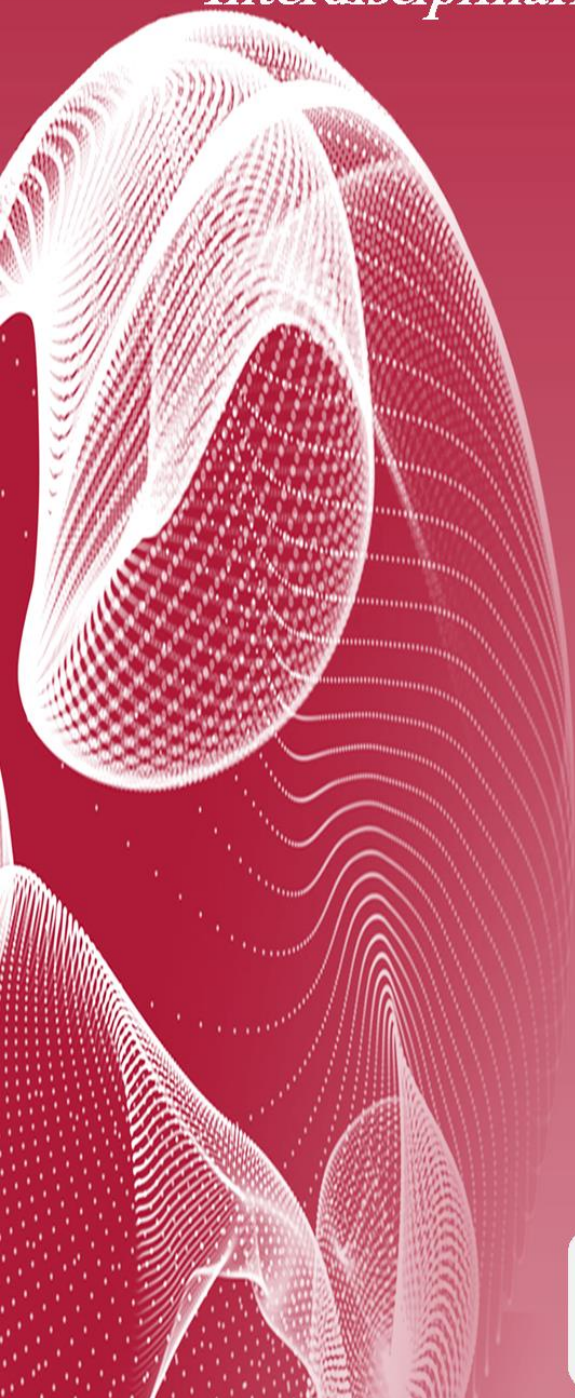


3rd International Scientific Forum,

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22 - 25 April 2015, Amman, Jordan

“Interdisciplinarity and Higher education”



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PROCEEDINGS

**3rd INTERNATIONAL SCIENTIFIC FORUM,
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IMPACTS OF COAL MINING IN BALOCHISTAN

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Abstract

The average emission and prevalence of methane **CH₄**, carbon monoxide **CO**, and oxygen **O₂** measured as **11.8m³/ton, 36ppm and 14%** respectively which exceeds the permissible limits of **1-10m³/ton, 30ppm and 18 %**(Standardized by National institute of occupational safety and health **NIOSH U.S.A**) and are the source of high death ratio. The higher concentration of coal dust (**carbon and quartz contents of Coal dust**) have been measured as **4-5mg/m³ and 0.35mg/m³** against the threshold limits (**Recommended by NIOSH**) of **2mg/m³ and 0.05-0.1 mg/m³ for 8hours daily and 40hours/week**. The high concentration of coal dust in coal mine areas of Baluchistan is not only the source of health problems like **routine headache, irritation in throat ,nose, and eyes, drowsiness, shortness of breath, nausea, pneumoconiosis, tuberculosis, chronic obstructive bronchitis, heart problems, respiratory irritation, asthmatic and even lung impairment and lung cancer problem**, but is causing severe damage to the Environment., The coal water and slurry being the residual of coal mining are disposed off in an unconfined area which becomes the source of soil and water degradation and the contaminated water taken by coal workers has several health impacts **like ulcer, diarrhea, cholera, hepatitis B and C** etc on coal workers of Baluchistan.

Keywords: Threshold limit values (TLVS), Carbon capture and sequestration (CCS), , Maximum allowable concentration (MAC), Occupational Exposure Limits (OEL)

Introduction

The environmental standards during coal mining in Baluchistan are neither implemented nor observed rather it would be more appropriate if we say that the mine owners don't know the environment and its standards. This gives rise to uncontrolled and overexposure of gases and other effluents which happen to cause environmental and health degradation, Steyn, J., and J. Edward, 2007 . The coal mine water; the major source of water pollution in the coal mines is the carryover of the suspended solids in the drainage

system of the mine water .In some of the coal mines, acidic water has also been found in the underground aquifers. Ground water supplies are adversely affected by mining activities. These impacts include drainage of usable water from shallow aquifers, lowering of water levels in adjacent areas and changes in flow directions within aquifers. During the coal mining in Baluchistan, the coal waste is normally dumped in open areas on surface thus it drastically alters the landscape and renders the land unfit for other purposes like vegetation or agriculture. The main source of noise pollution due to coal mining are blasting ,drilling and coal handling which has severe impacts on the health of coal workers. The clearing of trees, plants and top soil from mining areas destroys forests and natural wildlife habitat, it also promotes soil erosion; flooding and stirs up dust pollution. Mountain top removal to remove coal is a large scale negative change to the environment. During mining operations, the potent green house gas, (**methane and carbon**) are released into air and resulting in global warming, Eyre, N., and R. Bellingham, 1998.Due to old and obsolete mining techniques in Baluchistan the emission of gases are more pronounced. Similarly the coal dust is responsible for number of diseases and health degradation in Baluchistan Steffen, S., and D. Ragnvaldsson, 2005.

Material and Methods

The prospective study was conducted on Coal mine workers of Baluchistan from May 2008 to April 2009. Two types of data were collected. Primary data was obtained through questionnaire while Secondary data was collected from; Mine& Mineral department of Quetta, Environmental protection Agency Quetta, hospitals and medicals facilities in coal mine field's areas, Insurance companies, Wild life department, Water, Agriculture, Forest and land department. Total three mine fields were selected (Figure-1) depending upon Geographical location, types of mining carried out and type of coal extracted. For the simplicity and to be more specific in results the selected coal mine fields Mach, So-range-Degari, and Chamalong coal fields were further subdivided as M1(Mach),M2(Mach),andM3(Mach) at Mach coal field, SD1(Sorange degari), SD2(Sorange degari) and SD3(Sorange degari) at So-range-Degari and C1, C2 and C3 at Chamalong coal field.



Fig -1 The pictures of location of mines and sub-mines fields Baluchistan

S/NO	Mine Location	Time Weighted HRS	Average Emission of CH4 m3/ton		Concentration of		Method of Measurement
			During Mining	Post Mining	CO PPM/HR	O2 %age	
1.	Mach coal fields M1,M2,M3	8	11.2	5.43	37	13.5	Mine safety Appliances Mining Detector Meotro NICs serial No 045 MEO 6101 Made in UK
2.	Sorange degori coal fields SD1,SD2,SD3	8	8.7	5.46	35	16.2	“
3.	Chamalong coal fields C1, C2, C3	8	12.5	4.5	37	12.4	“

Source Field work

Results and Discussion

The Exposure limits of gases measured in coal mine fields of Baluchistan are given in below Table-1, 2 and 3

Table- 1 Emission of methane (CH4), carbon monoxide (CO) at Selected Sites

Table-2 Comparison of rate of emission of methane

Ser/NO	Country	Emission of %age of CH ₄ in CF/Million ton
1.	China	9.76
2.	U.S.A	9.0
3.	Pakistan (Baluchistan)	10.2

Source EPA (U.S.A) and EPA Quetta

Table-3 Comparison of carbon monoxide poisoning

Ser/NO	Country	Duration	Death due to CO poisoning/ton of coal produced
1.	China	2005-2009	16
2.	U.S.A		12.4
3.	Pakistan,(Baluchistan)		15.1

Source EPA USA and MMD Baluchistan

The Table-1&2 shows that the gas exposure limits are more than the permissible exposure limits specified by health safety agencies NIOSH, OSHA and MSHA. Methane emission from coal mining depends on the mining methods, depth of coal mining, coal quality and entrapped gas content in coal seams, however the rate of emission of methane should range between **(1-10 m³/ton)** during mining and maximum **3.5 m³/ton** in case of post mining, Watson, L.D., and L. Smith, 2004 , but higher limits measured in both cases especially after post mining the average concentration measure as 6.5% which is very high concentration. The higher concentration of methane reacts with air ($\text{CH}_4 + 2\text{O}_2 = \text{CO}_2 + 2\text{HO}$) and displaces the prevalence of oxygen, Antao, V.C., and E.L. Petsonk. 2005. as it has been highlighted in above table-1, higher the concentration of CH₄, lower the percentage of oxygen (Min 18%) and thus it results in suffocation and ultimately sudden death, Walter, R., and R. Amofah, 2001. One of the reason of sudden death due to over emission of CH₄ in Balochistan coal workers is the weak cardiac sensitizers in human following inhalation exposures to high concentration (greater than 5% isobutene and greater than 10% for propane) cardiac sensitizers causes the sudden onset of irregular heart beat and sudden death, Megrran, P., and B. Gustavsson, 2001. In some cases due to high concentration and oxygen deprivation damage to some or all organs including the nervous system and the brain has also been observed in Balochistan coal workers. In some cases Occupational or accidental exposure to CO (Table-3) has caused acute decrements in lung function because of high level car boxy hemoglobin. During medical examination headaches, dizziness, drowsiness, unconsciousness, nausea, vomiting, shortness of breath has been found common in Balochistan coal workers.

Problems of aging and illness due to CO induced neurobehavioral effects have been observed, because, under normal circumstances, the brain can increase blood flow to tissue, oxygen extraction to compensate for the hypoxia caused by exposure to CO, Talli, J.A., and W. Jiang, 2004

Tissues of highly active oxygen metabolism, such as heart, brain, liver, kidney and muscle may be particularly sensitive to CO poisoning, Wei-Long, A.J., and K.L. Lättström, 2003. When carboxy-hemoglobin levels are higher than **50%** convulsion and cardio pulmonary arrest have been observed. Complications have been observed frequently in CO poisoning like immediate, death, myocardial impairment, hypotension, arrhythmias, and pulmonary edema, Gabe, J., A. Wells and P. Lesvitz, 2008. Perhaps the most insidious effect of CO poisoning observed is the delayed development of neuron psychiatric Impairment and the neurobehavioral consequences, Richard, V., and R.B. Rweing, 2005. Impact on the central nervous system, causing hallucination and a heightened emotional state has also been observed. This is very unfortunate that no stake holder is having such awareness. This has given rise to numerous of health problems like, respiratory Problems, Impairment of lung tissues, pneumoconiosis, Impact on brain, kidneys and other organs, itching and irritation problems, Tuberculosis, Asthmatic problem are most common due to overexposure of coal dust in Balochistan. The few of the pictures as shown in Figure-1 of the lungs taken during the X-ray at CMH Quetta of coal workers of all three sites clearly Indicates the presence of all symptoms of lung impairment, changing color of lungs from pink to black is the indications of dusty lung (Figure-2). During medical examination the maximum strength of coal workers was diagnosed with T.B.

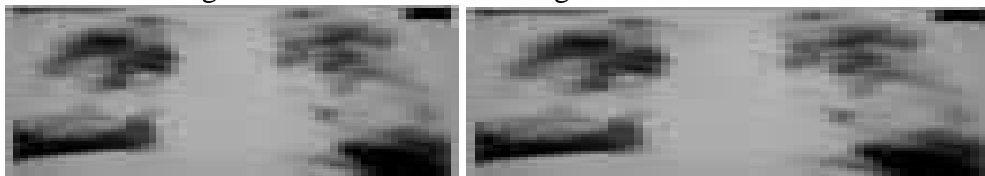


Fig -2 The pictures of damaged lungs of coal workers of so-range Degari taken during medical examination at CMH Quetta

A comparison between the numbers of death due to coal extraction in different coal producing countries has been shown in below tables-4

Table -4 Coal Production in Million tons VS Death

Ser/NO	Country	Year	Million tons of coal produced	Death occurred
1.	Pakistan (Baluchistan)	2004-2005	1.89	77
		2005-2006	2.02	246
		2006-2007	1.92	180
		2007-2008	2.30	345
		2008-2009	1.98	78
2.	China	2004-2005	60.44	55
		2005-2006	50.27	45
		2006-2007	46.01	42
		2007-2008	41.35	38
3.	India	2004-2005	198.3	180
		2005-2006	80.2	73
		2006-2007	116.9	136
		2007-2008	147	163

Source: -Field Result and ISBN 2005

In Table-4 we find maximum deaths in china because maximum coal is produced in china in the world whose **75-80%** of economy depends on energy produced by coal. Yohi, R.J., and K.K. Wong, 2007. Where as in Balochistan we do not produce compatible coal, but the rise in death as compared to U.S.A and Australia is quite high which is just because of use of obsolete mining equipment (Room and pillar Method) and non-adherence to safety measures. Similarly the emission rates of coal dust (carbon and Quartz) and concentration of suspended and Respirable dust particle measured during the field work are appended below in Table-5, 6&7

Table-5 Summary of field results of Coal dust exposure at selected sites

S/NO	Mine ID	Location of Reading	Average Dust Concentration mg/m3	Threshold Limit Value mg/m3	Difference mg/m3
1.	Mach (Abe-gum) M1,M2,M3	At the face of mine	5.26	2	+3.26
2.	Mach (Abe-gum) M1,M2,M3	At the loading place	4.25	1-2	+2.25
3.	Mach (Abe-gum) M1,M2,M3	At Ventilation / Exhaust	3.47	2	+1.47
4.	Sorange degari SD1,SD2,SD3	At the face of the mine	3.54	2	+1.54

5.	Sorange degori SD1,SD2,SD3	At the loading point	3.05	1-2	+1.05
6.	Sorange degori SD1,SD2,SD3	At Ventilation / Exhaust	2.75	2	+0.75
7.	Chamalong C1,C2,C3	At the face of mine	5.2	2	+2.2
8.	Chamalong C1,C2,C3	At loading place	4.35	1-2	+2.35
9.	Chamalong C1,C2,C3	At Ventilation / Exhaust	4.05	2	+2.05

Source Field Work

Table-6 Summary of the field results of quartz exposure at selected sites

S/NO	Mine ID	Location of Reading	Average Dust Concentration mg/m ³	Threshold Limit Value mg/m ³	Difference mg/m ³
1.	Mach (Abe-gum) M1,M2,M3	At the face of mine	0.67	0.1	0.57
2.	Mach (Abe-gum) M1,M2,M3	At the loading place	0.55	0.05-0.1	0.45
3.	Mach (Abe-gum) M1,M2,M3	At Ventilation /Exhaust	0.44	0.1	0.34
4.	Sorange degori SD1,SD2,SD3	At the face of the mine	0.45	0.1	0.35
5.	Soange degori SD1,SD2,SD3	At the loading point	0.39	0.05-0.1	0.29
6.	Sorange degori SD1,SD2,SD3	At Ventilation / Exhaust	0.35	0.1	0.25
7.	Chamalong C1,C2,C3	At the face of mine	0.67	0.1	0.57
8.	Chamalong C1,C2,C3	At loading point	0.58	0.05-0.1	0.45
9.	Chamalong C1,C2,C3	At Ventilation / Exhaust	0.52	0.1	0.42

Source; Field work

Table-7 Concentration of particles in coal dust in time weighted average in Comparison of W.H.O

S/N	Mine Location	Type of Pollutant	Average Flow Rate	Time Weighted Average	Average Concentration in Ambient Air	WHO Permissible Limit	Equivalent Used	Measuring Principle	Analytical Method	Equipment Used
1.	Mach coal field	Suspended particulate matter Respirable particulate matter	1/m ³ /minute 1/m ³ /minute	24 hours daily 24 hours daily	625 μg/m ³ 170 μg/m ³ 3	500 g/m ³ μ 24 hour 150 g/m ³ μ	High Volume sampler	Aerodynamic sampling followed by gravitational measurement	Gravimetric	Gravimetric G-1023 NF of U.K.
2	So range coal field	SPM RPM	1.1/m ³ /minute 1/m ³ /minute	24 hours daily 24 hours daily	610 μg/m ³ μ 185 g/m ³	500 g/m ³ μ 150 μg/m ³	High Volume sampler	Aerodynamic sampling followed by gravitational measurement	Gravimetric	Gravimetric G-1023 NF of U.K.
3.	Chamalong	SPM RPM	1/m ³ /minute 1/m ³ /minute	24 hours daily 24 hours daily	630 μg/m ³ 155 μg/m ³	500 g/m ³ μ 150 μg/m ³	High Volume sampler	Aerodynamic sampling followed by gravitational measurement	Gravimetric	Gravimetric G-1023 NF of U.K.

Source: -Field work

Exposure to coal dust; The tabulated values received as a result from analysis in EPA laboratory have exceeded the recommended exposure limits as given by like **NIOSH**, **OSHA** and **ACGIH**. The most obvious reason of higher concentrations of coal dust in Balochistan coal fields is the lack of monitoring by EPA, and mine and mineral department (MMD), implementation of environmental laws and free hand to mine owners, moreover no precautionary measures are taken by coal workers and mine owners. This give rise to numerous of health problems and environmental degradation. The inhalation of these particles through airways, throat and finally goes into lungs and causes damage like irritation in eyes, throat and nose, Lungs infection and impairment, Shortness of breath, wheezing,

Asthma, Coughing and Chest pain has been reported from coal mine workers of Balochistan etc. The summary of health problems of coal mine workers reported from different hospitals for five years is given below in Table-8

Table -8 Yearly health analyses of coal workers of Balochistan

Ser/NO	Types of Occupational Illnesses	No of patients / year				
		2005	2006	2007	2008	2009
1.	T.B	204	289	319	307	379
2.	Post T.B	348	372	412	407	389
3.	Bronchitis	396	422	453	392	512
4.	Asthmatic problems	423	447	492	398	307
5.	Skin and other infection	729	597	612	707	779
6.	Hypertension	837	714	745	810	823
7.	Lung C.A	149	112	132	79	93
8.	Death in hospital due to injury	119	139	122	98	109

Source; Data collected from different hospital at Quetta

Impacts of coal waste. During coal mining no doubt the coal mine waste water and coal waste (**coal slurry**) come out as the product waste and spread out into unconfined place at Baluchistan coal fields. It contaminates(Degrade) the nearby source of drinking water that water is used by coal mine workers and they are suffering from numerous waterborne diseases, this was investigated by taking the water sample and testing it into laboratory, the results in comparison of WHO prescribed limits have been tabulated in table-9&10

Table-9 Concentrations of suspended solid in coal mine waste of Balochistan

Ser/NO	Mine Location	Type of effluents	Measured qty in mg/L except PH	WHO standards in mg/L, except/pH	Measuring apparatus
1	Mach coal field	PH	4.9	6.9	PH meter's/no 558272, HM 25r, TTK_TOA Japan
		Turbidity	0.59	0.5	Turbidity meter's/no F412R-05NB Nippon Dashiki Japan
		BOD	220	250	Hatch BOD Track's/no 26197-01/0104103 U.S.A
		COD	370	400	Hatch COD Reactors, s/no 021200010120 p/n45600-02 love land colo U.S.A
		TSS	425	400	Vacuum Pump filter system for TSS
		TDS	3720	3500	Ion sense meter hatch TDS-EC Salinity meter
2.	Sorange coal field	Taste	Objectionable	-	-
		Odor	Objectionable	-	-
		Hardness	515	500	Titration Method, NO 460130
		PH	5.0	6.9	PH meter

Ser/NO	Mine Location	Type of effluents	Measured qty in mg/L except PH	WHO standards in mg/L, except/pH	Measuring apparatus
		Turbidity	0.57	0.5	Turbidity meter
		BOD	215	250	Hatch BOD Track
		COD	350	400	Hatch COD Reactors
		TSS	430	400	Vacuum Pump filter system for TSS
		TDS	3600	3500	Ion sense meter hatch TDS-EC Salinity meter
		Taste	objectionable		
		Odor	“	“	-
		Hardness	530 mg/L	500 mg/L	Titration Method
3.	Chamalong coal field	PH	4.9	6.9	PH meter
		Turbidity	0.52	0.5	Turbidity meter
		BOD	225	250	Hatch BOD Track
		COD	360	400	Hatch COD Reactors
		TSS	435	400	Vacuum Pump filter system for TSS
		TDS	3650	3500	Ion sense meter hatch TDS-EC Salinity meter
		Taste	Objectionable		
		Odor	“	“	-
		Hardness	520	500 mg/L	Titration Method

Source- Field work and WHO-2007

Note:-

- BOD - Bio-available oxygen demand
 COD - Chemical oxygen demand
 TSS - Total suspended solid.
 TDS - Total dissolved solid.

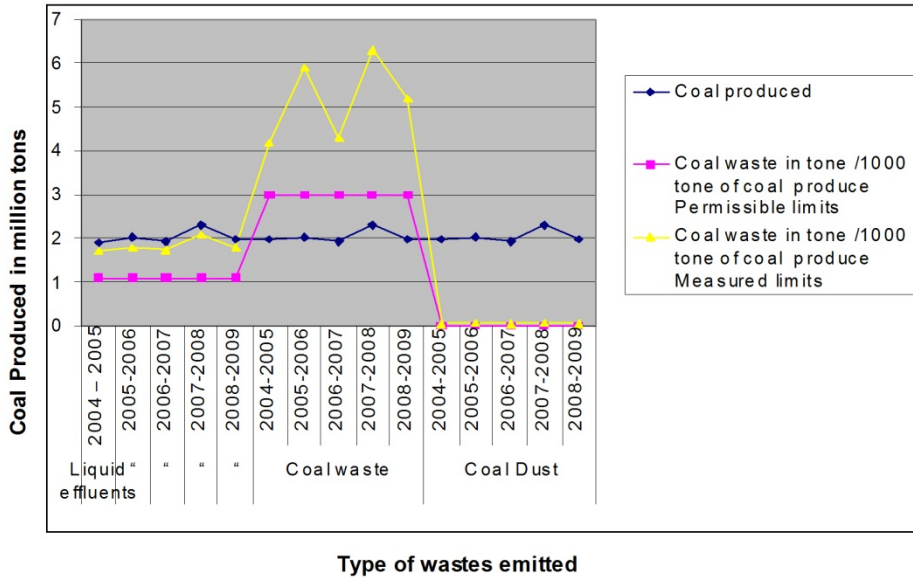
Table -10: Coal waste produced per ton of coal from Balochistan coal fields.

S/NO	Mining technique	Parameter	Year production	Coal produced in million tons	Coal waste in ton /1000 ton of coal produce	
					Permissible limits	Measured limits
1	Underground	Liquid effluents	2004-2005	1.89	1.1	1.7
		“	2005-2006	2.02	1.1	1.8
		“	2006-2007	1.92	1.1	1.74
		“	2007-2008	2.3	1.1	2.09
		“	2008-2009	1.98	1.1	1.8
2.	Underground	Coal waste	2004-2005	1.98	3	4.2
			2005-2006	2.02	3	5.9
			2006-2007	1.92	3	4.3
			2007-2008	2.3	3	6.3
			2008-2009	1.98	3	5.2
3.	Underground	Coal Dust	2004-2005	1.98	0.01	0.041
			2005-2006	2.02	0.01	0.087
			2006-2007	1.92	0.01	0.043
			2007-2008	2.3	0.01	0.091
			2008-2009	1.98	0.01	0.045

Source; EPA and MMD Quetta

The comparison shows the concentration limits of **TSS and TDS** in Balochistan coal fields are higher than prescribed by W.H.O. The higher concentration of these effluents makes the water heavier and unsuitable until unless it is purified and the lower PH value shows that the water is acidic. The less **BOD and COD** demand shows that either the microorganisms are less in numbers or mostly dead due presence of higher concentration of **TDS and TSS**. Moreover the non-availability of facility to purify the water has become one of the reasons of no of health impacts in coal workers of Balochistan. In this way the water at coal mine fields and surrounding becomes unsuitable for drinking purposes. The quantity of coal waste

produced is more than the requisite limits as prescribed by W.H.O which speaks of the substandard mining techniques in Balochistan. This element contributes towards the deterioration of health of coal workers, Environmental degradation (Air, water and soil degradation).and significant impact on the economy of the province. The results so obtained can be represented graphically in comparison with W.H.O (Figure-3)



Noise Impact due to coal mining Noise in coal mining is obvious and is displeasing for coal workers that disrupt the activating and life as well Whispers, B., and J.K. Robinson, 2006.like impaired hearing, damage to hearing system, deafness etc due to produced noise Rathus, A.K., and J.K. Robert, 2006.and obviously noise pollution. Mining operation like drilling, collection, transportation and handling of coal, sizing and segregation units are the major source of noise pollution/degradation in underground coal mining of Baluchistan.

Land/Soil degradation; The coal waste produced is disposed off in an open area in Balochistan. The coal Slurry and other wastes in the shape of liquid or solid are not disposed off at a confined place rather spread out in surrounding areas at far of place and this overburden is dumped on surface, preferably on mined-out or de-coaled area (Figure-4). Therefore this type of mining requires quite large area on surface. In this way coal mining drastically alters the landscape and renders the land unfit for other purposes like vegetation or agriculture Nitish, J.S., and V.P. Yadarshi, 2008. due to removal of top nutrients and thus decreasing the yielding capacity of soil.



LAND DEGRADATION DUE TO MINING

Fig-4 Land Degradation Due to coal waste water and acid mine drainage at Balochistan coal field

This aspect of land degradation in underground coal mines is due to subsidence over the underground cavity resulted. During coal mining in Balochistan about **20 – 25%** of coal is removed as waste and it is disposed off as the loose dumping as landfill, which causes soil degradation. Tailings produced as slurry are often drained out without proper impoundment into the streams, which use to contaminate the water. The slurry settles there and dries out and makes the soil for no more use.

Many a times; large forest areas have been transferred for coal mining purpose. The clearing of trees, plants and topsoil from mining areas have destroyed forests and natural wildlife habitats. It has also promoted soil erosion and flooding and stirred up dust pollution that has lead to respiratory problems in coal workers and even nearby communities. It was revealed through questionnaire and physical inspection also that the area near coal mining was mostly barren or with wild bushes. The cultivation was to be carried out prior the mining operation but since the yield was decreased with passage of time, so the farmers left the area and the wild bushes took the crop place and Made the area barren, in this way a huge cultivatable land was lost due to coal mining. The area could have been saved if monitoring agencies should have implemented the re-vegetation process.

Biodiversity; During the field work It was pointed out by coal workers, coal owners and even the local population that there used to be a variety of wild animal like bear, Jackal, fox, stage and even lion use to be found in the area but illegal hunting, coal mining, man generated activities have decreased the strength of wild animal, moreover the migrating birds which use to come to Balochistan are very rare due to the occupation of the area because of coal mining activities

Impact on Communities; Balochistan is a deserted place, where the cities, towns or villages are quite far apart and scattered. The coal mining activity is carried out normally quite away from living communities, however at scattered places the people are living in near vicinity of mined

area. Moreover the families of coal workers are very close to the mined area, therefore the coal workers and their families are the most victimized due to coal mining. Community is affected due to acid mine drainage AMD and water impurities mostly, soil and air degradation Karl, H.D., and J.H. Edwent, 2006.

Aesthetic effect; although the coal mining is considered a source of revenue for the province but at the same time its unhealthy and unpleasant activity (Figure-5). The poor and unhygienic living conditions of coal workers of Balochistan, unsafe water and food has made the life of coal workers quite miserable and is leaving negative impact on environment.

Fig-5 Unhygienic living conditions of coal workers



More over the storage of spoil and rejects has the potential to cause adverse environmental impacts. The extraction of coal by mining disrupts virtually all aesthetic elements of the landscape, in some cases the new linear patterns appear as material is extracted and waste piles are developed. Different colors and texture are exposed as vegetative cover is removed and overburden dumped to the side, Dust vibrations are created, affecting sight, sound and smell. Some members of local communities may find such impacts disturbing or unpleasant

Negative change to Environment; Mountain top removal to remove coal is a large scale negative change to the environment. Tops are removed from mountains or hills to expose thick coal seams, underneath, the soil and rock removed are deposited in nearby valleys, hollows and depressions, resulting in blocked and sometimes contaminated water ways. The remediation is often delayed for decades; one of the legacies of coal mining is the low coal content waste forming slag heaps. In addition, all forms of mining are likely to generate over as where coal is stacked and where the coal has significant sulfur content, such coal heaps generate highly acidic, metal – laden drainage when exposed to rainfall. These liquors can cause severe environmental damage to receiving water courses

Climate Change; The consequences which are attributed directly and indirectly to human activities, like coal mining activities result in the

alteration in the composition of the atmosphere and the global climate in General, thereby causing climate change Gurdeep, R.B., and S. Smitha, 2009. Over emission of Methane CH₄ and carbon monoxide CO both green house gases from the coal fields of Balochistan may not be significant but contributing towards the climate

Conclusion

Though many research are being conducted all over the coal mining countries for the improvement in coal extraction techniques, to overcome the emission rate of methane and carbon and thus to reduce the death and injury rate and environmental degradation. Efforts have also been instituted to overcome and reduce the toxicity of coal effluents on the health of the coal workers, but in Pakistan especially in Balochistan no such measures have been taken by Government and mine owners. On a similar fashion a study was designed to ascertain whether the coal mining in Balochistan is carried out as per the international standard or not. The special emphasis was laid to evaluate the environmental degradation in Balochistan. The analysis of samples in EPA Laboratory and pathological tests results have revealed that due to overexposure of coal dust and over emission of methane, carbon and other coal effluents are not only the source of rise in death toll, have severe health implications and are the contributing factors towards the environmental degradation by contaminating air, water and soil. No doubt the extraction of fossil fuels is the big source of environmental degradation and global warming. Today most burning issue is the climate change issue due to emission of CO₂ and CH₄ which are the green house gases and their excess emission contributes in rise of temperature and thus changing the climate.

References:

- Eyre, N., and R. Bellingham. 1998. Environmental Impacts of Energy. *Journal of Environmental Degradation*. Vol. 3(11): 14-18.
- Gabe, J., A. Wells and P. Lesvitz, 2008. Black Lung, A Disease of Coal Workers. *American Journal of Environmental Sciences*. Vol. 2(7): 19-41.
- Gurdeep, R.B., and S. Smitha. 2009. Coal Mining and Pollution. *Indian Journal of Mining*. Vol. 5(1): 7-9.
- Karl, H.D., and J.H. Edwent. 2006. Respiratory Disease Induced by Coal Mine Dust. *Massachusetts Medical Society Journal* Vol. 4(6): 17-23.
- Megran, P., and B. Gustavsson. 2001. Health effects associated with the inhalation of Hydrogen Sulfide in Idaho. *American journal of occupational safety and health* Vol. 6(16): 63-67.
- Nitish, J.S., and V.P. Yadarshi. 2008. Impacts of mining industries in Jharkhand. *Indian Journal of Occupational Medicines*. Vol. 3(31): 36-43.

- Rathus, A.K., and J.K. Robert. 2006. Mining and Aids Brief. *Journal of Impacts of Mining*. Vol. 3(1): 8-10.
- Richard, V., and R.B. Rweing. 2005. Mining and prediction of coal worker's pneumoconiosis with bioavailability iron content in the bituminous coal. *International Journal of Environmental Health Pakistan*. Vol. 9(5): 32-43.
- Steffen, S., and D. Ragnvaldsson. 2005. Occupational Asthma. *International Weekly Journal of Science*. Vol. 2-4(1): 20-29.
- Steyn, J., and J. Edward. 2007. Environmental Assessment of Mining Projects. Environment Department World Bank Note Number 22: 36-39.
- Talli, J.A., and W. Jiang. 2004. Indigenous Environmental Justice Issues Enter the Global Ring. *Australian Journal of Environmental Studies*. Vol. 14(1): 14-15.
- Walter, R., and R. Amofah. 2001. Real problems of coal mine workers. *Indian Journal of Medicine*. Vol. 52(7): 32-35.
- Watson, L.D., and L. Smith. 2004. The environmental concern. *Asian Journal of Medicine*. Vol. 2(3): 5-836.
- Wei-Long, A.J., and K.L. Lättström. 2003. How mining affects the workers. *International Journal of Medicines*. Vol. 2(6): 45-48.
- Whispers, B., and J.K. Robinson. 2006. How to avoid the hazards of mining. *Asian Journal of Mining*. Vol. 5(2): 5-7.
- Yohi, R.J., and K.K. Wong. 2007. The true cost of coal in India. *Indian journal of mining*. Vol. 7(10): 61-110.
- Weeks, J. L. 2003. The fox guarding the chicken coop: monitoring exposure to respirable coal mine dust, 1969-2000. *Am. J. Public Health* 93 (8):1236-44.
- Antao, V.C., and E.L. Petsonk. 2005. Rapidly progressive coal workers' pneumoconiosis in the United States: Geographic clustering and other factors. *Occup. Environ. Med.* 62(10): 670-74.

THE RELATIONSHIP BETWEEN HUMAN FACTORS AND ORGANIZATIONAL PERFORMANCE IN YEMENI INDUSTRIAL COMPANIES

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Abstract

This study conducted an empirical investigation into the extent of total quality management practices in the Yemeni industrial companies. It evaluated the impact of the human factors of quality management on organizational performance. The data employed in this study were questionnaires from 87 industrial companies. The sample consisted of three quality managers for each company and a total of 210 managers responded to the survey in response rate of 80%. A structural equation modelling (SEM) was carried out by Amos program to evaluate the hypothesis of this study. This study is the first to report on the human side of total quality management in Yemen as well in Middle East countries. In this study, the findings revealed a direct relationship among the variables; the human factors directly impacted organizational performance and the standardized coefficient was .432 and significant at .001 level ($P = .000$).

Keywords: Human factors, total quality management, organizational performance, Yemeni industrial companies

Introduction

The new millennium has been witnessed many changes, these changes have significantly affected the requirements of business environment. The competition in global market makes organizations and researchers emphasis on the need to innovate new methods to face the new challenges. However, total quality management is considered a greater

innovation methods interested in making competitive advantage. It is the only way to face the rapidly changing in the business environment. Actually, total quality management becomes as a famous approach, since it has new methods to assure the successful for organizations in business environment. However, total quality management approach was built by quality leaders such as Deming, Grosby, Juran, Feigenbaum, and Ishikawa, who made the main structure of total quality management (Zairi et al; 1994)

The spotlight on quality management in business environment urged the researchers to focus seriously on the improvement of quality management methods, which enhance the organization activities via the successful of total quality management implementations. Recently, many attempts were made to identify the critical success factors of total quality management from one side, and also to discover the importance of these factors to the implementation of the total quality management from the other side (e.g. Oprime et al., 2012; Guion, 2010; Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali, 2008; Antony et al., 2002; Zhang et al, 2000; Yusof and Aspinwall, 1999; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993).

Alongside, some studies were interested in dividing the quality management practices however, they divide the critical factors of quality management into two groups; either hard and soft factors or technical and human factors respectively (e.g. Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Kumar et al., 2009; Abdullah et al., 2008; Tari, 2007; Demirbag et al., 2006; Rahman and Bullock, 2005; Louise, 1996; Flynn et al., 1995; Wilkinson, 1992). According to Wilkinson (1992), there are two aspects of quality management; hard aspect, which focuses on tool and work process, and soft aspect, which interests on human side of quality management. Also, he suggested that the hard aspect has more preoccupation rather than the human aspect when the organizations implement total quality management program. Moreover, Edward and Sohal (2003) suggested that the lack of attention to the human side of total quality management may lead to limited success of total quality management implementation.

Scientifically, literature of quality management suggested that human factors of quality management such as leadership, employee involvement, training and education, customer focus, communication, rewards and recognition, supplier relations, and teamwork have a highly significant impact on organization performance (Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; and Kumar et al., 2009; Abdullah et al., 2008; Rahman and Bullock, 2005; Flynn et al., 1995).

Recently, Yemeni economic sectors are affected by the new rapidly changing in the business environment. In the last decade, Yemen

Government made a revolution to face the new challenges through enhances its economic sectors. Actually, the industrial sector received much more emphasis in Yemeni Government effort due to its importance to Yemeni economy (Government report 2007). Consequently, due to the importance of human factors to the implementations of total quality management and organizational performance, this study attempts to examine the impact of human factors on organizational performance, which contributes to a better understanding of human side of total quality management through context of Yemeni industrial companies.

Human factors and organizational performance

A large body of research supports the relationship between total quality management practices and organizational performance (e.g., Fotopoulos and Psomas., 2009; Gadenne and Sharma., 2009; Kumar et al., 2009; Abdullah et al., 2008; Demirbag et al., 2006; Tari., 2007; Rahman & Bullock., 2005; Dow et al., 1999; Ahire et al., 1996; Louise, 1996; Powell., 1995; Flynn et al., 1995).

Flynn et al. (1995) claimed that there is a significant relationship between core quality management practices (technical factors) and quality management infrastructure (human factors); they mentioned that the human factors positively impact the technical factors. Their study, further, showed that the human factors have both direct and indirect impact on performance through their impact on technical factors of quality management.

Indeed, the human factors act to create an appropriate environment to implement the technical aspect; this fact refers to the influence of the human factors on the implementation of technical factors. On the other hand, the human factors also impact organizational performance in the same way that the traditional human resource management impact organization performance (Ahire et al., 1996). Besides, Ahire suggestion was similar to the claim of Flynn et al. (1995); Ahire claimed that the human factors directly and indirectly impact organization performance.

Furthermore, Rahman & Bullock (2005) examined the relationship between the soft factors (human factors) and the hard factors (technical factors) and their impact on organization performance. They found a positive relationship between both soft and hard factors and organization performance, since the soft factors directly impact the hard factors and organization performance. They also found indirect relationship between the soft factors and organization performance; the soft factors indirectly impact organization performance through their direct impact on the hard factors.

As well, Abdullah et al. (2008) suggested that the effective implementation of the soft factors in the organization plays a central role in the quality improvement, which acting to improve performance and

productivity. However, they examined the direct and indirect relationship of the soft factors on organization performance. Their results found direct positive effect of soft factors on organization performance, and they also found indirect effect of soft factors on organization performance through their direct effect on quality improvement that acts as a mediator factor for the relationship between the soft factors and organization performance.

Gadenne & Sharma (2009) suggested that the favourable relationship between the hard and the soft factors of quality management improve organizational performance. They found that organization performance is influenced simultaneously by the hard factors (such as benchmarking and quality measurement, continuous improvement, and efficiency improvement) and the soft factors (such as top management philosophy and supplier support, employee training and increased interaction with employee and customer).

Moreover, Demirbag et al. (2006) measured the effect of total quality management practices on the organization performance in SMEs in Textile Industry of Turkish. They found a strong positive effect of quality management practices on non financial performance, and a weak effect of quality management practices on financial performance. Again, Tari et al. (2007) identified the relationship of total quality management practices and their direct and indirect effect on organization performance. They found a positive effect of total quality management practices on organization performance. And, Kumar et al. (2009) investigated the impact of total quality management implementations on Canadian organization performance. They also found a positive impact of employee relations, operating procedure, customer satisfaction and financial result on organization performance.

Additionally, Samson & Treziovsk (1999) found that total quality management practices such as leadership, management of people and customer focus have a significant relationship with organization performance, and the behavioural factors such as executive commitment, employee empowerment and open culture contribute a competitive advantage more significant than the hard factors such as process improvement, benchmarking, and information and analysis. Besides, in a study conducted by Dow et al. (1999) a positive relationship between the human factors (such as employee commitment, shared vision and customer focus) and organizational performance was found. Not that only, but they also found that the hard factors such as benchmarking, cellular work team, advanced manufacturing technology and close supplier relations do not contribute significantly to superior performance.

Theoretical framework

Due to the production orientation of TQM leaders, there is insufficient attention paid to the human side of quality management such as leadership, communication, training and education, employees’ involvement, teamwork, reward and recognition, customer focus and supplier relations, (Louise, 1996; Wilkinson, 1992; Hill, 1991). Recently, there is more interest on the human side, and empirical studies [e.g. Flynn, 1995; Abdullah et al., 2008; Rahman and Bullock, 2005; Flynn et al., 1995; and Ho, 2001) examined the relationship between the human side and organization performance. Indeed, they provided evidences for a significant relationship between the human factors and the organization performance.

From all what have been discussed above and based on the work that has been done by TQM leaders (such as Deming, 1986; Grosby, 1979; Juran,1993; Feigenbaum, 1991; and Ishikawa, 1985) In addition to the previous studies that are interested on identifying the critical factors of TQM implementation (e.g. Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali, 2008; Antony et al., 2002; Zhang et al, 2000; Yusof and Aspinwall, 1999; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993). and the studies that concentrated on the human side of TQM (e.g., Fotopoulos and Psomas., 2009; Gadenne and Sharma., 2009; Kumar et al., 2009; Abdullah et al., 2008; Demirbag et al., 2006; Tari., 2007; Rahman & Bullock., 2005; Dow et al., 1999; Ahire et al., 1996; Louise, 1996; Powell., 1995; Flynn et al., 1995; Wilkinson, 1992). this paper developed the following framework:

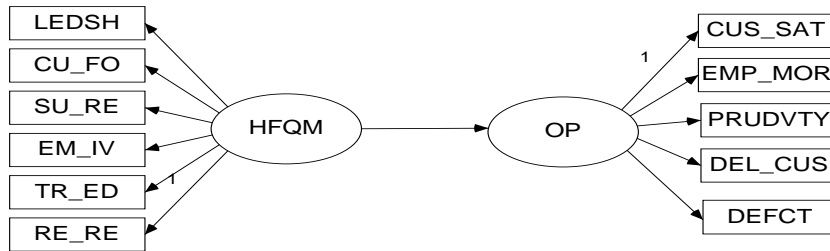


Figure 1: Framework of study

Whereas:

HFQM=human factors of quality management

OP = organization performance

LEDSH = leadership

CUS_SAT = customer satisfaction

CU_FO = customer focus

EMP_MOR = employee morale

SU_RE = supplier relations

PRUDVTY = productivity

EM_IN = employee involvement

DLE_CUS = delivery customer in full time

TR_ED = training and education

DEFCT = defects

RE_RE = reward and recognition

Methodology

Population and sample

The target population of this study was all Yemeni industrial companies who had received local and international quality certificates due to their interest on total quality management implementations and implicate international criteria in their operations. In fact, there are 87 Yemeni Industrial Companies have already taken local and international quality certificates; these companies were divided into five industrial cities: they are Sana'a, Aden, Hadramout, Alhudaidah and Taiz.

The participants of this study were the managers who are familiar with the implementations of total quality management. And at the same time all of them have enough knowledge about the performance. Based on this principle, the respondents of this study were one top management manager and two quality managers, from each company. A total of 210 completed surveys were returned out of 261 surveys questionnaire, for a response rate of 80 %.

Measurement

A questionnaire was designed to collect the data that determine and clarify the relationship between the human factors and organizational performance. To measure the human factors, the researcher developed the instrument that was used by Zhang et al. (2000). This instrument was developed based on an extensive literature of total quality management, which include 40 items dividing into six factors; they are leadership, customer focus, employee involvement, supplier relations, training and education, and reward and recognition. While to measure organization performance, the instrument that was developed by Samson and Terziovski (1999) was used. This instrument includes five dimensions; they are customer satisfaction, employee morale, productivity, delivery in full and defects. Prior to conducting the present study, a pilot study was conducted with 30 quality managers in Yemeni industrial companies in order to test the clarity, comprehensiveness and acceptability of the questionnaire. Each measure was assessed on a five-point Likert's scale continuum. Factor analysis and reliability analysis were carried out and the coefficient alpha shown in Table 1.

Table 1: Reliability analysis

No	Factor	No of items	Alpha
	Leadership	8	.824
	Customer focus	6	.817
	Supplier relations	6	.777
	Employee involvement	8	.727
	Training and education	6	.860
	Reward and recognition	6	.871
	Organizational performance	5	.827

Analytic methods

Pearson correlation coefficient test was used to evaluate the relationships between the variables of this study, and structural equation model by Amos program carried out to examine the hypothesis of this study.

Findings

The correlation between the six human factors (leadership, customer focus, supplier relation, employee involvement, training and education and reward and recognition) and the five dimensions of organizational performance (customer satisfaction, employee morale, productivity, delivery to customer and defect) are shown in Table 2. The correlation results show that five out of the six human factors were significantly related to organization performance (leadership, customer focus, employee involvement, training and education and reward and recognition). While supplier relations has not any relation with any dimension of organizational performance.

An in-depth analysis of the structural model establishes the existence of the causal relationship between the human factors and organizational performance. A significant coefficient would reveal the existed relationship among the variables, and the magnitude of this relationship can be observed from the value of this coefficient.

The estimated model fit shows a good fit, as shown in Figure 2. The results of the goodness of fit test, indicates that the value of chi-square (94.118), degree of freedom d,f (36), CFI (.955), RMSEA (.088) and P-value (.000) are significant.

Table 2: Correlations analysis of human factors and organizational performance

	CUS_SAT	EMP_MOR	PRUDVTY	DEFCT	DLE_CUS
LEDSH	.206**	.303**	.334**	-.013-	.139*
CU_FO	.224**	.249**	.345**	.014	.199**
SU_RE	-.038	-.063	-.027	-.116	-.074
EM_IN	.222**	.415**	.469**	.004	.216**
TR_ED	.236**	.332**	.423**	.000	.198**
RE_RE	.233**	.405**	.473**	.020	.178**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

As shown in Table 3 and Figure 2 below, the results indicate that the human factors have a positive relationship with organizational performance, and directly impact organizational performance (the standardized coefficient = .432, effect size (R²) = .186 and significant at .001 level (P = .000)). These results mean that 19% of organizational performance can be explained by the human factors, which considered as a large effect size.

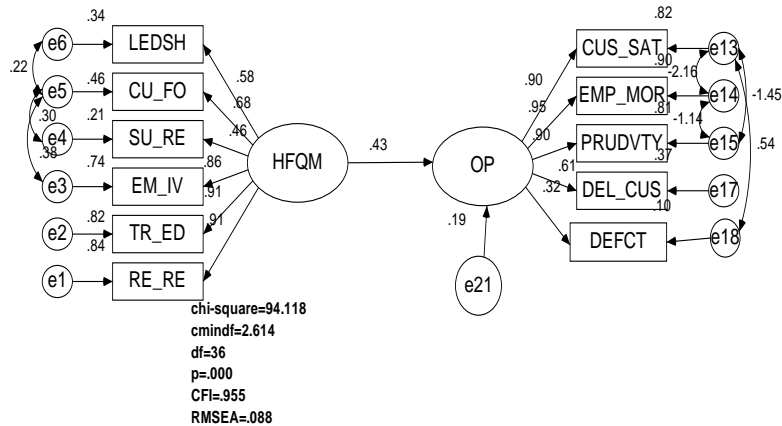


Figure 2: Structural model of relationship between human factors and organizational performance

Table 3: Fit indices for the structural model of the relationship between human factors and organizational performance

			Unstandardized	Standardized	S.E.	C.R.	R2	P
Organizational Performance	<---	Human factors	.108	.432	.017	6.527	.186	.000

Discussion

The results of this study reveal that the human factors of quality management have an important role in the implementations of total quality management and directly impact organizational performance (Dow et al., 1999). So, due to this importance, these factors must get enough attention when the companies reengineering their process to implement total quality program (Wilkinson, 1992).

Despite the fact that there is lack of studies emphasis on the human factors, many studies carried out to contribute the design development and application of the total quality system (Dow et al., 1999). Furthermore, in Middle East countries, actually, at the knowledge of the current researcher there is no research to date interested on the human side of quality management. Moreover, in the implementation of total quality management there is insufficient attention paid for the human factors. This may be due to the production orientation of total quality management leaders (Wilkinson, 1992; Louise, 1996; and Lau and Adris, 2001).

Lau & Idris (2001) suggested that it is necessary to study the critical soft factors (human factors) of quality management due to their important role to the implementations of total quality management in addition to their contribution in changing the thinking of the managers and employees, and permeating the total quality management throughout the whole organization.

According to Tamimi & Sebastianelli (1998), 48% were identified as barriers to total quality management due to human side of quality management. Motwani et al., (1994) considered the human factors (such as leadership, organizational skills and culture) as a key player acting to achieve quality performance. Previous studies bring evidences that the human factors have important role in the implementation of total quality management (Abdullah et al., 2008; Rahman & Bullock., 2005; Flynn et al., 1995). Following this same logic, this research established to examine the relationship between the human factors and organizational performance. However, the structural equation model was estimated to test this relationship.

In general, the results of this study confirmed that there is a significant relationship between the human factors and organizational performance, in which the human factors directly impact organizational performance, and the standardized coefficient is .432, and significant at .001 level ($P = .000$). Five out of the six human factors have a significant relationship with organizational performance. These factors are leadership, customer focus, employee involvement, training and education and reward and recognition, which make this research consistent with previous studies such as Flynn et al. (1995), Rahman & Bullock (2005), Abdullah et al. (2008) and Ho et al. (2001) On the other hand, the results of this study didn't find any positive relationship between supplier relation and organizational performance. This result, however, agrees with the results obtained by Powel (1995) and Dow (1999) who suggested that a factor such as supplier relations could only be context-dependent. In sum, this research confirmed previous suggestion that claimed the important role of the human factors of quality management in the implementation of total quality management and organizational performance.

Conclusion

This study determined, described, and explored the contribution of the human side of quality management to the implementation of total quality management program through examine the direct impact of human factors on organizational performance. The study carried out through 87 companies of Yemeni Industrial Sector by sample of three managers from each company (one of top managers and two quality managers). In methodology, this study used a quantitative approach by designed questionnaire. The study involved a sample of 87 companies; they were different sized population from small, medium and large. They were also different in terms of local and international certified. In term of analysis, this study used correlation analysis to examine the relationship among variables, and the structural equation model was used by Amos program to evaluate the direct impact of human factors on organizational performance. The analysis results found a

positive relationship among the variables of this study; thus, it showed that human factors have a significant direct impact on organizational performance.

Although, this study was conducted successfully without problems, but it is like any other study; has some limitations. Firstly, in instrument, the employee morale and customer satisfaction were evaluated by the managers perception, which perhaps make it relatively weak. Secondly, other Middle East Countries such as Saudi Arabic, UTA, Qatar, Bahrain, Oman, Kuwait, Jordan, Egypt, Iran and Turkey could be included in order to make comparisons in terms of human side of quality management and organization performance. Finally, other human factors of quality management such as communication, empowerment, teamwork, quality culture, human resource management, and employee satisfaction could be included as well. However, this can be the issue of a future research.

References:

- Abdullah, M.M.B., Uli, J. and Tari, J.J. (2008), "The influence of soft factors on quality improvement and performance: perceptions from managers", *The TQM Journal*, Vol. 20 No. 5, pp. 436-52.
- Abdullah, M.M.B., Ahmed, Z.A. and Ismail, A. (2008) *The Importance of Soft Factors for Quality Improvement*, *International Journal of Business and Management*, Vol. 3, No. 12.
- Ahire, S.L., Golhar, D.Y., Waller, M.A., 1996. Development and validation of TQM implementation constructs. *Decision Sciences* 27 (1), 23–56.
- Antony, J. Leung, K. & Knowles. G (2002) Critical Success factors of TQM Implementation In Hong Kong Industries, *International Journal of quality & reliability management*, Vol. 19, No 5, pp551-566.
- Badri, M.A., David, D. & Davis, D. (1995) A study of measurement the critical factors of quality management, *International Journal of quality & reliability management*, 12, pp. 36-53.
- Black, S.A. & Porter, L.J, (1996), Identification of the critical factors of TQM, *Decision Sciences*, Vol. 27 No. 1, pp. 1-21.
- Boon, O.K. & Arumugam, V. (2005), Does soft TQM predict employees' attitudes, *The TQM Magazine* Vol. 17 No. 3, 2005 pp. 279-289.
- Crosby, P.B. (1979), *Quality Is Free*, McGraw-Hill, Inc., New York.
- Deming, W.E. (1986), *Out of Crisis*, Massachusetts Institute of Technology, Center for Advanced Engineering Study, Cambridge, MA. evidence from Turkish SMEs", *Journal of Manufacturing Technology Management*, Vol. 17 No. 6, pp. 829-47.

- Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S. (2006), "An analysis of the relationship between TQM implementation and organizational performance:
- Dow, D., Samson, D., Ford, S., 1999. Exploding the myth: Do all quality management practices contribute to superior quality performance? *Production and Operations Management* 8 (1), 1–27.
- Feigenbaum, A.V. (1991), *Total Quality Control*, Third edition, McGraw-Hill, Inc., New York.
- Flynn, B.B., Schroeder, R.G. and Sakakibara, S. (1994), A framework for quality management research and an associated measurement instrument, *Journal of Operations Management*, Vol. 11, pp. 339-366.
- Flynn, B.B., Schroeder, R.G. and Sakakibara, S. (1995), The impact of quality management practices on performance and competitive advantage, *Decision Sciences*, Vol. 26 No. 5, pp. 659-691.
- Fotopoulos, C.B. and Psomas, E.L. (2009), The impact of "soft" and "hard" TQM elements on quality management results, *International Journal of Quality & Reliability Management* Vol. 26 No. 2, 2009 pp. 150-163
- Fotopoulos, C.V., Kafetzopoulos, D.P. and Psomas, E.L. (2009) Assessing the critical factors and their impact on the effective implementation of a food safety management system, *International Journal of Quality & Reliability Management* Vol. 26 No. 9, pp. 894-910.
- Gadenne, D. and Sharma, B. (2009), An investigation of the hard and soft quality management factors of Australian SMEs and their association with firm Performance, *International Journal of Quality & Reliability Management* Vol. 26 No. 9, 2009 pp. 865-880.
- Guion, C. L (2010), the impact of TQM and six sigma improvement methodologies on organization performance, USA, Capella University, Thesis.
- Hill, S. (1991). Why quality circles failed but total quality might succeed. *British Journal of Industrial Relations*, 29(4), 541-568.
- Ho, D.C.K., Duffy, V.G., and Shih, H.M. (2001) Total quality management: an empirical test for mediation effect, *International Journal of Production Research*, 39, pp. 529- 548.
- Ishikawa, K. (1985), "What is Total Quality Control? The Japanese Way, Englewood Cliffs, NJ: Prentice-Hall.
- Juran, J.M. and Gryna, F.M. (1993), *Quality Planning and Analysis*, Third edition, McGraw-Hill, Inc., New York.
- Kumar, V., Choisine, F., Grosbois, D. and Kumar, U. (2009), Impact of TQM on company's performance, *International Journal of Quality & Reliability Management* Vol. 26 No. 1, 2009 pp. 23-37

- Lau, H. and Idris, M. (2001), "the soft foundation of the critical success factors on TQM implementation in Malaysia", *The TQM Magazine*, Vol. 13 No. 1, pp. 51-60.
- Lewis, W.G., Pun, K.F. and Lalla, T.R.M. (2006a), "Exploring soft versus hard factors for TQM implementation in small and medium-sized enterprises", *International Journal of Productivity and Performance Management*, Vol. 55 No. 7, pp. 539-54.
- Lewis, W.G., Pun, K.F. and Lalla, T.R.M. (2006b), "Empirical investigation of the hard and soft criteria of TQM in ISO 9001 certified small and medium-sized enterprises", *The International Journal of Quality & Reliability Management*, Vol. 23 No. 8, pp. 964-85.
- Louise, C. (1996), "Analyzing business performance: counting the 'soft' issues", *Leadership & Organization Development Journal*, Vol. 17 No. 4, pp. 21-8.
- Motwani, J.G., Mahmoud, E. & Rice, G. (1994). Quality practices of Indian organization: An empirical analysis. *International Journal of Quality and Reliability Management*, 11, 38-52.
- Oprime, P.C., G.H. Mendes & M.L Pimenta. 2012. "Continuous improvement: critical factors in Brazilian industrial companies". *International Journal of Productivity and Performance Management*. Vol. 61. (1): pp. 69-92
- Porter, L. J., and Parker, A. J. (1993). Total quality management - the critical success factors. *Total Quality Management*, 4(1), 13-22.
- Powell, T. C. (1995). Total quality management as competitive advantage: A review and empirical study. *Strategic Management Journal*, 16(1), 15-37.
- Quazi, H.A., Jemangin, J., Kit, L.W. & Kian, C.L. (1998) Critical factors in quality management and guidelines for self-assessment, *Total Quality Management*, Vol. 9, No. 1, 1998, 35-55.
- Quazi, H.A., Padibjo, S.R., 1998. A journey toward total quality management through ISO 9000 certification – a study on small- and medium-sized enterprises in Singapore. *International Journal of Quality & Reliability Management* 15 (5), 489–508.
- Rahman, S. and Bullock, P. (2005), "Soft TQM, hard TQM, and organizational performance relationships: an empirical investigation", *Omega*, Vol. 33 No. 1, pp. 73-83.
- Samson, D., Terziovski, M., (1999). The relationship between total quality management practices and operational performance. *Journal of Operations Management* 17 (4), 393–409.
- Saraph, J.V., Benson, G.P. and Schroeder, R.G. (1989), An instrument for measuring the critical factors of quality management, *Decision Sciences*, Vol. 20, pp. 810-829.

- Sharma, M. Kodali., R (2008) TQM implementation elements for manufacturing excellence, *The TQM Magazine* Vol. 20 No. 6, pp. 599-621.
- Tamimi, N, & Gershon, M. (1995) A tool for assessing industry TQM practice versus Deming philosophy, *Production and Inventory Management Journal*, 36, pp. 27—32.
- Tamimi, N. and Sebastianelli, R. (1998), ``the barriers to total quality management'', *Quality Progress*, June, pp. 57-60.
- Tari, J.J., Molina, J.F and Castejon, J.L. (2007) The relationship between quality management practices and their effects on quality outcomes, *European Journal of Operational Research* 183 (2007) 483–501
- Wahid, R.A. and Corner, J. (2009) Critical success factors and problems in ISO 9000 maintenance, *International Journal of Quality & Reliability Management* Vol. 26 No. 9, pp. 881-893.
- Wilkinson, A. (1992). The other side of quality: 'soft' issues and the human resource dimension. *Total Quality Management*, 3, 323-329.
- Wilkinson, A., Marchington, M. & Daleuman, B., (1994). Manufacturing More Effective TQM: Implications for the Management of Human Resources, *Research and Practice in Human Resource Management*, 2(1), 69-88.
- Yang, C.C. (2006), "The impact of human resource management practices on the implementation of total quality management: an empirical study on high-tech firms", *The TQM Magazine*, Vol. 18 No. 2, pp. 162-73.
- Yusof, S., & Aspinwall (1999). Critical success factors for TQM implementation in small and medium enterprises. *Total Quality Management*, 10, 803-809.
- Zairi, M., Letza, S.R. and Oakland, J.S. (1994), Does TQM impact on bottom-line results? *TQM Magazine*, Vol. 6, pp. 38-43.
- Zhang (2000) Developing a model of quality management methods and evaluating their effects on business performance, *Total quality management*, Vol. 11, NO. 1, 2000, 129-137.
- Zhang, Ab Waszink, Jacob Wijngaard (2000) an instrument for measuring TQM implementation for Chinese manufacturing companies. *The International Journal of Quality & Reliability Management*. Vol. 17, Iss. 7; pg. 730

BUSINESS RISK MANAGEMENT: FEATURES AND PROBLEMS IN SMALL AND MEDIUM-SIZED TRADING AND MANUFACTURING ENTERPRISES

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Abstract

SMEs are generally recognised as the engine of economic development, and their development becomes a precondition for the international competitiveness and the economic growth of the state. Business risk management is a specific management sphere that requires a deep understanding of economic activity, decision optimisation, insurance activities, and knowledge of economics, law, psychology and many other fields. In countries with deep-rooted business traditions, business risk management starts with the creation of the company. Currently Lithuania has no consensus on how to encourage and support the entrepreneurship in SMEs, minimizing the danger of possible risk. The main research tasks of the article are as follows: we analyse the related literature and information about SME risk management, and its application, generalizing this topic, and then we examine and evaluate the practical applications of business risk management instruments to SME companies in trading and manufacturing sectors in Lithuania. The data analysis of empirical studies carried out with the managers and experts of the Lithuanian SMEs, using the survey and interview methods, revealed a greatly varying capacity of the respondents to identify business risk and manage it accordingly. Such differences are particularly noticeable when examining SME CEOs understanding of what risk mitigation instruments can be applied to their business.

Keywords: Risk management, small and medium sized enterprises, trading and manufacturing

Introduction

The existence of a risk, as an integral and inevitable part of the human economic activity, had led to risk management becoming an urgent and even fashion activity on enterprise level, as what appears to be stable today, may change tomorrow. In the last decades, many scholars - Jordan, (2013), Woolfson (2007), Pickett (2005), Tepman (2002), Stulz (2003), Chanse (2001) paid special attention to the risk management in industry field. These authors argue that risk management is a part of every company's daily work, however, both the business executives and company employees insufficiently understand the modern methods of risk assessment. The main reason for this phenomenon is the lack of knowledge, because risk management is a relatively new area of activity, especially in small and medium-sized enterprises. The possibility of various losses is always inherent in a business environment of uncertainty and indeterminacy. SMEs are particularly vulnerable due to lack of capital or lack of human resources that in the event of loss could ensure the coverage of company's financial losses or even avoid of bankruptcy. As stated by Skipper and Kwon (2007), reducing the long-term financial volatility, risk management increases the competitiveness of the company, reduces its cost of funding risk and capital costs. In addition, in the macroeconomic point of view, risk management may reduce the number of insolvent companies in the country's economy, which in turn expands the credit and capital markets and has a favourable effect on the country's trade and entrepreneurship.

It is reasonable to say that there is a number of scientific publications published on the topic of the general business risk management, however the lack of consistent studies or research on risk mitigation instruments that are or should be used in the SME business risk management process and which could be applied to small and medium-sized trading and manufacturing companies. When collecting, analysing and describing knowledge and information about SME risk management, instruments used and their application, it was observed that this topic calls for theoretical generalizations. This requires to analyse and evaluate the behaviour of SMEs in business risk management, which, if applied to practice, could be used to determine what risk management instruments reduce the probability of business risk in SMEs in trading and manufacturing sectors and enable them to sustain their business running profitably.

The research methodology is based on a comprehensive approach to the object and its components. To obtain theoretical and practical results, general scientific and special methods were used, e.g. a systematic literature review and analysis, synthesis of scientific findings, publicly available surveys and statistical data analysis and assessment: grouping, comparison, specification, interpretation, summary and graphical modelling. To

summarize gathered information the following programs were used “IBM SPSS statistics 17” (International Business machines Corporation Statistical Package for Social Sciences) and MS Office Excel.

The purpose of this paper is twofold. First, we analyze the concepts of business risk and business environment risk classification with possible application to manufacturing and trading industries. Second, we explore empirical research and used results to clarify the risk management instruments’ (no)use in Lithuania’s SMEs and identify the internal and external risk management factors affecting business development.

The structure of this paper is as follows. In the section 1, we review the literature connected with interpretation of concept of business risk and peculiarities of risk classification and interpretation in trading and manufacturing industries. The section 2 then present the empirical research, it’s interpretation, and it’s results. The last section provides some concluding remarks, estimation results of the analysis.and recommendations for manufacturing and trading enterprises.

Some Reflections on the Concept of Business Risk and its Features in Trading and Manufacturing Sectors:

In today's extremely dynamic business environment, dominated by global trends and rising level of uncertainty, the concept of risk is becoming increasingly important. When making every day strategic business decisions, entrepreneurs are faced with economic, social and political changes in the market, consumer consumption changes, unforeseen competitors’ actions, entrepreneurship encouragement peculiarities and other factors influencing their business environment. Moreover, corporate activity is becoming more and more complex, so risk in this area and uncertainty assessment becomes critically important.

In the scientific literature, risk is defined and measured in different ways, but the primary and inherent meaning of risk is considered danger and threat. In their works, many authors - Rejda (1998, 2013), Williams and Heins (1985), Shahov (2003), Cepinskis et al. (1999), Rutkauskas (2001), Belinskaja et al. (2001) emphasize that one and unanimous definition of risk cannot be offered. As a result, a variety of risk concepts exist. Despite the fact that the definition of the concept of risk tends to have negative – danger and threat – connotation, some authors also describe the probability of occurrence of positive results (Garskiene (1997), Schieg (2006), Rejda (1998, 2013), Ritholtz (2012)).

Also, in describing the risk as a variety of results - Williams and Heins (1985), Dowd (1999), Nilsen (2002), Wilson and Summers (2002), Wilson et al. (2003), Berlin (2003), - do not specifically define if the expected results may have a positive connotation. The authors have a

different understanding of the risk analysis process and its management. Economic risk management is generally examined from the financial risk perspective (Harvard Business Review, 2011). Furthermore, Trieschmann et al. (2001), claim that the risk should not only be linked to potential of loss, but with expected benefits as well. These scientists define risk as the deviation from the expected result, and this deviation can be as detrimental as well as beneficial.

The reviewed works by Borovkova (2004), and Sarkisova (2009), examine in depth the risk management in trade sector. Trapani (2012), Grath (2012), Fraser and Simkins (2010), Lam et al. (2014) examine risk management in the international trade and/or the international financial market as well as the general management instruments applied in a hypothetical company, regardless of its specificity and economic sector.

Kacalov (2002), focused on the risk management in manufacturing sector in general, while the authors Wilson and McCutcheon (2003) went deep only into the security risk management in production. Other authors, such as Cretu et al. (2011), Edwards (1995), Burtonshaw–Gunn (2009), or Anders Garth, 2012; Fraser and Simkins (2010), Lam (2003), analysed the risk management process and applied instruments in the construction, engineering and design sectors. The authors Belinskaja et al. (2001), Utkin and Frolov (2003), Shapkin (2003), Cepinskis and Raskinis (2005); Vageris (2005), Jashina (2006), Kaleininkaite and Trumpaite (2007), Startiene and Remeikiene (2007), Tamosiuniene and Savcuk (2007), Damodaran (2008), Buskeviciute and Leskeviciute (2008), Kouns and Minoli (2010), Mylrea and Lattimore (2010), Aabo et al. (2010), Rutkauskas (2011), Jasinavicius et al. (2011), Duckert et al. (2011), did not examine thoroughly the individual business risk management model and instruments that can be applied to trading or manufacturing companies, so a limited attention is given to these types of economical activity.

It can be noted that the scholars pay more attention to the risk management, as identification and detection of the specifics of insurance services and complexity aspects, understanding the insurance aspects, evaluating them, comparing, choosing, acquiring and using this service as one of the ways to reduce business risk (Skipper and Kwon, 2007; Reida, 1998, 2013; Trieschmann, 2001; Tamosiuniene and Savcuk, 2007; Damodaran, 2008; Buskeviciute and Leskeviciute, 2008; Kouns and Minoli, 2010; Mylrea and Lattimore, 2010; Aabo et al. 2010; Rutkauskas, 2011; Jasinavicius, 2001, 2011; Duckert, 2011).

Giving the occurrence of the field of business, risks can be divided into two: *internal risks and external risks*. *External sources* of risk are environmental factors, which may influence the quality of business. As an entrepreneur cannot influence external risks, he can only anticipate and take

into account their potential threats to his business. Here are discussed the unforeseen changes in laws governing business activity, unstable political regime in the country and other situations, and entrepreneurs losses resulting from the outbreak of war, nationalization, strike and publication of embargoes. Due to state-led financial, credit, currency, structural policies, even the most gifted and the most qualified entrepreneur may find him/herself on the brink of bankruptcy.

The internal and external business environment of the enterprise may be affected by business risk factors. The *external environment* consists of the economic, social and political conditions in which the firm operates, and the dynamics of which it is forced to adapt to. The uncertainty of external risks depends on many factors and/or on individuals whose actions may be unpredictable. The setting of objectives, criteria and their evaluation indicators of these risks (societal needs and shifts in consumer demand, technical and technological innovation, changes in market conditions and unexpected natural events (disasters) is difficult to understand.

The indirect factors of impact are classified in many different ways. However, the direct factors of impact, which are most common in literature, are: customers, competitors, suppliers, corruption, unexpected change in domestic and foreign market conditions, labour resources, laws, revolutionary scientific and technical progress, and other state regulatory forms. In contrast, the indirect factors of impact are: political, legal, economic, technological, social/psychological and other factors from the outside world. The external environment presents itself through factor, which affects the company's business and its results.

The sources of internal risk arrive from the business itself. This risk arises from ineffective management, false marketing policies as well as abuse of position within the company. The main internal risk is personnel risk, which is associated with company's employees' professionalism and character. The main internal risks are: incompetence, experience, lack of knowledge and business-operational inactivity, venturesome, excessive confidence in business partners and reach for instant profit while ignoring development opportunities and so on.

When developing a business, it is also important to arrange the greatest risks to the company into internal and external risks (see Figure 1)

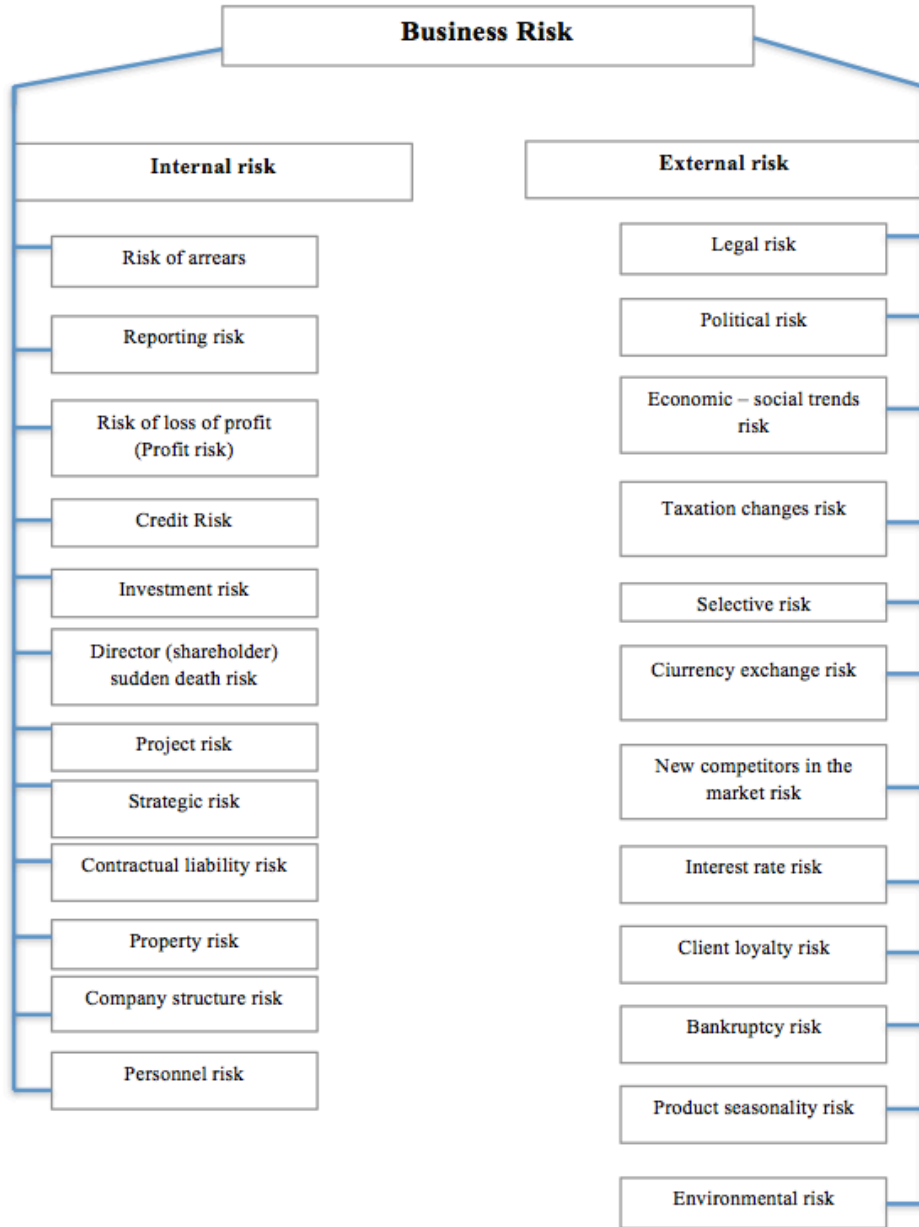


Figure 1. Business risk determined by the internal and external environment, prepared by the authors.

The objective side of risk in business is associated with real economic and independent factors and processes. As we can see, the combination of external and internal risks made a unique risk profile for each company, and influence on risk management policy and instruments used. Even though the influence of internal and external business risks is often declared in literature, it still lacks a comprehensive risk management process

for identification and its impact on the business environment, which would allow increase the quality and effectiveness of business decisions.

A review of the scientific literature and related sources shows that business risk is researched globally by a lot of scholars, but a single concept and classification of risk does not exist, as the authors interpret and classify it very differently. A unified and clear risk profiles and business risk management model that would be designed for SME trading and manufacturing companies is not presented in the examined literature.

The increasing pace of change in the global business environment and the political challenges of business environment raises the necessity to rediscover the benefits of integrated risk management in SME trading and manufacturing companies and to assess the specificity of individual businesses in the long-term perspective.

Possibly and even rationally, the risk management concept must include the psychological risk element, i.e., it must emphasize the aspects of company manager's perception and tolerance of risks. These properties of a leader play a very important role in making the business risk management decisions. However, this article does not analyse the influence of the psychological characteristics of CEOs on the business risk management process, because it is believed that it is an area of psychological research and moreover interdisciplinary studies that could be taken in future researches.

The risk, as the chance of potential losses can be classified according to various criteria (distinctions): by causes; according to the functional type of business and the economy; according to the scale; the resolution phases; according to the duration of exposure; by insurance options; permissible level, etc. Interpreting the opinions of various authors (Martinkute, 2006; Cepinskis and Raskinis, 2005; Damodaran, 2008; Kaupys, 2003; Dowd, 1999; Wilson and Summers, 2002; Wilson and McCutcheon, 2003; Nilsen, 2002; Berlin, 2003) and aiming to find the inherent risks, as well as define its specifics in the trading and manufacturing business environment, it is possible to distinguish sole definitions of risk by individual authors as such: in recent decades, the companies mainly deal with these financial sub-risks: foreign exchange risk; credit risk; production risks; inflationary risks; risk of changes in interest rates; market risk; investment risk; yield decrease risk and others. Unpredictable changes in foreign exchange rates may affect not only the company's financial performance, but may also threaten its further existence in the market.

One of the most used in economic theory and practice risk classification method is to separate pure and speculative risks (Rejda, 2007, 2013; Dorfman, 1994; Dickson, 1995; Trieschmann et al., 2001; Belinskaja et al., 2001; Cepinskis and Raskinis, 2005; Williams, 1989). Simplifying such division, possible to conclude that pure risks have no positive results,

i.e. the realizations of pure risks are always a loss. But as to speculative risk's realization, here could be two results – the same negative (loss), and in contrary – positive (profit). In addition, we can consider also zero result (no loss, no profit), that possible to apply both as to pure and to speculative risks as well.

Other authors draw attention to the fact that sometimes a business risk has both; the pure and speculative evidence of risk, thus to strictly divide them into speculative or pure risk is impossible. (Rejda, 1998, 2013; Dorfman, 1994; Trieschmann et al., 2001; Skipper and Kwon, 2007; Cepinskis and Raskinis, 2005; Cernova, 2007, 2010). As an example, legal risk, political or country risk, operational risk, cannot be strictly synonymous with pure and speculative risk types.

We can observe in business environment increasing significantly such types of risks, which have both as pure as speculative features. Those risks are evaluated and manageable only partly, and we can see it obviously in activity of insurance companies on a global market, when insurance companies before rapid globalization of business environment classically insured only pure risks, then transfer their supply of protection also to risks, which have partly speculative nature as in modern business environment could be partly managed, i.e. predicted, calculated, and financed and partly unmanageable (for exp., currency risks, country risk, market risk and many others). Looking from position of business risk and estimating the possibilities to manage risks properly in trading and manufacturing small and medium sized enterprises, we offer to modify mostly traditional and dominated risks classification method, and propose to classify risk into three categories: pure, speculative and partly speculative risk. Such classification reflect modern business environment and its rapid development, and also help to manage risk properly, i.e. to make much more less mistakes in assessment of risk, selection of risk management tools and methods, financing of risks etc. Such classification is a dynamic one, as are dynamic all risks. Also important that the division of risks under three categories is very much depends on geographical criteria (for exp., in one country political or legal risks could be speculative, in other country – only partly speculative). Below you can see the example of risks under the mentioned classification and using some related traditional business risks categories that, by our opinion, could be applicable both to trading and manufacturing small and medium sized enterprises (Figure 2).

<i>Speculative risk</i>	Investment risk; Yield reduction risk; Inflation risk; Deflation risk; Currency exchange risk; Liquidity risk; Interest rate risk; Market risk; Selective risk
<i>Partly speculative risk</i>	Political or country risk; Legal risk; Operational risk; Risk of loss of profit; Commercial risk; Bankruptcy risk; Credit risk; Systematic risk; Export credit risk
<i>Pure risk</i>	Property risk; Production risk; Natural disasters; Personal risk; Civil liability risk; Third party liability risk

Figure 2. **Business risk distribution.** Author's risk classification that divides business risks into the speculative, pure and partly speculative risks.

Trading enterprise – is a complex dynamic system that functions in a constantly changing social and economic global environment, and its strategic management based on risky decisions (Sarkisova, 2009). Trading business is always facing with changes that cause a number of new risks. First, the new trade regulation rules and norms are coming into business environment with globalization, region's integration and disintegration processes. Secondly, trading companies are forced to look for new innovative strategic management and capital raising solutions. And finally, the trading company operating in the nowadays-international market should to create not only the medium but also of long-term plans of good's realization.

Researches from McKinsey company - Jan Ascher, Paul Laszlo and Guillaume Quivige in paper "Commodity trading at a strategic crossroad" (Ascher et al., 2012) indicated that in the next 2-3 years, those main three trends affect trade: 1) increasing competition and related consumer empowerment will lead to decrease of profitability of trading enterprises. Recent decade decline in trade barriers stimulates the emergence of many new market players, such as example - only in Geneva during the year 2006-2011 the number of trading companies has doubled (from 200 to 400). On the other hand, there is increasing trend of manufacturers to set up their own points of sales, and less to cooperate with the traders. Also during the last 5-10 years, financial institutions began actively involved in a variety of goods on sale, and not directly connected with their core business lines; 2) volatility in the markets requires trading companies to dispose of an increasing working capital, which strongly affects their balance and encourages trading companies to seek new sources of capital or financing; 3) regulatory changes in banking services trade increases transaction costs, which leads to the same banks to engage in trade of various additional services and goods.

Summarizing, all these tendencies increase the business risk of trading companies, encourages them to seek proper management decisions, thus finding out new and combine with known risk definition, assessment, calculation, financing methods, as well to apply adequate risk management instruments and tools to keep companies on the balance edge.

The production risk is formed by combining the resources used in production (labour, capital, land) and the same manufacturing process of goods. It depends on the company and production potential, technical support, technical level of security, work safety compliance etc. In the event of unforeseen changes in manufacturing, for exp., due to adverse natural conditions (poor business processes organization in company or accidents), the company will suffer losses and difficulties in the commitment to the market partners.

Describing the type of trading or manufacturing enterprise from a risk management analysis point of view, depending on the area of occurrence, risk factors also can be divided into external and internal as it shown before (see Figure 1).

In consideration to estimations mentioned above it could be stated, that it is necessary to identify the essential and specific external and internal risks of trade and manufacturing enterprises, which usually and the most often are indicated in different sources of the theoretical literature (Allen, 2003, Bard et al., 2003; Belinskaja et al., 2001, Bertinetti et al., 2013; Cepinskis and Raskinis, 2005; Banks and Dunn, 2003, Kacalov, 2002; Rejda, 1998, 2007, 2013; Skipper and Kwon, 2007; Williams, 1989; Chapman, 2011; Lam, 2003, 2014; Doherty, 2000; Urniezius, 2001; Taylor, 2014; Williams, 1989 and oth.) , and also have been mentioned by various experts and practioners in our research study.

The dominated types of external risks both to trading and manufacturing enterprises are the follows: political risk; new competitors risk; changes in socio-economic trends; negative information about enterprise risk; terrorism risk; mass strikes; interest rate risk; inflation; currency exchange risk; investment risk; non-compliance with state regulation; electrical disturbances; fuel disorders; natural disasters; changes in global market conditions; sector risk.

The dominated types of internal risks both to trading and manufacturing enterprises are the follows: volatility of cash flows and settlement risk; unpredictable expenditures; risk of arrears; liquidity risk; credit risk; loss of profit; rental price increase risk; personnel risk; the risk of accidents; employers illegal actions; strategic risk; company structure risk; the risk of spreading of responsibility and accountability in company; third part liability; the risk of non-compliance contractual obligations; the employee's negligence or intentional fraud; CEO (shareholder) the risk of

sudden death; employers liability; property risk; storage risk; risk of bankruptcy.

While talking about **the differences in risk profiles of trading and manufacturing risks**, let us summarize the main listed in reviewed literature (see Table 1)

Table 1. Trading and Manufacturing companies internal and external specific risks.

Trading company specific risks		Manufacturing specific risk	
Internal	External	Internal	External
Acceptance of goods and services by consumers	Changes in customers preferences	Technological risk and risk of innovations	Expansion into foreign markets
Realization of goods at the market	Customer loyalty	Product demand forecasting	New regulation requirements for product composition
Goods transportation	Foreign trade risk	Defected product and product liability	Changes in prices of raw materials
No effective order of good's portfolio	Transport costs fluctuations due to increased fuel cost	Lack of raw materials	Decreasing of public sector buyers or their orders
Location of trading spots	Decline in the prices of goods on the global market	Failure or depreciation of machines or equipment	Public sector buyers risk of delayed settlements
Failed goods arrangement in sale premises	Goods seasonality	Production time risk and decrease of labour productivity	Product withdrawal/cancellation from the market
Failed advertising	The emergence of substitutable goods	Professional diseases	Legal expenses risk
	Changes in tariffs and duties	Project risk	New regulation requirements for employers safety
		Business interruption	Ecological risk

Compiled and developed by the authors.

Looking from position separate risk type, it's worth to note that under the same common title of risk sometimes cover different interpretation of specific risk for different type of activity. For example, negative information about enterprise as an external risk, both for trading and manufacturing activity has a different sources and sometimes meaning, i.e. for trading company it could be actions of customers because of bad service, and for manufacturing companies it could be public opinion of media in frame of lack of social responsibility. Or, other example, internal personnel risk in trading enterprise could be more influenced by employee's personal character, and in manufacturing enterprise – by employee's qualification.

In summary, it may be asserted that both trading and manufacturing risk profile, assessment of risk and risk management have common features, but there is also quite enough specificity to one or other type of activity. This depends on the variety of risk and on its unique composition in these areas of business. This implies a different risk management in relation to the selection of different activities.

Concluding, we agree that any individual trading or manufacturing enterprise has its own risk profile, but at the same time we can state that this risk profile should be defined by specialists, and possibly using cross-combination of internal and external risks reviewed and described previously in this article.

A survey in Lithuania SME trading and manufacturing companies performed by the authors and presented below, provide the opportunity to see the results and refine the understanding of risk management in these sectors in Lithuania, the application of risk management in its corporate activities, instruments used and their compliance with specific and most dangerous risks, risk management specifics in these sectors as it stated in theory, and could be useful for appropriate risk management models developing in future.

Small and medium business risk management application in Lithuanian trading and manufacturing companies: research methodology, analysis, evaluation and interpretation.

We maintained several research objectives: to find out how SMEs assess business security; to determine how SMEs define, describe and evaluate business risk; to identify, reveal and validate the operating specifics of SME risk management instruments; to set the applications, their potential and trends of SME risk management instruments in trading and manufacturing enterprises in Lithuania.

This research study is based on two methods – quantitative and qualitative. A quantitative study achieves a much higher number of respondents, thus comparing the anonymous questionnaire responses with the open answers of the in-depth interview respondents will help to get a more thorough and comprehensive understanding of the object of investigation, to confirm the research problem and purpose as well as fulfil the research objectives. Qualitative research helped to reveal each respondent's personal experience, his/her perceived reality and an approach to certain events, which allowed investigating in details the intended phenomena. This research method helped to reveal Lithuanian SMEs' level of understanding of risk management and their ability to predict and manage as well as to reveal the instruments used for the management process and their practical application.

The questionnaire revealed Lithuanian small and medium-sized trading and manufacturing enterprises' ability to identify business risk, risk management features and its management instruments. Target enterprises are Lithuanian trading and manufacturing companies, having up to 250 employees, and with yearly turnover not more than 138 mln. Litas (approx. 40 mln. Euro) or value of assets in the balance sheet not exceeds 93 mln. Litas (or 27 mln. Euro). The study surveyed 418 respondents. Fully completed questionnaires received from: 126 small and medium-sized manufacturing enterprises and 292 small and medium-sized trading enterprises. This number does not include partially completed or rejected questionnaires. The questionnaires were designed for CEOs, owners and other management decision makers. In accordance with the customer data storage, professional ethics and confidentiality reasons, the names and other data of the companies participating and not participating in the study are not disclosed. The authors express gratitude to JS Insurance Company "Lietuvos draudimas" for great and inestimable possibility to use its online survey creation tool "Sinopticom" and Intranet page for location of questionnaire. Methods and tools of statistical data analysis and assessment: grouping, comparison, specification, interpretation, summary and graphical modelling, calculation of selected response incidence and percentage frequency distributions, average and statistical significance tests, factor analysis. To summarize gathered information the following programs were used "IBM SPSS statistics 17" (International Business machines Corporation Statistical Package for Social Sciences) and MS Office Excel.

A selection of purposive samples has been used for the qualitative research, since, according to Bitinas et al. (2008, p.98), the most informative cases in terms of research perspective – and in this study individuals – are the most suitable for qualitative research. The qualitative study refers to its research subjects as informants or respondents. This research study refers to its research subjects as experts, because they represent the small and medium-sized business sectors (manufacturing and trading) and in a way summarize in their responses SME representatives' opinions, attitudes, evaluations and insights about business risk and its management instruments. Using the random target selection method, eight directors, representing small and medium-sized enterprises in trading and manufacturing sectors and four risk management professionals, working in the insurance and banking sectors, were selected and voluntarily agreed to be the experts.

The individual, semi-structured, otherwise known as purposeful or partly-structured interview method was used for the data collection, during which the researcher has the opportunity to not only listen to respondents, but also see them, monitor their mood, emotions, reaction to questions and answers that the informants provide in their own words, as "every person

uses certain terms to describe the life events, to express their views” (Bitinas, et al., 2008, p. 98). All interviews are strictly **confidential** and **anonymous**, as required by the research principles (Trochim, 2006, cit. Bitinas et al., 2008). The interviews were recorded with the consent of respondents. Each respondent received the main questions that were drafted taking into account the objectives of the study. However, during the interview the questions were expanded and the responses were free and unlimited. The interviews were informal and took a conversational form. Responses received during the interviews were analysed using the qualitative content analysis. In this way, the essential aspects of the investigated phenomenon were determined, and the data obtained were analysed precisely in the context of a specific text. In the process of analysing the text, categories and sub-categories are formed, which are interpreted and in such way the answers to survey questions are obtained. The methodological paradigm of ethnographic research was selected on the basis of analysis methodology – the study result can be described, interpreted and construed hypothetically.

Due to restricted volume, and limitations for article, here is not possible to attach all supporting data, i.e. questionnaires, respondent’s answers, calculations, analysis and interpretations of interviews made by authors etc., so here authors ensure and take a responsibility, that all information used for analysis, calculation and interpretations in their research is original and properly treated.

In order to better demonstrate the research purpose and answer the questions raised in the research objectives, as well as analyse in detail and present the research results, four areas that share a common aspect of the research – the risk associated with SMEs, its management instruments and the understanding of it – are identified: business security and its identification in SMEs; the understanding and identification of business risk in SMEs; the understanding of the risk management process in SMEs; risk management instruments and their application in SMEs.

Summary of the results of quantitative research

1. Business Security and Identification in SME: an analysis conducted formulates conclusion: Lithuania SME manufacturing and marketing of directors believes that both the production risk, which is mainly characterized by the production companies and the risk of human-induced, such as stealing, bullying, vandalism, errors and omissions, accidents, and other man-made risk, has the lowest impact on business and corporate development. *External security:* analyzing macro (external) factors, mainly affecting the company's activities, the majority of CEOs mentioned the following factors: the economic situation in the country, the legal and tax system weaknesses and / or change, a large concentration of competitors and

/or change, the economic environment (which, in turn, associated with fluctuations in the purchasing power of the population and therefore affect the company. Production companies often than trading company said that the company's activities have an impact on the legal and tax system weaknesses) and political-legal business environment. Generally these macroeconomic factors, mainly affecting the activities of the company, are the country's economic situation; legal and tax system weaknesses and/or change them; high concentration of competitors and/or their change; economic environment and the political-legal business environment. *Internal security:* The analysis revealed that the respondents do not see the contact points between business and production risk, and the production risk imposes a minimal effect or does not absolutely exist in business. The analysis of the data revealed that the human-made unexpected risks, such as theft, hooliganism, vandalism, intentional or unintentional negligence and others could also affect the company's business and its stability. Respondents' opinion on this point split in half. *Business risk perception and identification of the SME:* as to **pure risk**, part of the survey respondents completely agree (42 percent) or agree (39 percent) that employees lack the competence or qualifications affect a company's reputation. Many (41 percent) of the companies surveyed completely agree that the chances of a major business risk is when the client cannot paid on time or go bankrupt and default on payments to the company. These factors may have a strong influence on the financial stability of the company. 43 percent of respondents say that the partner default pose a serious threat to their corporate cash flows. **Operational risks:** speaking about the internal factors, mainly affecting the company's operations, corporate executives participating in the survey most often mentioned staff competence or lack of qualification, the possibility that the customer may go bankrupt or has not been paid, partner defaults and difficulties in obtaining a loan from the bank. **Financial risks:** in response to the question of whether large bank debt would affect the activities of the company, 28 percent of respondents said that disagree with this statement, and 21 percent completely disagree. This means that almost half of the survey respondents said that any debts, liabilities or collateral to the bank should not affect the company's activities. More than half of the respondents completely agree (35 percent) or agree (29 percent) with the statement that the possibility of getting a loan from a bank for small and medium enterprises are often not considered due to the fact that the company does not meet the lender's requirements. Even 41 percent companies are not sure that the product or service substitutes raised in the market would create incentives to change the company's maintained strategy and objectives.

2. *Risk management in SME's.* **Risk identification:** a small number (27 per cent) of the surveyed companies use the company's financial audit

services with purposes of verification of financial statements or the consolidated financial statements and which audit the company's financial condition, operating results and cash flows. According the results of research, financial audits the most often use the company, which is engaged in medium sized business and managed by senior executives up to 29 years old. **Risk analysis and assessment of the company:** the analysis of the respondent's survey answers, by the use of risk instruments for its purpose and content, can be divided into several groups. For example, one group includes "physical" risk reduction measures: safety organization and control, property "physical" protection and installation of fire alarm system. This risk management instruments used most - an average of 68 percent of all companies (the total use of all of these instruments was calculated), often small and medium-sized enterprises, which has been in existence for more than 10 years, insured the potential business risks, and claiming that they have enough information about insurance. **Choice of risk management instruments in company:** when asked whether the company used as a risk mitigation tool fire and property safety alarm "yes" answered even 77 percent surveyed medium sized business companies which has existed for over 10 years. Respondents to the questions about risk management instruments requiring "higher understanding", such as financial audit, investment management, loss control system establishment and improvement of the recruitment of skilled employees, said that these kind of instruments used by an average of 38 percent of all companies, and generally they formed a self-insurance fund. Manufacturing companies, according to research statistics, much more frequently than trading companies use such instrument as the recruitment of skilled employees, and medium enterprises are more likely than small businesses prefer the following measures: fire alarm and property protection, physical protection of objects and consultancy of brokers, insurance managers and other consultants. **Economic Risk Control:** respondents mentioned the following risk control instruments: the financial audit, investment management, loss control system establishment and improvement of the recruitment of skilled employees. This group of instruments used by an average of 38 percent of all companies, and also they used a self-insurance fund. **Risk monitoring and supervision:** after analysis of the distinguishing factors in risk management of manufacturing and trading, it became clear that factors, both the general and separate analysis by corporate activity, is almost exactly the same, but the main difference between trading and manufacturing companies - an importance of factors' row. Trading companies associate the most important risk factors with the partner and customer defaults, economic, political, legal situation, and only then highlights the risk of human resources or demographic aspect. And manufacturing companies, on the contrary as a higher risk called the human

aspect -this factor is placed in the first ranking, and then the maximum weight is given for the economic situation, demographic, political and legal environment, and the last factor is associated with partners and customers in default (this trading firms ranked on the first place).

3. *Risk management instruments used by SME.* **Risk avoidance:** Most (60 percent) of the respondents confirmed that investments, as well as fund-accumulating are one of the most popular tools for companies to manage and reduce business risk. Most SME trading and manufacturing companies representatives answered "yes" (63 and 74 percent). Physical protection of the object (the area or premises, the property therein and the protection of employees, when the protected object continuously or at a certain time secured by guards) used by 46 percent respondents. Consultancy from JS „Creditinfo Lietuva“ used 26 percent of surveyed companies (this company collect information about partners - other Lithuanian and foreign companies or customer's creditworthiness, debt recovery from private and commercial persons in Lithuania, provide a legal advice and consultancy to solve problems of the company financial troubles). This instrument used both by medium and small manufacturing and trading sector companies, but most of them operate not only in Lithuania, but also in other countries. **Dangerous factors change by less dangerous:** the majority (82 percent) of the companies surveyed indicated that one of the major risk instruments used by the company - safe organization and management in the company guided by occupational safety and health regulatory legislation, technical documentation for processes and work equipment, assessment of the potential risks of employees safety and health, regularly organized improvements of safety and health measures. **Risk retention:** such risk mitigation instrument mainly selects companies that carry out their activities in Lithuania and abroad and they are led by up to middle age - from 30 to 49 years - executives (46 and 43 percent trading and manufacturing companies respectively). **Risk transfer:** insurance strategy formed by brokers, insurance managers or consultants used by only 30 percent of surveyed companies: most of them medium-sized manufacturing and trade companies (respectively 64 and 33 percent). More than half (57 percent) are not covering their property - it is more common for small companies and companies that operate only in Lithuania. Small companies, which carry out activities both in Lithuania and abroad, and is engaged only in export or in import, between the insured and uninsured distributed in half. It is observed that the various types of insurance are more frequently used by medium sized companies, has existed at market for more than a decade, and conduct business in Lithuania and abroad, and with a self-insurance fund and a longtime CEO of the company (headed the company a decade or more). **Risk instruments alternatives:** The question whether the self-insurance (reserve

fund formation) could be one of the most common business risk mitigation instruments, 39 percent of SME trading and manufacturing companies indicate that agree on this, which dominated activity is trade, and many of which are small firms. The majority (82 percent) of the companies surveyed indicated that one of the major risk instruments used by the company - organization and management of safe working environment.

Summary of the results of qualitative research

Target of researches was concentrated to four areas that share a common aspect of the study - SME risk perceptions and management: business security and identification in SMEs; business risk perception and identification in SME; perception of risk management process in SMEs; risk management tools and their use in SMEs.

1. Business security and identification in SMEs. Most of the experts unanimously recognize the business that Lithuania is not safe due to the unstable political and economic situation and constantly variable and uncertain tax environment. Experts participating in the survey identified two business security/risk aspects, which can be identified as internal and external security. **External:** business security is directly dependent on the country's economic, political, legal and tax environment and the existing regulations and restrictions. This environment, as assessed by all the experts, is unsafe and unable to provide a secure business development. "Such environment not only does not help companies to increase their business, but, on the contrary, - promote the shadow economy "..., notes one of the experts. **Internal:** In this regard, the experts identified a broad variety of company's internal management, emphasizing that the small business depends on its directors' tactical and strategic decisions. Internal security, according to experts, initiated from the business idea, that it must be well thought out, measured and analyzed with a proper business plan creation, together with planning measures for manage crisis situations as well. Summarizing the risk of security in Lithuanian SME, respondents see the main following: reckless or ill-founded business plan development; human resources (deficiency of skilled employees, especially in the periphery); shadow economy; tax evasion; untimely payment for goods or services.

2. Business risk perception and identification in SME. **Pure risk:** entrepreneurs are most afraid of instability, any political and economic change in the situation since then and frequently changing tax environment Experts say that the biggest business risk - high taxes and very confusing tax system, also a significant influence on their businesses brings inflation and deflation. Most experts tend to compare the business situation by the year before 2008-2009 crises, during and after the crisis. However, according to experts, the crisis has affected the business, but also has brought new

knowledge as disclosure the hidden risks and hazards of this economic activity. In case of natural disasters, the CEO of the company determines the survival, and if has the understanding about insurance mechanism and possibilities for his/her business. Experts stress that risk of accidents at work places has a very significant impact on business security, especially when there are injured or even died employees. Experts point out that managers' awareness in this area really increasing in companies and more and more attention is paid to the employee training and safety protection. **Operational risk:** According to experts, one of the biggest threats to company's' property is unexpected situation where the company's premises devastated by fire or water accident. Unfortunately, even 95 percent small companies that are not experienced such unexpected disasters, not conscious of the potential threats and their consequences, and take measures to avoid this risk only when unexpected events already happen. Saving their in many cases limited resources, such companies, even understand the extent of risk, does not insure property as suppose that insurance is too expensive for them. By all experts' opinions, there are some similarities in trading and manufacturing activity as to operational risks, as both companies meet the human-made risks, seasonality of operations, untimely payments or cancellation, irregular and inconsistent orders. But also there are essential differences, as to manufacturing plant, most probably affect the following risks: manufacturing defect; untrained staff; theft; customer's refusal to pay for improper output, currency exchange fluctuations, and for trading companies: changes in political and economic environment, affecting the purchasing power of the population, natural disasters (earthquake, storm, flood, etc.), but the most – customer' insolvency. Assessing the causes of customer' insolvency, experts say about tax environment, unstable political and economic situation, accidents at work place and so on. **Financial risk:** describing the financial risks, experts stress that most companies incur foreign exchange risk, and it is an impact of the global economic developments, but this type of risk is dominated in trading companies, especially for exporting firms. According to experts, the majority of small and medium-sized companies do not trust the hedging proposed by banks as do not understand properly this service and simply have an assumption, that such kind of assurance is profitable only for banks. Experts say that companies are unable to protect themselves from banks and other credit institutions' liquidity risk, and even it is still important in Lithuania (after several latest banks bankruptcies and nationalization), cannot to buy related expensive consultancy from experienced audit or other firms. Also credit risk refers by the experts as one of the greatest, because late financing, deficiency of working capital cause many difficulties for companies, especially with planes to expand productive capacity or to participate in public procurement. Interviewed experts didn't like to disclose

the information about credit risk that already realized in their companies, probably because is very much connected with company reputation and image.

3. *Perception of risk management process in SMEs.* **Risk identification:** Experts pointed out that the international companies are aware of the risks and its realization and are able to manage it properly, that cannot be said about the Lithuanian firms, and particularly in SME sector. However, experts admit that the SMEs, however, in his own way try to identify business risks as rely on CEO knowledge and using its limited financial resources necessary for identification techniques. Almost all leaders convinced themselves that are able to manage even the most unexpected threats, but none of the respondents mentioned that company has professional employee responsible for managing of crisis situations. **Risk analysis and assessment:** many experts say that small and medium-sized enterprises rarely analyze and evaluate their business risks, mainly consulting with some friends and colleagues who have experienced more. No risk maps, no risk analysis plans, and even one specialist in the area of SME sector companies do not have. However, medium-sized manufacturing enterprises analyze and assess risk in some extent, in contrary of typical commercial enterprises. But, in manufacturing plants for risk analysis are usually responsible only technical managers, no other specific staff. **Choice of risk management instruments:** there are companies that use at least the simplest and the least cheap risk management instruments – following by safety instructions, fire protection and fire extinguishers in the workplace, some types of insurance. **Economical risk control:** according the experts, it is generally aware of companies CEO and complies with the high professional competence of them. **Risk monitoring and supervision:** Experts say that there is plenty of information about how to do business more safety and not depends on any risks' realization, but most entrepreneurs are too optimistic about risks, or don't like to make additional investments into supervision by outsourcing such activity just because often expect to be able "not to meet" the risk.

4. *Risk management instruments and their use in SMEs.* **Risk avoidance:** Possibly safely assume that risk avoidance as a preventive measure, the country's manufacturing and trading SMEs' use very rarely. In other words, if entrepreneur simply feels that some very risky decision could bring more profit, so just takes it. Only one expert referred to the case of the acquisition of own premises for a lot of money, which the company and its owner does not have, and for this had to put under the risk all of its assets to obtain a bank loan to buy these premises, but then decided to avoid this risk, because didn't like to lose everything in case of fail. **Removal the sources of risk:** Experts believe that the risk is not relevant to small business in the

same extent as to big corporations. To think about possible sources of risk for them is unbearable, and what to say about additional costs to finance removal of sources of risks. However, it is noted that over the past decade, interest in potential business threats increases. **Replacing the dangerous factors by less dangerous:** Experts emphasize that for the majority of SMEs to install even fire-extinguishing system is too expensive. However, the majority of SMEs have contracts with security companies, mostly for property risk protection. All experts without exception said that security services is inevitable risks management instrument for manufacturing and trading SMEs. **Risk retention:** when experts talk about self insurance as a form of risk-retention, they say that companies often have their own accumulated funds and keep them in bank deposits. Some CEOs put their personal funds in a self-insurance funds, if necessary, to the rescue of their business. They agree to put aside at least 10 percent of annual turnover that would be sufficient for an initial decision in the event of a disaster, but in order to reduce business risk and to protect third parties, self-insurance programs must be perfectly aligned with well-managed cost control program. **Risk transfer:** Experts recognize that insurance - one of the most favorable business risk management instrument that provide the security for a company and its owner. Especially it could be said about manufacturing medium-sized enterprises whose activities are at higher risk segments: woodworking; furniture, plastic products, peatlands; pharmaceutical companies and the like. But, as have heard in interviews, entrepreneurs representing such activities and CEOs are more likely not to insure company's risks, but, their private property and other risks. Experts say that the majority of small businesses count insurance only as expenditures, and only few are aware that it may be a certain psychological comfort, and future risk financing at the cost of transfer. According to experts, risk transfer to insurance company in this sectors is happening because of their own, friends, colleagues painful experience, or requirements from banks, and the media or publically spreaded information about accidents, disasters, and other threats happened in their environment. According to experts, there is still a lack of confidence in insurance companies, that in Lithuania there is not developed yet an insurance culture. **Risk instruments alternatives:** Experts confirm that the services of risk management specialist are not popular among companies. This is due to the lack of confidence of the consultants and the high price of their services. Even with additional resources, many CEOs to designate an employee training and development, rather than hired consultants. Most business leaders, experts say, more confident in their, their friends, relatives knowledge and experience than the advice of the consultant from outsource. Experts point out that SMEs do not trust also services of auditing companies, because do not trust the quality of service and responsibility of audit firms,

and such services are usually too expensive for SMEs. According to experts, the state-level consulting business could be really valuable and necessary, as it is likely that it would have a positive impact on the decline of SME bankruptcies.

Conclusion

The analysis of scientific literature showed that there is no general treatment and approach to risk and showed that authors classify business risk very differently; there is incoherent terminology and a lack of general business risk classification for trading and manufacturing business risk. A version of such classification, as proposed by the authors, offers to separate risk into three main types: pure risk; speculative risk; partly speculative risk. The essential difference between the pure and speculative risk is that a person voluntarily accepts the speculative risk, hoping for a positive result (profit), even though he knows that the result can be a loss. It should be noted that sometimes risk has characteristics of both pure and speculative risk. It is claimed that such business risk distribution is more suitable to changing conditions of business and its environment.

Traditional management theory only partially explains the conditions for successful business performance. Risk management, which originated in the seventh-eighth decades of the 20th century as a result of the Western business practices, has long been regarded as the opposite concept of business “success” management, and only in the recent years has become an important part of the company’s integrated management and professional activity that leads to the continuation of the business not less than traditional business management models. In addition, sources of theoretical studies have shown that integrated risk management is a new field of science, and that it needs further in-depth research and assessment, particularly in the small and medium business environment, where many gaps are found and the risk management process and its instruments are understood differently, unevenly and inadequately in respect of the company-specific and/or dominant risk.

The scientific literature study showed that SMEs should choose the right risk management instruments, which are unique to each company, taking into account the risk determined by internal and external environment, the operations specifics, uniqueness, and the stage of business development and volume. Quite an important condition for the adoption of risk-taking and avoiding decisions is to evaluate the economic benefits that the company will gain by choosing to avoid the risk or, on the contrary, by deciding to take it.

Although the development conditions for the SMEs in Lithuania are quite favourable, on the basis of empirical studies it can be claimed that the macroeconomic (external) risk factors that affect the development of SMEs and have the most impact on the operations of enterprises in Lithuanian, are

the following: economic situation in the country, changes and limitations to the legal and tax systems; high concentration of competitors and / or their rapid change; economic environment (which in turn is associated with fluctuations in the purchasing power of population and therefore affects the company); as well as the political and legal environment for business.

Empirical studies' data show that exposed in the SME environment is not only the external, but also the internal (microeconomic) factors, affecting the development and scalability of SMEs. The most frequently mentioned risk factors affecting the company's activities in Lithuania are as follows: lack of employee's competence or qualification; probability that the client may not pay or go bankrupt; failure to comply with contractual obligations and difficulties obtaining a loan.

On the basis of empirical research data analysis, it should be noted that the business executives of Lithuanian small and medium-sized trading and manufacturing enterprises believe that both manufacturing and human-induced risk (theft, hooliganism, vandalism, mistakes and negligence, accidents, etc.) have the lowest impact on the company's development. Work accidents, which usually occur due to inadequate assessment or lack of assessment whatsoever of the hazards and the risks they cause, could be costly for the enterprise that does not have a risk management and does not realize its necessity. In conclusion, the business development is often hindered by business managers' lack of ability to understand, recognize and anticipate business risks, lack of expertise in using risk management instruments and failure to anticipate and develop a long-term business risk management strategy.

On the basis of empirical research data analysis, it must be concluded that the business executives of the Lithuanian small and medium-sized trading and manufacturing enterprises perceive the business environment as risky, *a priori* understand the importance of business management, but in their company's management processes apply episodic and fragmented risk management. In other words, risk management is not a planned, consistent and continuous process, integrated into the company's (success) plan, as various periodic risk management actions are taken on the fragmentary identified "more familiar" risk, such as operational, market, credit, etc. This situation stems from the fact that the businesses lack experience and skills, business executives lack knowledge and competence, there is a lack of specialists and organisations providing specialised risk management services for business, and there is institutional void of information databases.

On the basis of empirical research data analysis, it should be noted that unfortunately, the business executives of the Lithuanian small and medium-sized trading and manufacturing enterprises do not have a risk management strategy (appropriate risk identification, assessment, selection

of risk management instruments, risk control and monitoring), without which the business can not only be temporarily disrupted, but even fail.

In the authors' opinion, the fact that an incredibly small number of Lithuanian SMEs use insurance services, apart from financial reasons, is quite closely related to the belief of companies' executives that nothing bad can happen and even if it does, the business will not collapse. Such a belief can often cost ten or a hundred times more than insurance services, which in the small and medium business segment are used to a very limited extent, because their benefits are not trusted. The authors believe that the insurance companies' educational activity in this business segment is insufficient.

Having evaluated risk management gaps in small and medium-sized trading and manufacturing enterprises during the empirical study, specific theoretical assumptions for the application of risk management instruments inherent in small businesses have been revealed. It can be claimed that both manufacturing and trading enterprises risk management shares common features, however specific features characteristic only to one or the other sector can be distinguished. It is determined by the variety of risks and its unique composition in these areas of business, and implies a different selection of risk management instruments for different business activities.

Recommendations

The risk management process should cover the entire company's operations, should integrate into all processes, and the right choice of risk management tools will help to prevent or at least reduce the company's risks. The authors suggest to gradually integrate the risk management strategy into the company's management process according to the company's business development conception and strategic objectives as well as the company's individual characteristics, in order to make sure that risk-focused management does not become destabilizing to the company's development and that risk management is perceived in the company as an integral part of each employee's share of responsibilities and not as a separate activity. Complex integrated risk management implies the need to assess all the risk factors characteristic to the individual company – economic, organisational, legal, technological, social, ecological, human and other, and not only known to the business executives or persons responsible.

The main responsibility for the quality of risk management lies with the company's executives. The authors believe that in addition to many other personal qualities, business executives must be able to anticipate the business risks and manage them properly; the author suggests to realize, learn the business "risk management culture" and abandon the "stereotypical" thinking, mostly based on the success (the implementation of a business idea, benefits, achievements in a market segment or in the

international market, etc.) planning, to be able to grow with your business, introduce new business management methods, to share responsibility with employees, partners, customers, insurance companies, and to professionally and responsibly plan and forecast the company's performance and development.

The authors propose that the risk management functions should be distributed among the functional units, clearly stating that in the employees' job descriptions and exercising their permanent monitoring. This should lead to establishing an internal company's risk management system, which would identify the balance between the optimal share of the risk and the ability to manage it. This requires not only ensuring the optimal interaction between the internal and external members of the enterprise, but above all, creating an effective internal communication. Since establishing separate risk management units in SMEs, especially in the early stages, is difficult due to lack of funds, and often economically inefficient, it is proposed to integrate certain risk management functions into the functions of individual employees.

Addressing the problem of lack of information, internal communications and business processes transparency, the author proposes to companies to open up a multi-level access to the information according to employees' positions, and the employees themselves, in general and on the basis of the integrated risk management concept, can be divided into employees who are directly associated with a particular risk management in respect of the nature of their duties (risk subjects), employees who control some of the processes carried out by the above-mentioned employees and help them make risk management decisions, and other level employees (information users), who are not directly related to risk management in the enterprise, but they need the information to ensure the business process efficiency.

Business executives are recommended to use the services of certain experts in the development and implementation of risk management program in the enterprise, and integrating it into the company's business plan. The outside assistance is needed in order to constitute a unique concept of self-assumed risks depending on the specific company's risk management environment and to avoid management mistakes, while ensuring the development and dissemination of the risk management culture in the company. It can be claimed that currently in the environment of the Lithuanian small and medium-sized trading and manufacturing enterprises such experts could be:

Company's shareholders (if they do not involved in the management of the company); state institutions (Tax Office, municipality, etc.); banks (financial advisers); investors; the company's customers (e.g.,

ensuring the quality of goods or services); company's suppliers; business partners (joint project development and participation); various external consultants; insurance companies and insurance brokers.

References:

- Aabo, T. Fraser, J. R. S. and Simkins B. J. The Rise and Evolution of the Chief Risk Officer: Enterprise Risk Management at Hydro One. In Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives. New York: John Wiley & Sons, 2010.
- Allen, S. Financial risk management: A practitioner's Guide to Managing Market and Credit Risk: New York: John Wiley & Sons, 2003.
- Anders, Garth. The Handbook of International Trade and Finance – The complete guide to risk management, international payments and currency management, bonds and guarantees, credit insurance and trade finance. UK, USA: Kogan Page Publishers, 2012.
- Ascher, Jan, Paul Laszlo and Guillaume Quivige. Commodity trading at a strategic crossroad. McKinsey Working Papers on Risk, Number 39. December, 2012.
- Banks Erik, Dunn Richard. Practical Risk Management: An Executive Guide to Avoiding Surprises and Losses. USA: Wiley, 2003.
- Baranoff Etti, Patrick L. Brockett, and Yehuda Kahane. Risk Management for Enterprises and Individuals. Retrieved from: http://catalog.flatworldknowledge.com/bookhub/1?e=baranoffch01_s04 .
- Bard Sharon K., Stewart Robert K, Hill Lowell D., Linwood Hoffman, Robert Dismukes, and William Chambers. Risk and Risk management in the production and marketing of Value-Enhanced Grains. Paper presented at the Symposium "Product Differentiation and Market Segmentation in Grains and Oilseeds: Implications for Industry in Transition". Washington, January 27-28, 2003.
- Belinskaja, Larisa, Kestutis Bagdonavicius and Augustas Sernius. Draudimas I. Lietuvos bankininkystes, draudimo ir finansu institutas: Vilnius 2001.
- Berlin, M. Trade Credit: Why Do Production Firms Act as Financial Intermediaries? Business Review, Q3, 2003, p.21-28.
- Bertinetti, Giorgio Stefano, Cavezzali Elisa and Gardenal Gloria. The effect of the enterprise risk management implementation on the firm value of European companies. Universita ca Foscari di Venezia, Working Paper n. 10/2013, ISSN; 2239-2734. Retrieved from: <http://virgo.unive.it/wpideas/storage/2013wp10.pdf>
- Bitinas B., Rupsienė L. and Zidziunaite V. Kokybinio tyrimu metodologija: Klaipeda: S. Jokuzio leidykla-spaustuve, 2008.
- Borovkova V. Upravlenyie riskami v torgovle. Saint Peterburg: Piter, 2004.

- Buskeviciute E. and Leskeviciute A. Rizikos valdymas draudimo imonese. Taikomoji ekonomika: sisteminiai tyrimai, 2008, Nr. 2/2, p. 59-79.
- Burtonshaw-Gunn Simon A., Risk and Financial Management in Construction. UK, USA, 2009.
- Cepinskis, Jonas, and Dalius Raskinis. Draudimo veikla. Vilnius: Vytauto Didziojo universiteto leidykla, 2005.
- Cernova G. Strachovanie. Moskow: Prospekt, 2007.
- Cernova G., ed. Strachovanie: economica, organizaciia, upravlenie. Saint Petersburg: St. Petersburg University, Faculty of Economics, 2010.
- Chance, Don M., An introduction to derivatives and risk management Fort Worth, Tex.; London: Harcourt College Publishers, 2001.
- Chapman, Robert E. Simple Tools and Techniques for Enterprise Risk Management, 2nd Edition. USA: Wiley, 2011.
- Cretu Ovidiu, Stewart Robert B. and Beren Terry. Risk Management for Design and Construction, USA: Wiley, 2011.
- Damodaran, Aswath. Strategic risk taking: a framework for risk management. New York: Upper Saddle River Wharton School Publ., 2008.
- Edwards, Leslie. Practical Risk Management in the Construction Industry. London, 1995.
- Dickson, G. S. A. Risk Management. London: Chartered Insurance Institute, 1995.
- Doherty, Neil. Integrated Risk Management: Techniques and Strategies for Managing Corporate Risk. USA: McGraw-Hill, 2000.
- Dorfman, Mark S. Introduction to Risk Management and Insurance. USA: New Jercey, 1994.
- Dowd, K. Beyond Value at Risk: the New Science of Risk Management. USA: John Wiley & Sons Ltd., 1999.
- Duckert, G. H. Practical Enterprise Risk Management: A Business Process Approach. USA: John Wiley & Sons, 2011.
- Fraser, John and Simkins, Betty. Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives. USA: Wiley, 2010.
- Garskiene A. Verslo rizika. Vilnius: Lietuvos informacijos institutas, 1997.
- Harvard Business Review – Analytic Services: Risk Management in a Time of Global Uncertainty. A report sponsored by Zurich Financial Services Group, 2011.
- Jasinavicius, Rimvydas et al. Verslininkas ir jo veikla: retrieved from: http://distance.ktu.lt/kursai/verslumas/verslo_projektavimas_II/fcontent.html
- ≥
- Jordan Andy. Risk Management for Project Driven: Organizations A Strategic Guide to Portfolio, Program and PMO Success. Canada: J. Ross Publishing, 2013.

- Kacalov R. Upravlenyie chozajstvennym riskom. Moscow: Nauka, 2002.
- Kaleininkaite, Laura and Trumpaite, Ingrida. Verslo rizikos valdymas ir jo tobulinimas, Verslas: teorija ir praktika, 2007.
- Kaupys R. Valiutu kursu rizika ir jos valdymas Lietuvoje. Vilnius: Ekonomika, 2003.
- Kouns, Jake and Minoli, Daniel. Information Technology Risk Management in Enterprise Environments: A Review of Industry Practices and a Practical Guide to Risk Management Teams. New York: Hoboken, John Wiley & Sons, 2010.
- Lam, James. Enterprise Risk Management: From Incentives to Controls. USA: Wiley, 2003.
- Lam James. Enterprise Risk Management: From Incentives to Controls. USA: Wiley, 2014.
- Martinkute R. Verslo rizika. Vilnius, 2006.
- Mylrea, Ken and Lattimore, Joshua. How to Create and Use Corporate Risk Tolerance in Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives. New York: Hoboken, John Wiley & Sons, 2010.
- Nilsen, J.H. Trade Credit and the Bank Lending Channel. Journal of Money, Credit, and Banking, Vol. 34, No.1, p.227 -253, 2002.
- Pickett, Spencer K. H. Auditing the Risk Management Process. USA: Wiley, 2005.
- Rejda, G. E. Principles of Risk Management and Insurance, sixth edition. USA: Addison Wesley Longman Inc., 1998.
- Rejda George E., Principles of Risk Management and Insurance, 12, edition, USA, 2013.
- Ritholtz B. Defining Risk Versus Uncertainty, Published 10.12.2012. retrieved from: <<http://www.ritholtz.com/blog/2012/12/defining-risk-versus-uncertainty>>
- Rutkauskas, Vytautas. Verslo finansu valdymo problemos ir sprendimai. Retrieved from <http://distance.ktu.lt/kursai/verslumas/finansu_valdymas_II/fcontent.html>
- Sarkisova E. Riski v Torgovle. Upravlenie riskami. Moscow: Dashkov&Co., 2009.
- Shachov V.V. Strachovanie. Moscow: Unity, 2003.
- Shapkin. A. Monography - Ekonomiceskie i finansovyie riski: oцена, upravlenyie, portfel investycyji. Moscow: Dashkov&Co., 2003.
- Stulz, R.M. Risk Management and Derivatives. Mason: South Western, 2003.
- Scieg, M. Risk Management in Construction Management. Journal of Business, 2006.

- Skipper, Harold D. and Kwon, Jean W. Risk Management and Insurance: Perspectives in a Global Economy. USA, UK, Australia: Blackwell Publishing, 2007.
- Startiene, Grazina and Remeikiene, Rita. Methodology of Business Risk Analysis and its Practical Application in the Enterprises Working in the Global Market. Engineering economics, 2007, Nr. 3(53), p. 7-16.
- Tamosiuniene, Rima and Savcuk, Olga. Risk management in Lithuanian organizations – relation with internal audit and financial statements quality. Business: theory and practice, 2007, vol. VIII, Nr. 4, p. 204-213.
- Taylor, Liz. Practical Enterprise Risk Management: How to Optimize Business Strategies Through Managed Risk Taking. USA: Kogan Page, 2014.
- Tepman, L.N. Riski v ekonomike. Moscow: Unity, 2002.
- Trapani, Lorraine. Risk Management: Global Approach. World Custom: Journal Volume 6., No 2; retrieved from: <http://www.worldcustomsjournal.org/media/wcj/-2012/2/Trapani.pdf>. >
- Trieschmann, James S., Gustavson Sandra G. and Hoyt Robert E. Risk Management and Insurance. Mason, USA, Ohio: Thomson/South-Western Publishing, 2001.
- Urnieszus R. *Rizika*. Vilnius: Minties leidykla, 2001.
- Utkin E. and Frolov, D. Upravlenyie riskami predpriiatyia. Moscow: ТЕИС, 2003.
- VAGERIS, Robertas. *Rizikos analizes vadovas: administracinu ir techniniu gebejimu stiprinimas uztikrinant duomenu, informaciniu technologiju ir jomis perduodamu duomenu apsauga*. Vilnius: Vaga, 2005.
- Williams, C. A. Jr., and Heins, R. M. Risk Management and Insurance, fifth edition. USA: McGraw-Hill book company, 1985.
- Wilson, N., Summers, B. Trade Credit Terms Offered by Small Firms: Survey Evidence and Empirical Analysis. Journal of Business Finance & Accounting: Vol. 29, Is. 3/4, p. 317-351. 2002.
- Wilson, Laird, Doug McCutcheon. Industrial Safety and Risk Management. Canada: University of Alberta, , 2003.
- Yashina N. Osnovnyie principy upravlenyia riskom. *Moscow: Finansy I credit*, 2006, Nr. 36 (240) Retrieved from: <http://www.finizdat.ru/journal/fc/detail.php>>

ECONOMIC OPENNESS AND ITS IMPACT IN THE GROWTH OF THE ALGERIAN ECONOMY DURING THE PERIOD (1970-2012)

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Abstract :

This study aims to clarify the relationship between openness and growth of the Algerian economy during the period (1970-2012), and according to a series of studies that have proved a causal relationship between openness and economic growth. Our study end up to the existence of significant correlation between the openness of the Algerian economy and the evolution of its Gross Domestic Product, that is the Algerian GDP growth leads to attract foreign capital which is known by the name of Foreign Direct Investment, which in turn contributes to the opening up of the Algerian economy, and the latter, is influenced by Gross Domestic Product and other determinants like inflation and the real exchange rate, trade openness and infrastructure, where the study proved the existence of a positive impact on trade openness, and an expected negative impact on both inflation and the real exchange rate, and an unexpected negative impact on the infrastructure.

Keywords: Economic Openness, Economic Growth, Foreign Direct Investment

Introduction

The Algerian economy is headed toward a market economy, making it more flexible and more openness to the global economy, through the applicable reforms by decision-makers, following the package of economic recovery schemes, making the Algerian economy more attractive to direct foreign investment, through infrastructure development, create jobs. But it remained below the level despite the presence of growth in the Algerian economy over the past few years, the fact that the latter entirely dependent on fuel.

Algeria suffers, like other developing countries from recession investments of various kinds, and then they are looking for ways to sent and revitalization, so it has adopted since the mid-nineties of the last century, the

economic opening-up policy, with a view to encourage the flow of foreign capital, the development of legislation and approve incentives, to attract modern technology to establish industries strengthen economic growth, and stimulate domestic investment, as essential elements for economic growth and the achievement of economic and social development, and therefore attract the largest number of foreign direct investment contributes to more openness of the Algerian economy.

Is the growth of the Algerian economy impact on attracting foreign direct investment and hence its openness to the outside world?

To answer this problem we decided to split this article as follows:

- The theoretical framework and previous studies.
- The standard analysis.

One : The theoretical framework and previous studies

Not addressed the issue of economic openness in economic thought, but in a few, and most researchers are expressing openness of an economy that the value of foreign direct investment flows in year t for country i on the value of gross domestic product for the same country i in the same year t , the higher those percentage say that the economy is more open. In order to make it clear that you must specify the objectives of the study, previous studies that I've ever had, and then to identify the determinants of economic openness.

1. Objectives of the study: This study aims to demonstrate the relationship between economic openness and economic growth in Algeria, and by clarifying the determinants of economic openness and foreign direct investment, which enables decision makers in Algeria, to make its economy more open to increase economic growth rates and spur economic development wheel .

2. Previous studies: This subject is covered, but other aspects, we can mention the most important studies in the following:

A. Mohamed Samir Hindawi study (2003), dealt with openness and economic growth the case of Jordan, where the researcher analyzed the relationship between economic openness and growth and investment, and to study the impact of the policy of openness on the effectiveness of both the fiscal and monetary policies and a link to this effect growth, was clearly evident positive impact of openness on Investment as a natural result of the increase in foreign investment by opening up, and the adoption of domestic investment on imports of raw materials, machinery and technical equipment, and concluded that the policy of openness affect growth positively and negatively through a variety of channels, and one of these positive channels are foreign direct investment flows, and increased domestic investment

opportunities through the opening of global markets, and improving export performance.

B. Narayan Chandra Pradhan study (2010), entitled: openness and growth of the Indian economy: An Empirical Study analytical, he studied the relationship of trade openness and growth of the Indian economy, and concluded that the existence of a causal relationship between the growth of the Indian economy, especially trade and openness after changing the pattern of trade in India.

C. Nabil BELOUARED study (2013), entitled causal Granger relationship of foreign direct investment and economic growth in Algeria, where he found a small probability of the causal relationship between the two variables, after a simulation for 1000 scenario, where it was noted that 30% can internal output of crude (GDP) that affect foreign direct investment (FDI) in Algeria, and can 6.5% foreign direct investment (FDI) that affect the gross domestic product (GDP) in Algeria.

3. Determinants of economic openness: There are several determinants of openness of the economy determines what we remember the most important of which is applicable to our study as follows:

A gross domestic product GDP: The gross domestic product specific key multinational companies seeking to achieve growth or access to new markets or increase their share of the host countries' markets, and in this context, we find that states with a local GDP of large be very convenient for a lot of domestic and foreign enterprises, especially those working in the non-services to trafficking, because the only way to be submitted to the host country markets is done through the establishment of their own in those countries branches, in addition to that, the larger the GDP size helps organizations that operate in viable products trafficking to achieve economies of scale. This is what makes the economy more open.

(B) Exchange rate: The multinational companies interact reactions counterproductive with exchange rate fluctuations, and in this regard, we find several studies of the most important of those carried out by the Economic Caves, has made it clear that there is a negative correlation between the exchange rate of the nominal and the real and the flow of foreign direct investment to America and the sudden fluctuations of exchange rates have a negative impact on the investment climate, as such fluctuations make it difficult to work studies, in addition, it can be FDI vector towards exports to be affected as a result of the relative changes in the exchange rate.

C Inflation: The inflation rates have a direct impact on the pricing policies and the size of the profits, and thus the impact on the movement of capital, also affect the cost of production, which attaches great importance by multinational companies, as we find affected the profitability of the market

as a result of high inflation in host countries, in addition to the poor investment climate, and here is the foreign investor need to stabilize the price, and if it happened to be the danger zone, both national investments or foreign, and add to this that inflation distorts investment style, as investors turn to short-term investments, and averse long-term investments.

W trade openness: expressed as total exports and imports of the country during the period t_i on gross domestic product for the same country in the same period t_i , and is also specific to the openness of the economy of the country i . Which is expressed in foreign trade, and here we must focus on import intermediate goods that complement the production process, not the import of consumer goods, then trade openness lies in bringing exports place imports for consumer goods, and import goods intermediate which is usually missing or minority in the state, In order to support the production process.

(C) infrastructure confirmed many economists theory of growth for each of the (Romer 1986 (Romer) and Lucas 1988 (Lucas)), which aims to public investment in infrastructure has an important impact on the overall economy in the long term, especially in the field of transport of all kinds (land, sea and air), and communication, thereby contributing to the promotion of foreign direct investment in the host country.

C -1 communications: the existence of a sophisticated communications network helps the flow of foreign direct investment, so as to easily connect to all types of telephone, internet ...

C -2 basal established: provide facilities Qaeda network of roads, railways, airports factor of attracting foreign capital factors, for ease of movement from one area to another, the transport of goods, whether for distribution or bring in raw materials, opening up to the outside world ...

Two: The standard analysis

The approach of economic measurement of the most effective economic curriculum being taught phenomenon in several variables over time, it was noted relied upon in the last years of the analysis, as well as it depends on a huge amount of data to explain the phenomenon, which is taken into account all the circumstances that surround the economic problem, and the phenomenon of economic openness Economic growth does not represent an exception.

1. descriptive study of the variables of the study: I, we decided that there are several determinants explain the flow of the openness of the economy, so we will know all the variables we considered specific to the openness of the Algerian economy, which we consider to be the model variables, data and statistical sources and the expected effects of the variables.

1-1 Model variables: Take prototype form logarithmic follows:

$$= f(\ln(\mathbf{OE}_t), \ln(\mathbf{GDP}_t), \ln(\mathbf{GDPpc}_t), \ln(\mathbf{POP}_t), \ln(\mathbf{INF}_t), \ln(\mathbf{REER}_t), \ln(\mathbf{TELE}_t), \ln(\mathbf{OPR}_t), \ln(\mathbf{ALPH}_t), \ln(\mathbf{EXOIL}_t), \mathbf{U}_t)$$

Whereas:

$\ln(\mathbf{OE}_t)$: Logarithm of economic openness.

$\ln(\mathbf{GDP}_t)$: Logarithm of GDP.

$\ln(\mathbf{GDPpc}_t)$: Logarithm of per capita income.

$\ln(\mathbf{POP}_t)$: Logarithm of population density.

$\ln(\mathbf{INF}_t)$: Logarithm of inflation.

$\ln(\mathbf{REER}_t)$: logarithm of the exchange rate.

$\ln(\mathbf{TELE}_t)$: Logarithm of telephone lines per 100 inhabitants.

$\ln(\mathbf{OPR}_t)$: Logarithm of trade openness.

$\ln(\mathbf{ALPH}_t)$: Logarithm of the educational level.

$\ln(\mathbf{EXOIL}_t)$: Logarithm of oil exports.

\mathbf{U}_t : Errors, and t is the number of years of schooling.

And we can clarify variables used in the study in Table (1) below:

Table (1): Model variables

variables	Symbol	Definition
economic openness	OE	Foreign direct investment flows to Algeria divided by the gross domestic product. ($OE = FDI/GDP$).
gross domestic product	GDP	Is the gross domestic product at the price of the base year 2005, and reflects the size of the market.
inflation	INF	Price index on consumption.
the exchange rate	REER	The real exchange rate.
telephone lines per 100 inhabitants	TELE	Number of installed telephone lines per 100 inhabitants, and reflect on the level of development of infrastructure.
trade openness	OPR	Openness rate = $(\text{exports} + \text{imports}) \backslash GDP$

Table: prepared by the researcher.

1-2 statistical data were obtained on the statistical data for the variables of the study to the case of Algeria from several sources, was to rely more on data from the World Bank, they contain the largest amount of Statistics, and so there is no contradiction in the data, but in the absence of variable resort to other sources, the Arab as the founder of the investment guarantee and export credit in Kuwait, Statistical, Economic and Social Research and Training countries Islamic center in Ankara (Turkey), and the

study was conducted on the Algerian economy during the period (1970-2012), and for this we'll explain in a comprehensive sources table to get the data and websites and below.

Table (2): data and statistical sources

variables	Symbol	Data source	Site web
economic openness	OE	World Bank, World Development Indicators (WDI).	www.worldbank.org
gross domestic product	GDP	World Bank, World Development Indicators (WDI).	www.worldbank.org
inflation	INF	World Bank, World Development Indicators (WDI).	www.worldbank.org
the exchange rate	REER	World Bank, World Development Indicators (WDI).	www.worldbank.org
telephone lines per 100 inhabitants	TELE	Economic and Social Research and Training Centre for Islamic countries in Ankara	http://www.sesrtcic.org
trade openness	OPR	World Bank, World Development Indicators (WDI).	www.worldbank.org

Table: prepared by the researcher.

1-3 The Effect of variables: we can expect from this study raised the previous variables on the Algerian economic openness, some of them affects positively, whenever any the rising value followed by the rise of the value of the openness of the Algerian economy and vice versa (proportional) relationship, and some of them adversely affects any rise whenever the value of the variable leads to the devaluation of the opening of the Algerian economy and vice versa (inverse relationship), and summarized in the form of the table below.

Table (3): The expected effects of the variables

variables	Symbol	The expected effects of the variables
gross domestic product	GDP	Positive impact (+) any direct correlation
inflation	INF	Negative impact (-) any inverse relationship
the exchange rate	REER	Positive impact (+) any direct correlation or Negative impact (-) any inverse relationship
telephone lines	TELE	Positive impact (+) any direct correlation

per 100
inhabitants
trade openness

OPR

Positive impact (+) any direct correlation

Table: prepared by the researcher.

1-4 Model Rating: I've been using the model estimation method of least squares OLS by the statistical program (EViews), and after a workout most possibilities concluded to the form shown below, after converting the data to the absolute value of the fact that there are negative values affect the relationship logarithm:

$$\ln(OE_t) = a_0 + a_1 \ln(GDP_t) + a_2 \ln(REER_t) + a_3 \ln(TELE_t) + a_4 \ln(OPR_t) + a_5 \ln(INF_t) + U_t$$

Was in this way rely on gross domestic product (GDP) as a variable to the size of the market, and telephone lines as a variable of infrastructure, trade openness, and the exchange rate, inflation, it was observed that the value of the correlation coefficient ($R^2 = 0.7144$) and the correlation coefficient debugger (Adj $R^2 = 0.6494$). And Table 4 below shows the summary indicators.

Table (4): Summary indicators.

variables	Notes	Mediator	The standard deviation	Minimum	Maximum
OE	39	-1.638325	2.547718	-7.524326	0.9969954
GDP	42	24.90292	0.388322	24.01852	25.51733
INF	43	1.91076	0.898902	-1.081274	3.455359
REER	41	4.017844	0.1993587	3.486903	4.339309
TELE	33	5.118734	0.5409966	4.589278	6.10597
OPR	39	13.70014	1.003557	11.47002	14.97929

Table: prepared by the researcher depending on the data EViews program.

3. The model test: We have to use all of the Fisher test to measure model quality, and test Student to test the model parameters, in addition to Darbn test - Watson to test the link, which observed the existence of a self-correlation between the errors, in the estimated Least-squares OLS model, so we re-appreciation using method (HAC Newey-west fixed) to address the existence of a self-correlation of the errors on the one hand, and the heterogeneity of variance on the other hand, using a statistical program (Eviews), after conducting the necessary tests we have acquired on the results shown in Table 5 below.

Table (5): Results of the estimates using the method of least squares OLS variable interpreter logarithm of the openness of the Algerian economy

variables	Model
ln(INF_t) : Logarithm of inflation	-0.74 (0.61)
ln(REER_t) : logarithm of the exchange rate	-5.3 (2.64)*
ln(TELE_t) : Logarithm of telephone lines per 100 inhabitants	-2.38 (3.94)
ln(OPR_t) : Logarithm of trade openness	0.96 (1.75)
ln(GDP_t) : Logarithm of GDP	2.44 (6.02)
C	-5.177
R2 correlation coefficient	0.7144
Edited Adj R2 correlation coefficient	0.6494
Statistical Fisher F	11.006
The value of the probability P	0.000021
Views N...	28

Figures in brackets represent the standard error, and statistical Student (T- Student) where (*) represents a significant level 10%.

Source: The table was obtained from the statistical program EViews output.

4. The interpretation of the results: Since the statistical Fisher calculated (F_{obs}) greater than statistical Fisher scheduled (F_{tab}), the model is acceptable, where it was noted that the model better the fact that the debugger correlation coefficient is the largest, and it takes the smallest value for each of the test (Akaike Info Criterion «AIC ») and testing (Schwarz Criterion« SIC »), was observed in this model that trade openness in Algeria positively affected by each of the gross domestic product, trade openness to the outside world, and negatively with both inflation and the real exchange rate, and this is what was expected.

While the opening of the Algerian economy has been negatively affected infrastructure was not expected, any infrastructure evolution lead to a decline in the openness of the Algerian economy because foreign investment went to investment in infrastructure, and the development of the latter leads to the reluctance of foreign investors who invest in infrastructure, and it say The Algerian economy growth positively affect the openness, any increase in rates of economic growth comes as a result of increased gross domestic product, which in turn contributes to attracting foreign direct investment, and thus increase the value of the latter on the gross domestic product, which is expressed openly economy.

Conclusion

Most countries in the world is witnessing a growing trend towards openness and liberalization of economies desiring to achieve a set of development goals, and Algeria is one of those countries which headed towards openness desire to achieve these goals. Through this study, we found that:

1. There is a relationship between economic openness and the growth of the Algerian economy during the study period, and that by attracting a large part of foreign direct investment as a result of gross domestic product growth (economic growth), and a rise in foreign investment value direct to GDP say that the Algerian economy more openness.

2. Economic openness is determined by a set of parameters like GDP, including inflation, the real exchange rate, trade openness, in addition to the infrastructure.

3. The real inflation rate negatively affect the openness of the Algerian economy, I mean there is an inverse relationship between inflation and real exchange rate and foreign direct investment divided by the gross domestic product, and this is what was expected.

4. trade openness positively affect the growth of the Algerian economy, and by increasing exports, which in turn contributes to the increase of foreign direct investment value through competition between domestic and foreign investment and thus opening up more to the outside world.

5. There is a negative impact was not expected between infrastructure expressed in the number of telephone lines per 100 inhabitants and economic openness in Algeria, and the fact that most of the direct foreign investment, investing in infrastructure, of evolution the latter contributes to the reluctance of foreign investors, contributing to the decline of economic openness .

6. The Algerian government has taken several measures to create an investment climate consisted of those measures to make many adjustments to investment laws, created these amendments legal conditions and legislative favorable for investment and containing many of the financial incentives and inducements, though observed lack of efficacy, which led to the reluctance of the foreign investor and thus shut out the outside world.

7. A set of restrictions and obstacles hindering the development of foreign direct investment in Algeria, because the geographical location of the islands suggests that these are sophisticated investments. Which led to the closure somewhat to the outside world, and thus slow economic growth.

References:

Abdur Chowdhury & George Mavrotas, **FDI & Growth: What Causes What?**, Paper to be presented at the WIDER Conference on “Sharing Global Prosperity”, WIDER, Helsinki, 6-7 September 2003. P:02.

Caves.R, **Multinational Enterprise and economic analysis**, 2nd edition, Cambridge university pressv, 1996 .

Ali Nabil BELOUARED, **causalité de granger enter les Investissements Directs Etranges et la Croissance Economique en Algérie**, communication dans séminaire CIMGLE 2013, université de PARIS VIII.

Nabil KHOURI, **les déterminants de l’investissement direct étranger dans les pays d’accueil en développement et son impact sur leur croissance économique, Évidences empiriques à partir des données en panel de 81 pays d’accueil en développement observés de 1995 à 2005**, (Thèse de Doctorat, en sciences de gestion - option : finance, a l’école supérieure de commerce d’Alger, Algérie, 2008).

Narayan Chandra Pradhan, **openness and growth of the indian economy: an empirical analysis, export-import bank of india**, occasional paper no. 150.

Rime MAHMOUD, **les Investissements Directs Etrangers dans les pays Arabes**, (Thèse de Doctorat, LEAD- Laboratoire d’Economie Appliquée au Développement, Faculté de Sciences Economiques et de Gestion, Université du Sud Toulon-Var, France, 2009).

Ch. Abdul Rehman and others, **Determinants of Foreign Direct investment and its impact on GDP Growth in Pakistan**, interdisciplinary journal of contemporary research in business copy right 2011 institute of interdisciplinary business research 198 january 2011 vol 2, no 9.

www.worldbank.org.

Supplement: The results obtained using the EViews program

Dependent Variable: LGOE

Method: Least Squares

Date: 01/31/14 Time: 03:05

Sample (adjusted): 1980 2010

Included observations: 28 after adjustments

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.176870	93.78780	-0.055198	0.9565
LGGDP	2.441467	6.025469	0.405191	0.6893
LGINF	-0.742718	0.617246	-1.203277	0.2417
LGREER	-5.301824	2.641620	-2.007035	0.0572
LGOPR	0.960552	1.753952	0.547650	0.5894
LGTELE	-2.378131	3.948317	-0.602315	0.5531
R-squared	0.714396	Mean dependent var		-2.022818
Adjusted R-squared	0.649485	S.D. dependent var		2.776192
S.E. of regression	1.643624	Akaike info criterion		4.019093
Sum squared resid	59.43298	Schwarz criterion		4.304566
Log likelihood	-50.26731	Hannan-Quinn criter.		4.106365
F-statistic	11.00592	Durbin-Watson stat		1.442026
Prob(F-statistic)	0.000021			

THE EFFECTS OF DEMOGRAPHIC TRENDS ON ECONOMIC GROWTH IN THE EUROPEAN UNION

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Abstract

The aim of this article is to assess the influence of demographic age shares on changes in economic growth in the EU from 1996 to 2013 using a fixed effects model. The authors hypothesise the demographic variable having a statistically significant effect on the macroeconomic variable. Conclusions and suggestions stemming from the analysis are expected to benefit policymakers and provide guidance to public institutions.

Keywords: Demographic trends, ageing, economy

Introduction:

With the onset of long-term transformations in the EU's demographic makeup, the issue of their implications for the economy has become acute. The status quo maintaining an ageing population coupled with low birth rates and no signs of imminent change manifested itself in a conundrum that neither the private nor the public sector currently appears to have the capacity to solve. Discussions covering these socio-economic changes spanned from developed countries like the USA to emerging economies such as India and China. For developing nations, the connection between demographics and the economy served as a basis for forward-thinking policy changes while others conducted research to understand the aforementioned processes as they manifested. Their efforts resulted in an extensive debate regarding the value of savings, return caps and the demographic variables' influence on the economy in general.

The EU context raises more questions due to previous studies being scarcer than those dedicated to the USA, specifically, on the relationship between GDP growth and demographic shifts.

The purpose of this research is to quantify the effects of processes such as the evolution of the age composition in the EU on economic growth and juxtapose estimation results with those obtained in comparable works.

This, in turn, forms a platform for insight to suggest areas necessitating remedial action.

This article consists of four parts: an overview of modern approaches to the relationship of demographic trends and the economy, the construction of the fixed effects model, and the assessment of the aforementioned trends' effects on economic output. The last section outlines the conclusions derived from the research.

Modern Approaches to the Relationship of Demographics and the Economy

Stacking predictable short-run changes in demographic makeup raises the question of the current framework's longevity, considering retirement benefits, entitlements, returns on investment-based alternatives and economic development as a whole. Bloch (2011) argues all of the above will undergo an "asset meltdown" with cuts to reduce the amount of distributable welfare on every level from state-run schemes to investment funds. A Romanian study by Nadelea and State (2008, p. 1008-1012) contributes to the discussion by pointing out the costs of demographic transformations incurred by the consumer goods market.

Dizard (2013) seems to agree with the Bloch's sentiment, as far as pointing out the same sectors to be affected by demographic changes. Dizard further contributes to the discussion with the addition of non-healthcare elder goods and services, providers of which will manage to alter their businesses in a timely manner to reap benefits from changes in demand. He predicts that due to life expectancy remaining on the increase, demographic transformations will reduce demand of youth-oriented consumer products and put pressure on stock valuations of related companies. Moreover, he expects gains of medical and care service providers to be modest due to restrictive government legislation and an increasing strain of public finances caused by the need to deliver the assumed amount of funding. Dizard introduces care homes as an example of a service in high demand that is not profitable enough for the private sector to fully satisfy the demand.

Jensen (2013) and Magnus (2008, 2010) offer a consensual valuation of the state of affairs, but their views on the downturn are muted. Magnus argues that regions experiencing the transition to low birth rates and low infant mortality rates such as Europe or Japan are home to global businesses able to provide stability thanks to income generated in emerging markets. Such enterprises are not expected to fall under the lower returns trend. Nonetheless, both authors admit a doubling old age dependency ratio is a problem the effects of which are largely unknown. As Magnus (2010, p. 1) puts it: "we actually have no template about what to expect because 21st century population aging is unique." Japan's experience may be even more

unique for cultural reasons, but the implications of a lost generation happening in the EU deserve more attention than they currently get, Jensen (2013) concludes. Declé's (2000) Japanese case study pointed to a temporary effect in the economy that lasted for ten years, where consumption levelled off instead of falling as the population aged. This was explained with savings made on fewer workforces being required along with reduced costs to equip it, leaving more funds available for consumption.

Macunovich (2010) uses examples from Latin America, Japan and the USA to explain that their economic downturns in the last 30 years were rooted in the countries' demographic makeup. In the paper, he stresses the importance of the 15-24 age group rather than an increasing old age dependency ratio. He discovered that growing economic activity and GDP per capita correlated with an increase in the group's relative weight while downturns occurred immediately after the period of the cohort's peak size. This effect manifested itself in many countries across Europe, including Belgium, Sweden and Russia. Macunovich suggests examining the age structure as a polynomial to avoid omitting meaningful data, going as far as suggesting overestimating the number of degrees in the polynomial to begin with unbiased, if inefficient, estimates. However, he warns against combining countries with different types of age structures, as they indicate a different economic effect in the 65 and over age group due to the presence or absence of government aid schemes.

McKinsey Global Institute, the research arm of the McKinsey & Company management consultancy, presents a standardised approach towards polynomials as a representation of ageing effects in a publicised discussion on the upcoming *demographic deficit*. In their case study on Germany, Italy, the UK, and among non-EU countries, they have used fifth-degree estimates of life cycle effects. The Institute details in the technical notes section: "in this type of synthetic panel specification, all trends in the data are captured by lifecycle and cohort effects. Linear time trends cannot be separately identified since age, time and cohort are linearly related. Any time effects are implicitly assumed to be orthogonal to the deterministic trends represented by age and cohort effects" (McKinsey Global Institute, 2004, p. 224).

The IMF dedicated an issue of *Finance and Development* to the matter. Bloom and Canning (2006) pointed out the current state is a result of more than 100 years of deviation from a historic trend, in which populations and age structures changed very little. The "upheaval", according to the authors, caused a wave of "booms, busts, and echoes" referring to baby boomers, the subsequent decline in fertility as they reach maturity and echo effects, maintaining that a generation's influence manifests itself in waves.

Regardless of the looped effect and overall population increases, the IMF's contributors pointed out the total fertility rate dropped from 5 in 1950 to approximately 2.5 in 2006, projected to fall further to 2 by 2050. As such, birth rates in developing countries are not expected to remain as high as they are now. However, they have also noted a drop in infant mortality, down to a third of its value of 180 since 1950 in developing countries and from 59 to 7 in developed countries. This is accompanied by greater life expectancy worldwide, up by 15 years since 1950 to 65 in 2005. The increase has not been homogenous across the world, with disparity expected to rise due to AIDS hampering longevity in sub-Saharan Africa and failure to improve social infrastructure in certain Post-Soviet states (Bloom, 2006).

Challenges stemming from a large cohort entering retirement, provided behaviour is constant within age and sex groups, have potentially destructive consequences as described by Bloch. Conversely, his IMF paper notes a change in behaviour such as more women participating in the workforce or active immigration, as stated by Magnus, will resist the downward pressure on real income. Lacking such structural changes, public expenditures on pensions are to increase by as much as 16 p. p. of GDP by 2050 in countries like Spain, more than twice of the projection made by the European Commission (Catalán, 2007).

Magnus (2010) and Bloch (2006) support their claim with the example of Ireland, the net migration rate of which has been negative since 1960 until 1990, amounting to 1 per cent per annum on average (not dissimilar from Lithuania), but changed with the onset of economic growth fuelled by policy and demography-based factors. The increase in female labour force participation and immigrants, those returning and foreigners, dampened the negative effect predictions based purely on historic data.

A production technology model encompassing the demographic transition in China and India employed by Chamon (2006) sheds light on the subject of challenges in utilising the benefits of the demographic dividend. The log-linear model takes changes in demographic makeup and the economic transformation process as exogenous variables, meaning that certain tasks can only be done in countries deemed "developed". It resulted in noteworthy conclusions, one of which was a development queue, allowing a certain country to develop only after a country ahead of it in the queue attains "developed" status. The authors also introduced criticality for long-term transformations, maintaining a scenario will continue indefinitely as long as external processes keep the population's demographic makeup above threshold. A country joining the developed world produces explosive growth; however, "transitions from the developing to the advanced economy group are rare" (Chamon, 2006, p. 11). Trade barriers are pointed out as a potential demographic dividend reductor. While the authors warn about the

limitations of transferring regional experiences verbatim, they admit long-term predictions with borderline values are sensitive to changes, some of which do not depend on action within the country because “the same policies that make a country unattractive to foreign investors today may not discourage them from investing in the future if that country becomes one of the last places in the world where labour is still ‘cheap’,” which makes the case for keeping data from developing and developed countries in separate subsets (Chamon, 2006, p. 13).

Batini et al (2006) used a dynamic intertemporal general equilibrium four-country model to project the effects of demographic transformations as far as 80 years into the future. They have discovered the outcomes are different between regions, with Japan undergoing the most extreme change in capital flows. Developed countries are expected to boost their developing counterparts’ growth over the next 20-30 years, exploiting their demographic dividends. Moreover, a rise in productivity by 0.1 per cent per year was projected as sufficient to offset half of Japan’s aggregate GDP’s fall attributed to demographic changes. The model inspected GDP per capita growth rates as well, concluding a decrease in industrialised nations due to ageing whilst those of developing countries are expected to increase as long as additional labour is used effectively.

With regards to policy and implementation, it is important to distinguish between cyclical and long-term structural changes. A simulation exercise run as part of the IMF Working Paper initiative underpinned capital export into developing Asia with demographic processes happening in Europe and Japan (Lueth, 2008). While there was speculation about capital flows in 2007 stemming from loose monetary policy, the author suggested that demographic change is behind the current, “making a sudden reversal less likely” (Lueth, 2008, p. 15). Lueth makes it clear that ROI interests governments, which will be motivated to move from pay-as-you-go to investment-based schemes. He insists about processes such as globalisation and financial integration being beneficial in the long run, reassuring that the demographic transition may not cause a fall in returns as steep as others predict and he does not exclude the possibility of them increasing.

Arnott and Chaves (2012) present a development in the study of demographic variables as a determinant of economic shifts. The authors use a pool of 22 countries for the main regression and increase the number of degrees of freedom by force-fitting the equation into a two-to-four-degree polynomial. While a secondary regression with 176 countries is present in their study, the authors admit that data is fragmented, allowing for more accurate estimates only in developed countries. Their study involved a two-fold set with GDP per capita being analysed in one regression and returns on securities in the other. Both sets depicted: “a strong and intuitive link

between demographic transitions and both GDP growth and capital market returns“ (Arnott, 2012, p. 23).

Insight taken from the works laid out in this part is used as a basis to formulate the methodology to be used in hypothesis testing.

The Methodological Framework of the Econometric Model

The model’s basic premise entails the use of secondary time series data as reported in a sample of countries over a specified period. The data is panelised, labelling the demographic variable as the regressor and the economic variable as the regressand in a panel least squares single-equation regression. To capture valuation and business cycle effects, the equation contains a proxy economic variable on the regressor side. This may be seen in equation (1).

$$r_t = a + \gamma X_{t-1} + b_1 s_{t,1} + b_2 s_{t,2} + \dots + b_N s_{t,N} + \epsilon_t, \quad (1)$$

where r_t – dependent variable at period t

a – intercept term

X_{t-1} – proxy variable, used to gauge the business cycle

b_N – coefficient for age group N

$s_{t,N}$ – relative population share size of age group N at period t .

Note that the equation contains an intercept term, a lagged term for the valuation effect and denotes age shares for every cross-section in every period.

The main issue with equation (1) is that statistical data for most countries in a sufficiently large panel is available for a limited selection of years. As such, the number of data points is reduced, which complicates both analysis of the demographic variables’ slow evolution and its effect on the macroeconomic variable. In fact, estimating equation (1) directly is impossible for any country currently in the EU because including the intended number of five-year non-overlapping age groups ($s_{t,i}$) does not leave enough degrees of freedom, as i spans from 1 to 18, coinciding with the number of periods t . Excluding a particular age group, for example, ages 0 to 4 or broadening the groups is an ad hoc solution that hides a part of the information contained in the original equation.

Hence, we may include a restriction for the number of coefficients:

$$b_i = D_0 + D_1 i + D_2 i^2 + \dots + D_k i^k, \quad (2)$$

This expression suggests replacing the coefficient b_i next to every demographic share with a single polynomial of the order k , supposed to reduce the number of coefficients to estimate from N to k . The order of the polynomial is determined by testing it against redundancies with parsimony in mind via the Wald coefficient restriction test. It is worth noting that the i ,

representing the number of the age group, spanning from 1 to N, is raised to the power from 0 to k .

Since demographic shares have the cumulative sum of unity and their sum of changes always equals to zero, a restriction is required on the transformed coefficients to avoid multicollinearity with the intercept term. The issue is captured by the initial term, D_0 as described in equation (3).

$$D_0 = -\frac{1}{N}(D_1 \sum_{i=1}^N i + D_2 \sum_{i=1}^N i^2 + \dots + D_k \sum_{i=1}^N i^k), \quad (3)$$

Following the coefficient transformation and after the inclusion of D_0 as shown in (3), the model's regression equation intended for panel LS estimation appears as follows:

$$r_t = a + \gamma X_{t-1} + D_1 \sum_{i=1}^N \left[i s_t^{(i)} - \frac{i}{N} \right] + D_2 \sum_{i=1}^N \left[i^2 s_t^{(i)} - \frac{i^2}{N} \right] + \dots + D_k \sum_{i=1}^N \left[i^k s_t^{(i)} - \frac{i^k}{N} \right] + \epsilon_t, \quad (4)$$

Note that to conserve space, the presented equation does not contain fixed effects, which determine the country-specific intercept term, supposed to capture differences between countries in the panel. Equation (4) with fixed effects is used for out-of-sample robustness tests while equation (1) presents the end result containing implied regression coefficients of every demographic share to be compared with those obtained in previous studies, if available, using this methodology.

The framework is put through a range of tests pertaining to the Gauss-Markov assumptions, its robustness and is subject to adaptation in case one of these assumptions is not met and the result may contribute to misleading conclusions.

As demonstrated in the first part of this paper, the variables and underlying data quality are crucial for BLUE estimation. Previously covered research limited to the USA theatre is mostly concerned with the former rather than the latter due to the relative legislative stability and availability of statistical data, allowing the researcher to focus on variable selection. The European context adds complexity factored by historical and methodological divisions, which affect the quality and availability of data and its variable forms.

Institutional changes are a noteworthy example, limiting the number of data points available for study in multiple countries to a period spanning from years after the collapse of the USSR until 2013. UN Penn World Tables provide estimates for the most general demographic and macroeconomic variables as well as official statistics with their quality classified accordingly. However, this data is limited to 5-year increments or 20 data points per 100 years in addition to complementary variables necessary for hypothesis testing being absent from their repository. Hence, the European statistical

authority, Eurostat and the ECB act as the chief sources of data, providing demographic and macroeconomic time series used in this paper.

One of the key issues concerning the execution of the model was formulating the scope of detail to describe an EU member state's demographic makeup. By referring to previous research and prior testing with draft models¹, it was concluded that broad age groups withheld information present in the non-overlapping five-year cohorts reported by each member state. For countries such as France or Spain, these were published from 1948. For other countries, the series started from 1991 or 1993, a case not limited to CEE countries like Lithuania or Slovakia.

Unlike in previously cited research, the number of groups was 18, not 15, as Eurostat's age groups were concluded by 85 and over instead of 75 and over. Including all of the groups would have been impossible with the degrees of freedom available in an annual series from 1991 to 2013, excluding macroeconomic variables, were it not for the model's transformation of demographic shares into a polynomial.

The analysis includes the levels of demographic shares, as observed on January 1st of the year (t) in question. While short-run effects may have potential utility, the slow rate of change makes annual data the more feasible alternative. Although distribution by sex is available, it is not analysed in the scope of this thesis, considering the aggregate nature of economic growth.

Annual percentage changes of real GDP (fixed prices, 2005 base) are used to represent the demographic makeup's effect on the economy as the regressand. Following the literature review, it may be concluded that this is not a unique area of study, covered by the McKinsey Global Institute (2004), IMF's Bloom and Canning (2006), Magnus (2010), Arnott and Chaves (2012) among others. There are functional alternatives to this variable as a measure of the state of the economy, but the model pertaining to the explanatory variables' influence aims to test hypotheses comparable to those present in previous research.

Empirical literature deliberated on in the first section suggested the inclusion of a variable to account for valuation effects and business cycles, a proxy variable for information that would otherwise be omitted, referring to public trading statistics as a feasible solution. The ECB provides an array of leading EU stock market indices, either taken directly from the market or synthesised via a long-lasting index such as Euro Stoxx 50. Whenever possible, this variable is supplemented with data from the member state stock market's main index used for settlements, adjusted for breaks. The measure is not taken for countries lacking such an index during the analysed period.

¹These draft models utilised broad age groups as defined by Eurostat (0-15, 16-64, 65 and over) or featured ad hoc grouping.

In case of multiple markets being present, as is the case in states such as Germany and France, data from the operator with the highest index capitalisation is selected. To reflect the measures taken in preparation of other variables, raw closing values of a year's first trading session are converted into annualised percentage growth rates. The timing and magnitude are to match those of the demographic shares.

Dividend yields are cited as an alternative and a supplement to stock market indexes. However, these would be more challenging to use as an efficient measurement instrument in markets with endemic higher volatility, compounded by the fact that dividends are generally distributed several months after the end of the year in question. It generates a time lag, the length of which differs from country to country, that the market index does not have. Furthermore, indices in Western Europe have been dividend-inclusive since as early as 1999. Adjusting pre-1999 values accordingly preserves the yield information while avoiding structural break.

As a proxy solution outside the financial market, the economy's production function was considered. However, such a function's estimation for every country in the sample would add complexity and reduce the number of degrees of freedom upon its inclusion in the regression.

Stationarity is often a question when dealing with demographic variables due to their susceptibility to time trends. The variables selected for analysis, i.e. the demographic shares, are held within an interval $[0;1]$ and are taken from a sample of more than 20 countries experiencing different stages of the demographic transition, thus increasing the power of the tests, or, in case of economic variables, are presented in the form of annual percentage changes.

It is worth noting at this point the model's primary goal is to examine dependencies rather than make predictions.

The EU's changing composition poses another challenge of analysing dependencies in an all-inclusive fashion. Eurostat does not publish the aforementioned data for years prior to 2001 for newest members such as Romania and Croatia. Therefore, EU25 is the basis for the analysis. With regard to data availability, the model described in this part involves data from 1996 to 2013.

Assessing the Effects of Demographic Trends in the European Union

In this part, we apply the model to analyse the effect of demographic shares on the annual percentage change in real GDP. The main results of the analysis are presented in Table.

The basis for the model is panel data containing the transformed age shares, represented by D1, D2 (x10), D3 (x100), D4 (x1000) between the years of 1996 and 2013 and the country's main stock market index, lagged

by one period, represented by INDEX(1). The model includes fixed cross-section effects to address signs of serial correlation. The measure is tested with the Redundant Fixed Effects test. As a secondary measure to tackle serial correlation, the values of GDP and INDEX, lagged by one period, are taken into account.

After making the steps described above, demographic share variables D3 and D4 do not appear statistically significant. To measure the order of the implied polynomial, we run the Wald coefficient restrictions test for both D3 and D4. The probability of their redundancy is 0.13, which suggests their slope coefficients are statistically not dissimilar from naught at a 5 per cent significance level. Upon their removal from the regression, another iteration of the test run on D2 resulted in a probability of 0.018, which is enough to reject the null hypothesis at the same level of significance. This is in line with estimates obtained by Arnott and Chaves (2012) and the McKinsey Global Institute (2004). Disturbance variance is addressed by employing a White cross-section covariance matrix to obtain heteroscedasticity-consistent standard errors.

Table *Independent Variables and their Coefficients*

<i>Variable</i>	<i>Coefficient</i>	<i>Standard error</i>	<i>t-statistic</i>	<i>Probability</i>
C	-4.2036	1.4846	-2.8314	0.0049
D1	8.7571	3.6490	2.3998	0.0169
D2	-5.8888	2.0869	-2.8217	0.0050
INDEX(1)	-0.0119	0.0028	-4.1982	0.0000
GDP(1)	0.5117	0.0443	11.552	0.0000

Source: Calculated by the authors

The result is a model with a determination coefficient of 0.68 and a Durbin-Watson statistic of 2.009. All variables included in the regression appear statistically significant at a 5 per cent significance level. By running the Breusch-Godfrey serial correlation test, we tested for AR(q) processes of orders up to 5. The obtained Chi-squared statistic did not exceed the critical value at the aforementioned significance level.

Multicollinearity may be considered an issue characteristic to demographic data in the presence of micronumerosity. However, the practical implications of multicollinearity in the model in question are lessened by the nature of the data undergoing analysis as D1 and D2, the affected variables, are calculated from the same source. Furthermore, removing one of the variables would result in a specification error we avoid by leaving both in the regression to be studied jointly. With this data, it is possible to derive the implied regression coefficients of each five-year age cohort.

The implied regression coefficients of the original 18 age groups are reconstructed with the help of (3). They are regarded as such because the data pool was insufficiently large to generate the coefficients directly. The parabolic curve obtained (see Figure) should be read as follows: a 1 per cent increase in the share of the 30-34 age cohort in the population increases the annual growth rate of real GDP by 0.18 per cent. Likewise, an increase of 1 per cent in the share of the 80-84 age cohort in the population decreases the annual growth rate of real GDP by 0.36 per cent.

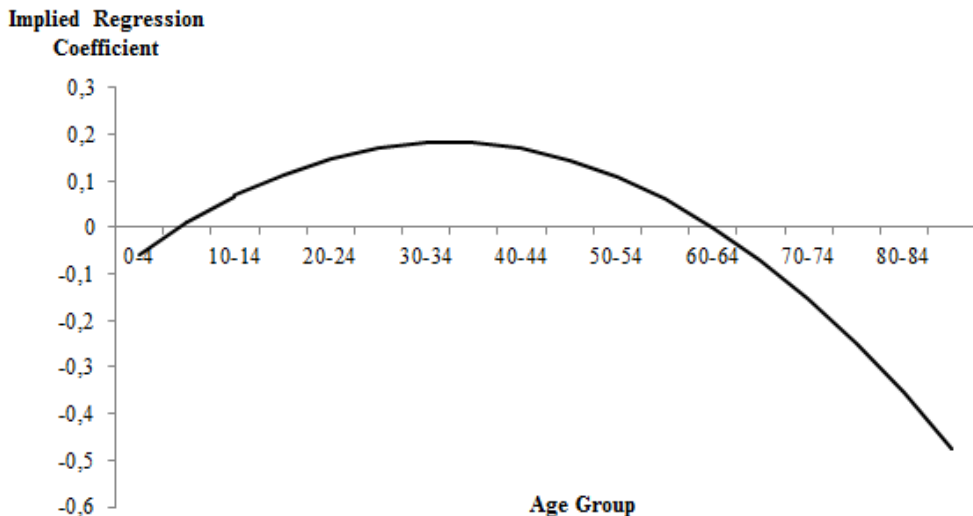


Figure. The Implied Regression Representation of Demographic Shares on Real GDP Growth.

Source: Calculated by the authors

What we see in Figure is in line with economic logic as both pre-adolescents and senior citizens in their retirement put pressure on growth while individuals of working age are the main contributors to real GDP growth, peaking at the age of 30-34, and dropping to zero at an age associated with retirement in parts of the EU. The insight obtained from Figure does not seem to contradict Life-cycle theory (LCT) assumptions.

The parabolic shape, the placement of the parabola's maximum, points of crossing the horizontal axis appear similar to the estimates obtained by the McKinsey Global Institute (2004) as well as Arnott and Chaves (2012). While these studies are comparable methodologically, they take a set of different countries, spanning in a different time period, which ultimately leads to similar conclusions.

However, this examination reaffirms conclusions of previous research, namely that the past is not a prologue to the future. This occurs in out-of-sample robustness tests, on a set of countries not present in the

regression, in which the model fares poorly, with determination coefficients below 10 per cent. The fact that countries such as Croatia, the newest member state, or Moldova, an aspiring EU member, do not have a liquid stock market and publish a narrower array of statistical data contributes to the challenge of using the model for forecasting. Hence, the model's theoretical contribution lies in providing a non-negative voice in the study of the relationship between demographic variables and the economy as a whole.

In practice, this paper gives policymakers a framework encompassing each five-year age group's net contribution to the economy. This encompasses the cohorts exhibiting a negative effect on real GDP growth, namely, those under the age of 10 and above the age of 64. Pinpointing the sources of dampened growth and quantifying their magnitude may have potential utility in the long term, be it a reform of parenthood and related social aid on the left side of the age spectrum or improvements of the pension system, which would tackle the right-hand side. Since an increase in the relative weight of groups on both ends of the age pyramid would have a negative effect on real GDP growth, given the circumstances do not change, EU member states should focus on the risks posed by an ageing society.

There are several non-exclusive ways of addressing the issue, based on Figure. Since it is unreasonable to assume a reduction in the relative weight of groups above the age of 64 in the current state of affairs without an increase in the weight of the previous groups, the straightforward solutions involves such an increase. Depending on the state of public finances, encouraging parenthood in an attempt to dilute the relative weight of those aged 65 and over and boost future growth may not be a functional alternative due to real GDP costs associated with the negative effect of the first two five-year age groups. It limits the possibility of using local resources to mitigate the negative effects. However, turning to non-EU countries, an outside source, as a means of stimulating real GDP growth via immigration may entail different costs despite being an attractive solution on the surface.

Another possible solution refers to limitations in forecasting long-term changes in demographic variables: the past not being a prologue to the future. Changes over time in the way different demographic shares affect the economy may preclude the need for making a conscious policy effort in altering the demographic makeup of a population. The solution entails influencing behavioural patterns to pushing the null points further apart on the horizontal axis, which may be a point in favour of encouraging prolonged activity in the economy and reach the spending phase in LCT at a later age.

While the challenges policymakers face in the event of continuous demographic transformations are distinguishable largely thanks to the macroeconomic nature of real GDP growth-oriented legislation, such changes pose a different question to the private sector equipped with a

limited set of tools. This quality outlines the importance of effective dialogue between the parties involved, but it does not bar the potential usefulness of private initiatives.

As the EU ages, an increased pool of time series data may help in further contributing to this analysis. Alternatively, limiting the sample of countries to states where data has been available since at least 1950 may provide greater accuracy for the use in the relevant region, leaving newer member states unassessed. Collating countries with established statistical authorities upon considering their key structural differences is another alternative in order to reach a long-term conclusion with plausibly greater predictive power necessitating further research.

Finally, the paper provides an EU-centric voice in an American-dominated discussion. It is a study encompassing a number of member states, taking into account the longest period possible for joint analysis of all five-year age groups. While it highlights similarities between the demographic challenges faced by the EU and the USA in comparable studies, it also presents an outlook from a different socioeconomic perspective in an environment that encourages governments to review their commitments to national pension systems. The importance of dialogue during a period of uncertainty is further maintained by providing a platform for subsequent research. Either utilising alternative macroeconomic indicators or slicing results into smaller regional clusters, there are numerous possibilities to further our understanding of the effects of demographic trends on the economy and financial markets.

Conclusion:

The on-going debate about the relationship between demographic and economic variables produced a body of academic work during the last 20 years. American research dedicated to the study of the Baby Boomer phenomenon in the USA has made a significant contribution to the discussion. Despite increasing interest in the topic, there is no consensus regarding the properties or existence of a transmission mechanism with different studies reaching opposite conclusions.

Research spearheaded by both policymakers and private initiatives highlights the shared nature of concerns related to changes in a population's demographic makeup. From social services to securities markets, steps were taken to analyse the underlying processes from the point of view of a number of industries, governments and international institutions.

Long-term estimates about the effects of demographic trends on the economy in academic literature are frequently based on a plethora of behavioural assumptions, making them susceptible to being altered in the presence of shocks. It limits the utility of currently available models.

In this paper, an attempt to analyse the effect of demographic transformations in the EU on the annual percentage change of real GDP has been made, thus adding a voice to the relevant academic debate. The proposed force-fitted polynomial model with fixed country cross-section effects has noted a statistically significant non-linear relationship between EU member states' demographic shares and annual growth of real GDP at a 5 per cent significance level. The fixed cross-section effects outlined inter-EU differences not caught by quantitative variables.

The model's findings did not reject LCT stipulations outright, with age groups pertaining to the period prior and after participation in the labour force putting pressure on the analysed economic variables. Conversely, the period associated with participation in the labour force exhibited a contrary effect.

Robustness of the calculated effect of each demographic share depended on the use of a sufficiently long period of time with formal variable restrictions in order to display the relationship between the slow evolution of a population's demographic composition and the underlying regressand. Robustness tests outlined the issue of predictability with the use of demographic shares: the models exhibited low precision, confirming their intended utility as an instrument for studying dependencies rather than forecasting. This property was also noted in comparable third party research.

While the lack of reliable long-term data makes progress in studying the effects of demographic trends in certain new member states of the EU slow, the conclusions reached by the authors as well as those in cited comparable research regarding the functional form of dependencies point to the possibility of period of underwhelming GDP growth. This, in turn, casts a doubt on the long-term sustainability of the social security system that is currently in place.

References:

Arnott, R. D.; Chaves, D. B. Demographic Changes, Financial Markets, and the Economy. *Financial Analyst Journal*. NYC: CFA Institute, 2012, vol. 68, p. 23-45.

Bakshi, G. S.; Chen, Z. Baby Boom, Population Aging, and Capital Markets. *Journal of Business*. Chicago: University of Chicago Press, 1994, vol. 67, p. 165–202.

Batini, N.; Callen, T.; McKibbin, W. The Global Impact of Demographic Change. *IMF Working Papers*. Washington: IMF Publication Services, 2006. Retrieved from

www.imf.org/external/pubs/ft/wp/2006/wp0609.pdf

Bloch, B. *Demographic Trends and the Implications For Investment*, 2011. Retrieved from

- <http://www.investopedia.com/articles/pf/06/demographictrends.asp>
- Bloom, D. E.; Canning, D. *Booms, Busts, and Echoes*. Washington: IMF Publication Services, 2006. Retrieved from <http://www.imf.org/external/pubs/ft/fandd/2006/09/bloom.htm>
- Bodie, Z.; Treussard, J.; Willen, P. The Theory of Life-Cycle Saving and Investing. *Public Policy Discussion Papers*. Boston: Federal Reserve Bank of Boston, 2007, May, p. 1-20.
- Catalán, M.; Guajardo, J.; Hoffmaister, A. W. Coping with Spain's Aging: Retirement Rules and Incentives. *IMF Working Papers*. Washington: IMF Publication Services, 2007. Retrieved from www.imf.org/external/pubs/ft/wp/2007/wp07122.pdf
- Chamon, M.; Kremer, M. Economic Transformation, Population Growth, and the Long-Run World Income Distribution. *IMF Working Papers*. Washington: IMF Publication Services, 2006. Retrieved from www.imf.org/external/pubs/ft/wp/2006/wp0621.pdf
- Dekle, R. Demographic Destiny, Per-capita Consumption and the Japanese Saving-investment Balance. *Oxford Review of Economic Policy*. Oxford: Oxford University Press, 2000, vol. 16, p. 46-60.
- Dizard, J. Rapid population ageing creates investment opportunities. *The Financial Times*. 2013. Retrieved from <http://www.ft.com/intl/cms/s/0/62234c82-42e3-11e3-8350-00144feabdc0.html>
- Eurostat, *Population on 1 January by five years age groups and sex*, 2014. (interactive). Retrieved from http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_pjangroup&lang=en
- Eurostat, *GDP and main components – volumes*, 2014. [interactive]. Retrieved from http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_gdp_k&lang=en
- IMF. *World Economic Outlook: Transitions and Tensions*. Washington: IMF Publication Services, 2013, October. p. 144-147. Retrieved from www.imf.org/external/pubs/ft/weo/2013/02/pdf/text.pdf
- Jensen, N. *Heads or tails?: The Demographics of Investing*. 2013. Retrieved from <http://www.creditwritedowns.com/2013/11/heads-or-tails-the-demographics-of-investing.html>
- Lueth, E. Capital Flows and Demographics – An Asian Perspective. *IMF Working Papers*. Washington: IMF Publication Services, 2008. Retrieved from www.imf.org/external/pubs/cat/longres.aspx?sk=21543
- Macunovich, D. J. The role of demographics in precipitating economic downturns. *Journal of Population Economics*. Hamburg: Springer Science & Business Media B. V., 2010, vol. 25, p. 783-807.

- Magnus, G. *Demographics, Destiny and Asset Markets*. 2010. Retrieved from http://www.investorsinsight.com/blogs/john_mauldins_outside_the_box/archive/2010/08/02/demographics-destiny-and-asset-markets.aspx
- Magnus, G. Do Demographics Matter? *BRICS Magazine*. Moscow: Mediacrat, 2013. Retrieved from <http://bricsmagazine.com/en/articles/do-demographics-matter>
- Magnus, G. *The Age of Aging: How Demographics are Changing the Global Economy and Our World*. Singapore: John Wiley & Sons (Asia), 2009, p. 73-148, ISBN-10: 0470822910.
- McKinsey Global Institute. *The Coming Demographic Deficit: How Aging Populations Will Reduce Global Savings*. Washington: McKinsey & Company, 2004, December, p. 137-256.
- Nadelea, A.; State, M. The Demographic Ageing and Consumer Market. *Annals of the University of Oradea*. Romania: University of Oradea, 2008, vol. 17, p. 1008-1012.

EFFECTS OF COMMUNICATION, SOCIALIZATION AND COLLABORATION ON ONLINE LEARNING

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Abstract

Communication is the main instrument of learning. In the online university learning environment there are various communication tools, however, their effective use is limited by a number of factors. One of the main obstacles to open and productive communication is difficulty in establishing relationships among students and between students and their instructor. Success of the students' learning, however, depends to a great extent on the instructor's preparedness to engage them. This presentation offers a theoretical discussion integrating current research on the topic and practical recommendations for online educators.

Keywords: Communication, collaboration, interaction, relationship, socialization, online learning

Introduction

Online learning is, by definition, a form of independent learning (Moore, Kearsley, 2011; Haythornthwaite, Andrews, 2011. Harasim, 2012). To be successful, however, learning cannot be solely an internal, individual activity. It takes place through interaction with the environment, particularly with people and information. Research indicates that effective online learning can be promoted by communication and collaboration among students as well as with instructors (An, Kim, & Kim, 2008; Siemens, 2005; Rourke, Anderson, Garrison & Archer, 2001). While educators should stimulate learner autonomy, complete individualization and independence of learning in the organized online university environment, however, may affect the learning process and outcomes that thrive on open communication and strong relationships, especially in view of the social constructivist theory which advocates collaboration and cooperation. Online learning, though highly individualized, thus needs to take place in virtual learning communities, even more than in onsite classrooms.

Online learning can be built on a highly interactive model, one that promotes social presence, active communication and collaboration, helps establish relationships among all stakeholders, and encourages the creation of a learning community. Application of such an approach, for instance, as a Community of Inquiry or CoI (Akoyol & Garrison, 2011) may lead to higher levels of learning and satisfaction in an online course with a focus on community building. Palloff and Pratt (2005) indicate that by creating and sustaining a community for learning, overall student satisfaction (and possibly, quality of the learning outcomes) increases when the community is engaged. Learning Management Systems (LMS), such as Blackboard, eCollege, and Desire2Learn - three of the most widely utilized systems (Green, 2013), as well as some others, like Moodle and MOOC's, thus far have limited capacity for interaction among the participants of organized learning. Therefore the responsibility to create an effective interactive environment rests mainly with the instructor.

Communication is key to effective learning as it plays a crucial role by helping develop cognitive skills, construct and transfer knowledge, socialize and establish a learning community. It also enables the sharing of information, thoughts and ideas, which contribute to learning. Information transforms into knowledge through communication. Scardemalia and Beriter (2002) assert that "knowledge is socially constructed, and best supported through collaborations designed so that participants share knowledge and tackle projects that incorporate features of adult teamwork, real-world content, and use of varied information sources"(p. ?)). As knowledge is being constructed in communication, so the sense of learning is being created via communication, like the "meaning is a phenomenon of thought only in so far as thought is embodied in speech" (Vygotsky 1962, 153). Discourse, from a constructivist perspective, is a central mechanism for learning (Palincsar, 1998). Communication actually creates opportunities for learning to take place. Moreover, it also helps to instill and maintain enthusiasm in learners, increase motivation, and build positive relationships among learners and with the instructor. So, direct personal communication among students and between students and their teacher is an indispensable component of any learning.

In an online environment where students can no longer personally experience and acquire knowledge, they need to construct their own knowledge by communicating with other students and instructors and establishing whatever relationships they can that help communication, collaboration and cooperation. The learner's ability to construct internal knowledge depends on his or her skills to locate the needed knowledge, select, evaluate, and apply it, which happens in the interactions not only with the information and computers, but also with people. Siemens (2003) notes,

“We derive our competence from forming connections” (p. 3). To facilitate effective and continuous learning instructors have to maintain and nurture connections among all participants, thus creating a community of practice (Lave & Wenger, 1991), capable of sustaining the challenges of learning.

Learning online or onsite can be, in fact, not only best facilitated by strong instructor engagement but more importantly, is dependent upon the instructor who guides the learner through a variety of cognitive and social activities. Vygotsky’s findings on social learning (1962) and Lave and Wenger’s situated learning approach (1991) suggest that the learning environment, whether physical or virtual, needs to include a social component. Socialization in the online environment is accomplished through communication tools such as asynchronous email and threaded discussions, and synchronous live web-based sessions, social networking and other activities. Nevertheless, as research and practice demonstrate, these tools are insufficient to achieve the optimum level of social activities to promote learning. Initiating and maintaining this important activity depends heavily on the instructor’s professional competency and personality.

Interactive online learning

With the advent of Web 2.0 and other collaborative online tools, an increased focus on collaboration, socialization, and group work in online university programs is noticeable; yet, students still report social isolation in online classes and, at the same time, exhibit a growing inclination to conduct their work independently without input from their peers or involvement in group work (Serdyukov & Hill, 2013). Yalof (2013) in her grounded research study of online learners examined the main impediments to studying online and reported that students feel a sense of isolation and lack of access to support systems due to navigating through the complex requirements of their online programs. Bolliger and Erichsen (2011), in particular, report that international students experience high levels of isolation both academically and socially. Perceptions of online learning from the student perspective continue to demonstrate the experience as an isolated and predominantly independent form of learning. The growth of class community and intensification of student engagement are, nevertheless, closely related to one another. Students who feel a sense of connectedness and psychological closeness, rather than isolation, are better prepared to become more actively involved with online learning, which results in higher order thinking and more productive knowledge building (Baker, 2010; Engstrom, Santo, & Yost, 2008).

Despite the feeling of isolation in an online environment, however, students in university classes often try to refrain from collaboration and prefer to work independently rather than in groups. Serdyukov and Hill

(2013) queried university students in a postgraduate program on learning preferences regarding independent learning and collaborative activities. When offered a choice between taking university courses and studying autonomously, 64.9% of students selected university courses, while only 24.3% indicated they could choose independent study and the rest showed no preference (p. 61). Thus, working adult students are not generally enthusiastic about learning autonomously, and yet, when asked if they prefer to learn independently or to collaborate with their peers in a university class, 70.3% of students stated they preferred to study independently, while only 18.9 % liked to collaborate with their peers. These data are indicative of students' attitude towards collaboration in online learning. Another study conducted by Poellhuber, Anderson, & Roy (2011) reported a higher percentage of students - 38.4% of respondents as "interested or very interested in collaborating with peers in their distance courses" (p.110), which still leaves the majority of students outside the community. The continued desire to work independently in online classes has generated a serious problem of student engagement with both instructors and peers in present-day online classes, thus affecting the quality of the learning outcomes, which needs to be addressed by the educators.

Learning, as noted above, is a social process involving continuous and varied interactions within the student group. Interactivity is essential for deep, meaningful learning. Early research in technology-based education (Moore, 1989) has identified three kinds of interactivity that support learning in online courses: interaction with content (learners access, analyze, manipulate, synthesize, and apply content information); interaction with instructors (learners communicate with and receive feedback from their instructors); and interaction with classmates (learners communicate with each other about content and create an active learning community).

According to Swan (2004), in the triad relationship between the learner, the course content, his or her peers in the college group, and with the instructor, the student's interaction with the content remains strong, while interaction with the two major live participants, the peers and the instructor, has been diminishing. Stroll, as cited by Hargreaves (2003) explains that "computers made us lose the ability to enter into spontaneous interaction with real people" (p. 25). As found in the previously cited study (Serdyukov & Hill, 2013), when working in groups, students have little confidence in their potential partners and are upset about losing their chance to earn a top grade if they team up with less proficient peers (p. 61). Hargreaves (2003) pointed to this phenomenon expressing concern over "school systems driven by performance results at the expense of relationships" (p. 26). Why does it happen? Perhaps because authentic human relationships are more complicated, unpredictable, demanding, time consuming and rely on trust in

one's partners? In an attempt to avoid human interactions, virtual or in person, students prefer to engage primarily with the content, which is not only necessary, but also safe and straightforward, and via electronic devices, which provide a protective, though transparent, barrier.

In addition to social learning and collaboration, success in education depends, to a large extent, on relationships, and empathy building. Student accomplishments are greatly affected by the level of their engagement in communication and collaboration with their peers and instructors. Beer, Clark, & Jones (2010) note that "engagement is the amalgamation of a number of distinct elements including active learning, collaborative learning, participation, communication among teachers and students and students feeling legitimated and supported" (p.76). Research shows that students who collaborate and even ask for help tend to obtain greater success in the online learning environment (Artino, 2008). Research by Serdyukov & Serdyukova (2009) demonstrates correlation between student outcomes and the volume and frequency of their participation in course communication (via threaded discussions), as well as instructor's involvement: the more the instructor is involved in the class interactions, the more students engage with the class, and the better the student outcomes. Liu, Magjuka, Bonk, & Lee (2007) also found that instructors who facilitate a sense of community and student engagement significantly affect student satisfaction and quality of online learning.

The need for interaction is certainly obvious to online course developers and, especially, the instructors. In addition to continuous engagement with the learning materials, assignments, course support materials, and external web-based resources, students in online courses traditionally participate in threaded discussions and chats, and also use email communication, which provides text-based interaction among students and with the instructor. This kind of text-only communication is insufficient to ensure effective, multimodal interaction in the class. Thus, a new trend has evolved to add more online synchronous communication through tools such as Collaborate or ClassLivePro (Blackboard), Adobe Connect, and other web-conferencing software. These tools allow for real-time Voice over Internet Protocol (VoIP) interaction to support live meetings and create a sense of immediacy in online classes. Incorporating advanced communication tools has been a recent innovation, which will be discussed further on. Many institutions are moving toward a blended model where the online class includes one or more face-to-face classroom sessions. For the online students, however, it imposes limitations on their flexibility and convenience of learning due to the requirement to attend synchronous meetings at an appointed time. Therefore, it does not have a great appeal for

working adult learners who favor asynchronous communication, which better allows them to adapt learning to their busy lifestyles.

Technological innovations leading to cloud-based collaborative learning, such as blogs, wikis, social media, and various Web 2.0 tools do offer communication and collaboration opportunities in the online environment. Davis, Deil-Amen, Rios-Aguilar, & Conche explain that “the term ‘social media technology’ (SMT) refers to web-based and mobile applications that allow individuals and organizations to create, engage, and share new user-generated or existing content in digital environments in multiple ways”(p.1). Research indicates a growth in student socialization on and outside the campus and the creation of virtual communities and spaces in the online environment for students to congregate (Sendall, 2008; Poellhuber, Anderson, & Roy, 2011). Still, computer-mediated interactions do not amount to “real”, personal, closer communication, and therefore continue to impair student learning. Charles Handy, cited in Hargreaves (2003), observes that, “fun they may be, these virtual communities create an illusion of intimacy and a pretense of community’ – but do they offer a substitute for real conversation?” (p. 25). While agreeing with Handy, we believe that to ensure students’ effective learning outcomes educators have to develop working online learning communities and increase students’ socialization and collaboration. Social networking, for one, which is rapidly embracing university students in academic settings, involves not only communication, but also collaboration, cooperation, and teamwork.

Relationships and collaboration in an online class

For active interactions in the student group to develop, the emergence of close relationships among them remains an essential condition. It is critically important that the instructors develop some kind of a relationship (rapport) with their online class, and establish personal contact with individual students. We also posit that students need to engage in continuous civil, intellectual, scholarly and professional discourse with their peers and with their instructors. In a study by Upkopodu (2008) online students identified commonly shared attributes of the academic course that increased their overall engagement and relationships in the online class: students positively reacted to using threaded discussions, partner-shared learning activities, favorably commented on course structure containing the 3Rs (rigor, relevance and relationships), and enthusiastically engaged in a variety of writing activities that allowed for interaction, e.g., making pre-post narrative inquiries and writing or reading response papers.

Research (Serdyukov & Sistik-Chandler, 2015) demonstrates that instructors generally appreciate the importance of relationships in a class. It is remarkable that 85% of queried respondents (university professors)

believe that relationships in the class affect the outcome of student learning. 67% percent agree online learning can promote relationships in the class, while 31% disagree, which suggests a problem with some instructors' pedagogy and teaching style. The overwhelming majority of the instructors in this study believe, on the one hand, in the power of personal relationships in an online class and consider that they should develop them; many, on the other hand, are still unsure whether online learning promotes relationships and creates an environment that blends the intellectual development and formalized learning with social learning. Even fewer know how to establish and maintain relationships.

The same publication indicates that instructors generally believe collaboration has good potential in online classes: 69% of respondents state online learning can include group work, whereas 28% regard it as mostly an independent activity. The main factors identified by the surveyed instructors as necessary for effective student collaboration in an online class are as follows:

1. Instructor's personal one-on-one contact with students via electronic tools (email, Skype, telephone, ClassLivePro, social media, etc.), and students' personal relationships with peers and the instructor.
2. Instructor's individual teaching style, methodology, role modeling, and persistence to make students work in teams and collaborate.
3. Students' disposition and desire to learn from others, to help and share, and experience empathy in interactions.
4. Students' confidence in the partners and trust established between team members.

From experience we know that confidence and trust develops in close, face-to-face teamwork. Although we cannot require students to share and care about others, the online environment needs to create experiences that simulate trust, empathy, cooperation, sharing, and caring. However, we should expect instructors to engage in more communication with the students, model effective interaction, develop relationships with students, and make working in teams for the expressed purpose of collaboration a standard practice.

A failure of social relationships and a corresponding loss of the sense of community that is usually present on a traditional campus are noted as one of the potential negative effects of online courses (Hiltz, 1998). Relationships develop when people have a common physical place to meet, a mutual reason to be together, shared goals to engage in some activity, a strong motivation and favorable conditions for joint activities. People need opportunities to get together, to rub shoulders, to experience commonality, and to learn to trust each other when combining their efforts and resources to enjoy the benefits of collective work. Do online classes offer such

opportunities? Not often, unfortunately, because in organized university classes someone needs to initiate, arrange and facilitate communication and collaboration in the class and construct conditions for the relationships to develop. It is clear that the main role in this task definitely belongs to the university and instructors.

Universities provide online classes through LMS, interactive tools, learning materials, communication channels, instructors, support, and resources. Instructors, in turn, facilitate, organize and maintain communication and collaboration in the class providing guidance, ongoing support, feedback and individual consultations.

While physical conditions are necessary for establishing and supporting communication and collaboration, still more depends on the enthusiasm, dispositions and professional qualifications of online instructors who make the learning possible. The role of the instructor is paramount for increasing effectiveness of online education (Barana, Correia, & Thompson, 2011; Hill & Serdyukov, 2010).

In online classes there are in-class and out-of-class communications, both of which can be done in various ways - via email, telephone and networking.

Format/ Temporal organization	Text-based	Voice/video-based
Asynchronous	Threaded discussion, email	Voice/video recording
Synchronous	Texting	Live sessions, telephone

Table 1. Interactions in online environment

As shown in Table 1, interaction in online classes can be either text-based or voice/video-based; the former is commonly done via threaded discussions and texting, and the latter via live sessions (videoconferencing) and telephone, or session recordings played back to reuse. Threaded discussions, emails and recordings are asynchronous, and networking via texting, as well as all live interactive sessions and telephone conversations, are synchronous. These types of communication are used in online classes with varying degrees of effectiveness.

All online interactions can serve two major functions: cognitive and social. Both cognitive and social interactions contribute to knowledge construction which has the most pronounced effect in threaded discussions. Actually, these discussions serve as one of the most effective mechanisms of knowledge construction, where students post information, share their knowledge, comment on other students' and instructor's posts, express their opinions, add new information, and argue (Knowlton, 2001; Hmelo-Silver, 2003), which contributes to deeper learning. Moreover, they are convenient due to their asynchronous character.

While cognitive interaction is necessary for building knowledge and solving problems stemming from the course content, social interaction is also crucial for supporting learning via its capacity to enhance the development of student behaviors, attitudes and relationships. Three of the more pronounced benefits of social interaction for learners included improved learning strategies, greater perseverance, and reduced need for help from the instructor (Lou, Abrami, & d'Apollonia, 2001), thus augmenting their self-efficacy. These outcomes are especially important in online education because of the inherent difficulties with learning without the structure and motivational elements of an in-person classroom setting (Moore, 2001). Social interaction, therefore, provides critical support for online learners who are separated from the school, instructor and peers.

As online learning is, as mentioned above, an independent learning, learning by reading the textbook and/or online materials, writing essays, solving problems, and posting answers to the course questions or discussion prompts cannot ensure quality of the learning outcomes. Interaction with the content, while static, is neither easy, nor sufficient, especially when students come to college with an inadequate knowledge base. Some students need guidance, support, and mentoring from their instructor.

Communication in the online class

Effective learning requires that the student interact with peers and the instructor. Yet, this is the weakest spot in online learning. As Eric Clark wrote, communication is the Achilles Heel of online learning (Clark, 2013). Why? First, it is difficult to communicate effectively via technology with the people you do not know. Second, communication takes precious time, and when students are busy and do not appreciate the value of communication in learning, they prefer to avoid it. Threaded discussions are a text document with clear requirements, therefore students are obliged to participate in them. Yet to engage students in a genuine communication is extremely difficult. For instance, in live sessions, even when they are graded, attendance in our classes commonly reaches only about 50% of the roster despite all of the instructor's efforts; the rest of the students have valid reasons to stay away and instead, if there is an alternate option, prefer to submit a written assignment. When live sessions are optional, attendance does not usually exceed 30 % of the class. The reason for poor attendance is evidently the synchronicity of such sessions which makes it inconvenient for working adults.

What part of the online course does communication occupy? We conducted a survey in an attempt to determine the time students spend on various activities in an online class. As we discovered (Serdyukov & Serdyukova 2009), communication in an online class consumes only a small

portion of students' time: per course students spend in threaded discussion 6.85 hours, in direct communications with peers (outside the discussions, via emails) 3.64 hours, with the instructor 1.55 hour, total 12.04 hours out of 62.95 hours invested in the class, or 19.05%. The rest involves doing assignments, writing a final paper, reading, testing, and some technical issues with the course – all mostly independent work. Thus, the active, communicative part of the learning takes less than 1/5 of the class time. Synchronous live sessions using videoconferencing, such as ClassLivePro, take, when integrated in the course, about 4 hours per course or less, which comprises up to 6.35% of the class time which adds to the overall communication time but still remains low – only 25% of the class time. It is definitely problematic to develop collaboration in the class if students are reluctant to communicate with each other.

Educators face various challenges in organizing student communication and collaboration in the online class:

- How to engage students in communication and collaboration?
- Will the course structure, integrated communication tools and assignments induce them to communicate and collaborate? Or it depends solely on the instructor?
- Which is the primary driver of communication and collaboration in the class: the cognitive or social networking?
- Is it possible to develop close relationships in an online class?

There are many other questions awaiting answers.

Collaboration as teamwork through networking is needed either to build knowledge more effectively, or solve complex learning problems, or develop projects of scale. There are three levels of collaboration via networking in an online class:

- Pair-share – individual questions, private conversations (among students)
- Team (small group) discussion, problem solving, project development, brainstorming (among students, and when necessary, with the instructor)
- Whole class – general discussion (both the class and the instructor)

There are also quite active individual in-class communications between the instructor and students on class matters. In addition, there is student networking outside the class, whether one-on-one with the peers or in a group.

Collaboration commonly develops in a small team where the work is shared between 3-5 students. The team has a task or a project with a focus on a common goal. Each team member has a role, personal objective, task, and information, all of which contribute to the achievement of a common goal.

The purpose of team activity is to achieve the preset goal by combining members' efforts via communication and collaboration.

Online learning puts an additional responsibility on the instructor to foster a communication-rich, collaborative learning environment. An understanding of social dynamics, including instructor immediacy and classroom community, can assist online instructors as they seek to develop the communal scaffolding necessary to support an effective learning environment (Baker, Woods, 2005).

Suggestions for best practices (Serdyukov & Sistik-Chandler, 2015) that encourage communication, collaboration, cooperation, and professional discourse invite the instructor to:

- design, and prepare course, syllabi, course outline, and calendar with the understanding that an online class is different from the face-to-face environment;
- plan for collaboration, synchronous communication, asynchronous threaded discussions and videoconferences, as well as for opportunities for informal communication;
- set the tone and produce a good first impression from the start; create and model a warm and welcoming learning environment that also establishes empathetic and humanistic relationships; institute a positive and mutually respectable collaborative online community overall will help to establish trust in a “cyberworld”;
- communicate policies and online norms including netiquette and other online ethics; set clear expectations that students will be expected to behave in a professional manner and that collaboration and meaningful exchanges with the instructor and with peers are desirable and required;
- hold virtual office hours when students can talk to you directly.

Key strategies that encourage and engage students in collaboration in the online class are as follows:

- Demand and require group work as part of the process.
- Ask students to self-select and form groups by meeting with other students in chat, private threaded discussion rooms or in a virtual office.
- Create a collaborative climate through Q&A and informal discussion boards (e.g., introductions) where students can get to know each other, and learn of their likes interests and problems.
- Use Socratic methods that help to engage students with the learning.
- Arrange groups by time zone and see that the groups reflect gender balance.
- Establish policies for differentiated grading that include group and independent grades for the same project.

- Encourage peer responses and have peers provide feedback in collaborative activities.
- Divide discussion boards, threaded discussions, and chats into small groups making interactions more personal.
- Monitor breakout sessions during synchronous discussions to help collaboration by facilitation.
- Engage students in paired work rather than in large group structures.

Conclusion

Active communication and collaboration among students and between students and their instructors are not only desirable but necessary for successful learning: fostering a highly interactive and collaborative online environment and relationships in the class that can enhance the learning outcomes. The majority of online university instructors believe in the power of personal relationships and agree that they should develop them in online classes. Many, however, are still doubtful that online learning promotes relationships and creates an environment that blends the intellectual and formalized learning with the social learning. This indicates that the loss of the ability to be social in an online environment may be manifested in student estrangement, which can be remediated through the use of social and collaborative tools. Students, in turn, often underestimate the benefits of communication and collaboration in the online class. Therefore it is critical for successful learning that the online instructor organize and facilitate teamwork and use a number of tools and strategies to accomplish this dynamic. At the same time, a significant number of educators who do not maintain collaboration and are not supporting the development of relationships for increasing student interactions in online classes. This necessitates further research in this area, dissemination of best practices, effective professional development and continuous institutional control.

References:

Artino, A. Promoting Academic Motivation and Self-Regulation: Practical Guidelines for Online Instructors. *Tech Trends: Linking research & practice to improve learning*. 52(3): p. 37-45, 2008.

Akyol, Z., & Garrison, D. R. Assessing metacognition in an online community of inquiry. *Internet & Higher Education*, 14(3), 183-190, 2011.

An, H., Kim, S., & Kim, B. Teacher perspectives on online collaborative learning: Factors perceived as facilitating and impeding successful online group work. *Contemporary Issues in Technology and Teacher Education*, 8(1), 65-83, 2008.

Anderson, T., Rourke, L., Garrison, R., & Archer, W. Assessing teaching

- presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1-17, 2001. http://www.aln.org/publications/jaln/v5n2/pdf/v5n2_anderson.pdf
- Baker, C. The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *The Journal of Educators Online*, 7(1), 1-30, 2010. <http://www.thejeo.com/Archives/Volume7Number1/BakerPaper.pdf>
- Baker, J., Woods, J. Social Dynamics of Online Learning: Pedagogical Imperatives and Practical Applications. *18th Annual Conference on Distance Teaching and Learning* Madison, WI, 2005. http://www.uwex.edu/disted/conference/Resource_library/proceedings/02_4.pdf
- Barana, E., Ana-Paula Correia, A-P. & Thompson, A. Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers. *Distance Education*, 32 (3), November 2011, 421–439, 2011.
- Beer, C. Clark, K., & Jones, D. Indicators of engagement. In Steel, C.H., Keppell, M.J., Gerbic, P & Housego, S. (Eds.), *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney 2010*, pp.75-86. <http://ascilite.org.au/conferences/sydney10/procs/Beer-ull.pdf>
- Bolliger, D. U. & Erichsen, E.A. Towards understanding international graduate student isolation in traditional online environments. *Educational Technology Research and Development*. June 2011, Volume 59, Issue 3, pp. 309-326, 2011.
- Clark, E. *Communication – The Achilles Heel of Online Learning*, 2013. <http://www.linkedin.com/today/post/article/20140604160445-60151704-communication-the-achilles-heel-of-online-learning>
- Davis, C. S. F., Deil-Amen, G., Rios-Aguilar, C., & Conche, M.S.G. *Social media in higher education: A literature review and research directions*. The Center for the Study of Higher Education at the University of Arizona and Claremont Graduate University, UofA, 2012.
- Green, K. *Campus Computing Project Survey*, Campus Computing Project, Encino, CA, 2013.
- Harasim L. *Learning theory and online technologies*. New York: Routledge, 2012.
- Haythornthwaite, C. and Andrews, R. *E-learning Theory and Practice*. London: Sage, 2011.
- Hargreaves, A. *Teaching in the knowledge society: education in the age of uncertainty*. Maidenhead, England: Open University Press, McGraw-Hill Education, 2003.
- Hill, R., Serdyukov, P. Setting the example: Role modeling in an online class. *Proceedings of Society for Information Technology and Society for Information Technology and Teacher Education 21st International*

Conference (SITE) San Diego, March 29 – April 2, 2010.

Hiltz, S.R Collaborative Learning in Asynchronous Learning Networks: Building Learning Communities. *ERIC Digest*, 1998. http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED427705&ERICExtSearch_SearchType_0=no&accno=ED427705

Lave, J., & Wenger, E. *Situated learning: Legitimate peripheral participation*. Cambridge University Press, 1991.

Liu, X., Magjuka, R. J., Bonk, C. J., & Lee, S. Does sense of community matter? An examination of participants' perceptions of building learning communities in online courses. *The Quarterly Review of Distance Education*, 8(1), 9-24, 2007.

Moore M., Kearsley G. *Distance Education: A Systems View of Online Learning*, 2011. Cengage Learning, 1011.

Palincsar A. Social Constructivist Perspectives on Teaching and Learning. *Annual Review of Psychology*, 49, 345-75, 1998.

Palloff, R. M., & Pratt, K. *Lessons from the cyberspace classroom: The realities of online teaching*. San Francisco: Jossey-Bass, 2001.

Poellhuber, B., Anderson, T., & Roy, N. Distance students' readiness for social media and collaboration. *The International Review of Research in Open and Distance Learning*, 12(6), 102-125, 2011. <http://www.irrodl.org/index.php/irrodl/article/view/1018/1960>

Scardamalia M.& Bereiter C. Knowledge Building. In *Encyclopedia of Education*, Second Edition, New York: Macmillan, 2002. <http://ikit.org/fulltext/inpressKB.pdf>

Sendall, P; Ceccucci, W., & Peslak, A. Web 2.0 Matters: An Analysis of implementing Web 2.0 in the Classroom. *Information Systems Education Journal*, 6 (64), 2008. <http://www.isedj.org/6/64/>.

Serdyukov, P. & Hill, R. Flying with clipped wings: are students independent in online college classes? *Journal of Research in Innovative Teaching*, 6(1), pp. 52-65, 2013.

Serdyukov, P. & Serdyukova, N. Effective Communication in Online Learning. *Proceedings of the 9th WCCE IFIP World Conference on Computers in Education*. July 27-30, 2009, Bento Goncalves, Brazil. http://www.wcce2009.org/proceedings/papers/WCCE2009_pap124.pdf

Serdyukov, P. & Sistek-Chandler, C. Communication, Collaboration and Relationships in the Online College Class: Instructors' Perceptions. *Journal of Research in Innovative Teaching*, 8(1), pp.116-131, 2015.

Siemens, G. Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2 (1), 2005.

Swan, K. *Relationships between interactions and learning in online environments*. Sloan-C, 2004.

Upkopodu, O. *Teachers' Reflections on Pedagogies that Enhance Learning in an Online Course on Teaching for Equity and Social Justice*, Journal of Interactive Online Learning Volume 7, Number 3, Winter 2008, www.ncolr.org/jiol

Vygotsky L. *Thought and language*. Cambridge, Massachusetts: M.I.T. Press, 1962.

Yalof, B. *Marshaling Resources: A Classic Grounded Theory Study of Online Learners*. Ph.D. Thesis, Northcentral University, 2012.

EDUCATING ASYLUM SEEKERS AND REFUGEES TO COPE WITH POST-TRAUMATIC STRESS: AN ETHNIC APPROACH TO PROFESSIONAL AND LAY INTERVENTIONS

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Abstract

According to the United Nations High Commissioner for Refugees (UNHCR), in January 2015 there were 622,384 asylum seekers or refugees from Syria living in Jordan. According to the same source, there are intense endeavors by private and public agencies aiming at improving their living conditions especially from an educational perspective. Focusing on this current challenge to Jordan, we present suggestions to deal with post-traumatic symptomatology in refugees in a culturally sensitive way in order to educate clients towards effective coping with their symptoms. First, we present experiences from a qualitative study on ethnic interventions at the Waiern Clinic in Austria for refugees from former Yugoslavia. Preliminary results have been highly encouraging, as participants reported to have benefitted especially from the culturally sensitive aspects of the interventions. Second, we report about a randomized, controlled study from Austria (total sample of N = 94), which examined the effects of self-help groups for asylum seekers and refugees from Chechnya. In the course of 15 sessions of guided self-help groups, we found statistically significant and large effects with respect to the reduction of clinical symptoms as compared to the Wait-List Control Group in traumatized participants. These effects remained stable over a six-month follow-up period. From the results it is concluded that ethnic interventions can be highly beneficial for asylum seekers and refugees towards educating them in dealing with post-traumatic symptomatology. The findings could instigate additional endeavors to assist Syrian refugees and might be of interest for psychiatrists, clinical psychologists, social workers, and policy makers.

Keywords: Refugees, Post-Traumatic Stress, Interventions, Lay-Help

Introduction

In the state of Jordan, according to the United Nations High Commissioner for Refugees (UNHCR), in January 2015, there were a total of 622,384 persons of concern, i.e., refugees and asylum seekers who had fled from Syria, with their numbers still increasing (UNHCR, 2015a). Details of their living conditions were already documented by Olwan & Shiyab (2012). With only six million inhabitants, since 2011, Jordan has accepted half a million of Syrian refugees. Although many refugee children do not attend school, in many classrooms they outnumber Jordanian residents. As many teachers are unable to deal with this challenge, they receive special training and support by the United Nations (UNHCR, 2015b). Further help is provided by private organizations with respect to medical facilities, nutrition, and hygiene (Save the Children, 2015).

In spite of these humanitarian endeavors, quite obviously, the present situation leaves little room to offer professional treatment of post-traumatic stress, which prevails among all refugee populations of the world. At least 50% of them must be expected to suffer from such symptoms (de Jong, 2002; Eisenbruch, de Jong & van de Put, 2004), and it must be expected that traumatized individuals will encounter more problems in the course of their acculturation as compared to non-traumatized ones (e.g., Silove, Manicavasagar, Coello and Aroche, 2005).

At the same time, typically "Western" symptomatology of post-Traumatic Stress Disorder (PTSD) as well as the respective treatment approaches only partly account for post-traumatic symptoms in refugee populations (Renner, Salem, & Ottomeyer, 2007; Stamm & Friedman, 2002).

Culturally Sensitive Interventions for Traumatized Asylum Seekers and Refugees

Apart from humanitarian and medical actions taken it seems of special importance to train traumatized asylum seekers and refugees to cope effectively with their symptomatology. Such training should be provided by compatriots who are familiar with the culturally specific way of expressing personal grief, loss, and trauma. As will be shown in the following sections, these compatriots may either be professionals, acting within the framework of a medical institution, or may be lay people, acting on a self-help basis. In both cases, asylum seekers and refugees will benefit from such psycho-education by experiencing social support as an important factor moderating their reaction to post-traumatic and acculturative stress (cf., Berry, 1997; Berry et al., 2002).

Psycho-education by social support from compatriots seems especially important, as asylum seekers and refugees in most cases had to leave back their extended families in their countries of origin. Members of

collectivist cultures who had to flee to a foreign country, thus not only had to leave back their loved ones, but part of their identity, previously defined by their family membership. Psycho-education in a group setting thus may, in part at least, act as an attempt to compensate for these emotional and interpersonal losses.

Study 1: Compatriots Providing Psycho-Education and Social Support as Professionals

The Waiern Clinic is a public hospital in Southern Austrian owned by a private charity. The so-called psychosomatic department comprises 23 beds, mostly treating patients with somatoform, anxiety, and affective disorders. Since the Yugoslavia crisis from 1991 to 1999, there have been rising numbers of traumatized refugees and their families from this area. Traditionally, they were treated by Austrian physicians and clinical psychologists with the help of interpreters and thus had little chance to receive culturally sensitive support.

In the present study, as an alternative, we formed a total of ten groups, each of them comprising up to seven inpatients from former Yugoslavia. These participants made up about one third of the total number of patients treated at the department. Each of these groups was treated for a period of four weeks. Apart from medication, these patients received daily psycho-education on a group basis provided by a native speaking psychotherapist stemming from former Yugoslavia. Each of these sessions lasted for 50 minutes and trained the patients to cope with their symptoms. In addition, they received psychotherapy on an individual basis twice a week by the same psychotherapist.

During their treatment, the patients were accompanied by two psychiatric nurses also stemming from former Yugoslavia and communicating with them in their mother tongue. In addition, patients participated in non-verbal therapeutic activities (e.g., occupational therapy, physiotherapy, therapeutic walks etc.) together with the Austrian native patients.

According to interviews conducted with the ex-Yugoslav patients, they had felt that it was far easier for them to gain trust to the ethnic therapist than it would have been the case with an Austrian one. They had felt confident to reveal to the therapist personal secrets and to speak about sensible issues. Due to her knowledge of the culture, according to the interviews, it was easy for the therapist to convey empathy and understanding to her patients. The patients were confident that they would be able to apply their knowledge acquired during their stay at the hospital in their everyday lives after discharge.

In order to facilitate this process of keeping up the improvements attained during psycho-education and therapy, we also offered ethnic aftercare group sessions on a weekly basis. These sessions were facilitated by the same ethnic psychotherapist in her mother tongue. Approximately two thirds of ex-Yugoslav patients participated in this aftercare on a regular basis. Again, they reported that they benefitted from exchanging feelings and thoughts with their compatriots.

By these measures, recidivism among ex-Yugoslav patients at the Waiern Clinic could be reduced dramatically. In addition, by ethnic networks, the possibility of culturally sensitive therapy had been communicated to other potential patients. Thus, among the ex-Yugoslav community, it has become considerably easier to accept the offer of psychiatric treatment at the Waiern Clinic in case of need.

Study 2: Compatriots Providing Psycho-Education and Social Support on a Self-Help Basis

We trained four Chechen refugees, two men and two women, all of them craftspersons without a psycho-social background, for their task as facilitators of guided self-help groups for Chechen asylum seekers and refugees in Austria. This training comprised a series of workshops provided by professionals from the fields of clinical psychology and social work and provided basic information on psychological trauma, the process of acculturation, and ways of supporting persons in need.

Simultaneously, assisted by the Provincial Government of an Austrian district, we recruited a total of $N = 94$ asylum seekers and refugees from Chechnya and randomized them to the following experimental conditions:

- (1) 15 sessions of guided self-help groups (SHG), each one lasting for 90 minutes and taking place weekly;
- (2) 15 sessions of group based Cognitive Behavior Therapy (CBT), provided by a professional therapist, assisted by an interpreter (weekly sessions of 90 minutes);
- (3) Three sessions of Eye Movement Desensitization and Reprocessing (EMDR), provided by an EMDR trainer, assisted by an interpreter;
- (4) A Wait-List (WL) Control condition, receiving no intervention over the 15-week period. This group participated in 15 weekly sessions of guided SHG after the first 15-week period had elapsed.

Both, SHG and CBT were provided separately for men and women and headed by a same-gender individual in order to conform to the Chechen participants' expectations and cultural traditions.

The interventions were evaluated by the following psychometric instruments:

- (a) The Harvard Trauma Questionnaire (HTQ) (Mollica et al., 1992), assessing post-traumatic symptoms;
- (b) Hopkins Symptom Checklist-25 (HSCL-25) (Mollica et al., 1987), assessing depression, anxiety, and somatoform symptoms, and
- (c) The Post-Traumatic Growth Inventory (PGI) (Tedeschi & Calhoun, 1996).

All the questionnaires had been translated to Russian, which the participants spoke perfectly as their second language. The HTQ and the HSCL-25 had been shown to be reliable and valid measures of post-traumatic symptomatology in Chechen refugees and asylum seekers in Austria (Renner, Salem, & Ottomeyer, 2006).

Only the traumatized sub-sample (N = 54, defined by a score on the HTQ > 1.75) yielded significant results with regard to the effectiveness of the interventions. As compared to WL, over the 15 sessions, SHG yielded highly significant reductions of post-traumatic symptoms as measured by the HTQ (multivariate interaction $p = .000$; Cohen's $d = 0.94$) and significant reductions of anxiety, depression, and somatoform symptoms as measured by the HSCL-25 (multivariate interaction $p = .013$; Cohen's $d = 0.62$). With respect to the scores on the HTQ and the HSCL-25, SHG and CBT were equally effective, and there was no significant effect of EMDR. None of the interventions was able to instigate significant Post-Traumatic Growth, as measured by the PGI.

When three- and six-month follow-up measurements were taken, there were no significant changes in the positive outcome of SHG and CBT. When the WL group received the self-help intervention after having completed their waiting function, effects were equally beneficial as for the original SHG with respect to symptom reduction on the HTQ and the HSCL-25.

Conclusion

Convergent results from both studies indicate that traumatized asylum seekers and refugees benefit from ethnic interventions provided either by professionals or by lay people stemming from the same culture. These findings are in accordance with previous results on the cultural specificity of clinical symptoms and effective treatment methods.

Quite clearly, interpersonal experiences and social support conveyed by persons sharing one's personal background are effective therapeutic factors. It should be especially noted that the culturally homogeneous self-help groups were equally effective as conventional, interpreter assisted psychotherapy and large effect sizes were attained especially with respect to a lasting reduction of post-traumatic symptoms.

The present results are in accordance with previous experiences with ethnic programs assisting refugees all over the world (e.g., a nine-step ethnic intervention program by Eisenbruch, de Jong and van de Put, 2004, implemented in Northern Uganda and Cambodia; a program introduced by Métraux & Fleury, 1995, for war survivors in Nicaragua, or Meier & Perren-Klingler's, 2002, approach to activating resources in Yugoslav refugees to Switzerland). One common advantage of these ethnic programs conducted either by lay-people or by (semi-) professionals is an economic one: being organized on a group basis, costs are low as compared to professional interventions on an individual basis and they can be realized in case of need without expensive infrastructure.

It may be concluded that similar programs could be beneficial in assisting Syrian asylum seekers and refugees in Jordan. Thus, the attention of medical and psychological professionals as well as politicians and policy makers should be drawn to ethnic approaches to coping with post-traumatic stress in the near future.

References:

- Berry, J. W. Immigration, acculturation, and adaptation. *Applied Psychology: An International Review*, 46, 5 – 68, 1997.
- Berry, J. W., Poortinga, Y. H., Segall, M. H., & Dasen, P. D. *Cross-cultural psychology. Research and applications* (2nd ed.). Cambridge: Cambridge University Press, 2002.
- de Jong, J. T. V. M. Public mental health, traumatic stress and human rights violations in low-income countries. In J. de Jong (Ed.), *Trauma, war and violence. Public mental health in socio-cultural context* (pp. 1-91). New York: Kluwer Academic/Plenum, 2002.
- Eisenbruch, M., de Jong, J. T. V. M. & van de Put, W. Bringing order out of chaos: A culturally competent approach to managing the problems of refugees and victims of organized violence. *Journal of Traumatic Stress*, 17, 123-131, 2004.
- Meier, C. & Perren-Klingler, G. (2002). *Ressourcenarbeit. Ein Handbuch [Activating resources. A handbook]*. Visp: Institut Psychotrauma.
- Métraux, J.-C. & Fleury, F. Die Zukunft erschaffen. Gruppenarbeit mit traumatisierten Gemeinschaften [Creating future anew. Group work with traumatized communities]. In G. Perren-Klingler (ed.), *Trauma. Vom Schrecken des Einzelnen zu den Ressourcen der Gruppe [Human reaction to trauma. From therapy to the mobilization of resources]*, (pp. 153-178). Berne (Switzerland): Haupt, 1995.
- Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. The Harvard Trauma Questionnaire: Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in

- Indochinese refugees. *Journal of Nervous and Mental Disease*, 180, 111-116, 1992.
- Mollica, R. F., Wyshak, G., de Marneffe, D., Khuon, F., & Lavelle, J. (1987). Indochinese versions of the Hopkins Symptom Checklist-25: A screening instrument for the psychiatric care of refugees. *American Journal of Psychiatry*, 144, 497-500, 1987.
- Olwan, M. & Shiyab, A. Forced Migration of Syrians to Jordan: An Exploratory Study. <http://cadmus.eui.eu/bitstream/handle/1814/23502/MPC-RR-2012-06.pdf?sequence=1>. 2012. Retrieved on Jan 12, 2015.
- Renner, W., Salem, I. & Ottomeyer, K. Cross-cultural validation of psychometric measures of trauma in groups of asylum seekers from Chechnya, Afghanistan and West Africa. *Social Behavior and Personality*, 35 (5), 1101 – 1114, 2006.
- Renner, W. Salem, I., & Ottomeyer, K. Posttraumatic stress in asylum seekers from Chechnya, Afghanistan and West Africa - Differential findings obtained by quantitative and qualitative methods in three Austrian samples. In J. P. Wilson & C. Tang, (Eds.), *The cross-cultural assessment of psychological trauma and PTSD* (pp. 239 – 278). New York: Springer, 2007.
- Save the Children (2015). Help and Hope for Syrian Children and Refugees. <http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.8721487/>. Retrieved on 13th Jan, 2014.
- Silove, D., Manicavasagar, V., Coello, M., & Aroche, J. PTSD, depression, and acculturation. *Intervention: International Journal of Mental Health, Psychosocial Work and Counselling in Areas of Armed Conflict*, 3, 46-50, 2005.
- Stamm, B. H. & Friedman, M. J. Cultural diversity in the appraisal and expression of trauma. In A. Y. Shalev & R. Yehuda (Eds), *International handbook of human response to trauma* (pp. 69-85). Dordrecht: Kluwer Academic Publishers, 2000.
- Tedeschi, R. G. & Calhoun, L. G. The post-traumatic growth inventory: Measuring the legacy of trauma. *Journal of Traumatic Stress*, 9, 455-472, 1996.
- UNHCR. Syrian regional refugee response. Inter-agency information sharing portal. <http://data.unhcr.org/syrianrefugees/country.php?id=107>. 2015a. Retrieved on Jan 12, 2015.
- UNHCR. The challenge of education. <http://unhcr.org/FutureOfSyria/the-challenge-of-education.html>. 2015b. Retrieved on Jan 13, 2015.

FACILITATING LISTENING COMPONENT IN EPP MASTER PROGRAMMES IN ECONOMIC UNIVERSITIES

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Abstract

Foreign language Master programmes in Russian economic universities crown the hierarchy of linguistic training the students get during their academic studies. The English for Professional Purposes course being elective, the EPP teachers have to offer their potential students really outstanding input to encourage them to choose it in preference to other elective programmes. Master students attending EPP lessons generally have very high expectations from them as they directly link their proficiency in professional English with their future employability. Thus the EPP course delivered has to contain varied linguistic input to train students in all language skills, and listening skills in particular. The conducted research justifies that one of the most problematic aspects of teaching EPP is finding sufficient samples of listening in specific areas. Analyzing the applicability of available sources such as textbooks and Internet-sites, the authors suggest how appropriate audio material selection and consequent processing can completely reshape the course design and significantly boost listening practices at MA level in economic universities.

Keywords: Professional English, English of accounting and finance, listening skills, course development, economic university

Introduction

An integrated approach towards teaching English for Professional Purposes (EPP), in particular English of accounting, finance and banking, must combine both linguistic and communicative competences providing sufficient knowledge for further master (MA) and post-graduate studies as well as for the reviewing foreign experience in wider areas of business and finance. The priority in foreign language studies is given to expanding the students' vocabulary by means of specialized lexis acquisition. This is preconditioned by the out-of-the-campus realities when profound learning of

terminology and research into the international fund-raising practices enable students to increase their employment competitiveness upon graduation.

Anyone pursuing a global career has to demonstrate their professional language skills and the ability to converse with the general international economic community as well as narrow specialists in accounting and finance habitually and unhesitatingly. Effective communication in a foreign language is inconceivable without the ability to listen, hear and comprehend the discourse partner, to understand and interpret the longer broadcasts including video- and podcasts, to cogitate on the lectures and presentations on research and professional issues.

One of the primarily objectives for the EPP teacher is to equip the student with a range of skills which are essential for increasing their future employability. Applying this to developing listening skills it is crucial that the undergraduates be trained enough to pass International Certificate in Financial English examination (ICFE) which corresponds to B2-C1 levels. In terms of test of listening skills the ICFE requirements stipulate that 'Candidates are expected to be able to understand a variety of listening texts, showing understanding of gist, detail and the attitude of the speaker. They must also be able to identify and interpret the context. Texts take the form of recordings of discussions, meetings, interviews, announcements, consultations, broadcasts, etc in the context of finance and accounting.'²

Thus successfully trained students are able to understand monologues and dialogues from one to four minutes in length, delivered at natural speed in a variety of voices' in a range of professional contexts.

In accordance with the guidelines of the Common European Framework of Language Reference (CEFR), B2 level, which is the entrance level of most master students, implies being in command of the listening skills that allow students to understand standard spoken language, live or broadcast, on both familiar and unfamiliar topics normally encountered in academic or vocational life situations including technical discussions in their field of specialisation, as well as being able to follow extended speech and complex lines of argument provided the topic is reasonably familiar, and the essentials of lectures, talks and reports and other forms of presentation which use complex ideas and language.³

The targeted level of the undergraduates is C1 which in terms of listening enables students to follow most lectures, discussions and debates with relative ease, understand complex technical information, and a wide range of recorded audio material, including some nonstandard language,

² <http://www.cambridgeenglish.org/exams/financial/>

³ http://www.coe.int/t/dg4/linguistic/Cadre1_en.asp

professional jargon, job-related phrasal verbs and identify finer points of detail, including implicit attitudes and relationships between speakers.

Consequently, the future graduates' competences development should not be restricted to such inert comprehension as text translation or extensive reading on the subject. Productive skills in hearing, reflecting and vocalizing need to be sustained and advanced in. However, at the EPP level the foreign language teacher is challenged by the scarcity of listening learning materials to improve these skills.

Literature Review

The significance of mastering listening skills and strategies has long been recognized by researchers as vital for active language acquisition. Rost and Ross (1991) highlighted the direct correlation between listening and general language proficiency. Koroleva C. (2011) sees listening skills as ones of the most important in future economists' education as the ability to understand a foreign language is now seen as a must for their further career progression. Therefore master students need strong oral comprehension skills for confident access to oral content in their academic classes delivered in English. Many Russian-speaking master students in economic universities find it difficult to understand the lectures in English as part of their course because "listening is a highly complex process during which they have to construct meaning out of information provided by the speaker" (Saliha Chelli, 2013). Their difficulties are many, ranging from decoding words and sentences, insufficient knowledge of the language structure, lack of prior subject knowledge to inferring abilities. Saliha Chelli (2013) believes that successful listening requires the integration of a range of strategies: cognitive strategies, meta-cognitive strategies and socio-affective strategies. In other words, "to yield better performance for listening comprehension, listeners must at least possess the ability to recognize and master major foreign language patterns, as well as to activate all the schemata to make sense of the incoming information" (Hui-Fang Shang, 2008). It is frequently assumed that students having many opportunities to hear spoken English during their academic studies, this exposure will automatically improve their ability to comprehend oral English. However, for many students, this is not always the case. Even when listening is the focus of lessons in the English language classroom, it often consists of testing students' ability to listen to oral information and answer comprehension questions, without providing any specific instruction in the skills and strategies necessary to accomplish this task (Field, 1998). Li, Hasegawa and Yamamoto (2014) consider the listening comprehension ability as the most difficult to improve and suggest building up personal learning environments based on their characteristics and conditions. Mehrak Rahimi and Sajad Abedi (2015) study the relationship

between metacognitive awareness of listening strategies and listening proficiency among language learners with low, mid, and high levels of academic self-regulation. Close to our research are the findings by Manjet Kaur Mehar Singh, Ambigapathy Pandian, Sarjit Kaur Gurdial Singh (2015) focusing on the challenges faced by the students in Master programmes of Malaysian universities in their academic listening practices, and the measures employed to overcome the challenges. Modern authors propose various strategies to improve listening comprehension skills. For example, Wallwork (2014) has pointed out that advances in listening can be achieved apart from the classroom by employing a vast range of materials on the web specifically designed for non-native speakers as well as a mix of TV programs. Yong Lin (2013) proposes a method of listening strategies via a one-year practical teaching. Alyssa Friend Wise, Simone Nicole Hausknecht and Yuting Zhao (2014) in their study develop a robust theory of online listening by examining the relationship between how learners “listen” (access existing posts) and “speak” (contribute posts) in online discussions. The study by Flowerdew, J. and Miller, L. (1992) has revealed a broad, rich picture of the perceptions, problems and strategies of students struggling to get to grips with a new situation, that is of listening to lectures in a second language. The key finding is that listening to a lecture monologue is an extremely difficult task, for which second language students may well be inadequately prepared. Results of Zeng Yajun, Zeng Yi (2014) study show that (Chinese) undergraduates have a fairly high degree of metacognitive awareness of listening learning in aspects like person knowledge, planning, and problem solving but not in strategies like directed attention, online-appraisal and mental translation. The findings of Hong Dang (2012) thesis focusing mainly on listening strategy training in web-based self-access environment affirm its value and conclude that it will not only help students become more successful to learn a foreign language but can also provide teachers with a meaningful way to focus their efforts. Nikitenko (2011) uses the integrative listening tasks based on the use of podcasts in the English language textbook for technical post-graduate students as an example of the integrative basis formation in masters’ education.

Nevertheless, the literature review let us conclude that despite the abundancy of research on listening strategies there are few studies which are directly related to the present paper.

Research Results

Data Collection Methods and Procedures:

The method that we employed in our study was a descriptive survey research method. In our research we have analyzed the data collected from 9 English Language Teaching sites, 7 newspaper and journal sites, 2 on-line

encyclopedias and 8 textbooks by 4 publishing houses. The practical experience described has been accumulated at 3 faculties at Plekhanov Russian University of Economics (PRUE) for 5 academic years. Field and research results were summarized in an in-house publication ‘Supplementary listening tasks for the students of finance and accounting’.

Textbooks selection

Textbooks on financial English by international publishing houses for the EPP courses are not many. We have analysed 8 available textbooks in point of their suitability for the task of teaching MA students listening skills and presented our research results in Table 1. Survey of available textbooks by international publishing houses shows that most of these publications are logically structured along theoretic encyclopedic contents or newspaper/journal articles with a plethora of exercises based on them. Such educational material is ideal for teaching English of finance and accounting hence providing the students with a sufficient amount of texts for the vocabulary acquisition, translation, analysis and discussion.

Table 1. Comparative analysis of textbooks respective listening skill training

Author, Title	Level	General impression	Availability	Listening Description
Ian MacKenzie, English for Business Studies	C1- C2	topic-based units covering major business topics and functions	yes	+ required level - around 1/4 of the topics concern financial sector
Ian MacKenzie, English for the Financial Sector	B1- B2	topic-based units covering major business topics and functions	yes	+ a very big selection - not required level
Ian MacKenzie, Professional English in Use Finance	B1- C2	excellent for vocabulary acquisition, an ideal business language reference book		no
Ian MacKenzie, Financial English	B1- C2	excellent for vocabulary acquisition, an ideal practice book		no
Sara Helm, Market Leader Accounting and Finance	B1- C1	excellent for vocabulary acquisition, reading, discussing and Internet search skills development		no

Christine Johnson, Market Leader Banking and Finance	B1- C1	excellent for vocabulary acquisition, reading, discussing		no
Paul Emmerson, Business Vocabulary Builder	B1- B2	excellent for vocabulary acquisition and revision purposes	yes	+ interesting and useful content - very few in relation to the volume of the book - not required level
Paul Emmerson, Business English Handbook Advanced	B2- C1	excellent for vocabulary acquisition and revision purposes	yes	+ interesting , useful content + required level - very few in comparison with the volume of the book

As far as listening input is concerned, none of these publications material fits perfectly into the MA EPP course design due to the disparity either with the students' group language level or subject matter of the course.

For example, a universally recognized as one of the best textbooks for the finance students "English for the Financial Sector" by Ian MacKenzie though covers a lot of relevant issues is stated by the author to be B1/B2 level which is the approximate language level of a second-year student, rather than the level of an undergraduate or MA student that is C1 predominantly.

Another textbook by the same author "English for Business Studies" contains learning materials at a required C1 level whereas only 8 out of 28 units fully correspond to EPP study curriculum.

Paul Emmerson's "Business Vocabulary Builder" and "Business English Handbook Advanced" are also more biased towards Business English rather than Financial English. However, they both do have some topical audio recordings which are of great informative and educational value. Nonetheless, these pieces of listening are fragmented and not all of them can be included into EPP studies.

And last, but not least, every time a teacher wants to use selected listening comprehension exercises from any printed publication, he/she steps onto the shaky ground of possible copyright infringement when including these copyright materials in his/her teaching practice which, of course, is a serious constraint and acts as a deterrent.

Internet sources

Desire to provide students with the appropriate level listening material on financial issues urges teachers to search and consider different sources of audio-information not only in the course books but also in the Internet. Nowadays the sites of such popular publishing houses as the

Financial Times, the Economist and others contain not only the on-line open-access versions of their regular issues but also multimedia libraries which present videoblogs and audio- or videocasts. Nevertheless, the teacher and students cannot benefit from these authentic sources fully for the lack of scripts which complicates the teacher's preparation for the class. Also, paradoxically, immediacy, on the one hand, being the highest value of current news at the same time disrupts the sustainability of the developed tasks due to the inevitable obsolescence of the news video- and podcasts. Additionally, the speech rate, e.g. in podcasts, is the regular speed of speech of the native speakers encompassing innumerable varieties of the world's accents which in turn compounds its perception without any visualization. Such recordings would ideally supplement training listening skills of the most advanced student group aspiring to achieve C2 level when non-native speaker practically has no difficulty in apprehending any type of speech: 'I have no difficulty in understanding any kind of spoken language, whether live or broadcast, even when delivered at fast native speed, provided I have some time to get familiar with the accent' (CEFR). However, the university teacher has to take into account the fact that a university group usually consists of students with miscellaneous linguistic abilities, where the number of learners could total up to 40, and some of them may be below C1. Therefore, the authentic material from the news-reporting sources is not always an appropriate e-resource for the development of listening skills.

Another valuable listening material resource has always been ELT sites. Yet, most of them are aimed to meet the needs of General English learners. As a matter of exception, one can find there a few General Business topics covered, e.g. 'How to become a manager' or 'How to get ready for the job interview'. Finally, browsing the sites one can discover the LearnEnglish site by the British Council where a searcher will be lucky to find 'Business and Work' and 'Professionals' tabs. There are 12 podcasts on financial themes, with a duration from 2 to 13 minutes, reporting on the issues of banking, insurance, investment, financial forecasting and financial management in quite a generalised way.

The British Council LearnEnglish and Professionals podcasts can be approached on-line or downloaded free to the user's PC. The downloadables mostly consist of MP3 podcast sound, support pack and PDF transcript. In particular 'support pack' presents the text of some interactive exercises to enable a student to print out, read and analyse the tasks from the site, as well as the keys to these exercises. Undoubtedly, the availability of the podcast scripts is convenient for the detailed examination of the recorded text and creating, if necessary, some supplementary exercises to tailor them to the particular course objectives.

As a sample we have analyzed one of the above mentioned podcast sets.

‘Risk Management’ is an excerpt from a lecture about how to manage risks by a business school professor. Statistically, it contains 627 words, which is approximately equivalent to one A4 page reading format, the sound lasting 04.34 minutes, the speech speed at around 145 words per minutes. For this recording the authors have developed one task, consisting of 8 true/false statements. Students with the financial background knowledge immediately decide on the (in)correctness of 5 out of 8 statements yet not hearing the recording, while reading the sentences only, so obvious the answers are (such statements are marked with an asterisk in Table 2). It is also worth mentioning that some of the statements do not tackle the professional contents of the lecture or check the knowledge of terminology, but only the accuracy of hearing a particular word as in statement 3 from Table 2. It is evident that such a task is not motivating the students’ interest in listening to the recording.

Table 2. Key to the original listening task on ‘Risk Management’ audio

1. Companies are not taking the issue of risk management seriously.	*FALSE	are not taking →	are taking
2. Companies need to look at the whole picture and at each separate element.	*TRUE		
3. The enterprise risk scorecard is made up of four circles .	FALSE	circles →	sections
4. Companies should make accurate predictions about the amount of tax they have to pay.	*TRUE		
5. Employees who are trained will increase a company’s productivity.	*TRUE		
6. The price of insurance does not affect a company’s business risk perspective.	FALSE	does not affect →	affects
7. Customer risk perspective includes the numbers of satisfied and dissatisfied customers.	TRUE		
8. Risk management is a simple issue.	*FALSE	simple issue →	complex

A thorough examination of the audio script revealed several layers of professional context of the lecture: 1) risks are divided into two basic types; 2) there are four types of risk perspective; 3) each of the types in 2 is illustrated by specific examples. Furthermore, it can be heard from the audio that the lecturer is switching the presentation slides and commenting on some ‘enterprise risk scorecard’, a framework to analyse the types of risk for an enterprise. Consequently, upon the script and audio analysis it is feasible

to offer the listeners three more tasks, such as to fill in the chart and to take notes for the summary of the lecture:

- 1) make notes on the **three main risk types**;
- 2) complete the enterprise risk scorecard with the **four types of risk perspective**;
- 3) make notes on examples of each type of **risk perspective** (7 words max.)

Displaying the ‘scorecard’ with the Word SmartArt tools to visualise the grouped blocks of information diversifies the listening tasks framework and stimulates students to search for more examples of the topic discussed.

In some cases the teacher may also have to master some audio editing software tools either to improve the sound quality or to filter and cut the track to excise some irrelevant to the subject matter pieces.

Our teaching practice shows that it is also necessary to prepare some tasks to facilitate listening comprehension in terms of possible vocabulary difficulties that is to match the glossary terms with their definitions or problematic lexis with the translation. This, in turn, accentuates the necessity to compose pre-listening tasks. The word-definition matching exercise appears to be necessary to bridge the gap in understanding the overseas business realia such as the differences in accounting standards. Determined by the topic of listening some additional training to review the abbreviated terms might be needed. In rare cases it is essential to give students the Russian equivalents for some terminology or specific vocabulary of the audio-piece. A set of ambiguous questions for lead-in discussion should be made up to raise the students’ genuine interest in the issue sounded out.

In order to draw the logical conclusion to the listening activity a follow-up mini-case to discuss in pairs or teams can be offered. The task to analyse a company’s performance in relation to the risk-types sounded out in the recording can consolidate the recently acquired knowledge in both linguistic and subject matter terms. Based on the soundtrack case should cause an augmented debate which will trigger the passively acquired vocabulary into the speech and will provide some associations for further reflection on the issue.

Provided there is a set of tasks, depending on the group’s background, the number of attendees and time constraints, the project with a four-and-a-half-minute audio like ‘Risk Management’ can take up from 20 to 40 minutes of classroom time.

Thus, the high-quality sound and text need further task developing and a completely new set of exercises focusing on the practical instruction in EPP is required. In line with the text the following tasks for listening skills and other competences development can be offered as in Table 3:

Table 3. Sample listening tasks

I. Before listening tasks:

1. Match the terms used in the lecture/conversation/interview with the definitions.
2. Match the terms used in the listening and their definitions with the Russian translation.
3. Search the internet and find what the following abbreviations mean in terms of accounting/banking/insurance/...?
4. Discuss the following issues (based on the background information the students received during the previous classes).

II. Pre-listening and while-listening tasks:

1. You are going to listen to an interview with X, a/an auditor/compliance officer/stock broker/.... How do you think he will answer the questions below? ... Now listen to the interview and compare your ideas with the real answers.
2. Read the stages in a typical ... process below. Put them in the right order. Now listen to an interview with X, a ... manager in the ... industry, and check your answers.
3. What is the role of a/an internal auditor/speculator/equity manager/...? Match 1—6 with a)—f) to make a list of his/her responsibilities. ... Now listen to an interview with X, a/an internal auditor/speculator/equity manager/.... Which one/two of the above does he/she not mention?
4. Guess the missing words (the first letters have been given to help you). Then listen to the interview and check your answers. Translate these terms and collocations into Russian.
5. Conventional banks/fund managers/venture capitalists/portfolio managers/... use different types of analysis to decide which companies and sectors to invest in. Put the key factors in the correct column. ... Now listen to an interview with X, a ... manager, and check your answers.

III. While-listening tasks:

1. Are these statements true or false?
2. Listen to the interview and find answers to the following questions (make notes).
3. Listen again and make notes on what X, a ... manager, says about the following topics (maximum ten words each). When you finish, discuss the general issues with some colleagues.
4. What players are involved in the ... process/market/underwriting process/...? What are their functions? Match the players to the functions they perform. There are some extra players in the list.
5. Below are some of X's answers to the interviewer's questions. Fill in the gaps in the sentences.
 6. Listen again to fill the gaps and establish the correct sequence of events / to exclude the event that didn't happen.
 7. Listen to the lecture/conversation/interview and match the halves of the sentences to summarise/develop/cover the points made.
 8. Complete the gaps with a word from the box to make a summary of the text.

IV. After-listening tasks:

1. Translate the following phrases from the lecture/conversation/interview into

Russian/your native language.

2. Discuss the following questions: What are the advantages of ...? What other means of ... do you know? What way would you prefer to pay/invest/be insured if you ...? What are your priorities in ...?
3. Work in groups of three. Each group should choose a type of securities/financial forecasting/risk management/... . Listen again and make notes on the chosen type of securities/financial forecasting/risk management/... . Prepare mini presentation (2 min. maximum) on the types and hold a meeting with the students who have chosen the other roles to choose the most attractive/feasible/practical type.
4. Choose a company (if necessary invent some detail) and analyse its investment/risks/financial statements/... .
5. When was the recording made? Find additional or up-to-date information, make a presentation to the other students.

The podcasts supplied with a complex of thoroughly developed supplementary exercises (see Table 3) seem to become quite challenging tasks for MA students. However, the EPP teacher has to take into account the fact that the undergraduates are less likely to be interested in listening to a theoretical lecture excerpt or philosophic dispute on the nature and ethics of banking and financing some faraway overseas projects. The practical bias towards finance and accounting matters is more appealing for EPP target audience. For instance, the university students want to know what is going to be included in their job description when they are employed as specialists. Consequently, it necessitates creation of thought-provoking tasks on the basis of authentic interviews with the leading businessmen and senior managers working in multinational corporations in different economic sectors, therefore the search for such audio tracks of C1 level is going to be continued.

Conclusion

Being elective in most economic universities, EPP courses nevertheless enjoy paramount popularity as MA students appreciate their validity for their future employment opportunities. Modern job market becoming tougher and tougher for inexperienced graduates, the prospective employers are more likely to offer a job to multilingual applicants with strong command of listening and speaking skills. Companies struggling to cut costs no longer can afford to invest money into drilling their employees' language skills and prefer to hire linguistically proficient applicants. Our communication via professional networks with EPP colleagues from other geographical locations let us conclude that they have similar problems and face similar challenges. Therefore our research accentuates the urgent need to create and develop tailor-made listening courses in accounting and finance to satisfy particular learners' demands.

In pursuit of the desire to streamline the EPP course syllabus, following the need to incorporate more appropriate listening in the course, EPP teachers are enthusiastic to search and adapt different sources of audio-information to match the MA language level and develop professional awareness as well. A framework described in the article can facilitate teachers' endeavours to foster both linguistic and employability advancement with the MA students. It is assumed that a thoroughly built up set of exercises, targeted at practical approach in teaching listening, should develop professional competences as well.

References:

- Common European Framework of Language Reference (CEFR). (2015). Retrieved from http://www.coe.int/t/dg4/linguistic/Cadre1_en.asp
- Cambridge English: Financial (ICFE). (2015). Retrieved from <http://www.cambridgeenglish.org/exams/financial/>
- Chelli, S. (2013). An Investigation of the Listening Strategies Used by Second-Year EFL Students at Biskra University: Sciences de l'Homme et de la Société Vol. 6 (2013)
- Dang, H. (2012). A Study of the Application of English Listening Strategies by College Students Education Management, Education Theory and Education Application Advances in Intelligent and Soft Computing Volume 109, 2012, 831-838.
- Economist*. (2010-2015). Retrieved from <http://www.economist.com>
- Emmerson, P. (2011). *Business English Handbook Advanced*. Macmillan.
- Emmerson, P. (2013). *Business Vocabulary Builder*. Macmillan.
- Field, J. (1998). Skills and strategies: Towards a new methodology for listening. *ELT Journal*, 52, 110–118.
- Financial Times*. (2010-2015). Retrieved from <http://www.ft.com>
- Flowerdew, J. and Miller, L. (1992). Student perceptions, problems and strategies in second language lecture comprehension. *Regional English Language Centre Journal*, 23(2), 60-80.
- Helm, S. (2010.) *Market Leader Accounting and Finance*. Pearson Longman.
- Johnson, C. (2000). *Market Leader Banking and Finance*. Pearson Longman.
- Koroleva S. (2011). Audirovanie kak sredstvo i kak cel' obuchenija v nejazykovom vuze: Psihologija i Pedagogika: metody i Problemy Prakticheskogo Primenenija № 18 2011, 472-476.
- LearnEnglish British Council. (2010-2015). Retrieved from <http://www.learnenglish.britishcouncil.org/en/business-and-work>
- Li, H., Hasegawa, S. & Yamamoto, S. (2014). Improving Academic Listening Skills of Second Language by Building up Strategy Object Mashups: Journal on data semantics.; Human interface and the management

- of information: 16th international conference, HCI International 2014; Heraklion, Greece, 2014; Jun, 2014, 384-395.
- Lin, Y. (2013). Vocational English Listening Teaching Reform Based on Teaching Strategies of Listening Informatics and Management Science IV Lecture Notes in Electrical Engineering Volume 207, 655-661.
- MacKenzie, I. (2011). *Professional English in Use Finance*. Cambridge University Press.
- MacKenzie, I. (2010). *English for Business Studies*. Cambridge University Press.
- MacKenzie, I. (2008). *English for the Financial Sector*. Cambridge University Press.
- MacKenzie, I. (2002). *Financial English*. Thompson Heinle Language Teaching Publications.
- Manjet Kaur Mehar Singh, Ambigapathy Pandian, Sarjit Kaur Gurdial Singh. (2015). International Graduate Students' Experience in Academic Listening Practices in a Malaysian Public University: Challenges and Overcoming Measures In: The Asia-Pacific Education Researcher March 2015, Volume 24, Issue 1, 91-102.
- Mehrak Rahimi, Sajad Abedi. (2015). The Role of Metacognitive Awareness of Listening Strategies in Listening Proficiency: The Case of Language Learners with Different Levels of Academic Self-regulation In: Metacognition: Fundamentals, Applications, and Trends Intelligent Systems Reference Library Volume 76, 2015, 169-192.
- Nikitenko, O. (2011). Integrativnaja Osnova Obuchenija Inostrannomu Jazyku Magistrantov Tehnicheskikh Napravlenij: Resurs Podcastov V Audirovanii: Nauchno-Tehnicheskie Vedomosti Sankt-Peterburgskogo Gosudarstvennogo Politehnicheskogo Universiteta. Gumanitarnye i Obshhestvennye Nauki Volume 3 N 131 2011, 89-95.
- Professionals British Council. (2015). Retrieved from <http://www.learnenglish.britishcouncil.org/en/professionals-podcasts>
- Rost, M., & Ross, S. (1991). Learner use of strategies in interaction: Typology and teachability. *Language Learning*, 41, 235-273.
- Shang, H.-F. (2008). Listening Strategy Use and Linguistic Patterns in Listening Comprehension by EFL Learners THE INTL. JOURNAL OF LISTENING, Taylor & Francis Group, LLC 22(1), 2008, 29-45.
- Teng, H. (2008). A study of teaching EFL listening strategies. In K. Bradford Watts, T. Muller, & M. Swanson (Eds.), *JALT2007 Conference Proceedings*. Tokyo: JALT.
- Wallwork, A. (2014). Using the Web and TV to Improve Your Listening Skills In: Telephone and Helpdesk Skills Guides to Professional English 2014, 115-121.

Wise, A.F., Hausknecht S.H., Zhao, Y. (2014). Attending to others' posts in asynchronous discussions: Learners' online "listening" and its relationship to speaking International Journal of Computer-Supported Collaborative Learning June 2014, Volume 9, Issue 2, 185-209.

Zeng Yajun, Zeng Yi. (2014). Chinese EFL Learners' Metacognitive Knowledge in Listening: A Survey Study Frontier and Future Development of Information Technology in Medicine and Education Lecture Notes in Electrical Engineering Volume 269, 2014, 2975-2979.

EVALUATE E-LEARNING IN IRAQ APPLYING ON AVICENNA CENTER IN ERBIL

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Abstract

The Accelerated growth of information and communication technology and the magnificent evolution in digital technology unlock new Prospects in different dimensions including education one. E-learning is now playing a very important role in learning processes and the major concern in all education institutions and universities. E-Learning approaches are new trends that are based on using computers and information and communication technology as a proxy to deliver and share educational materials which makes education available anytime, and anywhere. Khan suggested eight dimensional e-learning framework which serves as a base to help institutions to plan, design, implement and evaluate their e-learning programs. This paper discusses whether e-learning systems at Avicenna Center in Erbil meet the eight dimensional e-learning frameworks. Also it presents the most critical success steps to develop and evaluate Avicenna center , for the purpose to spread the e-learning in all over Iraq. This research measures the eight dimensional framework and calculates their materiality.

Keywords: E-learning , eight dimensional framework , critical success factors , information and communication technology

Introduction

The rapid growth of e-learning technology has brought new chances and methodologies in higher education and teaching methods represent in all the shapes of new technology learning . These shapes are typically used in place of traditional methods and mean that learners deliver their knowledge through the Internet rather than face-to-face tutoring.

E-learning is the use of electronic media , educational technology and information and communication technologies (ICT) in education[1]. E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-

ROM, and computer-based learning, as well as local intranet / extranet and web-based learning. Information and communication systems, whether free-standing or based on either local networks or the Internet in networked learning, underlie many e-learning processes [2].

Kruse [3] addressed the benefits of e-learning for both parties: organization and learners. Advantages of organizers are reducing the cost in terms of money and time. The money cost is reduced by saving the instructor salaries, and meeting room rentals. The reduction of time spent away from the job by employees may be most positive shot. Learning time reduced as well, the retention is increased, and the contents are delivered consistently. On another hand, learners are able to find the materials online regardless of the time and the place; it reduces the stress for slow or quick learners and increases users' satisfaction; increases learners' confidence; and more encourages students' participations.

Khan's eight-dimensional e-learning framework is a detailed self-assessment instrument for institutions to organize their evaluation of e-learning readiness and opportunities for growth. The framework provides a structure for systematically reviewing e-learning initiatives and programs, so that desired learning outcomes are achieved. The framework is composed of eight dimensions, each reviewed by practical checklists of 50 - 70 questions. The checklist does not include a scoring system, but serves as an instrument that verifies that each area is cultivated [4].

In order to make such e-learning or blended learning works effectively a well-designed framework is needed. Khan's framework offers eight factors that help in planning, designing, and evaluating e-learning materials, e-learning authoring tools, and e-learning platforms, such as Learning Management systems (LMS). The framework dimensions are: institutional, pedagogical, technological, interface design, evaluation, management, resource support, and ethical. Khan's framework aims to serve as a self-assessment instrument for institutions to evaluate their e-learning readiness or their opportunities for growth [5].

In this paper, the e-learning system of Avicenna Center in Erbil is described in Section II. The eight dimensional framework is presented in Section III. Section IV investigates the critical success steps . the six principles of effective e-learning are discussed in Section V. Section VI presents the evaluation of e-learning in Avicenna center.
the eight dimensional framework

Khan [6] suggested eight factors of e-learning framework that provides a structure to help institutions reviewing e-learning initiatives and programs to achieve the desired learning outcomes. Each dimension represents “a category of issues that need to be considered in order to create successful e-learning experiences” [7]. The question: "What does it take to

provide the best and most meaningful open, flexible, and distributed learning environments for learners worldwide?" [8] originates the idea of Khan's framework. The framework aims to guide planning, designing, and implementing online programs and materials. Fig. 1 shows the eight dimensional e-learning framework which are listed below:

- Pedagogical dimension, which mainly concerns of issues related to teaching and learning such as course contents, how to design it, how to offer it to target audience and how the learning outcomes will be achieved.
- Technological dimension examines issues related to hardware, software and infrastructure. E-learning environment, LMS, server capacity, bandwidth, security and backup are also covered in this dimension.
- Interface design dimension concerns the overall look and feel of an e-learning program. Interface design encompasses web and content design, navigation, web accessibility, and usability testing.
- Evaluation dimension addresses the evaluation of e-learning at institutional level, evaluation learning assessments.
- Management dimension refers to the maintenance and modification of the learning environment, it also addresses issues related to quality control, staffing and scheduling.
- Resource support dimension related to all technical and human resources support to create meaningful online environment which includes web-based, digital libraries, journals, and online tutorials.
- Ethical dimension considers issues related to social and political influence, diversity, and legal issues such as plagiarism, and copy rights.
- Institutional dimension includes three sub dimensions: issues of administrative affairs related to financial aid, registration, payment, graduation and grades; issues of academic affairs related to accreditation policy, faculty and support staff, and class size; issues of student services related to e-learning which covers everything from counseling and library support to book store, internships, and alumni affairs.

Fig. 1. shows the eight dimensional e-learning framework as Khan suggested .



Fig. 1. The eight dimensional framework [9]

Every dimension in the eight dimensional framework has many components or sub dimensions[10] . Table 1. shows the most important components of the eight dimensional e-learning framework .

Table 1 : The main dimensions' components of the eight dimensional e-learning framework

Dims.	Sub-dims
Institutional	Administrative Affairs Academic Affairs Student Services
Management	People, Process and Product (P3) Continuum Managing E-Learning Content Development Management Team Managing E-Learning Environment
Technological	Infrastructure Planning Hardware Software
Pedagogical	Content Analysis Audience Analysis Goal Analysis Design Approach Instructional Strategies Organization Blending Strategies

Ethical	Social and Cultural Diversity Bias and Political Issues Geographical Diversity Learner Diversity Digital Divide Etiquette Legal Issues
Interface Design	Page and Site Design Content Design Navigation Accessibility Usability Testing
Resource Support	Online Support Resources
Evaluation	Evaluation of Content Development Process Evaluation of E-Learning at the Program & Institutional Levels Evaluation of E-Learning Environment Assessment of Learners

I. the critical success steps

There are many critical success steps in evaluating and developing the e-learning programs , the following is a list of top action to ensure the success of the program [11] :

- Conducting a thorough analysis and developing a training plan leads to the most efficient and effective learning solutions;
- Using a blended approach to training including classroom training, synchronous and asynchronous online training, and printed materials supports training for a widely distributed and changing audience;
- Developing e-learning content that is interactive, relevant to the audience, and includes the whys as well as the how will keep learners engaged and increase overall knowledge retention;
- Marketing the e-learning through a variety of mediums prepares and excites users for the new methods of training delivery;
- Allowing adequate time for e-learning on the job and ensuring managers support this type of learning increases the completion rate for self-paced learning;
- Tracking results and tying to performance reviews holds learners accountable no matter what delivery mode is selected;
- Providing adequate technical and operational support during training and after go-live for end users decreases frustration;

II. Six Principles of Effective E-Learning

Exploring the concept of effective practice in e-learning, begins with an understanding of the term ‘pedagogy’. Formerly restricted to erudite usage, the term is now used with increasing confidence and panache by those who discuss and debate educational principles[12].

There are six principles to make the e-learning more effect. Every center of e-learning must adopt them to success in its mission. These principles are [13] :

1. *The multimedia principle : adding graphics to words can improve learning .*

Graphics refer to a variety of illustrations including still graphics such as line drawings, charts, and photographs and motion graphics such as animation and video. Research has shown that graphics can improve learning. The trick is to use illustrations that are congruent with the instructional message. Images added for entertainment or dramatic value not only don’t improve learning but they can actually depress learning .

2. *The contiguity principle : placing text near graphics improves learning .*

Contiguity refers to the alignment of graphics and text on the screen. Often in e-Learning when a scrolling screen is used, the words are placed at the top and the illustration is placed under the words so that when you see the text you can’t see the graphic and vice versa. This is a common violation of the contiguity principle that states that graphics and text related to the graphics should be placed close to each other on the screen.

3. *The modality principle: explaining graphics with audio improves learning.*

If the e-learning center have the technical capabilities to use other modalities like audio, it can substantially improve learning outcomes. This is especially true of audio narration of an animation or a complex visual in a topic that is relatively complex and unfamiliar to the learner.

4. *The redundancy principle: explaining graphics with audio and redundant text can hurt learning.*

Some e-lessons provide words in text and in audio that reads the text. This might seem like a good way to present information in several formats and thus improve learning. Controlled research however, indicates that learning is actually depressed when a graphic is explained by a combination of text and narration that reads the text.

5. *The coherence principle: using gratuitous visuals, text, and sounds can hurt learning.*

It’s common knowledge that e-learning attrition can be a problem. In well-intended efforts to spice up e-learning, some designers use what called a Las Vegas approach. By that mean they add glitz and games to make the

experience more engaging. The glitz can take a variety of forms such as dramatic vignettes (in video or text) inserted to add interest, background music to add appeal, or popular movie characters or themes to add entertainment value. As an example, consider a storyboard for a course on using statistical quality control techniques to improve quality. To add interest, several stories about the costs of product recalls were added.

6. *The personalization principle: use conversational tone and pedagogical agents to increase learning.*

A series of interesting experiments summarized by Byron Reeves and Clifford Nass in their book, *The Media Equation*, showed that people responded to computers following social conventions that apply when responding to other people. For example, Reeves and Nass found that when evaluating a computer program on the same computer that presented the program, the ratings were higher than if the evaluation was made on a different computer. People were unconsciously avoiding giving negative evaluations directly to the source. Of course individuals know that the computer is not a person. However, deeply ingrained conventions of social interaction tend to exert themselves unconsciously in human-computer interactions. These findings prompted a series of experiments that show that learning is better when the learner is socially engaged in a lesson either via conversational language or by an informal learning agent [14,15].

III. Avicenna Center for E-learning in Erbil

Avicenna Center for E-learning in Erbil is dedicated to accelerating the adoption and best use of ICT-assisted Open Distance Learning (ODL). The project aims at establishing adequate local infrastructures and transferring best practice and professional know-how within target universities.

Avicenna Center for e-learning in Erbil was established in 2012 by UNISCO as a part of long scientific plan to strength the e-learning in the middle east in the period (2008-2013).

The main aim to consolidate the activities towards the implementation of 3 centers implemented after the first workshop. They include the following :

- Organization of the Avicenna e-learning centers .
- Development and revising the author contract drafts .
- Development of online courses using SMIL technology.
- Development of e-learning interactions.
- Improvement of online course sequences developed in Iraq.
- Discussion of the future development steps.

The Avicenna center has many logical sequences to achieve all its objectives , these objectives can be illustrated in the following module structure map as shown as in Fig. 2 .

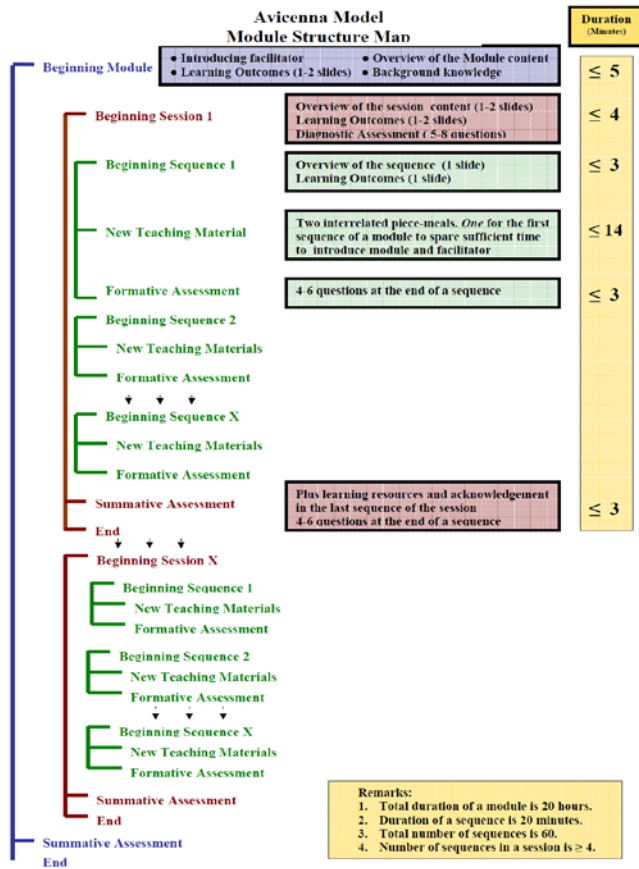


Fig. 2. Module Structure Map of Avicenna Center [4]

IV. The Evaluation of E-learning in Avicenna Center

According to all the dimensions, critical success factors and effectiveness principles, 40 questionnaires were prepared by the researchers and distributed to a slide of staff and academics that work in Avicenna Center in Erbil. The questionnaire had two parts, the first part was about the materiality of each dimension and weight of each sub dimension, and the second part of the questionnaire was about staff and academics opinions to develop the activities of Avicenna center.

Table 2. shows the materiality of every dimension in the eight dimensional framework according to the questionnaire.

Table 2: The Materiality of All The Components of The Eight Dimensional E-Learning Framework

Dims.	Sub dims	Materiality	Weight	Sub Mat.
Institutional	I ₁	10.80%	25.50%	2.8%
	I ₂		44.70%	4.8%
	I ₃		29.80%	3.2%
Management	M ₁	13.90%	20.50%	2.8%
	M ₂		17.80%	2.5%
	M ₃		32.90%	4.6%
	M ₄		28.80%	4.0%
Technological	T ₁	18.80%	28.80%	5.4%
	T ₂		35.00%	6.6%
	T ₃		36.20%	6.8%
Pedagogical	P ₁	12.10%	12.50%	1.5%
	P ₂		19.80%	2.4%
	P ₃		9.20%	1.1%
	P ₄		22.40%	2.7%
	P ₅		18.40%	2.2%
	P ₆		17.70%	2.1%
Ethical	E ₁	9.20%	15.50%	1.4%
	E ₂		12.90%	1.2%
	E ₃		13.70%	1.3%
	E ₄		7.50%	0.7%
	E ₅		22.50%	2.1%
	E ₆		12.30%	1.1%
	E ₇		15.60%	1.4%
Interface Design	ID ₁	11.30%	19.70%	2.2%
	ID ₂		22.50%	2.5%
	ID ₃		20.10%	2.3%
	ID ₄		26.70%	3.0%
	ID ₅		11.00%	1.2%
Resource Support	RS ₁	14.50%	65.30%	9.5%
	RS ₂		34.70%	5.0%
Evaluation	E ₁	9.40%	21.70%	2.0%
	E ₂		25.90%	2.4%
	E ₃		23.00%	2.2%
	E ₄		29.40%	2.8%

Table 3 shows the opinions of staff and academics about the effect of the eight dimension on the effectiveness of the e-learning in Avicenna center.

Table 3: The Results of The Questionnaire

Dims.	Sub dims	partial	Total
Institutional	I ₁	2.50%	12.3%
	I ₂	3.80%	
	I ₃	6.00%	
Management	M ₁	1.20%	9.8%
	M ₂	2.40%	
	M ₃	3.70%	
	M ₄	2.50%	
Technological	T ₁	14.20%	25.4%
	T ₂	5.80%	
	T ₃	5.40%	
Pedagogical	P ₁	1.20%	12.6%
	P ₂	2.70%	
	P ₃	1.00%	
	P ₄	1.50%	
	P ₅	3.40%	
	P ₆	2.80%	
Ethical	E ₁	0.80%	5.5%
	E ₂	1.10%	
	E ₃	0.70%	
	E ₄	0.80%	
	E ₅	0.90%	
	E ₆	0.90%	
	E ₇	0.30%	
Interface Design	ID ₁	2.70%	15.4%
	ID ₂	2.80%	
	ID ₃	1.30%	
	ID ₄	6.10%	
	ID ₅	2.50%	
Resource Support	RS ₁	7.30%	12.8%
	RS ₂	5.50%	
Evaluation	E ₁	1.50%	6.2%
	E ₂	1.60%	
	E ₃	1.10%	
	E ₄	2.00%	

Table 4. shows the opinions of staff and academics about the effect six principles on the effectiveness of the e-learning in Avicenna center .

Table 4 : The results of The Questionnaire

Principle	Materiality	%	total
<i>Multimedia</i>	16.50%	35.2%	5.81%
<i>Contiguity</i>	22.50%	62.5%	14.06%
<i>Modality</i>	21.70%	69.6%	15.10%
<i>Redundancy</i>	12.50%	52.4%	6.55%
<i>Coherence</i>	11.10%	51.7%	5.74%
<i>Personalization</i>	15.70%	71.9%	11.29%

Table 5 shows the opinions of staff and academics about the effect of critical success factors on the effectiveness of the e-learning in Avicenna center .

Table 5 : The Results of The Questionnaire

C.S.F	Materiality	%	Total
C ₁	17.10%	55.4%	9.47%
C ₂	16.50%	62.8%	10.36%
C ₃	9.70%	88.9%	8.62%
C ₄	20.80%	45.8%	9.53%
C ₅	8.60%	52.3%	4.50%
C ₆	12.80%	47.3%	6.05%
C ₇	14.50%	71.2%	10.32%

According to all the results above , the degree of the eight dimensional e-learning framework in addition to the critical success factors and the six principles , the figures 3, 4, and 5 can illustrate them .

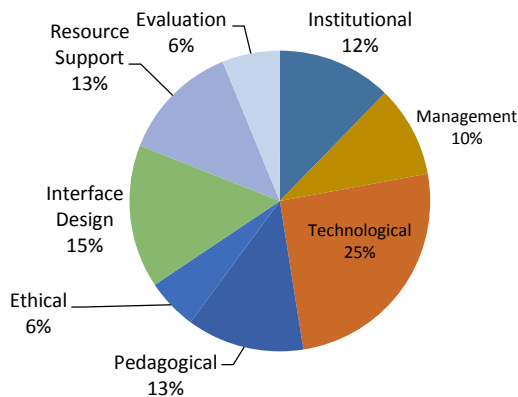


Fig. 3. The illustrate of Table 3

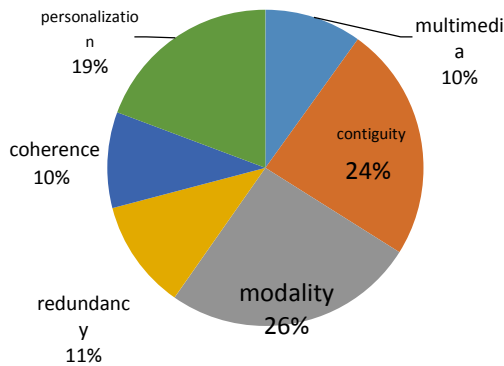


Fig. 4. The illustrate of Table 4

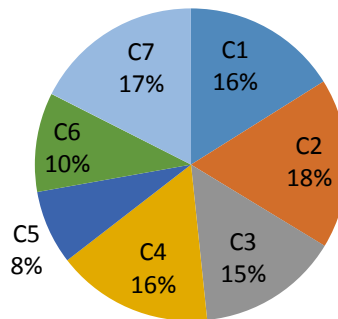


Fig. 5. The illustrate of Table 5

V. Results

1. The best dimension that have been applied in Avicenna Center in Erbil is technological dimension , it's about 25% , and the worst one is ethical dimension , it's about 6% .
2. The most effectiveness principle in Avicenna Center in Erbil is modality , it's 26% , and the less one is coherence , it's about 10% .
3. The most useful critical success factor in Avicenna Center in Erbil is (C₂) using a blended approach , and the less useful one is (C₅) Allowing adequate time for e-learning on the job .

VI. Conclusion

According to the results of this paper , Avicenna Center for e-learning in Erbil needs to :

1. Strengthen all the eight dimensions in Khan's framework to increase the effectiveness , especially ethical , evaluation and management dimensions .

2. Spread the culture of adopting the six principles of education in the center to reinforcement the eight dimensions .
3. Have clear steps for adopting and increasing the degree of critical success factors .
4. Develop a new department of training the staff to deal with e-learning centers .
5. Improve the university students skills to create a new generation compatible with e-learning technologies.

In addition , there is a strong relationship between the eight dimensions in Khan's framework and the six principles of education .

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References:

- D. Palová, M. Vejcka , 2013 , On-line E-learning platform supporting education and practice of accountants in EU space , MIPRO , Opatija , Croatia, pp. 641-646.
- D. Tavangarian, M. E. Leybold, K. Nölting, M. Röser, and D. Voigt, 2004, Is e-Learning the solution for individual learning?, *Electronic Journal of e-Learning* , vol. 2(2) , pp.273-280.
- K. Kruse, 2014, The Benefits and Drawbacks of e-Learning. CoreBiz Technology Solution .
- S. Knight, 2004, Effective Practice with e-Learning , A good practice guide in designing for learning , 1st ed. Bristol, U.K. : Higher Education Funding Council for England , pp. 21-25 .
- B. Abu-Shawar, 2014, Evaluating AOU e-Learning Platform Based on Khan's Framework, presented at the sixth international conference on advanced cognitive technologies and applications , IARIA, pp. 99-104.
- B. H. Khan, 1997, Web-based instruction : What is it and why is it?, In B. H. Khan Web-based instruction , Ed. Englewood Cliffs, NJ: Educational Technology Publications, pp. 5-18 .
- B. H. Khan, 2001, Web-based training: An introduction ,In B. H. Khan Web-based training , Ed. Englewood Cliffs, NJ : Educational Technology Publications, pp. 5-12 .
- A. Marengo, and V. Marengo, 2005 , Measuring the Economic Benefits of E-Learning: A Proposal for a New Index for Academic Environments " *Journal of Information Technology Education* , vol. 4, pp. 329-346.
- R. Clark, 2002, Six Principles of Effective e-Learning: What Works and Why, the e-learning developers' journal, vol. 10, pp. 3-7.
<http://asianvu.com/bk/framework> .

Rita Ósz , Mariann Váraljai , János Fodor , 2013, New methods of the education in the E-learning's dimensions, ICETA , 11th IEEE International Conference on Emerging eLearning Technologies and Applications, Stary Smokovec, The High Tatras, Slovakia, pp. 305-310.

M.C. Lohman. 2007, Effects of Information Distributions Strategies on Student Performance, and Satisfaction in a Web-Based Course Management System. International Journal for the Scholarship of Teaching and Learning, vol. 1, no. 1, pp. 1-17.

Mikic, F. and Anido, L., 2006, Towards a standard for mobile technology. Proceedings of the International Conference on Networking, International Conference on Systems and International Conference on Mobile Communications and Learning Technologies (ICNICONSMCL'06), pp. 217-222.

Peter Toth, 2012, E-learning and Web Mining, Aniko Szakal (Ed.): Proceeding of 10th Jubilee International Symposium on Intelligent Systems and Informatics, SISY, Serbia, pp. 439-444.

Susana Martínez, Naharro Mónica Alagón Labarta , 2007, ELearningat the Polytechnic University of Valencia: A Bet for Quality Journal of Cases on Information Technology, Vol. 9(2), pp.11-14.

THE EFFECTIVENESS OF PROBING QUESTIONS STRATEGY IN THE DEVELOPMENT OF THINKING SKILLS IN THE ISLAMIC EDUCATION COURSES USING A SAMPLE OF INTERMEDIATE SCHOOL STUDENTS IN RIYADH

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Abstract

Importance of the study: Current study may be useful for Islamic education teachers to improve their performance in light of using of probing questions strategy for Teaching Islamic education courses and the development of thinking among the students of the middle stage, and not only on the using of strategies such as the lecture for the development of only memorization and recall skills.

The present study aimed to:

1. Enhanced knowledge of the reality of teaching practices and exercise enhanced probing questions strategy by teachers of middle stage.
2. Enhanced knowledge of the effectiveness of probing questions strategy in the development of thinking in Islamic Education courses at a sample of the middle stage students in Riyadh.

The problem of the study is concentrated on the following question: What is the effectiveness of probing questions strategy in the development of thinking skills in the courses of Islamic Education at a sample of the preparatory grade students in Riyadh?

The researcher was able to formulate the following null hypotheses to answer her main question:

1. There is no difference statistically significant at the level of significance ($\alpha \leq 0.05$) between the average post-test scores for the experimental group and control group in the skills of thinking.

To ensure the correct of hypotheses of the study The researcher was able to use the experimental method on a sample deliberate of students from third grade of preparatory school number of students: (59) student applied them to the experience of the study and the researcher prepared the test for measuring

thinking skills, as used retail mid-term to ensure the validity of this test and its reliability by the application of tribal for them at the two study groups, as was applied to the two groups after the completion of the experiment, while the test was used (T-Test) as a way to statistically processing the results and see significant differences between the two groups.

The study resulted in:

1. There are significant differences between the average degrees of post-test for two groups in the level of skills of thinking in favor of the group experimental.

In light of the results of the study, the researcher recommended a number of recommendations including:

1. The education departments of the Ministry of Education conduct some training courses for teachers in various disciplines about the teaching strategies of using the probing questions strategy; and the development of thinking that is done on a regular basis to include all parameters.
2. Training the teachers of all subjects to develop the levels of thinking of students and to be done on a regular basis to include all teachers.

Keywords : Probing Questions, Thinking Skills

Introduction

The aim of Islamic Education is to build the physical, mental, spiritual, and social perspective of an integrated Muslim. However, the most important objective of this education is pushing the individual towards meditation and reflection in attaining the stage of self-certainty. The use of one's mind as well as thoughts about the creations of God, and understanding the realities of existence are foregrounded actions of the Islamic faith. They are the means by which human beings discover and understand the laws of the universe and yield to them for their own delight. However, the practice of Islamic Education is the way to know the Creator and strengthen the doctrine of the Islamic faith. In fact, Islam's supports the use of the mind, and the functions entrusted to it do not differentiate between using it to understand the universe, or to reflect on the book of Allah's Quran.

Meditating and thinking are the individual's path way to certainty. Thus, the Quran classifies good thinking and discernment of the universe as the greatest source of faith in Allah. To better understand the Quran, its verses, and its implications, it requires a Muslim to thoughtfully learn as much verses as possible to the extent he/she becomes well-trained on how to ponder on the Quranic text. By this, Muslims achieve the aim of the Islamic education. Thinking is a mental formation that allows a Muslim to handle the Book of Allah (the Almighty) in reading and listening, as well as in

understanding its content. This is aimed at defending the faith by revealing the fallacies and fabrications of the enemies of Islam.

Education provides students with the opportunity to think, especially because these students are the pillars of tomorrow. Presently, this has become the most important educational concern to all Arab and Islamic countries. Therefore, this is so because of the challenges facing Arab and Islamic nations in the era of globalization, intellectual invasion, blatant interference in their religious curricula, extremism and terrorism, and other challenges. These issues entail raising the awareness of students by developing their thinking skills, and enabling them to deal with religious and non-religious texts. The role entrusted to the teacher today is not just in transferring knowledge and teaching learners, but also in guiding and facilitating the learning process. However, this process does not mean leaving students to learn on their own, but rather that the teachers needs to foster their learning by inciting and pushing them to interact with important topics. Furthermore, there is no single way of teaching which fits all areas of knowledge, or which is appropriate for all students. A successful teacher however is someone who uses a variety of methods to help students achieve a lot during the learning process.

The common practice of teachers shows the use of questions to accomplish dialogue in the classroom. They exploit most time in delivering different ideas relying on questions, answers, and comments. Most classic and modern teaching methods rely on questions to explain the topics of study. Hence, classroom questions are one of the most commonly used methods in the educational process given their importance in raising, sustaining, and verifying the mental abilities of students. This would also enable the teacher to acquire more knowledge by learning from the answers that was given. This is what we call the probing questions which are the focus of this research paper (Rabadi, Insaf, 2007: p. 5-6).

The Research Question

How effective is the strategy of using probing questions in the development of thinking skills in Islamic education courses using a sample of second-grade intermediate school students?

Hypotheses

1. There is no statistically significant difference at the level of significance ($\alpha \leq 0.05$) between the average pre-test scores for the experimental group and the control group in the skills of thinking.
2. There is no statistically significant difference at the level of significance ($\alpha \leq 0.05$) between the average post-test scores for the experimental group and the control group in the skills of thinking

Limitation

This study is limited by the following:

1. A sample of second-grade students of an intermediate school in Riyadh.
2. Some thinking skills and the corresponding Islamic Education course (Skills of understanding the Quranic text), which are as follows:
 - A. Inference Skills
 - B. Refocusing skill
 - C. Interpretation skill
 - D. Induction skill

Tools of the Study

A. A questionnaire for teachers before applying the experience of the study to identify the level of their ability to use the strategy of probing questions.

B. Testing the thinking skills in understanding the Quranic text.

Objectives of the Study

This present study aims to:

1. know the reality of Islamic education teachers use of probing questions strategy and their mastery of such strategy.
2. Investigate the effect of probing questions on the development of thinking skills in Islamic education courses in a sample of second-grade students from an intermediate school.

Importance of the Study

The importance of carrying this study is manifest in the following points:

1. This study may benefit Islamic education teachers in intermediate school classrooms in improving their performance when using the probing questions strategy in the teaching of Islamic education and in the development of thinking skills.
2. This study may benefit Islamic education curricula developers in the preparation and development of activities, guidelines, and proposals to ensure the formulation of a content, while respecting the relationship between the use of probing questions in teaching and the development of thinking skills.
3. Determine the level of intermediate school students in thinking skills.
4. Enlighten those who teach Islamic education on the importance of training students on how to understand the Quranic text.
5. The present study may be useful in providing teachers with new ways to help them increase the academic achievement of male and female students,

as well as inciting them to think and develop their thinking skills in other areas.

Concepts of the Study

-Probing Questions

Probing questions as defined by Insaf Rabadi (2007: 11) "are the sequential questions provided by the teacher after a student answers a question, and they might include a new formulation or hints intended to guide the student to obtain the correct answers or improve the quality of the answers".

As a researcher, I procedurally define probing questions as the type of questions posed by the teacher after the initial response to a question was previously posed. This is done so that the student amends, corrects, completes, justifies or confirms his answer, link it to previous knowledge, or transfer it to other classmates to achieve mutual active participation. Therefore, this helps them to obtain more in-depth answers and increase their thinking level.

-Thinking Skills

Barakat defines thinking skills as "the student's ability to deal with situations, events, and educational stimuli vigilantly, and to analyze such situations and events in depth and with care to make the right decision at the right time and place in achieving the expected goals" (Barakat, Ziad, 2005: 108).

Theoretical Framework and Literature

First Research Area: Probing Questions

Classroom probing questions are questions that help students solve the problems they face during the learning process. They are one of the most important means used by the teacher to excite students' thinking and learning. They are also entrance which saturates the individual's tendency to search and carry out investigation, and the teacher sees them as an assessment of his work and the achievement of others (Jamal, Mohammed Jihad 2005: 206).

Therefore, the above definitions show the consensus of educators that probing questions share the following characteristics:

- Depends on the initial answer of the student and uses it as a starting point for the next question.
- Focus on the effectiveness of the student by exciting his thinking and ability to recognize relationships between content elements, and through the teacher's adoption of the student's answer in dialogue management and in addressing the discussed topics.

Probing Questions Categories

There are several types of probing questions by which educators express different opinions in classifying them;

Insaf Rabadi (2007: 24) classified them into two types:

1. Prompting Probing Question
2. Illustrative Probing Questions

Nabhan, Yahia (2008: pp. 90-91) divides them into three sections:

1. Switch probing
2. Refocusing probing
3. Direct probing

Samurai et al. (2000: 42) classified them into four types:

1. Prompting Probing
2. Illustrative Probing
3. Switch Probing
4. Refocusing Probing

Saada Jawdat et al. (2006: pp. 260-269), Nabhan, Yahia (2008: pp. 70-72), and Younis wafa (2007: 259-260) divided them into five types:

1. Clarification Probing Question
2. Prompting Probing Question
3. Refocusing Probing Question
4. Switch Probing Question
5. Critical Probing Question

Prompting Probing Questions: Probing questions share the following characteristics:

1. Helps to rectify the student's answer without resorting to the use of corporal punishment or to sentences repulsive of values.
2. Calls for the development of the initial responses of the student.
3. Helps in the in-depth analysis of the content of its multiple elements such as facts, concepts, principles, laws and theories, and recognizing the relationships between them.
4. Expansion of the base of the participating students, especially when using the switch or refocusing probing questions.
5. All of them are thought-provoking, and they encourage active participation on the part of students.
6. The role of the teacher involves being a director, guider, and a thought-provoker.
7. Encourage to delve deeper into the subject matter or issue being discussed, leading to a better understanding by the students.
8. Ranked among the most successful patterns of the questions that the teacher can use in the skill of asking questions and investigation.

9 .Reveal the strengths and weaknesses of both the cognitive and participatory aspects of learning of both the teachers and students (Saada Jawdat et al., 2006: 270-271).

Consequently, thinking is a continuous mental process, carried out by human beings as long as his mind is intact, particularly when they are exposed to a dilemma or when they wish to make gain. It is affected by culture, experience, the environment, and the circumstances surrounding them. However, it benefits people in solving problems and in decision-making.

Based on the above definitions, it is clear that the constituent elements of the thinking process are:

1. Complex cognitive processes (such as problem solving) and less complex processes (understanding, application, and reasoning), supra-cognitive direction and control operations.
2. Special knowledge of the content or subject.
3. Preparations and personal factors (trends, needs, tendencies).

The tremendous changes the world is witnessing and the challenges that Islam and Muslims are facing which is jeopardizing the fundamentals of faith, enjoins us to give our students thinking skills. This skill serves as a set of tools for the individual who needs to deal effectively with any type of information or variables that comes in the future. "Educational institutions have to accustom students with the use of their mental abilities, and equip them with the necessary thinking and working skills to diagnose the reality in which they live as individuals and groups, in the family, city, clubs, and in the community. (Ahmad Mahdi Abdel Halim, 2004: 183)

The Importance of Developing Thinking Skills

Many educational institutions are keen to set up integrated and effective programs of study which include the training of teachers to implement these programs efficiently. They fulfill the different requirements from technology to workshops to equip teachers with skills to enable them to fulfill their mission and carry out their duties of achieving a number of key objectives, such as the creation of desirable changes in students' behavior, and the development of their skills and ways of thinking, as well as building balanced characters in students.

The creative teacher is one who can plan an educational position based on a set of integrated and organized behavioral objectives, and work to achieve them through active multilateral interaction to be evident through:

- Quiet and serious dialogue between all the interlocutors in the hall.
- The ability to understand the needs of the students and work to satisfy and meet them.
- Build human relationships based on friendship and mutual respect.

- Build the student's self-confidence to play their role without disturbance.
- Equip students with skills that could benefit them in dealing with issues of life successfully.
- Care to take into account individual differences among students.
- Application of methods and tools to suit the level of the students and their ability to think.
- Graduation in addressing the goals from easy to difficult.
- Complementarity between cognitive, emotional, skills-related and social goals, to bring about a change in behavior and in the modes of thinking (AL Khadra, Fadia 2004: 142-145).

Relationship Between Thinking Skills and Probing Questions

Probing questions depends on leading students gradually to the correct answer, and to the interpretation and critique of each answer to make it easier for the student to correct his/her mistakes and reach the correct generalization. They also work in analyzing the dimensions of knowledge and connecting previous and current learning. Thus, reflective thinking as well, is based on the same principles. Students are pushed to participate in the thinking session by stimulating them with certain ambiguity or by formulating a specific problem. The teacher can hence use probing questions as a way of stimulating students in classroom interaction and effective reflection. The interrogative method guides students towards different thinking skills, and gets them to answer the questions (Why?, how?, and what happens when you make specific decisions?)

Furthermore, the development of thinking skills using probing questions helps in providing students with the following characteristics (Abdul Hadi and Mustafa 2001: 219):

- Concentration and accuracy.
- The use of logical analysis and interpretation.
- Extract results from insufficient information in some cases.
- The need to retrieve information on an ongoing basis, and connect evident information with each other to reach the underlying reasons related to the problem or situation to be thought of.
- Draw conclusions, categorize, and review it for authenticity.

Relationships Between the Skills of Understanding the Quranic Text and the Thinking Skills

The relationship between the skills of understanding the Quranic text and the thinking skills goes back to the fact that both are the results of mental operations carried out by the individual. The difference between them lies in the kind of experience that will help the thinking individual in understanding

the Quranic text in general and in dealing with other religious and non-religious texts. One can combine the two by training on non-religious texts, and then try to apply the acquired skills and mental processes on religious texts, or vice versa. Hence, the learning effect is transferred, depending on the combination of both experiences with religious and non-religious texts.

The follower of the thinking skills addressed by researchers and theorists of thought processes and skills found that they resemble those skills or rules referred to by the exegetes of Quran. The refocusing skill means the existence of a link between two things in the form of one occurring before or after the other, or in a sequential and steady manner. Symmetry relationship means the existence of a partial or substantial analogy between a couple of concepts or things, causal relationships, which means the existence of a link between the two things, or any other relationships and links (Jerwan, Fathi, 2005: 223). All of these issues were discussed by exegetes and Islamic jurisprudence specialists. When interpreting, Quran exegetes start with a rule which is a skill in thinking and understanding the Quranic text, and is "the link of a Quranic sentence with the subject of Surah and its objective association with other verses in the Qur'an." They believe that the scrutinizer of Allah's words has to look for the link between a meaning learned from one Quranic sentence with the other meanings scattered in the text and which share the same topic. Every particular meaning learned from a Quranic sentence has a link with the other meanings scattered in the text, that share the topic, and which has another close link with the meaning of the other sentences in the Verse. The verse itself has a close link with the thematic unity of the text (Hanbaqa, Ibrahim 1400 AH: 9). In addition, there are sequential links in the Quran. The night and the day are mentioned sequentially, and the same is true for bliss and torment as well as faith and good works.

The skill of interpretation as a thinking skills means "processing, analyzing information and drawing conclusions, identifying implications, giving meaning to experience and justifying it" (Jerwan, Fathi 2005, p. 319). It is very much like the skill of interpreting the Quranic text, which at the linguistic level means exposition, disclosure, and illustrating sense. In the convention of exegetes, interpreting looks at how to pronounce the words of Quran, their meanings and provisions at unit and sentence level, and the connotative meanings as well (Al-Qattan, Manna 1405 AH: 323-324).

Azzarkashi defines exegesis as "the science by which we understand the Koran and explain its meanings and extract its provisions and wisdoms (Zarkashi, Tom 2, D.t: 174).

The aim of exegetes and interpreters is to have access to all the meanings that the Quran (the subject of exegesis and interpretation) can

convey regardless of its kind, whether linguistic, dogmatic, historical, doctrinal, moral, or emotional (Saleh, Aiman, 2005: 37).

As for the skill of induction, it is a mental process aimed at reaching conclusions or generalizations. Induction by nature seeks to explore the rules and laws (Jerwan, Fathi 2005: 319), especially as thinking skills is widely used in Sharia Sciences and provisions. When the Fakih wants to reach a doctrinal rule, he extrapolates or reads in the traces of religious texts, and then concludes the rule. For example, the rule of "there should be neither harm nor malice," is one of the five major rules, which is the cornerstone of Islamic theology. However, upon this rule, a lot of branches and issues in the various sections of *fikh* are built.

The base of the rule of "you should do neither harm nor malice," is a strong Hadith with a trusted chain of narrators agreed upon among scientists. What is intended by doing neither harm nor malice is forbidding in harming someone without a just reason. The reader of Quran sees clearly the significance of this rule as in verse 231 of Surat AL Baqara which states that, "When ye divorce women, and they are about to fulfill the term of their Iddat, either take them back on equitable terms or set them free on equitable terms; but do not take them back to injure them or to take undue advantage of them". The prevention of magic falls under this rule is harmful and implies the damage of a third party without a just right. Hence, the same applies to adulterated medication because it is harmful and damaging to others, and also, many other issues that falls under this rule (Saidan, Walid bin Rashid, D.t: 8).

The skill of inference is one of the thinking skills that reflect a mental process including organizing facts or information, and processing them in a manner that leads to a conclusion, decision, or problem solving. There is also what is called logical inference, which means the thinking process based on specific rules and strategies aimed at generating new knowledge. Thus, this skill can be used to demonstrate the legal provisions of Sharia, and can be used to demonstrate matters on faith.

Procedures of the Study

First: The Community of the Study and its Sample

The application of the current study is limited to a deliberate sample composed of 65 students from an intermediate second grade class divided into two groups. The first group is the experimental group made up of 33 students who were taught using the probing questions method, while the other group is the control group made up of 32 students who were taught in the traditional way.

The Study Field

I adopted the design of equal groups which requires the presence of two groups (experimental and control groups). The first group is exposed to the independent variable (probing questions strategy), while the second group is taught in the traditional manner. This is as shown in Table (1).

N	Group	A priori test	Independent variable	A Posteriori test
1	Experimental group	Thinking skills in understanding Quranic text	Probing questions strategy	Thinking skills in understanding the Quranic text
2	Control group		Traditional method	

Group	Number	Arithmetic Average	Standard deviation	T Value	
Experimental	32	11.2188	2.91530	Calculated	Tabular
Control	33	11.1212	2.65468	0.141	1.999

The test shows no statistically significant difference at the level of significance (0.05); and so, the two groups are equal in the assessment of the thinking Skills in the understanding of the Quranic text. However, this means that the two groups have begun to learn from almost the same level of thinking, and therefore, any change that may occur at the level of students can be attributed to the effect of the experimental variable (probing questions strategy).

Thus, the first hypothesis states that:

"There is no statistically significant differences between the average scores of the experimental group and the control group students at the level of $\alpha \geq 0.05$ in the a priori test of the thinking skills meant to understand the Quranic text."

Carrying Out the Experiment

I developed the teaching plans to implement the strategy of probing questions along with the classic teaching plans. I provided teachers of Islamic education with some training sessions for clarification and training on how to practice a strategy of probing questions. Also, I was in constant contact with the teachers of the subject.

After the a priori test of thinking skills to understand the Quranic text, the application of the experience lasted for eight weeks at the rate of two sessions per week for both groups (experimental and control group). At the end of the experiment, students of both groups sat for the same test in order to verify the validity of the second hypothesis on the development of thinking skills in the understanding of the Quranic text.

Results of the Study and Discussion

Having taught the two groups according to the two teaching methods, and having applied the test of thinking skills to understand the Quranic text, the responses of the sample were corrected and analyzed statistically.

Results of the Second Hypothesis

I calculated the average scores of students' a posteriori test of thinking skills to understand the Quranic text. The experimental group was taught using probing questions strategy, while the control group was studied using the traditional method. Using two samples of t-test for independent samples, the difference between the average score of the two groups was statistically significant at the level of significance ($\alpha \geq 0.05$) and the independence degree was 63. Thus, this is in favor of the experimental group. Table 3 illustrates the result.

Table 3

Group	Number	Arithmetic Average	Deviation Standard	T Value	
				Calculated	Tabular
Experimental	32	13.8125	3.21727		
Control	33	11.3636	2.57170	3.395	1.999

This result suggests the superiority of the experimental group which used the strategy of probing questions over the control group.

However, hypothesis zero is rejected and the alternative hypothesis is accepted, which states that:

"There are significant differences at the level of significance ($\alpha \geq 0.05$) between the average scores of the experimental and the control group students in the a posteriori application of the test on the skills to understand the Quranic text. The difference was in favor of the experimental group."

Discussion of Results

The difference between the average students' scores in the a posteriori test of thinking skills to understand the Quranic text in the research groups was in favor of the experimental group which was taught using the strategy of probing questions. This advantage is due to the fact that:

1. probing questions were used in different positions for multiple purposes:

- *To clarify or increase the level of thinking skills
- *To upgrade students' answers to a higher mental level
- *To re-focus on answers and achieve accuracy and validity,
- * To reduce the generalizations that are not supported
- *To achieve customization

*To justify and strengthen the evidence to confirm the answer, and help Students contribute in increasing participation in the probing thinking and situations organized by the teacher

*Ability to infer (refocusing relations, Interpretation) induction of thinking skills to understand the Quranic text.

2. The probing questions work to back-up dialogue and interaction between the teacher and the student of the initial response until the latter by himself reaches the correct answer or complete the lack of response, infer something specific, and show the correlation between two things. All this was reflected on the student's responses in the test of thinking skills to understand the Quranic text

Recommendations and Suggestions

In the light of the results of the study, the following recommendations and suggestions were provided:

Recommendations

1 .Greater use of the strategy of probing questions in Islamic Education in all its branches because they contribute to the development of thinking skills.

2 .Training students on each of the skills of understanding the Quranic text, as well as other thinking skills in view of the impact not only in the area of student achievement in the understanding of the Quranic text, but also with other subjects.

3 .When teaching students, the interpretation of Quran focus on understanding and in avoiding memorization and remembrance. Traditionally, students are pushed to memorize what they learn, without giving them the opportunity to participate in the operations of eliciting implicit and explicit meanings from the Quranic text.

4 .Take advantage of educational programs offered to students like Quranic interpretations which will help them acquire the skills to understand the Quranic text and thus gain associated thinking skills.

Suggestion

To complement the current research, the following studies should be conducted:

1. The effect of using the strategy of probing questions on the achievement of pupils in the first cycle of basic education in the courses of Islamic education.

2 .Designing training programs in skills of understanding the Quranic text for intermediate school students, and study their impact on the development of their thinking skills and in their understanding of the Quranic text.

3 Conduct similar studies to highlight the relationship between thinking skills and skills gained in other courses, such as science of Hadith and Islamic jurisprudence.

4. Conduct research and studies to analyze the paths of thinking adopted by diligent scholars of jurisprudence, as well as scholars in interpretation and Hadith. Take advantage of such studies in developing the skills to understand the Quranic text, and including it in the programs and courses of Islamic education.

References:

Primary Sources

The Holy Koran

Anis Ibrahim; Montassar Abdel Halim; and Sawalhi, Attia; Ahmed Mohammed Khalaf Allah. (1972): AL MUJAMU AL MUHITU. Second Edition, Part I, Istanbul: Islamic Library for Printing, Publishing and Distribution.

Secondary Sources

Arabic References

Al-Qattan, Manna. (1985): **Investigation in the Science in the Quran**, Edition 15, Beirut. Arrissala Foundation.

Rabadi, Insaf George. (2007): The Impact of Probing Questions Led Teaching On the Academic Achievement in Physics and the Development of Scientific Thinking Among Elementary Students in Jordan. **Unpublished PhD thesis**, Graduate School of Educational Studies, Amman Arab University for Graduate Studies, Jordan.

Samurai, Hashem; and Gaoud, Ibrahim; and Aziz, Sobhi Khalil; and Momani, Mohammed Akla. (2000): General Teaching Methods and the Development of Thinking. Second edition, Irbid: AL Amal Publishing House.

Mahdi, Ahmed Abdel Halim. (2004): **Islamic Culture As Axis of Curriculum, Vision of Education from an Islamic Perspective**, Cairo, Achuruk International Library.

Zarkashi, Mohammed bin Abdullah. (1391 AH): Proof in the Sciences of Quran, Edited by Mohammed Fadl, Beirut, AL Marifa Publishing House.

ALwahr, Mahmoud Taher. (2003): Curriculum and Teaching Methods, Part 2, Kuwait, Arab Open University.

Assumbul, Sheikha Saad. (2001): Arabic Female Teachers Extent of Using Probing and Pause Styles When Posing Classroom Oral Questions in the secondary stage at Al-Kharj Governorate, **Unpublished MA Thesis**, College of Education, King Saud University, Saudi Arabia.

Assaifi, Atef. (2009): Teacher and Strategies of Modern Education. The first Edition, AMman: Osama Publishing House.

- Barakat, Ziad. (2005): The Relationship Between Reflective Thinking and Achievement at a Sample of University Students and High School Pupils in the Light of Some Demographic Variables. *Journal of Educational and Psychological Sciences*, Issue 4, Volume (6), December.
- Jerwan, Fathi Abdel Rahman. (1999): *Teaching Thinking; Concepts and Applications*. First Edition, AL Ain / United Arab Emirates: University Book House.
- Jerwan, Fathi Abdel Rahman. (2005): *Teaching Thinking: Concepts and Applications Second Edition*, Jordan, AL Fikr Publishing House.
- Jamal, Mohammed Jihad. (2005): *Mental Processes and Thinking Skills*, First Edition, AL Ain: University Book House.
- Habib, Magdi Abdel Karim. (2003): *Teaching Thinking, Future Strategies for the New Millennium*, First Edition, Cairo: AL Fikr AL Arabi Publishing House.
- Hanbaka, Ibrahim Maidani. (1980): *The Best Rules of Understanding Koran*. Damascus, AL Qalam Publishing House.
- Ryan, Mohammad Hashim. (2005): *Teaching Strategies for the Development of Thinking and Training Packages*. First Edition, Amman: AL Falah Publishing and Distribution House.
- Saada, Jawdat Ahmed. (2003): *Teaching Thinking Skills With Hundreds of Practical Examples*. First Edition, Amman: El Shorouk publication and distribution House.
- Saada, Jawdat Ahmed; and Akl, Fawaz; and Zamel, Magdi; and Ashtih, Jamil; and Abu Arkoub, Huda. (2006): *Active Learning Between Theory and Practice*. First Edition, Amman: AL Shuruk Publishing House.
- Saidane, Walid bin Rashid. (D.t): *Restricting Some Sharia Rules in Medical Branches and Issues*, the Islamic University of Medina.
- Saleh, Ayman. (2005): *Reception of the Religious Text. A Study of Fundamentals, Objectives*. The Islamic Aspect of Knowledge Magazine. A Trusted Journal issued by the Higher Institute of Islamic Thought, Tenth Year, ISSUE (40), Beirut.
- Abdul Hadi, Nabil; and Mustafa, Nadia. (2001): *Child Thinking*. First Edition. Amman: Al Safa for Publication and Distribution.
- Amayreh, Ahmed Abdul Karim. (2005): *The Impact of Learning Cycle and Concepts Mapping on Reflective Thinking and the Achievement of Tenth Grade Students in National and Civic Education*. **Unpublished PhD thesis**, College of Education, Yarmouk University, Jordan.
- Fakhro, Abdul Nasser Abdul Rahim. (2000): *Solve Problems Creatively*: Arab Council for the Gifted and Talented, the second Arab Scientific Conference for the Gifted and Talented, Amman.
- Kerkz, Nael Mohammad. (2004): *The Effectiveness of a Proposed Training Program for the Development of the Ability of Islamic Education Teachers*

in the Use of Probing Questions in the Achievement of Basic School Students in Jordan and The Attitudes Towards It. **Unpublished PhD thesis**, Graduate School of Educational Studies, Amman Arab University for Graduate Studies, Jordan.

Kitami, Naifeh. (2001): Teaching Thinking in the Elementary Stage. First Edition, Amman: AL Fikr for Printing, Publishing and Distribution.

Kitami, Naifeh. (2004): Teaching Thinking in the Elementary Stage. Second Edition, Amman: AL Fikr for Publication and Distribution.

Canaan, Atef. (2000): Methods of Teaching and Developing Thinking / Theory and Practice: the Arab Council for the Gifted and Talented, the Arab Second Scientific Conference for the Gifted and Talented, Amman.

Nabhan, Mohammed Yahya. (A) (2008): Probing Questions and Feedback. Amman: Yazouri Publication and Distribution House.

Younis Wafa Mahmud. (2007): The Impact of Probing Interrogation in Biology on the Development of Science Operations Skills of the fourth-grade general branch female students. **Journal of Education and Science**, Issue 2, Volume (14).

International References

Arth, Mary A. (2002): Teacher questioning in the elementary mathematics classroom: Engaging students in an on-task dialogue. **Doctoral Dissertation**, University of Wyoming.

Blythe, T. and Allen, D. (2004): **The Facilitator's Book of Questions**, U.S.A: Teachers College Press.

Lyons, N (2010): **Handbook of reflection and reflective inquiry: Mapping a Way of Knowing for professional reflective inquiry**, U.S.A: Springer.

Powell, E. and Camino, L (2006) : **Program Development and Evaluation, University of Wisconsin-Extension**, Retrieved in: 25\2\1432AH, from: <http://www.uwex.edu/ces/pdande/resources/pdf/tipsheet34.pdf>

Sahin, Alpaslan (2007): The effects of types, quantity, and quality of questioning in improving students' understanding. **Doctoral Dissertation**, Texas A&M University.

BODY SATISFACTION AMONG PRESCHOOL-AGE CHILDREN IN CARINTHIA (AUSTRIA)

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Abstract

Worldwide, the prevalence rates of overweight and obese children has significantly increased over the last decades. Evidence suggests that overweight and obesity may lead to serious health hazards such as diabetes mellitus typ 2, cardiovascular diseases or problems of the muscoskeletal system. Therefore it is important to analyse biological, social and psychological causes of overweight. The objective of this paper was to explore the prevalence of overweight and obesity in preschool-age children and their parents as well as to discuss possible risk factors, like nutritional and recreational habits, body satisfaction, sleep duration and media consumption, associated with overweight. We conducted a cross-sectional study among 319 children aged three to six years and their parents (n = 257) in the city of Villach, Austria. Results show that the majority of children had normal weight, although one third of the mothers and more than half of the fathers were overweight or obese. Sporty children preferred vitamin-rich foods whereas children with high media consumption time liked sugary foods. In families with lower socioeconomic background, children spent significantly more time watching television. Parents can play a central role by limiting media consumption or determining their children's bedtime. Our analysis highlights that only 22% of preschool children are satisfied with their bodies, most of them wanting to be thinner. Thus, thinness is highly valued in our society, even among the youngest. Interventions to prevent overweight have to focus on the parental-child interaction and the home setting as well as educational and societal aspects.

Keywords: Body satisfaction, childhood, overweight, obesity

Introduction

More than a third of the adult overall world population is overweight or obese, industrialized countries exhibiting a similar percentage also in

children. The total number of people concerned has increased from eight hundred and seventy-five million in 1980 to 2,1 billion (Ng et al., 2014). The percentage of overweight children varies in different regions: In Austria 20% of the young population between six and fourteen years is affected (Zwiauer et al., 2007). The Middle East as well as North Africa show equally high numbers of obese children (Lim et al., 2012). An overall survey by Musaiger (2011) refers to alarming rates in the Middle East, fluctuating locally. Prevalence of overweight or obesity in scholars differs between seven and forty-five percent, with a great impact on further health development. Children with weight problems turn into overweight adults (Freedman et al., 2005) with multiple comorbidities such as diabetes mellitus typ 2, cardiovascular diseases or problems of the muscoskeletal system (Zwiauer et al., 2007). A meta-analysis by Lenz, Richter and Mühlhauser (2009) predicted a 20% rise of mortality in obese adults, increasing to 200 percent in severe cases. The Institute for Health Metrics and Evaluation in Seattle stated that overweight and obesity is responsible for 3,4 millions of fatalities (Lim et al., 2012). Changes in lifestyle and the constant availability of food plus the increase in portion sizes, sugary drinks and the vast range of convenience products, as well as their effective presentation are cited as reasons for increased obesity prevalence (Te Morenga, Mallard & Mann, 2012). Besides the changes in nutritional habits, also biological, psychological and social determinants are discussed as relevant risk factors. Scientific research determines 50% of the difference in BMI in a population by genetic predisposition (Maffeis, 2000). Individual and alterable factors are nutritional habits and frequency of physical activity. A high level of media consumption and lack of sleep are additional risk factors for the development of weight problems.

Hense et al. (2011) showed that children with less than nine hours of sleep have twice the risk of being overweight than children with eleven hours of sleep. Reduced sleep duration is associated with intensive use of media. Children who have their own TV and/or computer in their room were more affected by a lack of sleep (Van den Bulck, 2004), moved less, preferred fatty and sugar rich foods and had a higher obesity risk (Relsch & Gwozdz, 2010).

Further risk factors can be seen in low social status and income as well as migrational background (Kurth & Schaffrath Rosario, 2010). Lange, Plachta-Danielzik, Landsberg und Müller (2010) indicated that children from migrant families had a doubled risk for overweight in comparison to German children. Underprivileged upbringing including socially disadvantaged housing and low educational standards elevate the health risk of children and adolescents considerably (Gordon-Larsen, Nelson, Page & Popkin, 2006; Pigeot, Buck, Herrmann, & Ahrens, 2010). Last but not least children are affected by societal messages suggesting that “thin” is “good” and “fat” is

“bad”. Dissatisfaction with one’s body is a substantial and upholding factor in obesity (Jacobi, Hayward, de Zwaan, Kraemer & Agras, 2004). Body dissatisfaction is defined as subjective negative evaluation of one’s physical appearance (Presnell, Bearman & Stice, 2004).

Many adolescent girls express dissatisfaction with their bodies. Every other girl aged 11 to 17 years has already engaged in weight-loss behaviors (McCabe & Ricciardelli, 2003) and 40% of the underweight and normal weight girls feel too fat (Van Hoeken, Seidell & Hoek, 2005). In the United Arab Emirates about two thirds of 13 to 18 year old girls want to be thinner (Eapen, Mabrouk & Bin-Othman, 2006). Several studies show that body dissatisfaction and weight-loss behaviour is already present in preadolescent children (Dittmar, Halliwell & Ive, 2006; Ricciardelli, McCabe, Holt & Finemore, 2003; Tremblay, Lovsin, Zecevic & Larivière, 2011). Starting at the age of four to six years children compare with each other. Whereas preschool kids worry mainly about hair-style and clothing, those aged six and older already focus on weight related problems, thus comparing to adults (Jones, 2011) in regard to body image and fear of overweight (Hayes & Tantleff-Dunn, 2010). Already preschool children defined their idea of an ideal figure as very slim and several studies confirm that most adolescent girls between the age of 10 and 14 had already tried to reduce weight (McVey, Tweed & Blackmore, 2004). Overall perceptions and worries about appearance differ in regard to gender, girls want to be slender and pretty, boys worry about muscular mass and physical strength (Tiggemann, 2011).

Against the background of rising numbers in the prevalence of eating disorders and health risks related to body weight, this study addresses the very young in our society. The aim of our investigation was the systematic inspection of parental-child interaction and attitudes regarding nutritional habits and body weight perceptions considering the influence of biological and social factors, thus providing data regarding body satisfaction, weight, nutritional and recreational habits in three to six year old children and their parents in Carinthia (Austria).

Methods

Study population

To recruit participants, six nursery schools in a rural area of Austria with approximately 60.000 inhabitants were randomly selected and sampled on the basis of divergent socio-economic status. All children (N = 526) and their parents were invited to participate in the study. Informed consent was obtained from a parent of each child.

Measures: Children

In a medical checkup the children were weighed and measured, the 90th percentile was used to define overweight and the 97th percentile to define obesity (Kromeyer-Hauschild et al., 2001).

a) *Food preferences and recreational habits*

A trained interviewer asked the children about their nutritional preferences. Based on the “food pyramid” (http://bmg.gov.at/cms/home/attachments/4/5/1/CH1048/CMS1212664711223/richtige_ernaehrung_fuer_mein_kind.pdf) children were shown five images to help them answer what they preferred to eat. Response options were coded numerically.

Then the children got four cards with recreational opportunities (sports, consuming activities, creative games, social interaction) and were asked to order them according to their likeability and they were asked some questions about media consumption (television viewing time, eating while watching television, having a television in their own room, playing video games).

b) *Body satisfaction and dieting awareness*

Body satisfaction was assessed using the Figures Rating Scale (Collins, 1991) consisting of seven female/male images (see fig. 1) ranging from underweight (1) to obese (7). Children were asked to identify the image that looked most like them as well as (2) their ideal figure.

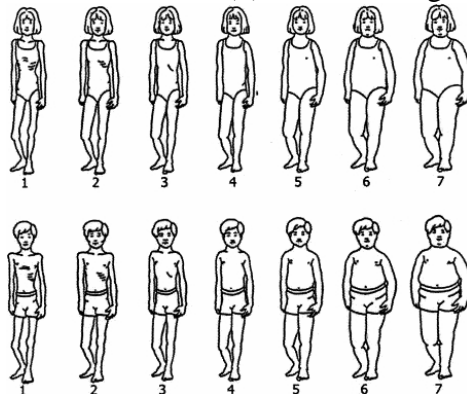


Figure 1: Figures Rating Scale (Collins, 1991)

The difference between “ideal” and „figure most similar to them“ was calculated as body satisfaction with a range from -6 to +6. Negative scores indicated that the child wanted to be thinner. No difference indicated satisfaction with one’s body size.

With a fictional story of Anna/Anton we wanted to assess the children’s dietary awareness: „One year ago Anna/Anton looked like image 3, today she/he looks like image 6.“ What do you think (1) happened to Anna/Anton and (2) what would you do, if this happened to you?

Parental questionnaire

The parental questionnaire included social parameters (highest educational level, nationality), biological factors (age, height and weight of mother and father) and questions about their child's television and sleeping habits. Parents' weight category was assigned according to the BMI definitions (WHO, 2000).

Based on the „food pyramid“, we developed a Food Frequency Questionnaire with 15 edibles. The respondents were asked to rate them using a seven-point rating scale ranging from "never" to "several times a day".

Physical activity behavior was assessed with the International Physical Activity Questionnaire (IPAQ <http://www.ipaq.ki.se/ipaq.htm>). The amount of strenuous (e.g., aerobics, heavy lift) and moderate activities (e.g., cycling at the ordinary rate) as well as everyday movement (e.g., walking, household chores) and the time spent sitting (e.g., while watching TV or reading) had to be documented in days per week and minutes per day.

Statistical Analysis

Quantitative data were analyzed using SPSS 20. Open-ended questions were transcribed and analyzed using qualitative content analysis (Patton, 2002). Missing values in the questionnaires partly resulted in smaller sample sizes.

Results

Study population

The present study included 319 children (149 girls and 170 boys) with a mean age of 4.85 ± 0.92 years. Out of the 319 children 202 (63%) were weighed and measured by a physician. On average, the sample was at the 50th percentile ($M = 50.03$, $SD = 27.09$), so the majority of children (85%) had normal weight, 5.4% were overweight and 3.5% obese. Among the 257 participating parents (225 mothers and 32 fathers) 27% mothers and half of the fathers were classified as overweight and another 9% of the mothers and 16% of the fathers as obese. Consistent with previous research we found slight significant associations between children and their mothers ($r = .242$, $p = .002$) as well as their fathers ($r = .181$, $p = .031$) weight status. 82% of parents came from Austria ($n = 209$), 2% from Germany ($n = 5$) and 16% from other countries ($n = 40$). The major socioeconomic characteristics of the sample included having an income between 20.000 and 30.000 (33%) Euros per year, and working mothers (56%). Almost half of the parents had a high school diploma or higher education. Socioeconomic status was associated with children's weight ($r = -.160$, $p = .047$).

Food preferences and habits

We found that 61% of children preferred sugary foods, followed by fatty foods (18%). Vitamin-rich food (7%), protein-containing foods (6%, $n = 20$) and carbohydrate-rich food (4%, $n = 14$) were less popular. Boys rated fatty foods more frequently as „very good“ ($\chi^2 = 19.944$, $df = 4$, $p = .001$). 76% of parents preferred foods with a high vitamin content ($n = 162$). No one mentioned a preference for fatty foods. Parents with higher education preferred vitamin-rich foods. Parents with lower education selected edibles rich in carbohydrates, sugary and protein-rich foods more often ($\chi^2 = 8.332$, $df = 3$, $p = .040$).

Recreational and physical activity

One third of the children preferred sports (34%, $n = 109$) or consuming activities (31%, $n = 98$). A quarter favored creative games ($n = 79$) and only 6% primarily chose the social interaction ($n = 20$). We found correlations between food preferences of vitamins and preference for sports ($r = .126$, $p = .029$), and between food preferences for sugar and consuming activities ($r = .113$, $p = .050$). The results of the IPAQ showed that 30% of parents ($n = 76$) could be categorized as low, 37% ($n = 95$) as middle and 33% ($n = 85$) as high physically active. Parents from Austria were more active than parents from other nationalities.

Television viewing

Parents estimated viewing time per day was about 82 ± 60 minutes. There was a positive correlation between time spent watching TV and BMI of mothers ($r = .192$, $p = .002$) and fathers ($r = .142$, $p = .035$). In families with lower socioeconomic background, children spent significantly more time with television viewing ($\chi^2 = 39.106$, $df = 16$, $p = .001$). Almost half of the children reported that they played computer games (53%).

One third of the children (30%, $n = 88$) in the present study had a TV in their room, which led to a higher consumption at noon ($\chi^2 = 13.863$, $df = 1$, $p < .001$) and in the morning ($\chi^2 = 36.035$, $df = 1$, $p < .001$).

Sleep duration

The average sleep duration of children was 11 ± 1 hour ($\chi^2 = 25.264$, $df = 14$, $p = .032$) and children with less than 10 hours of sleep, played with computers or video games more often ($\chi^2 = 7.534$, $df = 1$, $p = .006$).

Body satisfaction and dieting awareness

Our results show that only 22% of preschool children are satisfied with their bodies. 43% chose a thinner and 36% a fatter ideal figure.

Younger children ($\chi^2 = 31.917$, $df = 12$, $p = .001$) and boys often chose a more corpulent figure as ideal ($\chi^2 = 13.418$, $df = 6$, $p = .037$).

Dieting awareness

More than half of the children (60%) detected a weight gain comparing a normal to an overweight figure. When asked what they would do if this would happen to them, 27% of our participants mentioned an adequate intervention (e.g., eat less, exercise more), 21% did not know what to do and 12% cited an inadequate intervention (e.g., having a baby, go to the toilet, cut open the stomach). Younger children less often recognized the cause of weight gain or named an adequate intervention ($\chi^2 = 70.938$, $df = 24$, $p < .001$).

Discussion

Overweight has become epidemic. Results from descriptive analyses revealed that more than one third of the mothers and more than half of the fathers were overweight or obese. The proportion of children who were overweight or obese was considerably lower, but similar to comparable studies (e.g., Zwiauer et al., 2007). Almost every tenth child in the present study was overweight or obese. The study participation as a whole can be described as good, although we only reached 12% of the fathers. Mothers can be described as interested, engaged and committed. We can only speculate about the father's minor participation. We cannot give any details whether they had less interest in the subject, the questionnaires were referred to them at all or if they were not even present in their families.

The findings of this study are broadly consistent with other studies that examined slight significant associations between children and mothers as well as fathers weight status.

We found that more than half of the children preferred sugary foods, followed by fatty foods, in contrast, two-thirds of the parents preferred foods with a high vitamin content and no one mentioned a preference for fatty foods. In view of the high obesity rates, this is surprising. Maybe we received socially desirable answers. The same applies to the information on physical activity. According to the results of the IPAQ one-third of the parents can be classified as hardly active, another third as moderate and the last third as physically high active.

Our analysis highlights that sporty children prefer vitamin-rich foods whereas children preferring consuming activities liked sugary foods. This result can be seen in close connection with the media consumption. For our young sample TV is already of high interest, TV is part of everyday life. Almost a third of our participants had their own TV in their room. These children watched more TV and it can be assumed that these children also

viewed large numbers of food commercials. Here, the socioeconomic background also seemed to play a significant role. The vicious circle continued to work on: Children with a high level of media consumption, were affected by lack of sleep and preferred sugar rich foods. These results are supported by previous research findings (e.g., Hense et al., 2011; Relsch & Gwozdz, 2010). For three to six-year old children, body dissatisfaction appeared to be already common. Only a quarter of our participants were satisfied with their bodies, almost half of them expressed a desire to be thinner, this was obvious especially for the older girls in our study. Body dissatisfaction may have a negative impact on children's physical and mental health and is often associated with weight loss strategies and eating disturbances (Attie & Brooks-Gunn, 1989).

There are some limitations to the study: this study was conducted in a small rural area in Carinthia and therefore the results are not representative for the Austrian population. We also found evidence of risk factors but our cross-sectional data does not allow conclusions on intra-individual changes and differences in the developmental course.

Another potential limitation relates to measuring parents food preferences and physical activities since the answers of children and their parents did not always correspond.

Conclusion

The present results have indicated that individual factors like sleep duration and media consumption, as well as familial variables play an important role in childhood obesity in a nonclinical sample. There is a need of longitudinal studies in preadolescent boys and girls to get a broader insight in relevant risk factors. A slender body is the ideal of female beauty and piles pressure on young people in western as well as in oriental countries. Future studies should focus on psychological factors like self-esteem and attachment theories. Finally, there is a need for well-conducted intervention programs to improve body satisfaction of preadolescent children and motivate parents for healthy way of livings.

References:

- Attie, I., & Brooks-Gunn, J. (1989). Development of eating problems in adolescent girls: A longitudinal study. *Developmental Psychology*, 25, 70-79.
- Collins, M. E. (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders*, 10, 199-208.
- Dittmar, H., Halliwell, E., & Ive, S. (2006). Does Barbie make girls want to be thin? The effect of experimental exposure to images of dolls on the body image of 5- to 8-year-old girls. *Developmental Psychology*, 42(2), 283-292.

- Eapen, V., Mabrouk, A.-A., & Bin-Othman, S. (2006). Disordered eating attitudes and symptomatology among adolescent girls in the United Arab Emirates. *Eating Behaviors, 7*, 53-60.
- Freedman, D. S., Khan, L. K., Serdula, M. K., Dietz, W. H., Srinivasan, S. R., & Berenson, G. S. (2005). The relation of childhood BMI to adult adiposity: the Bogalusa Heart Study. *Pediatrics, 115*, 22-27.
- Gordon-Larsen, P., Nelson, M. C., Page, P., & Popkin, B. M. (2006). Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics, 117*, 417-424.
- Hayes, S., & Tantleff-Dunn, S. (2010). Am I too fat to be a princess? Examining the effects of popular children's media on young girls' body image. *British Journal of Developmental Psychology, 28*, 413-426.
- Hense, S., Pohlabein, H., De Henauw, S., Eiben, G., Molnar, D., Moreno, L. A., ... Ahrens, W. (2011). Sleep duration and overweight in European children: is the association modified by geographic region? *Sleep, 34*(7), 885-890.
- International Physical Activity Questionnaire (IPAQ). Retrieved from: <http://www.ipaq.ki.se/ipaq.htm>
- Jacobi, C., Hayward, C., de Zwaan, M., Kraemer, H. C., & Agras, W. S. (2004). Coming to terms with risk factors for eating disorders: Application of risk terminology and suggestions for a general taxonomy. *Psychological Bulletin, 130*, 19-65.
- Jones, D. C. (2011). Interpersonal and familial influences on the development of body image. In T. F. Cash & L. Smolak (Eds.), *Body Image: A handbook of science, practice, and prevention* (2nd ed.) (pp. 110-118). New York: The Guilford Press.
- Kromeyer-Hauschild, K., Wabitsch, M., Kunze, D., Geller, F., Geiß, H.C., Hesse, V., ... Hebebrand, J. (2001). Perzentile für den Body-Mass-Index für das Kindes- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. *Monatsschrift Kinderheilkunde, 149*, 807-818.
- Kurth, B. M., & Schaffrath Rosario, A. (2010). Übergewicht und Adipositas bei Kindern und Jugendlichen in Deutschland. *Bundesgesundheitsblatt, 53*, 643-652.
- Lange, D., Plachta-Danielzik, S., Landsberg, B., & Müller, M. J. (2010). Soziale Ungleichheit, Migrationshintergrund, Lebenswelten und Übergewicht bei Kindern und Jugendlichen. *Bundesgesundheitsblatt, 53*, 707-715.
- Lenz, M., Richter, T., & Mühlhauser, I. (2009). Morbidität und Mortalität bei Übergewicht und Adipositas im Erwachsenenalter. *Deutsches Ärzteblatt, 106*(40), 641-648.

- Lim, S. S., Vos, T., Flaxman, A. D., Danaei, G., Shibuya, K., Adair-Rohani, H., ... Ezzati, M. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, 380(9859), 2224-2260. [http://dx.doi.org/10.1016/S0140-6736\(12\)61766-8](http://dx.doi.org/10.1016/S0140-6736(12)61766-8)
- Maffei, C. (2000). Aetiology of overweight and obesity in children and adolescents. *European Journal of Paediatrics*, 1, 35-44.
- McCabe, M. P., & Ricciardelli L. A. (2003). Body image and strategies to lose weight and increase muscle among boys and girls. *Health Psychology*, 22(1), 39-46.
- McVey, G., Tweed, S., & Blackmore E. (2004). Dieting among preadolescent and young adolescent females. *Canadian Medical Association or its licensors*, 170(10), 1559-1561.
- Musaiger, A. O. (2011). Overweight and obesity in Eastern Mediterranean Region: Prevalence and possible causes. *Journal of Obesity*, 1-17. Doi: 10.1155/2011/407237
- Ng, M., Fleming, T., Robinson, M., Graetz, N., Margon, C., Mullany, E. C., ... Gakidou, E. (2014). Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9945), 766-781. [http://dx.doi.org/10.1016/S0140-6736\(14\)60460-8](http://dx.doi.org/10.1016/S0140-6736(14)60460-8)
- Patton, M. (2002). Qualitative research and evaluation methods. Thousand Oaks: Sage.
- Pigeot, I., Buck, C., Herrmann, D., & Ahrens, W. (2010). Übergewicht und Adipositas bei Kindern und Jugendlichen. Die weltweite Situation. *Bundesgesundheitsblatt*, 53, 653-665.
- Presnell, K., Bearman, S., & Stice, E. (2004). Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *International Journal of Eating Disorders*, 36, 389-401.
- Relsch, L. A., & Gwozdz, W. (2010). Einfluss des Konsumverhaltens auf die Entwicklung von Übergewicht bei Kindern. *Bundesgesundheitsblatt*, 53, 725-732.
- Ricciardelli, L. A., McCabe, M. P., Holt, K. E., & Finemore, J. (2003). A biopsychosocial model for understanding body image and body change strategies among children. *Applied Developmental Psychology*, 24, 475-495.
- Te Morenga, L., Mallard, S., & Mann, J. (2012). Dietary sugars and body weight: systematic review and meta-analyses of randomized controlled trials and cohort studies. *BMJ*, 346, <http://dx.doi.org/10.1136/bmj.e7492>
- Tiggemann, M. (2011). Sociocultural perspectives on human appearance and body image. In T. F. Cash, & L. Smolak (Eds.), *Body Image: A handbook of*

science, practice, and prevention (2nd ed.) (pp. 12-19). New York: The Guilford Press.

Tremblay, L., Lovsin, T., Zecevic, C., & Larivière, M. (2011). Perceptions of self in 3-5-year-old children: A preliminary investigation into the early emergence of body dissatisfaction. *Body Image*, 8, 287-292.

Van den Bulck, J. (2004). Television viewing, computer game playing, and internet use and self-reported time to bed and time out of bed in secondary-school children. *Sleep*, 27(1), 101-104.

Van Hoeken, D., Seidell, J., & Hoek, H. W. (2005). Epidemiology. In J. Treasure, U. Schmidt, & E. van Furth (Eds.), *The essential handbook of eating disorders* (2nd ed.) (pp. 11-34). West Sussex: Wiley.

World Health Organisation (2000). *Obesity – preventing and managing the global epidemic. Report of a WHO consultation on obesity* (Technical Report Series 894). Geneva: World Health Organisation.

Zwiauer, K. Bruger, P., Hammer, J., Hauer, A., Lehner, A., Lehner, P., ... Rust, P. (2007). *Österreichweite Feldstudie zur Erhebung der Prävalenz von Übergewicht bei 6- bis 14-jährigen Schülerinnen und Schülern* (Studienbericht). Wien: Österreichisches Grünes Kreuz.

TOWARDS A STRATEGY FOR SAFETY-ORIENTED URBAN STRUCTURE

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Abstract

The paper represents analysis and modelling of urban spaces through their topological properties in order to make them safer in terms of robberies, larceny and motor vehicle thefts, stolen properties, weapons and drugs. The research is performed on a macro-scale in the city of New Haven, Connecticut, USA. The topological properties of streets were calculated and analyzed by the application of space syntax method and DepthMap software, GIS and SPSS. The results are explained in the terms of people movement and presence on the main streets which are on the natural search paths of possible criminals, and which on the other hand have been assigned to a greater surveillance effect from movement.

Keywords: Crime, GIS, space syntax, urban space, urban structure

Introduction

The technique of strategic planning has been applied to manage various human activities in cities. Strategic urban planning is strongly related to the city dwellers, where the main goal is to enhance their life quality and satisfy their needs and requirements (Mirza, 2010). Urban crime is the well-known factor which reduces life quality of city dwellers. Therefore, the important task of crime prevention is highlighted in strategic planning of many cities all over the world.

In environmental criminology it is widely established that the crime is closely related to the urban environment in which it happens. In environmental criminology greater attention is paid to the places where the crime was committed. As the experience on crime investigations shows criminals are most likely to commit a crime near their living place or on the paths which connect major activities places (shopping, leisure etc. places). For instance, as the results of M. Lopez's and A. van Nes's (van Nes & Lopez, 2010) research show, "most residential burglaries took place in the most segregated and unconstituted streets that lay within a radius of 2.1 km

from a burglar's home address". Australian institute of criminology resource says that "most burglars (77%) travelled away from their home suburb to do their work, travelling an average of five kilometers to their target" (Ratcliffe, 2003). According to B. Hillier and O. Sahbaz (2009), "picking pockets is easier in crowded high streets, street robbery is easier when victims come one at a time, burglary is helped by secluded access, and so on". The above stated facts shows that the location of committed crimes is related to a certain place. Understanding the relation between the place and the crime can help us analyze, forecast and predict the crime, and therefore, to make the right decisions in a strategic planning of the city.

The research of various groups of crime on a macro-scale is being implemented in New Haven (Connecticut, United States of America). Research at a macro-scale means taking into account the distribution of crimes and the topological features of street network in the whole city. Crime data registered by the Police Department of New Haven during the last five years (since 2009) (New ..., 2013) was used for the research. The following topological features of street network were taken into account: robberies, larceny thefts, motor vehicle thefts, stolen property, weapons and drugs were analyzed on a macro-scale. Robberies amount 1.18% of all crimes committed in New Haven during the last five years, larceny thefts amount 6.91% of all crimes, motor vehicle thefts amount 5.78% of all crimes, stolen properties amount 2.29% of all crimes, weapons amount 1.05% of all crimes, drugs amount 2.73% of all crimes. New Haven is the second largest city in the state of Connecticut, with the population about 130,741 (according to Census Bureau data of July 1, 2012) and the area of 52.1 km². A large part of the city is built up with Yale University buildings, laboratories, offices and dormitories.

I.

Methodology

Space syntax method with the combination of Geographical Information Systems (GIS), as well as Statistical Package for the Social Sciences (SPSS) were used for the implementation of this research. First, segment map of New Haven City was prepared for the analysis using the DepthMap software (Varoudis, 2012). Segment is the shortest path which uses the least number of streets (actually the least number of "interjunction" stretches of street) to get to your destination (Turner, 2008). Second, the segment map was associated with crime map, and then compared to the syntactic characteristics of urban spaces (for that purpose correlation analysis was applied): global and local (at different radii) integration, choice, connectivity, depth from the most important and intensively used urban space in the city. It was identified that Elm street segment which lays

between Broadway and York streets was the most important and mostly chosen route (Fig. 1). This street segment is in the Downtown of New Haven connecting many important routes within and outside the city, with boutiques, bars, apartments above them, on both sides of the segment, also a grocery shop in a distance of a couple of steps on the next street segment, that definitely attract people. In this case, topological depth from this segment of Elm street to all other segments was calculated.

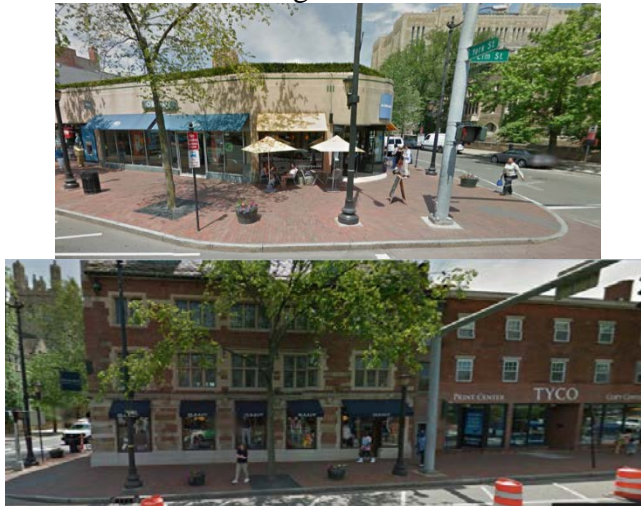


Fig. 1. Elm street segment is identified as the most important and intensively used urban space in New Haven

Integration is related to “to-movement” and the accessibility of spaces, it is about deciding where to go. “Integration says us how close each segment is to all others under different types of distance and at different scale. Integration describes how easy it is to get to one segment from all other segments. In practical terms this would mean that pedestrians would end up to such a space more often and with less effort” (Hillier & Iida, 2005). Global integration (with a radius n) shows how accessible a segment is from all the others, id est. how it is integrated in the scale of the whole city. More integrated spaces are used more as nearby destinations than more segregated spaces. Local integration (with radii 2, 3, 4 etc.) shows how integrated the local area is in the relationship of its surroundings. In this case study for the analysis of local integration topological and angular radii starting R2 and ending R10 were tested.

Choice is related to the choice of path on the way to the destination or so-called “through-movement”. “Choice describes how likely you are to pass through the segment on trips, and so it’s potential as a route, from all segments to all others” (Hillier & Iida, 2005). For the analysis of choice global radius R_n as well as local topological and angular radii starting R2 and ending R10 were tested.

Connectivity shows with how many segments each segment is connected by its both ends.

Depth defines the number of steps from any segment to any other segment (Raford & Ragland, 2004). Deeper spaces are accessed more hardly, therefore, they are less used. For the analysis of depth global radius R_n and various local radii R_2 - R_{10} were tested.

The GIS data for the research was provided by the city of New Haven, IT Department (maps of streets and their center lines, with sites and buildings) (City ..., 2014), and by the Police Department of the New Haven (all crime types committed in New Haven in 2009-2013, with all crimes being geocoded) (New ..., 2013). The DepthMap software (Varoudis, 2012) is used for the calculation of the topological characteristics of urban spaces such as connectivity, global and local integration, global and local choice, global and local depth, as well as topological step depth from the main space in the city. The ArcMap software was used to combine the calculated topological characteristics with the city map and crimes.

Results

According to the above described methodology the segment map was created for the city of New Haven. It was layered by the map with exact locations of analyzed crime groups, then certain crimes were assigned to certain street segments, after that the correlation analysis identifying the relations between crime groups and topological properties of street segments was performed. The research results show that some urban spaces are more vulnerable to some crime than others. The bigger and significant relations between various groups of crime and some spatial characteristics of urban spaces are shown in the Table 1.

	Connectivity	Choice R2	Choice R3	Choice Rn	Depth R2	Depth R3	Depth R4	Depth Rn	Integration R2	Integration Rn
Robberies	.415**	.408**	.354**	.078**	.346**	.395**	.345**	- .293**	-.188**	.310**
Larceny thefts	.512**	.502**	.506**	.022*	.509**	.524**	.527**	- .343**	-.279**	.366**
Motor vehicle thefts	.517	.527**	.499**	-	.512**	.516**	.511**	- .295**	-.296**	.319**
Stolen property	.429**	.420**	.420**	.042**	.423**	.426**	.426**	- .294**	-.212**	.312**
Weapons	.375**	.365**	.356**	-	.362**	.361**	.355**	- .234**	-.178**	.247**
Drugs	.426**	.416**	.404**	.031**	.413**	.413**	.409**	- .268**	-.218**	.285**

** . Correlation is significant at the .01 level (2-tailed).

Table 1. Spearman's rho correlations between crime groups and topological features of street segments (grey color means higher correlations. For all represented correlations $p=0.000 < \alpha = 0.05$)

The results demonstrate that the correlation on a local scale between choice and robbery decreases with the increase of radius achieving the highest value at $R_{sp_rho} = -0.408^{**}$ ($p = 0.000 < \alpha = 0.05$) at a local scale (R2), and the lowest value at $R_{sp_rho} = 0.078^{**}$ ($p = 0.000 < \alpha = 0.05$) at a global choice (R=n). Also with the increase of radius on a local scale correlation between depth and robbery decreases achieving the highest value at $R_{sp_rho} = 0.395^{**}$ ($p = 0.000 < \alpha = 0.05$) at a local depth R3, and the lowest value at $R_{sp_rho} = -0.293^{**}$ ($p = 0.000 < \alpha = 0.05$) at a global depth (R=n).

The larceny theft together with motor vehicle theft have the highest correlations between crime and connectivity, local choice (R2 and R3), local depth (R2, R3 and R4). The highest relation between larceny theft and choice is observed at a local topological radius R3 step: $R_{sp_rho} = 0.506^{**}$ ($p = 0.000 < \alpha = 0.05$). Also with the increase of radius correlation between choice and larceny theft decreases achieving the lowest value at $R_{sp_rho} = 0.022^{**}$ ($p = 0.000 < \alpha = 0.05$) at a global choice (R=n). Beyond connectivity and choice R2 motor vehicle theft is also related to integration, but it is a weak relation, with a bit stronger relations on larger radii (R10, R9).

For stolen properties the highest correlation value is observed for connectivity $R_{sp_rho} = 0.429^{**}$ ($p = 0.000 < \alpha = 0.05$) and local depth R3 as well as R4 $R_{sp_rho} = 0.426^{**}$ ($p = 0.000 < \alpha = 0.05$).

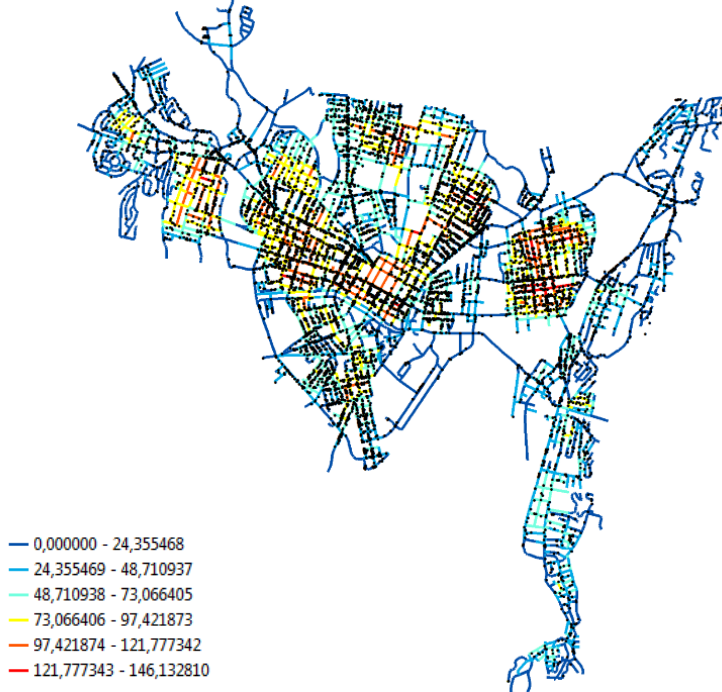
For weapons and drugs results are very similar: the highest correlation value is for connectivity, local choice R2, and local depth R2 and R3.

For all analyzed groups of crime depth on a global scale has negative relation with crime, and positive relations with the depth on a local scale for all radii R2-R10 with the highest values at local radii R2-R4. It could mean that analysis of these groups of crime through depth is effective only on a local scale (neighborhoods, city parts etc.) with the radius up to R4, and not at a global scale (the whole city). That looks like a logic outcome, because these topological features are related to pedestrian movement, and pedestrians usually move within the radius of 2.4 km that is equal to 30 minutes walk.

Integration on small local scales (R2-R4) has negative relations with all groups of crime, and positive relations on a global scale Rn. Though, both local and global integrations have weak relations with crime, therefore, they are not very suitable for the further analysis and prediction of crime.

Due to the highest correlation values the most accurate analysis and prediction of crime can be done for larceny thefts taking into account global depth R4 or R3 or R2, or connectivity, or global choice R3 or R2. The same could be done for motor vehicle thefts taking into account global choice R2, or connectivity, or global depth R3 or R2 or R4. Figure 2 demonstrates how

some of the above mentioned topological features (that have the highest correlations for larceny theft and motor vehicle theft) are visually related to the locations and density of crimes. From the Fig. 2 we can see that more larceny thefts concentrate on the streets with higher values of depth R4 (streets marked with hot colors – red, orange and yellow), it means that on the local scale the more shallow is the street from the main streets the more larceny theft happens on it. Shallow streets are used more often and accessed more easily, that factors might attract a possible thief. The same regularity is for the motor vehicle thefts. Also more motor vehicle theft concentrate on the streets with higher values of choice R2 (streets marked with hot colors – red, orange and yellow), it means that on the local scale the more chosen is the street by pedestrians walking from the point of origin to the point of destination, the more motor vehicle theft happens there. The same regularity is for the larceny thefts. Well-chosen streets serve as natural search paths for a possible thief. On the over hand, well-chosen paths can have a greater surveillance effect from movement. Though, this movement can be only transit and rapid, not concentrating attention at possible thefts. To achieve the most effective strategic planning for the City of New Haven streets should be planned in order to reduce crime. In this case larceny and motor vehicle thefts can be reduced (or at least controlled) by the regulation of streets' connectivity, local choice and local depth.



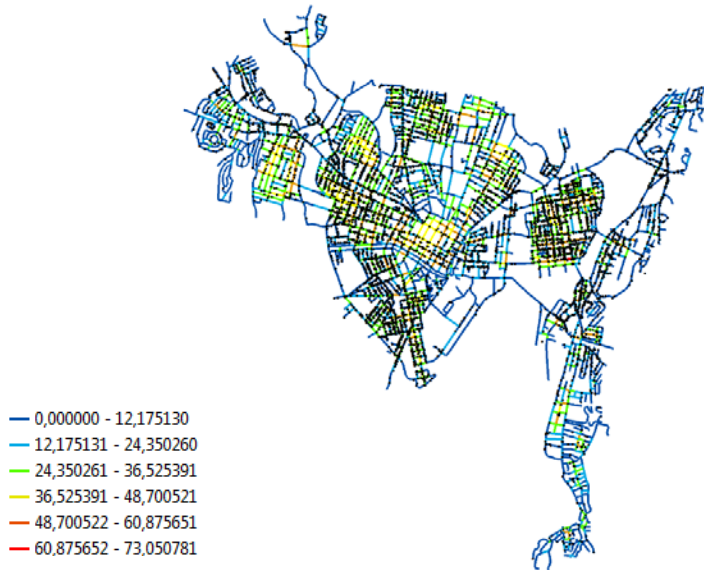


Fig. 2. Larceny theft and depth R4 (left). Motor vehicle theft and choice R2 (right)

Conclusion

For all the analyzed crime groups the highest correlation values are observed for connectivity, local choice and local depth. Though, the most accurate and reliable are correlation values for larceny and motor vehicle thefts with connectivity, local choice R2-R3 and local depth R2-R4. According to the research results more larceny and motor vehicle thefts happen on the streets with high connectivity, local choice and local depth values. In other words, it means that well-connected streets attracting more movement, shallow streets that are used more often and accessed more easily, and well-chosen streets attract more thieves. For the smart strategic planning of New Haven more surveillance by the police and local residents within the neighborhoods should be proposed for these vulnerable to crime streets. Also the proper urban planning could be employed that would make streets hardly accessible and a bad target for a possible thief. The strategy for the safety-oriented urban structure in New Haven could be addressed to larceny thefts and motor vehicle thefts only, as they have high enough and significant correlations with topological properties of urban spaces. The strategy should include regulations for urban spaces on not making spaces shallow from the main streets, connected with other spaces and chosen by pedestrians. It could be done by re-planning urban spaces, closing of some pedestrian routes and directing them to other paths. If the above mentioned actions are impossible or hard to implement, then organizational (security guards, police), mechanical (CCTV, alarms) or natural (local residents watching surroundings, strong communities) security tools could be added.

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References:

- City of New Haven, IT Department. GIS data [electronic resource], New Haven, USA, 2014.
- Hillier, Bill, Sahbaz, Ozlem. Crime and urban design: an evidence-based approach. In: Coper R., Evans G., Boyko C. Designing sustainable cities, 2009, Singapore, Blackwell Publishing, 163-186.
- Hillier, Bill, Iida, Shinichi. "Network and psychological effects in urban movement". Paper presented in Proceedings of Spatial Information Theory: International Conference, 2005, New York, USA, 475-490.
- Hillier, Bill. "Can streets be made safe?" Urban design international 9 (2004): 31-45.
- Mirza, Soraya. "Strategic urban planning and design tools for inner city regeneration". Paper presented in 46th ISOCARP Congress, 2010, Nairobi, Kenya. Available at: http://www.isocarp.net/data/case_studies/1633.pdf
- New Haven Police Department. GIS data about crime [electronic resource]. New Haven, USA, 2013.
- Raford, Noah, Ragland, David R. "Space Syntax: An Innovative Pedestrian Volume Modeling Tool for Pedestrian Safety". Transportation Research Record 1878 (2004): 66-74. Available at: <http://dx.doi.org/10.3141/1878-09>
- Ratcliffe, Jerry H. "Suburb boundaries and residential burglars". Australian institute of criminology 2003. Available at: http://www.aic.gov.au/media_library/publications/tandi/ti246.pdf
- Turner, Alasdair. "Getting serious with Depthmap. Segment analysis and scripting". London, UK, 2008. Available at: <https://www.bartlett.ucl.ac.uk/graduate/research/space/research/ucl-depthmap/documents/advanceddepthmap.pdf>
- Van Nes, Akkelies, Lopez, Mario J.J. "Macro and micro scale spatial variables and the distribution of residential burglaries and theft from cars". Journal of Space Syntax 1(2) (2010): 296-314.
- Varoudis, Tasos. „DepthmapX Multi-Platform Spatial Network Analysis Software“. London, UK, 2012. Version 0.30 OpenSource available at: <http://varoudis.github.io/depthmapX/>

MIRACULOUS CONSILIENCE? CONSTRAINTS ON FORMULATIONS OF THE NO MIRACLES ARGUMENT

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Abstract

The intuition that the success of science is a mark of sciences power to track the nature of our world, to permit us confidence that the descriptions of our best sciences are true (or approximately true), is not new. Puntam (1975) popularized an argument based on this intuition; this argument is known as the No Miracles Argument. Providing a convincing formulation of this argument has proven difficult, and recently Magnus and Callender (2004) have suggested that any probabilistic formulation (given form by Bayes theorem) is fallacious. Earlier formulations suffer from problems just as deep; best explanation formulations are question-begging, for example. In this article, I propose two constraints for those attempting to formulate the argument: first, we ought to narrow the scope of the argument, focusing on only a special set of successes, and, second, the epistemic principle that connects the intuition to the realist conclusion ought to be one that is defeasible (rather than probabilistic or categorical). These constraints serve to avoid problems already set out in the literature, and make the No Miracles Argument a sort of local inference – one that is licensed by the case at hand, rather than a general rule. That is, you may only *sometimes* infer to the truth or approximate truth from success.

Keywords: No Miracles Argument, Scientific Realism, Selective Realism, Agreement of Independent Measurements, Base Rate Fallacy

Introduction

If there are any miracles, certain successes of science are not among them. Since Hilary Putnam's work in 1975, arguments that rest on our intuition that the success of science cannot be a miracle have been popular tools for scientific realists. Scientific realism, at its core, hinges on the idea that our best sciences are truth tracking. That is, science, in its best theories, provides us with truthful, nearly truthful, or approximately truthful

descriptions of the world. A simplistic way to put Putnam's "no miracles argument" for realism is this: either the best explanation of scientific success is that science tracks the truth or the explanation is that the success is a cosmic coincidence. Of course, either postulating a cosmic coincidence is unwarranted or it is no explanation at all. Thus, we should take it that our best science tracks the truth. If one is struck that this argument is no more than a false dilemma, do not fret. My primary goal in this paper is to refine this argument so that it isn't so obviously troubling (read, transparently question begging).

An interesting new attack on this argument involves the claim that the argument rests on an altogether different fallacy: the base rate fallacy. Magnus and Callender (2004) argue that the no miracles argument rests on this probabilistic fallacy, which occurs when reasoners fail to take into account pertinent statistical information that bears on their assessment of the probability of some proposition. They are correct in their assessment of the no miracles argument as a probabilistic argument, but I argue that all this demonstrates that the argument is not a probabilistic one. This will be my first refinement of the argument.

Further, Magnus and Callender suggest that wholesale arguments for realism, like the no miracles argument are bound for the circular file.⁴ Wholesale arguments are attempts to vindicate realism that are not sensitive to particulars of the case; these arguments are supposed to make us realists regarding *all* of (our best) science. They suggest that there may be good realist arguments for the existence of electrons, but not, say, top quarks; they call these arguments, retail arguments. A refinement of the no miracles argument, a selective version, puts it among the retail arguments. This will be my second refinement to the argument.

Finally, the scientific realism that is supposed to be vindicated by the no miracles argument tends to be quite overstated. Not only does the no miracles argument require some refinement, but our basic notion of scientific realism needs some refinement, if not an overhaul. As an extension of the refined no miracles argument I develop here, I will make some simple suggestions regarding a refinement of scientific realism. These suggestions will be in line with a greater project, the development of Consilient Realism.

⁴ Gerald Doppelt's *Reconstructing Scientific Realism*, in *Philosophy of Science* (Vol. 74) provides a novel take on the No Miracles argument. He constructs a wholesale argument by expanding the explanandum of the Inference to the Best Explanation used in the no miracles argument in order to defend scientific realism for our best current theories. While I find this idea oddly compelling, my strategy differs in two substantial ways: (1) rather than expanding the explanandum, I suggest we diminish it, and (2) I suggest we draw back from the standard Inference to the Best Explanation epistemology.

The Base Rate Fallacy and the No Miracles Argument

A statistical version of the No Miracles Argument is implausible according to Magnus and Callender, since it rests on a common statistical fallacy – the Base Rate Fallacy. Consider the following example from Tversky and Kahneman (1982):

A cab was involved in a hit and run accident at night. Two cab companies, the Green and the Blue, operate in the city. 85% of the cabs in the city are Green and 15% are Blue.

A witness identified the cab as Blue. The court tested the reliability of the witness under the same circumstances that existed on the night of the accident and concluded that the witness correctly identified each one of the two colors 80% of the time and failed 20% of the time.

What is the probability that the cab involved in the accident was Blue rather than Green?

As it turns out, most people fail to assign the correct probability (and they miss by a lot). The diagnosis: most individuals fail to take into account the base rates – the distribution of cabs in the city. The correct probability assignment here is 41%. If you didn't guess right, don't sweat it; there are several reasons that may have happened.

An obvious problem with this experimental set up is found in interpreting the problem. What is the probability the cab involved in the accident was Blue rather than Green? Well, do they mean Blue rather than Green given that the witness said it was Blue? Presumably, yes. But that is far from obvious. Furthermore, Jonathan Koehler argues, persuasively, that base rate neglect (committing the base rate fallacy) is not as pervasive as we have been lead to believe. (1996) The problem is not base rate neglect, but employment of base rates in a non-Bayesian manner. That is, we do make use of base rates, but we do not always follow the Bayesian standard. Further, he argues that there may be other viable (rational) standards for deploying base rates. If he is right, then subjects may not be irrational when they fail to state that the probability is 41%. The point: while I agree with Magnus and Callender that the No Miracles Argument is in trouble when it comes to base rates, I do not agree with them that the intuition that drives the No Miracles Argument is in danger simply because people are notoriously bad at certain probabilistic judgments.

How do we get the “right” answer in the cab problem? Consider the conditional probability in question: $\Pr(\text{The cab in the accident was Blue} \mid \text{The witness identified the cab as blue})$. To determine the value of this conditional probability, we will employ Bayes' Theorem:

$$\Pr(A|B) = \Pr(B|A)\Pr(A)/\Pr(B)$$

And, the Theorem of Total Probability, which says the following:

$$\Pr(B) = \Pr(B|A)\Pr(A) + \Pr(B|\sim A)\Pr(\sim A)$$

So:

$$\Pr(A|B) = \Pr(B|A)\Pr(A) / [\Pr(B|A)\Pr(A) + \Pr(B|\sim A)\Pr(\sim A)]$$

The likelihood, $\Pr(B|A)$, is given by the reliability of the witness as described in the story. The witness reports the cab is Blue, when it is Blue, 80% of the time. We also know $\Pr(A)$, called a prior probability: 15% of cabs in the city are Blue. $\Pr(\sim A)$ is also well defined in this case; since all the remaining cabs that are not Blue are Green, $\Pr(\sim A)$ is 85%. Finally, the probability the witness says the cab is Blue, when it is Green, is also well defined; it is 20%, as given by the reliability of the witness. So:

$$\Pr(A|B) = (.8)(.15) / [(.8)(.15) + (.2)(.85)] = (.12) / [(.12) + (.17)] = (.12) / (.29) = .41$$

Here, though subjects often fail to do so, we can determine the “correct” probability that the cab was Blue, given the witness’ report, since we have good access to the base rates and we can employ them in Bayes’ Theorem.

This is not the case in the No Miracles Argument. Magnus and Callender (2004) suggest that a formal version of the No Miracles Argument looks like this:

For any theory x , let Sx stand for the expression ‘ x is successful’ and let Tx stand for the expression ‘ x is true.’ Let $\sim A$ be the negation of A and let $\Pr(A|B)$ be the probability of A conditional on B . We may now gloss the argument in this way for some current theory: [1] The theory h is very likely successful. [2] If h were true, it would be very likely to be successful. [3] If h were false, it would not be likely to be successful. [4] Therefore, there is a high probability that h is true. Formalizing this version of the argument yields:

$$\Pr(Sh) \gg 0 \quad (1)$$

$$\Pr(Sh|Th) \gg 0 \quad (2)$$

$$\Pr(Sh|\sim Th) \ll 1 \quad (3)$$

Therefore,

$$\Pr(Th|Sh) \gg 0 \quad (4)$$

Reintroducing our Bayesian formalism and replacing A with Th and B with Sh , we get the following:

$$\Pr(Sh|Th) = \Pr(Th|Sh)\Pr(Sh) / [\Pr(Th|Sh)\Pr(Sh) + \Pr(Th|\sim Sh)\Pr(\sim Sh)]$$

Recall that $\Pr(A)$ and $\Pr(\sim A)$ were set by the distribution of cabs in the population; in that case, it was easy to see how this calculation could be performed. In the No Miracles version of this calculation, it is not see easy to see how we get a value for $\Pr(Sh)$, and in turn $\Pr(\sim Sh)$. That is, to avoid a base rate fallacy, we must correctly determine this probability. What is the

probability some theory h is true? Well, that will depend on the distribution of successful theories in some population of theories.

Before we continue with our exploration of the No Miracles argument as a base rate fallacy, let me take a short detour. It strikes me that the problem isn't a base rate problem, but actually a much older problem – the problem of priors. It is often caviled that the assignment of a probability that some theory is true, say to something like Newton's theory, makes little sense. Considering the probability that it is true that some theory is successful induces a similar vertigo. Thus, base rate fallacy or problem of priors, the No Miracles argument formulated in the way Magnus and Callender suggest is in grave danger. With respect to realism and anti-realism disputes, Jon Dorling (1992) argues that the problem of priors can be resolved (and the base rate problem dissolved) if we take a subjective Bayesian approach to the problem. That is, if the priors, $\Pr(A)$ and $\Pr(\sim A)$, are assigned in line with a subject's own degree of belief, then there is no need for an objective estimate of the $\Pr(Sh)$ – you merely draw it from your standing psychological state. While this resolves the problem, it does so in a somewhat unsatisfying manner.⁵

Returning, then, to the question of how to get the base rates (determine the distribution of successful theories in some population of theories), Magnus and Callender make several suggestions and find them wanting. Obviously, the h in the No Miracles argument is drawn from a population of successful mature theories. At first, this additional assumption seems to be a good way to resolve the dispute in favor of $\Pr(Sh) \gg 0$. Magnus and Callendar make much hay of this, but it seems to me the right thing to say about this fact is this: there is an equivocation over “success” that matter here. Either (1) success means the same in ‘ h is successful’ and ‘ h is drawn from a pool of successful theories’, and we have $\Pr(Sh) = 1$, or (2) success comes in degrees and h 's being drawn from a “successful” pool of theories does nothing to tell us just how high $\Pr(Sh)$ should be set, and we have still have a standing problem of priors (or base rate determination). In case (1), the posterior $\Pr(Th|Sh) = 1$. This means that every theory is true, given that it is successful; this cannot be the case. There are obvious counter examples to be found in the history of science. In case (2), the problem for the no miracles argument is simply not resolved; we still have no objective way of assigning $P(Sh) \gg 0$.

⁵ Sober (1990) and Hitchcock and Sober (2004) provide an interesting discussion of a likelihood version of the No Miracles Argument. The later paper provides an additional worry for the No Miracles Argument: the kind of success we expect of our models involves selection in line with avoiding overfit to the data. Thus, the best explanation as to the predictive success of a particular currently employed model is that it avoids overfit, not that it is true.

As it stands, I am aware of no way to resolve this problem for the No Miracles Argument, short of conceding to Subjective Bayesianism, so I suggest the following: Modus Tollens – the No Miracles Argument is not a probabilistic argument after all.

Abduction and the No Miracles Argument

Another epistemology that has been traditionally employed in the realist literature is Inference to the Best Explanation. Consider André Kukla's formulation (1998):

[1] The enterprise of science is (enormously) more successful than can be accounted for by chance.

[2] The only (or best) explanation for this success is the truth (or approximate truth) of scientific theories.

Therefore,

[3] We should be scientific realists.

First, let me take issue with the conclusion. It is odd to state the conclusion of the abduction as a behavioral (or psychological) imperative. For now, let us simply revise the conclusion as follows: the enterprise of science is truth tracking. We will consider a further revision of this later, but for now this should allay some concerns.

Each of the two premises of the argument are in need of revision, so let us consider each of these in turn.

Success

I suggest, in a manner contrary to Doppelt (2007) and in line with Psillos (1999), that we refine the explanandum. The explanandum for our Inference to the Best Explanation is represented in [1] by the idea that the enterprise of science is (enormously) successful. As Psillos notes, predictive success is just too easy to get. This suggests the following strategy: we should restrict the explanandum, requiring that truth tracking be the best explanation for only some predictive successes, but not all the predictive successes of our sciences. In this way, we will also move from a wholesale argument for realism to a retail one – we are realists only about some of the descriptions of our best current theories. We are going to be *selective* realists; an accurate account of the epistemology of science only warrants belief that the descriptions of science are true in select cases.

Consider the beam balance example, introduced to the literature by Malcolm Forster (2000): Place an object a a distance x_1 from the fulcrum. Then move an object b left and right on the beam on the other side of fulcrum from a until the beam balances. Measure the distance y_1 that b is from the fulcrum when the beam is balanced. Repeat this for different x_1 values (distances of a from the fulcrum) and record all the x_1 and y_1 pairs.

This is the data from Experiment 1. In Experiment 2, we do the same thing for objects *b* and *c*, and in Experiment 3, the same for objects *a* and *c*.

The series of experiments might be described by a single model, call it DUM (for DisUnified Model), which is comprised of three equations:

DUM: (1) $y_1 = \beta_1 x_1$ (2) $y_2 = \beta_2 x_2$, and (3) $y_3 = \beta_3 x_3$.

For each experiment there are two variables, *x* and *y*, which are measureable distances, and one adjustable parameter, β , which is estimated from the data. Once the β for a particular experiment is estimated, it provides a fixed mathematical expression of the relationship between the two objects and the two distances – its mathematical structure, the predictive curve, represents some fact about the experiment in question.

For the sake of illustration, let us say you do the first experiment and get the following results:

x (distance)	y (distance)
1	2
2	4
3	6

From these results, we can estimate the parameter β for the first experiment – of course, the estimate will be 2. Thus, the mathematical equation for the first experiment is $y_1 = 2x_1$. We can continue in a similar manner for the other two experiments.

If, however, we are allowed make use of the resources of a theory, like Newtonian Mechanics, we can generated a model that has additional predictive successes. Mechanics when combined with a number of auxiliary assumptions, including idealizing ones, allows for the deduction of the following model, call it UNI (for Unified Model):

UNI: (1) $y_1 = (m_a/m_b)x_1$, (2) $y_2 = (m_b/m_c)x_2$, and (3) $y_3 = (m_a/m_c)x_3$.

Notice that when we employ the concept of mass, given by the Newtonian theory, we get a model that makes more predictions than its earlier counterpart! UNI provides a relation among its sub-models which DUM does not, namely that $m_a/m_c = (m_a/m_b)(m_b/m_c)$; let's call predictions that can be made on the basis of this constraint emergent predictions – they emerge from the model generated by the introduction of some concepts from a theory. For example, we can predict β_3 in two different ways, (1) by doing the third experiment and (2) by using the previous two experiments and the constraint above to determine β_3 . If these two measurements agree, we have an agreement of independent measurements.

Now, we are in a position to refine the first premise of the No Miracles Argument:

[1'] The agreement of independent measurements is a success of science that cannot be accounted for by chance.

This captures the intuition that there is something impressive about UNI that is not as impressive as the success of DUM. Further, anti-realists and realists alike can agree that this is a predictive success of science that is certainly worthy of note in developing an account of theory selection in science.

Explanation

The second premise of the No Miracles Argument hinges on the idea that the best explanation of the success of science is that its descriptions are true (or approximately true). To get from this premise (and our earlier one) to the conclusion, philosophers have suggested the following inference pattern: Inference to the Best Explanation. In essence, we can infer from the “bestness” of an explanation to the truth of that explanation. Let us now turn to the second premise and this inference pattern, which requires the truth of the second premise.

Much to do has been made over the details and inductive strength of Inference to the Best Explanation. A trenchant criticism of Inference to the Best Explanation is that it is question begging. Explanation is merely a pragmatic virtue, not an epistemic one, on the anti-realist account of scientific inference; thus, we cannot infer from the best explanation to the truth of that explanation, or we have already won (or conceded) the debate regarding realism (or anti-realism).⁶ That is, the strategy in deploying a No Miracles Argument is to apply an inference commonly used in science (Inference to the Best Explanation) to science itself; since Inference to the Best Explanation is objectionable as an inference pattern properly deployed in science, it is again objectionable at this “meta” level.

In light of this concern, I suggest that we pare down the No Miracles Argument. Rather than employ an inference pattern from the practice of science (like Inference to the Best Explanation), I suggest a more modest inference. Let us employ the following principle: unless there is reason to think that some regularity is the result of cosmic coincidence, take it to have a cause in the world. This principle may account for certain events in the history of science, like the dispute over hidden variables in Quantum Mechanics; until there was good reason (Bell’s Theorem and related experiments) to think there were no hidden variables, the research program to vindicate hidden variables seemed perfectly rational. This principle

⁶ Kukla (1998), Laudan (1981), and Fine (1984) all make this point.

doesn't suffer from the same problem (at least not to the same extent) as Inference to the Best Explanation, as anti-realists can also accept that there is a cause of the regularities in nature – they merely assert that we are epistemically removed from the nature or proper description these causes.

In light of this weaker principle, we can rewrite [2] as follows: [2'] Unless there is reason to think that the agreement of independent measurements is the result of cosmic coincidence, take it to have a cause in the world. Now, we can get a more modest conclusion: [3'] The agreement of independent measurements has a cause in the world. This has a realist flavor, but it isn't so obviously inflated as to be transparently question begging. Take the No Miracles Argument this way: where there are agreements of independent measurements, and there is no established reason to take this agreement as a cosmic coincidence, science has made a discovery about the world.⁷ Of course, this isn't much of a victory for realism just yet, since there are many notable anti-realist positions that will agree with this conclusion.

Realism

So far, our modified no miracles argument is a retail argument for realism. It doesn't suggest that we should be realists writ large, merely that there are places where science tracks the truth (makes discoveries about the world). One might begin to worry that this is not much like traditional realism that holds that the descriptions of the world provided by our best theories are true or approximately true. This idea that there is a discovery made where there is an agreement of independent measurements doesn't sound much like that brand of realism.

Notice that theory plays a role in the generation of UNI. In fact, it is difficult to see how we would generate UNI at all without the resources (the concept of mass in particular) of Newton's theory. Now, many cavalier realists are inclined to take these predictive successes as demonstrating that Newton's theory provides truthful descriptions of the world. We have already seen that this inference is in danger, since a probabilistic account of this inference fails and an abductive account begs the question. Realism needs to be more conservative in at least two ways. (1) Since it is the model that provides for the predictive success of UNI over DUM and not the theory (writ large), a realist should be careful not to endorse the whole of the theory

⁷ My hunch is that this move is also objectionable on similar grounds to Inference to the Best Explanation. However, this move is valuable in putting form to our intuitions about cases like UNI versus DUM. I argue elsewhere that taking the agreement of independent measurements to be a discovery about the world has additional epistemic virtues – it is employed in the identification of artifacts and it allows for the detection of false predictions in earlier theories. Work on this version of the argument is forthcoming.

in light of this success. And, (2) as of now, our No Miracles Argument only gets you to the fact that the intersection of Newtonian Mechanics and the agreement of independent measurements (the success of UNI) has provided us with a discovery; this says nothing about which scientific descriptions are true. However, it is difficult to see how we could escape endorsing some of Newton's theory as true, given its role in this increased predictive success of UNI.

Recognizing that I already pulled explanation from the No Miracles Argument, at some point explanation has to play a role in scientific realism. Good realists take science to be meeting two goals: (1) increasing predictive success (like the development of models such as UNI), and (2) providing an explanation of these predictive successes. Traditional, cavalier, realists take these to be simply tied together. We have seen that these goals are tied together; the concept of mass, from Newton's theory, plays a salient role in the generation of UNI and the discovery UNI allows. However, meeting the second goal is not as simple as reading the true descriptions (given by a theory) off of the predictive successes of the theory, as the traditional realists seem to think. Here I suggest a different strategy: we should use the theory to read into select predictive successes (agreements of independent measurements). Here, we take the theory to provide true descriptions of the world only where we need it to read in an explanation of the discovery endorsed by (the non-miracle of) the agreement of independent measurements.⁸

This should allay the concern that our No Miracles Argument fails to get any sort of robust realism. Of course, the No Miracles Argument only gets us to the conclusion that we have made a discovery where there is an agreement of independent measurements. Once this discovery is made, the realist then asks, what is it that has been discovered? The anti-realist, on the other hand, is happy with the increase in predictive success, and leaves it at that. A realist, on my view can answer her question by looking to the theory in question to provide an explanation of the predictive success (and in turn the discovery).

In restricting our realism to descriptions directed at the discovery made by models of the theory, we have generated a selective realism. This

⁸ In ongoing work, I argue that it isn't even the current theory (the one we used to make the discovery) that is used to read in an explanation of the discovery itself, rather it is a future theory (whether a development of the current one or a revolutionary one) that is used to provide the explanation of the discovery. Consider the way in which Relativity explains the successes (and failures) of Mechanics as an example of what I have in mind. Taking this diachronic view of the second goal of realism (providing explanation of the predictive success of a theory) has additional epistemic virtues – for example, it allows us to identify what we thought were predictive successes that were, in fact, failures.

realism also focuses on the connections among theories, models, and certain kinds of predictive successes (the agreement of independent measurements). These are the two most fundamental building blocks of a conservative realism that I call Consilient Realism.

Conclusion

Wholesale arguments for scientific realism, arguments indented to vindicate the claim that all of our best current theories track the truth, tend to face serious difficulties. One such argument is the No Miracles Argument. Attempted analyses of this argument, as a probabilistic argument and as an Inference to the Best Explanation, run into immediate road blocks. It seems transparent that the reason for this is just that these inference patterns are difficult to vindicate even within the proper pursuit of science; for example, Bayesian inference patterns make good sense in some cases, like ones where the base rates can be objectively determined, but seem to make little sense in other cases. Turning these inference patterns to the whole of science (or even just the successes of science) becomes quite difficult. As a result, philosophers of science have begun to push for retail arguments for realism; that is, some inference patterns in science to get us to truth some of the time, and others do not.

In this paper, we explored a retail version of the No Miracles Argument. This argument, to avoid problems (like question begging!) had to be pared down. We weakened the argument so that it only provides us with a proclivity to say that certain predictive successes (that rely on models derived from theories) are truth related (they underwrite the claim that we have made a discovery). This doesn't seem all that out of line with most anti-realist arguments. The realist then takes science to be directed at a second goal, explanation; it is here that she parts ways with the anti-realists. Recognizing that theory plays a role in discovery (and predictive success), the realist seeks explanations of these discoveries. These explanations are often read in to the discovery from the theory used to generate the agreement of independent measurements, but that need not be the case.

The Consilient Realist, when the view is fully developed, will hang her hat on the notion that realism isn't so naïve as to think that all of our best sciences, in all their glory, track the truth.⁹ This has been an embarrassment to realism for long enough. She will be pleased to note that realism is

⁹ A recent literature has arisen regarding problems with selective realisms (which is the kind of realism being endorsed in this essay). Work by several philosophers, including, most recently, Elsamahi (2004), Chakravartty (2007), and Harker (2010, 2012) have considered this problem. The success of the sort of No Miracles Argument I advance in this paper will depend on how that dispute turns out, and whether a selective realism based on the ideas generated by Forster's beam balance, can survive the main line critiques.

compatible with anti-realism on one level, but that taking certain predictive successes as discoveries (rather than mere increases in predictive accuracy) plays a role other epistemically promising inferences (read, promissory note here).¹⁰

References:

- Blackburn, S. (2002), "Realism: Deconstructing the Debate" *Ratio* XV 2: 113-133
- Chakravartty (2007), *A Metaphysics for Scientific Realism: Knowing the Unobservable*. Cambridge University Press
- Doppelt, G. (2007), "Reconstructing Scientific Realism" *Philosophy of Science*, 74: 96-118
- Elsamahi, M. (2004) "A Critique of Localized Realism" *Philosophy of Science*, 72: 1350-1369
- Fine, A. (1984), "The Natural Ontological Attitude" J. Leplin (ed.), *Scientific Realism*. Berkeley: University of California Press, 83-107.
- Forster, M. (2000), "Hard Problems in the Philosophy of Science: Idealisation and Commensurability," in R. Nola and H. Sankey (eds) *After Popper, Kuhn, and Feyerabend*. Kluwer, pp. 231-250
- Harker, D. (2010) "Two Arguments for Scientific Realism Unified" *Studies in History and Philosophy of Science*, 41: 192-202
- Harker, D. (2012) "How to Split a Theory: Defending Selective Realism and Convergence Without Proximity" *The British Journal for the Philosophy of Science*, 0 (2012): 1-28
- Hitchcock, C. & Sober, E. (2004), "Prediction Versus Accommodation and the Risk of Overfitting". *British Journal for the Philosophy of Science*. 55: 1-34
- Koehler, J.J. (1996), "The base rate fallacy reconsidered: Descriptive, normative, and methodological challenges". *Behavioral and Brain Sciences* 19 (1): 1-53
- Kukla, A. (1998), *Studies in Scientific Realism*. New York: Oxford University Press.
- Laudan, L. (1981), "A Confutation of Convergent Realism". *Philosophy of Science*. 48: 19-49
- Magnus, P.D. & Callender, C. (2004), *Philosophy of Science*. 71: 320-338
- Psillos, S. (1999), *Scientific Realism: How Science Tracks Truth*. London: Routledge.

¹⁰ My own current work focuses on questions surrounding correct inferences and coincidences. I am hoping the sort of reasoning suggested by Forster's Beam Balance example will play a key role in a good inference about non-coincidence. If it does, this would be a victory for the idea that the agreement of independent measurements (noted here as a "predictive success that is a discovery") plays a role in other successful inferences.

- Putnam, H. (1975), *Mathematics, matter, and method: Philosophical papers* (vol. 1). Cambridge: Cambridge University Press.
- Sober, E. (1990), "Contrastive Empiricism" in C. Wade Savage (ed.), *Scientific Theories*. Minesota Studies in the Philosophy of Science, vol. 14. Minneapolis: University of Minnesota Press, 392-410.
- Tversky, A. & Kahneman, D. (1982), Evidential Impact of Base Rates. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgment under Uncertainty: Heuristics and Biases*. Cambridge: Cambridge University Press.

EVALUATION OF KNEE FLEXORS AND EXTENSORS MUSCLE STRENGTH AFTER LIGAMENOTPLASTY FOR ANTERIOR CRUCIATE LIGAMENT AFTER 6 MONTHS OF SURGERY

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Abstract

The alteration of the strength of the quadriceps and hamstrings after six months of reconstruction of the anterior cruciate ligament (ACL) induces a decrease in performance and can cause injury. Hypothesis: The muscular strength of the operated side of anterior cruciate ligament after 6 months of surgery shows some muscular weakness in the quadriceps and hamstrings in comparison with the healthy side. Motor performance will be dependent on the total recovery of muscle strength of these young athletes.

Purpose: This study evaluated the isokinetic muscle strength parameters after 6 months of anterior cruciate ligament rehabilitation in young athletes. **Methods:** We measured muscle strength of 50 patients, 6 months after surgery after ACL reconstruction. The parameters used to evaluate the strength of the quadriceps and hamstrings were the: peak torque, average power, total work, max repetition total work and the ratio agonist / antagonist (AGO/ANTAG). They were studied at various speeds: 120, 180, 300 degrees / sec.

Results: muscle strength in the operated side after 6 months of conservative treatment shows a deficit only at the level of the quadriceps muscle in comparison with the healthy side.

Conclusion: hamstrings are recovered more quickly than the quadriceps.

Keywords: Biodex, isokinetic, anterior cruciate ligament (ACL), Ratio

Introduction

The anterior cruciate ligament (ACL) injury has become one of the most prevalent knee injuries, primarily in adolescents and young adults playing sports with pivot / contact like football, skiing, basketball (Park et al., 2010). ACL is an essential stabilizer of the knee, in preventing the anterior translation of the tibia on the femur, and stabilizing the knee against the constraints of rotation and valgus (Levy et al., 1982). In addition, knee instability is the most critical functional problem in ACL injuries, mainly in the activities requiring pivoting and side stepping, and that can be the major reason of disability in practicing sports activities and restriction of daily living activities (Wong et al., 2012).

However, it is noteworthy that patients still suffer from persistent weakness of the thigh muscles, postoperative pain (Rosenberg et al., 1992), patellofemoral osteoarthritis, anterior knee pain (AKP), functional deficits and a decline in sports activities, after ACL reconstruction despite the completion of ligamentous stability (Shino et al., 1993). Then, the goal of ACL reconstruction cannot be reached without the recovery of muscle strength, even if the knee recovered its stability and the adequate range of motion (Niga et al., 1996). Therefore, rehabilitation after ACL reconstruction typically begins during the short duration of hospitalization, with a period of 6 months approximately (Beynnon et al., 2002). The aim of our study was to examine the changes in the knee muscles strength after systematic and progressive rehabilitation exercises for 6 months of male athletes after ACL reconstruction.

Material and methods

Fifty subjects were treated surgically by ACL reconstruction using a standard Kenneth Jonnes (KJ) technique after complete rupture of ACL, participated in the study, with mean age about 27.02 (18–45) years.

Rehabilitation program was initiated with a partial weight bearing during the second postoperative week with a gradual advancement to full weight bearing during the fourth postoperative week; running was started between the third to fourth postoperative months and cutting motion exercises at the sixth postoperative month. Return to full sports activities was allowed after the achievement of at least 70% of quadriceps strength

compared to the opposite limb, and a complete full range of motion without hyarthrosis.

Muscle strength during an isokinetic exercise was measured using the Biodex dynamometer (Biodex, Shirley, NY, USA). Patients were fixed to the testing device with straps around their chest, pelvis, and thigh. We adjusted the height of the seat in a way to align the posterior one third of the tibiofemoral joint with the axis of the rotation of the dynamometer during flexion-extension motion of the knee. A resistance pad was placed over the distal one third of the lower leg, without restricting ankle dorsiflexion or plantar flexion (Lee et al., 2013). The isokinetic strength of the quadriceps and hamstring muscles were measured at a velocity of 120,180 and 300°/s. We explained to the subjects about the device as they can understand the measurement methods. Each subject was given a 10 minute of warm-up period by aerobic ergometer cycling. Each test included a series of movements of flexion and extension of the knee, resulting in five movements roundtrip knee over the average speed 120°/s, 10 movement in average speed 180°/s and 10 fast moves 300°/s. A rest period of 25 seconds was provided between tests. These muscles actions must reach a maximum, the changes in the direction of movement between flexion-extension and extension-flexion should take place without interruption. The regime was concentric.

In order to analyze the quadriceps and hamstring isokinetic strength, we assessed the mean peak torque, max repetition total work, an AVG power, ratio AGO/ANTAG, and the results of the operated leg were expressed as a percentage of the non-operated leg. These measurements procedures were performed at 6 months after surgery. Comparisons of data were performed using unpaired Student's t tests. The level of significance was set at P value <0.05.



Fig1. BIODEX

Statistical analysis methods

All data were analyzed statistically, using a current SPSS statistical package Version 21 and the data presented as Mean \pm Standard Deviation of Means (S.E.M). Comparison between affected side and healthy side was performed using t-test and p value was considered statistically significant if $P \leq 0.05$, P value > 0.05 insignificant.

Results

Paired Samples Test				
		Mean	Std. Deviation	p
Pair 1	300°/extension/healthy side 300°/extension/affected side	16.4560	15.3088	.000
Pair 2	300°/flexion/ healthy side 300°/flexion/ affected side	-.4080	14.6049	.844
Pair 3	180 /extension/ healthy side 180 °/extension/ affected side	29.2520	27.3057	.000
Pair 4	180 °/flexion/ healthy side 180 °/flexion/ affected side	.6240	14.7687	.766
Pair 5	120 °/extension/ healthy side 120°/extension/ affected side	33.0740	26.8345	.000
Pair 6	120° /flexion/ healthy side 120° /flexion/ affected side	.5940	15.6137	.789

Table 1: Results obtained with Biodex on healthy side and side operated at a PEAK TORQUE

Paired Samples Test				
		Mean	Std. Deviation	P
Pair 1	300°/extension/healthy side 300°/extension/affected side	32.5500	39.8898	.000
Pair 2	300°/flexion/ healthy side 300°/flexion/ affected side	-11.8080	49.4542	.098
Pair 3	180 /extension/ healthy side 180 °/extension/ affected side	40.2660	51.0567	.000
Pair 4	180 °/flexion/ healthy side 180 °/flexion/ affected side	-4.7580	40.3242	.408
Pair 5	120 °/extension/ healthy side 120°/extension/ affected side	32.2740	34.6817	.000
Pair 6	120° /flexion/ healthy side 120° /flexion/ affected side	-4.5720	23.6370	.178

Table 2: Results obtained with Biodex on healthy side and side operated at an AVERAGE POWER

Paired Samples Test				
		Mean	Std. Deviation	p
Pair 1	300°/extension/healthy side 300°/extension/affected side	18.4520	19.9063	.000
Pair 2	300°/flexion/ healthy side 300°/flexion/ affected side	-1.9260	17.9895	.453
Pair 3	180 /extension/ healthy side 180 °/extension/ affected side	28.0780	30.1943	.000
Pair 4	180 °/flexion/ healthy side 180 °/flexion/ affected side	-.0780	21.1330	.979
Pair 5	120 °/extension/ healthy side 120°/extension/ affected side	28.9980	27.0262	.000
Pair 6	120° /flexion/ healthy side 120° /flexion/ affected side	-1.7300	22.3706	.587

Table 3: Results obtained with Biodex on healthy side and side operated at a MAX REP TOTAL WORK

Paired Samples Test				
		Mean	Std. Deviation	p
Pair 1	300°/extension/healthy side 300°/extension/affected side	118.5240	161.8520	.000
Pair 2	300°/flexion/ healthy side 300°/flexion/ affected side	-35.4260	187.1259	.187
Pair 3	180 /extension/ healthy side 180 °/extension/ affected side	233.6740	295.1588	.000
Pair 4	180 °/flexion/ healthy side 180 °/flexion/ affected side	-10.2240	221.7589	.746
Pair 5	120 °/extension/ healthy side 120°/extension/ affected side	118.0860	142.4496	.000
Pair 6	120° /flexion/ healthy side 120° /flexion/ affected side	-8.0760	97.5883	.561

Table 4: Results obtained with Biodex on healthy side and side operated at TOTAL WORK

According to the Biodex test, patients in our sample showed only deficits of the quadriceps muscle. There is a significant difference between the results obtained from the healthy and the operated side ($p = 0$) at the confidence level of 95% for the extension movement. So, we can consider that there is a significant difference between the healthy and affected side at the confidence level 95% for the extension movement. Therefore, there is no significant difference for the flexion movement.

These results confirmed the presence of a deficit in operated patients during the extension for the peak torque, average power, max work and the total work.

Discussion

Isokinetic assessment can be used to measure torque values at several joints in the body; and the knee presented the most commonly tested joint.

This assessment is typically based on comparing the involved joint with the uninvolved joint (Holmes et al., 1984).

Our study was to affirm the presence of muscle weakness in the knee by using the biodex test after 6 months of rehabilitation after ACL reconstruction. According to the biodex test, the patients in our sample showed a weakness only in terms of quadriceps and not hamstrings. Our results confirmed the presence of a deficit in operated patients during the extension for the peak torque, average power, max work and the total work, and a muscular ratio (hamstring / quadriceps) less than 0.60.

Consequently, it was reported that is difficult to generalize that the normal H/Q (Hamstring/quadriceps) ratio is considered to be 50% to 80% as averaged through the full range of knee motion, with a higher ratio at faster speeds (Grace et al., 1984). For a 100% ratio, the hamstrings have an increased functional capacity for providing stability to the knee (Harter et al., 1990). This significant knee stability may reduce the possibility of an anterolateral subluxation of the tibia (Li et al., 1996).

However, a study conducted by Rosene et al. (2001) reported that an H / Q ratio of 0.52 in 12 female volleyball players aged twenty years old, with a measurements on isokinetic machine at a speed of 60 degrees / second which is higher than the ratio of our study. Another study conducted by Magalhaes et al. (2004) described a H / Q ratio of 0.51 for high level Volleyball men professional players, which is higher than the ratio of our patients.

Soderman et al. (2001) which presented a lower H / Q ratio among female footballers who had a secondary rupture of anterior cruciate ligament extern (ACLE) and Ahmad and al. that reported a generally lower ratio H / Q in women.

Our results presenting a muscular ratio (hamstring / quadriceps) less than 0.60 agreed with all these studies.

In addition our results confirm the result of kobayshi et al. (2004) study that measured muscle strength in 36 patients after ACL reconstruction with autologous "bone-patellar tendon-bone." The isokinetic quadriceps and hamstring strength was studied during the concentric contraction at 60 and 180 degrees / sec and was measured at 1, 6, 12 and 24 months after surgery. At 24 months, the quadriceps muscle strength had recovered approximately 90% of the force on the opposite side, 60 and 180 degrees / sec.

Therefore, these results are not consistent with those of Withrouw et al. (2006) which states that subjects who underwent ligament reconstruction by the kenneth jones method after 6 months of surgery have deficits in the hamstrings and quadriceps.

In contrast, the strength of the hamstring had regained 90% of its value in six months. Another study conducted by Keays et al. (2000) is

consistent with our study that have concluded that the quadriceps strength was recovered more slowly than the hamstrings strength after ACL reconstruction, the quadriceps muscle performance was recovered favorably after returning to sport. Hamstrings recovered well at six months after surgery and they played an important role in protecting the transplant because they limit the anterior drawer. Niga et al. (1996) measured the intensity of the extensor muscle periodically 3, 6, 9, 12, 15 and 18 months after surgery. They found that the quadriceps strength has recovered with time; it has specifically recovered over 80% with an ACL ligament 18 months after the operation.

Sachs et al. (1989) have found that the average of quadriceps strength was only 60.8% at 1 postoperative year.

Recently in 2013, a study by Lee et al. (2013) was carried out as a comparison between the affected side and the healthy side of 10 subjects, including 5 females and 5 males at 12 weeks after surgery of an ACL ligament reconstruction; the results showed that: at $60^\circ / s$, the isokinetic muscle function of women showed no significant change between before and after the operation in the total work, peak torque and average power for the healthy side and the affected side. Even at $60^\circ / s$, the isokinetic muscle function of men showed no significant change between before and after surgery in the max time, total work and average power, carried out on the healthy side. In extension, the peak torque showed no significant change on the affected limb. However, the difference in results may be due to a separate rehabilitation protocol, frequency and intensity of different physiotherapy treatment.

Conclusion

Our initial hypothesis that muscle strength of the operated side of anterior cruciate ligament had some muscle weakness after 6 months of surgery in the quadriceps and hamstrings in comparison with the healthy side, is partially verified because our results showed a deficit only in terms of quadriceps for the 5 parameters (peak torque, AVERAGE POWER, MAX WORK, RATIO AGON / ANTAG and TOTAL WORK). Quadriceps strength was recovered more slowly than the hamstrings strength after ACL reconstruction. Based on these results, our conclusion is that strengthening exercises for the quadriceps muscle need to be intensified after ACL reconstruction.

References :

Ahmad CS, CAM,HN,SJS,GTR, LWN.(2006). Effect of gender and maturity on quadriceps-to-hamstring strength ratio and anterior cruciate ligament laxity. The American Journal of Sports Medicine, 34, 3,370-3

- Beynon B.D, Johnson R.J, Fleming B.C. (2002). The Science of Anterior Cruciate Ligament Rehabilitation. *Clinical Orthopaedics and Related Research* , 402, 9–20
- Grace TG, Sweetser ER, Nelson MA, Ydens LR, Skipper BJ.(1984). Isokinetic muscle imbalance and knee-joint injuries: a prospective blind study. *J Bone Joint Surg Am*, 66, 734–740
- Harter RA, Osternig LR, Standifer LW. (1990). Isokinetic evaluation of quadriceps and hamstrings symmetry following anterior cruciate ligament reconstruction. *Arch Phys Med Rehabil*, 71,465–468
- Holmes JR, Alderink GJ.(1984). Isokinetic strength characteristics of the quadriceps femoris and hamstrings muscles in high school students. *Phys Ther*, 64, 914–918
- Kobayashi A, Higuchi H, Terauchi M , Kobayashi F, Kimura M, Takayishi K.(2004).Muscle performance after anterior cruciate ligament reconstruction. *International Orthopaedics*, 28,48-51
- Keays SL, Saxton-Bullock J, Keays AC.(2000). Strength and function before and after anterior cruciate ligament reconstruction. *Clin Orthop Relat Res*, 373,174-83
- Lee J.C, Kim J.Y, Park G.D.(2013). Effect of 12 Weeks of Accelerated Rehabilitation Exercise on Muscle Function of Patients with ACL Reconstruction of the Knee Joint. *J. Phys. Ther. Sci*, 25,1595–1599
- Lee GH, McCulloch P, Cole BJ, Busch-Joseph CA, BACH BR.(2008). The incidence of acute patellar tendon Harvest complications for anterior cruciate ligament reconstruction. *Arthroscopy*, 24,162-6
- Levy IM, Torzilli PA,Warren RF. (1982). The effect of medial meniscectomy on anterior-posterior motion of the knee. *J Bone Joint Surg Am*, 64,883-8
- Li RCT, Maffulli N, Hsu YC, Chan KM. (1996). Isokinetic strength of the quadriceps and hamstrings and functional ability of anterior cruciate deficient knees in recreational athletes. *Br J Sports Med* ,30,161–164.
- Magalhaes J, Oliveira J, Ascensao A, Soares J .(2004). Concentric quadriceps and hamstrings isokinetic strength in volleyball and soccer players. *The Journal of sports medicine and physical fitness*, 44,2, 119-125
- Niga S, Yamamoto H, Furuya K. (1996). Recovery of extensor muscle strength in athletes after anterior cruciate ligament reconstruction. *J Orthop Sci*, 1, 171–177
- Park W.H, Kim D.-K, Yoo J. C, Lee Y. S, Hwang J.-H, Chang M. J, Park Y. S. (2010). Correlation between dynamic postural stability and muscle strength, anterior instability, and knee scale in anterior cruciate ligament deficient knees. *Arch Orthop Trauma Surg*, 130, 1013-1018

- Rosene J.M , Fogarty T.D, Mahaffey B.L.(2001). Isokinetic hamstrings: quadriceps ratios in intercollegiate athletes. *Journal of Athletic Training*; 36,4, 378-383
- Rosenberg TD, Franklin JL, Baldwin GN. (1992). Extensor mechanism functions after patellar tendon graft harvest for anterior cruciate ligament reconstruction. *Am J Sports Med*, 20, 519–526
- Sachs RA, Daniel DM, Stone ML et al .(1989). Patellofemoral problems after anterior cruciate ligament reconstruction. *Am J Sports Med*,17,760–765
- Shino K, Nakagawa S, Inoue M. (1993). Deterioration of patellofemoral articular surfaces after anterior cruciate ligament reconstruction. *Am J Sports Med*, 21, 206–211
- Soderman K, Alfredson H, Pietila T, Werner S. (2001) Risk factors for leg injuries in female soccer players: a prospective investigation during one outdoor season. *Knee Surg Sports Traumatol Arthrosc*, 9, 313-21
- Withrow T.J, Huston L.J, Wojtys E.M, Ashton-Miller J.A.(2006). The Relationship Between Quadriceps Muscle Force, Knee Flexion, and Anterior Cruciate Liagment Stain in an In Vitro Simulated Jump Landing. *The American Journal of Sports Medicine*, 34,269-274
- Wong M.J , Khan T, Jayadev C.S , Khan W , Johnstone D.(2012). Anterior Cruciate Ligament Rupture and Osteoarthritis Progression. *The Open Orthopaedics Journal*, 6, 295-300

MOTIVATION TO PHYSICAL EXERCISE: IS IT DIVERSE WITH DIFFERENT SOCIODEMOGRAPHIC CHARACTERISTICS PARTICULARLY THE GENDER?

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Abstract

Engagement in physical exercise differs with different socio-demographic status. Females exhibit lower levels of physical exercise performance, it seems that their motivation to exercise is differ. Various types of motivation that influence exercise performance regularly were recognized. This study aims to determine the relationship between 21 motivating reasons and sociodemographic factors, concentrating more on the gender difference. **Method:** A study was conducted on 501 adults performing exercise. Participants were interviewed using a questionnaire comprises of 21 motivating reasons. Each reason was measured on a five-point scale as, strongly disagree (1) to strongly agree (5). The sum, and mean score of all the 21 reasons was used as the dependent variable versus each socio-demographic factor. The mean score of each item was used as the dependent variable versus gender. **Results:** Significant inverse correlations were detected between motivating reasons score with; age ($r=-0.122$, $p=0.007$), BMI ($r=-0.091$, $p=0.042$), and household income ($r=-0.095$, $p=0.036$). Unmarried or free of chronic diseases respondents showed, significantly higher motivating mean score ($p=0.032$, 0.010 respectively). No significant difference in the mean score with level of education and gender. However, males showed significantly higher means score in two motivating reasons to; *have a positive effect on the sex life* (4.18 ± 1.01 , $p < 0.001$), *have more energy to go about the daily chores* ($4.62 \pm .63$, $p = 0.027$). No significant gender difference in the mean score for other motivating reasons. **Conclusion:** young, unmarried, lower income, lower

BMI and no chronic illness individuals have higher motivating reasons. Both genders were almost equally motivated in performing exercises.

Keywords: Gender, Motivating reasons, Physical exercises, Socio-demographic factor

Introduction

The Epidemiologic study of any concept or event requires the item under investigation to be defined and measured. The common and professional use of the term "exercise" has been used interchangeably with "physical activity". Exercise, however is not synonymous with physical activity: it is a subcategory of physical activity. Exercise is a physical activity that is planned, structured, repetitive, and purposful with an objective for improvement or maintenance of one or more components of physical fitness (Carl, Kenneth, & Gregory,1985). Two main groups of components contributed to physical fitness: one related to health and the other related to skills that are relevant more to athletic ability. The health-related components of physical fitness are five (cardio respiratory endurance, muscular endurance, muscular strength, body composition, and flexibility) and more important to public health than the components related to athletic ability (Pate, 1983).

Engagement in regular physical exercise is an important part of a healthy lifestyle. In order to achieve the health benefits of physical activity it is important to exercise regularly, (Aura, Silvia, & Sorin, 2014; Sabina, Alina, & Bogdan, 2014). The 2008 Physical Activity Guidelines for Americans (U.S.A. Department of Health and Human, 2008) recommends that healthy adults should get a minimum minutes per week as 150 of moderate-intensity or 75 as vigorous-intensity aerobic exercise, or a combination of the two (two days doing 20 - 25 minutes of vigorous exercise and two days doing 30 minutes of moderate exercise).

Unfortunately, previous generations were more active naturally through manual labour and work. However, with the use of modern technologies that considerably decreased physical activity at home, at work, and even during leisure time. A sedentary lifestyle appears to be the rule in most developed countries.

Several researchers, (Gulap, 2014; Sabina et al., 2014; Ebru, 2013; Lindsay, Craig, Philip,& Jenny,2010) stated, that regular exercise is linked to the prevention of cardio-vascular disease, type 2 diabetes mellitus (DM), cancer, obesity, hypertension, osteoporosis, and depression. There is a body of evidence regarding the effectiveness of regular physical exercise in the primary and secondary prevention of several chronic diseases (Lindsay et al. 2010). Interestingly, Jennifer (2004), stated that, it has been proven

medically that people who do regular physical exercises have a lower risk of up to; 50% type 2DM, 50% colon cancer, 35% coronary heart disease and stroke, 20% breast cancer a 30% early death, 83% osteoarthritis, 30% depression, 30% dementia. In addition, Lindsay et al. (2010) reported that the medications used for diabetes, hypertension and Low density lipoprotein (LDL) have an inverse relationship with vigorous physical exercise.

In spite of the huge number of researches that had confirmed the link between physical exercise and health, only about 30 % of adult Americans reported they got regular physical exercise and about 40 % got no physical exercise at all. While 63% of Canadians were not sufficiently got physical exercise, (Lindsay et al., 2010).

One important factor which may contribute to continue regular exercise is his or her motivation to exercise,(Duncan, Craig, Philip & Jenny 2010). Generally, Deci & Ryan (2000) stated that according to the Self-Determination Theory, the motivation towards regular physical exercise can be; extrinsically or intrinsically motivation. The extrinsic motivation involves motivation towards physical exercise in order to avoid negative feelings or to satisfy an external requirement (e.g. rewards, sanctions, expectations). So, the individuals will likely feel pressured to perform the physical exercise. Whereas, the intrinsic motivation represents the most self-determined type of motivation and refers to engaging in the activity for its sake. An intrinsically motivated person considers the physical exercise inherently enjoyable, interesting and challenging.

Several authors (Hopkins, Davis, Van Tieghem, Whalen & Bucci, 2012; Silberner, & Joanne, 2010;Trost, Owen, Bauman, Sallis, & Brown 2002) categorised the motivation to exercise as follows: a-demographic and biological factor (gender, body weight), b- psychological, cognitive and emotional factors (enjoyment, improve cognition and memory and decrease the risk for dementia and anxiety), c- behavioural attributes and skills (sleep, smoking, improves their quality of life), d- social and cultural, (family or friends support) and e- physical environment and/or physical activity (satisfaction access to exercise facilities watching others exercises) characteristics.

Understanding how different types of motivation contribute to exercise behavior is an important first step in identifying ways to increase exercise among individuals.Changes in physical exercise performance were noted in relation to the influence of marital status, obesity, smoking, lack of time, past exercise behavior, and other environmental variables. Diyanah, Hafazah, & Mohd, 2012; Trost et al. 2002), detected the reasons why people engaged in physical exercise were different during different age period. The reasons were related to the changing in; values, life tasks, goals, and health circumstances over time.

Gender differences in physical exercise performance among adults are well documented by Jennifer (2004) who detected that, females typically exhibit lower levels of physical exercise performance than males. It seems that gender factor motivating people differently in performing regular exercise. Therefore, identifying these variations may help in the implementation of interventions aimed at promoting physical exercise across the lifespan. We hypothesized that there is a variation in the motivating reasons for performing physical exercise with different socio demographic factors. Man and woman also possessing different motivating reasons for performing regular physical exercise. The current study employs self-determination theory as a framework to examine how motivation for performing physical exercise is affected by various socio demographic characteristics and gender in particular.

Aims

1-To investigate the relationship between socio demographic factors and the motivating reasons for performing physical exercise.

2-To study the relationship between the sex of the individual with the motivating reasons for performing physical exercise

Methodology

A pilot study was carried out prior to embarking on the main project, for testing the reliability and validity of the questionnaire. The cronbach's alpha was 0.92.

A Cross sectional study was conducted among adult individuals performing physical exercise in Shah Alam. Five recreational areas / parks in Shah Alam were chosen randomly. Each selected area was visited during weekdays as well as weekend within the period of study (2013-2014). A sample of 501 adults aging 18 years and above, who were performing exercise in one of those five chosen areas was collected. Formal consent was obtained from each participant. All participants were face-to-face interviewed, using well structured, validated questionnaire. Information was obtained from each participant, socio demographic characteristics (age, sex, marital status, ethnicity, religion, education level, employment status, working hours per day, working days per week), smoking behaviour (non-smoker, current smoker, or ex-smoker) and medical status (presence and type of chronic disease).

In addition, this questionnaire includes 21 items referring to various kinds of motivation reasons for getting involved in a regular physical exercise. These items were categorised into four main domains: i. biophysical to; *increase the chances of living longer, control weight, obtain the weight-loss benefits, have stronger muscles and bone, have flexible body movement,*

have positive effect on the sex life". ii- psychological, cognitive and emotional to; feel better about my appearance, boost the confidence and improve self-esteem, decrease the risk of depression, feel happier, feel more relaxed, connect with family or friend in a fun social setting. iii- medical to; prevent high blood pressure, decrease the risk of stroke, decrease the risk of arthritis, decrease the risk of diabetes mellitus (DM), decrease the risk of cancer or recommended by the doctor", iv- behavioural to; improve the quality of life, have more energy to go about the daily chores, fall asleep faster and deeper".

Each item was measured on a five-point - scale, from (1) strongly disagree to (5) strongly agree. The sum score of the 21 reasons was then used as the dependent variable versus each sociodemographic characteristic. Moreover, for each item of these 21 reasons, the mean score was calculated, and used as a dependent variable versus the gender of the participant.

Each participant was asked to indicate his/her weight and height for the body mass index (BMI) calculation.

Descriptive statistics (frequency, percentage, and means) was carried out. χ^2 , ANOVA and correlation regression tests were used to assess the relationship between causes of motivation and sociodemographic factors. While independent t test was used to detect the significant variation in the motivating means score between the gender. Statistical analyses were done using the SPSS version 21.

Results

Out of 501 questionnaires, 495 were in a complete status. The descriptive socio-demographic characteristics for the study participants (495) are provided in table 1. The majority were Malay (92.1%), Muslim (93.3%), free of chronic diseases (80.8%). More than 3/4 (76.8%) were never smoked in his or her life. More than half (53.7%) of the participants were females. The respondent's mean age was 32.66 years (range 18-67 years). High percentage (72.5%) of the respondents were with high level of education, including university (57.8%) and college (14.7%) while only 9 (1.8%) had no formal education. More than 2/3 (64.6%) were employed at the time of enrolment, working with a mean of 8.6 hours /day. About half of our sample (49.3%) was unmarried. The mean BMI for all participants was 24.64 kg/m² ranging 11.07-48.8. kg / m².

The association between the independent (socio-demographic) variables and the mean score of the 21 motivating reasons of physical exercise is provided in table 1. Significantly, higher motivating means score were (7.588) detected among non-Malay compared to (5.562) Malay (t= 1.716, p=< .05.), unmarried responders (6.582) compared to married (4.954) and divorced /widow groups (3.714) F=3.783, p=0.023. Similarly, the mean

score was significantly higher (9.8) among the non-employed compared to (6.971) students or (3.2) retired, ($F=3.374$, $p=0.01$). The participants who have no chronic diseases their mean scores was (6.056) significantly greater than (4.316) those having one or more chronic disease, $t= 2.155$, $p=0.01$. On the other hand, insignificant greater score mean was (7.767), detected among non-Muslims than (5.590) Muslim respondents, $t=1.631$ $p>.05$. Similarly, females showed insignificant higher mean score (6.01) compared to the male participants $t= 0.967$, $p=0.306$. The motivating mean score for those 73 currently smoker, was (7.110) higher than the ex-smoker (4.273) or non-smoker participants (5.6), however, this difference statically was not

Table 1. The relationship between physical exercise motivating reasons' scores and socio-demographic characteristics

Socio demographic characteristics:		No (%)	Mean score	Test of sign..	P value
Ethnic	Malay	456 (92,1)	5.562	$t= 1.716$	0.001
	Non Malay	39 (7.9)	7.588		
Gender	Male	229 (46.3)	5.389	$t=0.967$	0.306
	Female	266 (53.7)	6.01		
Religion	Muslim	465 (94)	5.590	$t=1.631$	0.001
	Non Muslim	30 (6)	7.767		
Marital status	Married	237 (47.9)	4.954	$F=3.783$	0.023
	Un Married	244 (49.3)	6.582		
	Divorced/widow	14 (2,8)	3.714		
Education	No formal education	9 (1.8)	6.333	$F=0.204$	0.936
	Primary	9 (1.8)	7.667		
	Secondary	118 (23.8)	5.602		
	College	73 (14.7)	5.548		
	University	286 (57.8)	5.734		
Occupation	Retired	21 (4.2)	3.810	$F=3.374$	0.01
	Housewife	29 (5.9)	4.724		
	Employed	320 (64.6)	5.272		
	Students	105 (21.2)	6.971		
	Not employed	20 (4)	9.8		
Smoking status	Current smoker	73 (14.7)	7.110	$F=2.363$	0.095
	Never smoked	378 (76.4)	5.647		
	Ex-smoker	44 (8.9)	4.273		
Health status	Have chronic disease	95 (19.2)	4.316	2.155	0.01
	No chronic disease	400 (80.8)	6.056		
Days performing exercise	Weekdays only	48 (9.7)	5.958	$F=1.109$.331
	Weekend only	203 (41)	6.237		
	Both	244 (49.3)	5.246		
Age (years)		495 (100)		$r=-.122$	0.007
Income/ month		495 (100)		$r=-0.094$	0.036
BMI kg/m ² .		495 (100)		$r=-0.091$	0.042

significant, $F=2.363$, $p=0.095$. Participants, with primary school as a

maximal educational attainment showed the greatest motivating score mean (7.667), followed by those having no formal education (6.333). While those participant with the secondary school, college or university, their motivating reasons' score means were almost similar (5.602, 5.548, 5.734 respectively). However, these variations were statistically not significant $F=0.204$, $p=.936$. Most of the participants were performing physical exercise during the weekend, and only 48 individuals used the week days. Those who perform physical exercise during week days showed insignificant lower mean scores (5.958) than (6.237) those who perform exercise during the weekends. However, this difference was not significant, $t=0.236$.

Interestingly, we found that with the increasing of the BMI level as well as the monthly household family income, the motivating reasons' scores were decreased steadily, reflecting statistically the indirect significant inverse correlation with the BMI ($r=-0.091$ $p=0.042$) and household income ($r=-0.094$, $p=0.036$). Similarly, a significant indirect inverse correlation was detected between increasing age of a participant and motivating reasons' scores level ($r=-.122$ $p=0.007$), table 1.

In respect to the 21 motivational reasons and their relation with gender, the rate and mean were calculated for each item. Table 2, displays the rates of positive citation of the 21 items which ranging from 41.2% (*recommended by Doctors*) to 89.7% (*to feel more relaxed*). More than 85% of the individuals were cited positively to the six motivating reasons which included, in sort of descending, *to feel more relaxed* (89.7%), *have more energy to go about the daily chores* (88.3%), *have strong muscles and bones* (86.7%), *have flexible body movement* (85.5%) *feel happier* (85.3%), *connect with family or friend in a fun social setting* (85.1%). While all other reasons were mentioned by less than 85% of the individuals tested. On the other hand, less than 75% of the participants were cited positively to the following (most of them related to health issues) five items, *to decrease the risk of; DM* (73.9%), *cancer* (70.7%), *to increase chance of living longer* (71.5%), *to have a positive effect on the sex life* (63.2%), and *recommended by doctors* (41.2%).

The means score of the 21 motivating reasons were ranging from 3.19-4.57. The highest motivating reason's score means was (4.57) cited for the item, "*to feel more relaxed*", while the lowest (3.19) was given to the item "*recommended by doctors*". Interestingly, all the motivating reasons (except two) demonstrating a high (>4) mean score. Those two reasons with low means were; "*recommended by doctors*" (3.19 ± 1.361), and "*to have a positive effect on the sex life*", (3.94 ± 1.133), table 2.

Table –2- The score means and rates of the 21 motivation's reasons

	Motivating Causes to;	% Agree	Mean	±SD
1.	improve the quality of life	83.4	4.46	0.833
2.	live longer	71.5	4.08	0.959
3.	control weight,	84.8	4.42	0.850
4.	obtain weight-loss benefit,	81.6	4.33	0.937
5.	feel better about my appearance	83.2	4.35	0.922
6.	boost the confidence and improve self-esteem	84.4	4.40	0.853
7.	prevent blood pressure	81.8	4.35	0.876
8.	decrease the risk of stroke	82.6	4.36	0.842
9.	decrease the risk of arthritis,	77.8	4.25	0.932
10.	decrease the risk of DM	73.9	4.19	0.993
11.	decrease the risk of depression,	84.4	4.41	0.873
12.	decrease the risk of cancer,	70.7	4.08	1.041
13.	have strong muscles and bones	86.7	4.52	0.791
14.	have flexible body movement	85.5	4.46	0.860
15.	feel happier,	85.3	4.56	2.011
16.	feel more relaxed,	89.7	4.57	0.742
17.	have more energy to go about the daily chores	88.3	4.55	0.736
18.	fall asleep faster and deeper	75.4	4.24	1.013
19.	have effect on the sex life	63.2	3.94	1.133
20.	connect with my family or friend in a fun social setting	85.1	4.46	0.877
21.	Recommended by Dr.	41.2	3.19	1.361

The mean score for each of those 21 motivating reasons was used as a dependent variable for each gender to study the relationship between the two variables. Table 3, exhibits that female participants showed higher means score than males in seven motivating reasons *to; control the weight* ($4.48 \pm .82$ vs $4.39 \pm .83$) *obtain weight-loss benefit* ($4.35 \pm .93$ vs $4.32 \pm .9$), *decrease the risk of arthritis* ($4.29 \pm .91$ vs $4.20 \pm .96$), *decrease the risk of depression* ($4.41 \pm .89$ vs $4.40 \pm .87$), *decrease the risk of cancer* (4.11 ± 1.04 vs 4.09 ± 1.0), *feel happier* (4.63 ± 2.67 vs $4.47 \pm .76$), *feel more relaxed* ($4.58 \pm .75$ vs $4.56 \pm .71$). However, statistically, these differences were not significant, $t=.69, .12, 1.08, .12, .11, .78, .11, p=.49, .90, .28, .90, .92, .43, .92$, respectively. On the other hand, males exhibited higher means score compared to the females in the following 14 motivating reasons, *to; improve quality of life increase chance of living longer, feel better about my appearance, boost confidence and improve the self-esteem, prevent blood pressure increase, decrease the risk of stroke, decrease the risk of DM, have strong muscles and bones, have*

more energy to go about the daily chores, fall asleep faster and deeper sleep, effect on the sex life, connect with family or friend in a fun social setting, recommended by Dr. Statistically, the differences of all these means score were not significant except two; *to have more energy to go about the daily chores* ($4.62 \pm .63$ vs $4.49 \pm .81$, $p=.027$) and *to have an effect on the sex life* (4.18 ± 1.01 vs 3.72 ± 1.18 , $p=.000$) where males significantly showed greater means scores than females, table 3.

Table –3- Comparing the means score of the 21 motivational reasons between gender of respondents

Motivating Causes to;	Mean± (SD)		t test	P value
	Male	Female		
improve the quality of life	4.48 (.80)	4.45 (.84)	.70	.49
increase my chance of living longer	4.10 (.94)	4.07 (.96)	.50	.62
control my weight,	4.39 (.83)	4.48 (.82)	.69	.49
obtain weight-loss benefit,	4.32 (.92)	4.35 (.93)	.12	.90
feel better about my appearance	4.43(.79)	4.30 (.99)	1.87	.06
boost the confidence and improve self-esteem	4.42 (.83)	4.39 (.85)	.57	.57
prevent blood pressure increase	4.40 (.83)	4.34 (.90)	.75	.46
decrease the risk of stroke	4.38 (.83)	4.34 (.85)	.79	.43
decrease the risk of arthritis,	4.20 (.96)	4.29 (.91)	1.08	.28
decrease the risk of DM	4.19(1.01)	4.18 (.98)	.26	.80
decrease the risk of depression,	4.40 (.87)	4.41 (.89)	.12	.90
decrease the risk of cancer,	4.09 (1.0)	4.11(1.04)	.11	.92
have strong muscles and bones	4.56 (.73)	4.48 (.82)	1.16	.25
have flexible body movement	4.52 (.76)	4.42 (.92)	1.48	.14
feel happier,	4.47 (.76)	4.63(2.67)	.78	.43
feel more relaxed,	4.56 (.71)	4.58 (.75)	.11	.92
have more energy to go about the daily chores	4.62 (.63)	4.49 (.81)	2.21	.027
fall asleep faster and deeper	4.29 (.99)	4.19(1.04)	1.12	.27
have effect on the sex life	4.18(1.01)	3.72(1.18)	4.65	.000
connect with family or friend in a fun social setting	4.53 (.85)	4.41 (.88)	1.78	.08
Recommended by Dr.	3.25(1.33)	3.12(1.37)	.92	.36

Discussion

Lack of motivation is the reason behind many people drop out of their physical exercise routines and then find it hard to start them up again. The primary purpose of this study was to examine whether the sociodemographic factors effecting differently on the motivating reasons for performing the physical exercise.

The 2008 Physical Activity Guidelines for Americans which published by the U.S.A. Department of Health and Human Services, stated that one of the factors negatively associated with adult physical activity is advancing age. Several studies (Rodríguez-Romo, et al 2011; Ruth et al 2011; Trost et al 2002), identified that older people were less likely to perform regular physical exercise, while Margot, Marieke, Mai, & Marijke

(2011) from their systematic review found no evidence for an association between age and physical exercise performance. However, the inverse correlation between age and motivating scores observed in our study are consistent with previous research done by Bergman, Grijbovski, Hagströmer, Bauman, & Sjöström (2008) who confirmed that (by using univariable & multivariable linear regression analysis) younger age were more likely to have higher physical exercise. Also, Trost et al (2002) detected, that young individuals having almost 2 times odds of engaging in physical exercise than the old ones. The explanations for such results could be that, older adults may have; perception of great effort needed for exercise, perception of poor health, overweight or obese, or being disabled due to physical, emotional, and psychological problems. In addition, lack of social support, lack of transportation to facilities or inaccessibility of facilities, fear of injury and the difficulties of managing physical injury faced by elderly people may act as barriers that keep them far from being physically exercise. The chronic as well as serious diseases may also be contributed.

The inverse correlation that we detected between household income and motivations to physical exercise contradicting the Physical Activity Guidelines for Americans (2008) which pointed out that low income is negatively associated factor with adult physical exercises. However, we support several other studies done by; Sebastião, Cristina Diogo, Luís, & Adilson, 2011; Rodríguez-Romo et al 2011; Bergman et al. 2008) detected a significant higher prevalence of inactivity among people with high socio-economic status (SES). Moreover, Bergman, et al (2008) by a univariable & multivariable linear regression analysis gave evidence that lower SES groups were more likely to have higher physical exercise. Best explanations for such results, those subjects with higher SES cited more desire to do other things, as well as lack of time (Sebastião et al 2011), overweight or obesity which is more prevalent among population with high income. In concordance with other authors (Bergman et al 2008; Margot et al 2011) who found that the body mass index (BMI) was inversely associated with the physical exercise performance. Interestingly, we found a significant inverse correlation of the motivating reasons' scores with BMI. With the increasing in the BMI level the motivating reasons' scores decreased. This could be partly explained that, high level of physical activity seem to be associated with long term weight maintenance and low BMI, or leaner individuals may spend less time reflecting on their physical exercise motivation levels than more overweight individuals. Another explanation, the potential for angst when wearing a sport's costume in the presence of others' was expressed, particularly amongst those considering themselves overweight.

The highest significantly mean scores of motivating reasons among non-employed individuals in our study is in agreement with Bergman et al

(2009) as they detected by univariable & multivariable linear regression analysis and contradicts Schuit, Feskens, & Seidell (1999) who found that physical inactivity was more common in unemployed subjects. Lack of time is the best explanation for our result. About 21% of our respondents were students with an almost 7 mean score is identical with Rodríguez-Romo et al (2011) who reported that one in five students met the physical exercise recommendation guideline.

Controversial opinion had been given, regarding the relation between physical exercise and educational levels. Our study revealed no significant variation in mean score of physical exercise motivating among different educational groups. However, several authors, Rabiatal, Sabarinah, & Azni (2013; Trost et al 2002) documented, that, subjects with the lowest educational level had a significantly lower level of physical exercise. While, Bergman et al (2008) detected, that subjects with a college/university degree were less likely to perform physical exercise regularly than those with basic education. The variation in these findings could be related to socioeconomic status, lacking of time, expectation of benefits, belief in ability to exercise, social support from peers, diseases associated (physical or psychological) among different level of education. In addition, it has been suggested that factors of an unhealthy lifestyle such as smoking and fast food eating as well as sedentary life styles may have a contribution, (Trost et al 2002).

Almost half (49.3%) of our participants were unmarried and showing significantly the highest mean score compared to their counter groups. This finding goes with the, Activity Guide Lines for Americans (2008) and supporting Trost et al (2002) who reported that being single was positively associated with achieving the physical exercise guidelines. On the contrary, Bergman et al (2008) showed that marital status was not related to the physical exercise performance. Best explanation for our result is the availability of more time, and less responsibility, particularly where 1/3 of our sample was students and high percentage were females.

Margot et al (2011), stated that adherence to exercise was best predicted by health and health indicators, such as being non-smoking, no chronic conditions and diseases. Contradicting the other researchers (Ruth et al 2011 & Trost et al 2002) who reported that smokers were less likely to participate in regular physical exercise compared to non-smokers, our study revealed that the difference in mean score of the motivating reason was not significant among different smoking status. This could be explained that the high percentage of our study group was females, and students. In agreement with Margot et al (2011) who provided an evidence for a negative association between chronic conditions or diseases and exercise performance. The participants with no chronic diseases in our study, their motivating reasons score mean was significantly greater than those having

one or more chronic disease(s). This finding may be related to the age, smoking, and physical fitness of the individuals.

Contradicting to Tudor, Grigore, & Tudor M. (2014) and in concurrence with Trost, et al. (2002), a high rate (85.4%) and mean score (4.46) were detected in the study for the item *to connect with my family or friend in a fun*. This may be explained as, watching others doing exercise may help to motivate people to continue with their exercise plan. Also, spending time with friends, meeting new people help to build these social support networks.

Several authors (Gulap, 2014; Jennifer, 2004) considered exercise as one important technique for preventing and (or) treating mild forms of depression. They stated that regular physical exercise can positively affect mental health, boost self-esteem and reduce the risk; of stress, depression, anxiety and, dementia. Additionally, the exercise can be more effective when it is performed with other people. In concurrence with the above mentioned studies, we noticed high rates and score means related to the psychological, cognitive and emotional items, *to; feel happier, feel more relaxed, boost the confidence and improve self-esteem, decrease the risk of depression*". Best explanation for such results is that the physical exercise increases; the blood and oxygen flow to the brain, the growth factors that assist to create new nerve cells, also the chemicals that help cognition, such, norepinephrine endorphins and serotonin in the brain. Therefore, the levels of circulating serotonin and endorphins are increased. Interestingly, these levels can stay elevated for several days even if the activity is discontinued.

Supporting other studies, (Rabiatal, et al., 2013) which stated that regular physical exercise have a significant effect on the quality of life improvement, people be more active, feeling more energetic, and increases mechanical productivity in the body, our study revealed that the motivating reason "to make me have more energy to go about my daily chores" occupied the second highest rate and mean score with a significant greater score mean among males. This may be attributed that, males were more likely to be engaged in work or job, so exercise performance could provide the energy needed.

Amazingly, in our study, the item "*recommended by Doctors*" showed the lowest motivating, rate (41.2) and score mean (3.19) behind performing a physical exercise. This reflects that the extrinsic motivation is low, where a small number of participants exercised to make peace with their physician. This is a good positive healthy indicator, which means that most of the population were engaging in the physical exercise for its own sake, because they enjoy the real feeling of performing the exercise.

Strong evidence was given by several researchers (Szostak & Laurant, 2011; Sabina, et al., 2014; Jennifer, 2004) considering physical

exercise as a highly effective way to delay or avert the development of diabetes mellitus depending on the fact that exercise is an insulin-independent stimulus for increased glucose uptake by the working muscle cells. Additionally, the skeletal muscle contraction during exercise plays a role in mediating the athero protective effect which prevents the development of plaque and fatal lesions. Furthermore, the concentrations of high-density lipoprotein (HDL) will be increased while low-density lipoprotein will be decreased. Contradicting Tudor et al. (2014) who found the need for healthcare is second ranking cause for physical exercise performance. Interestingly, we noticed that all motivating factors related to the disease prevention through physical exercise "*to decrease the risk of; cancer, DM, arthritis, stroke, high blood pressure, and increase chance of living longer*" showed lower rates and small motivating means score. This result may indicate that the participants were intrinsically motivating people particularly, when we detected that "*to feel more relaxed*" was associated with the highest rate (89.7) of respondents as well as with the greatest mean score (4.57), with no significant difference between the two genders. In addition, several evidences interpretate these findings. First, the majority were young, free of any disease (80%), non-smokers, and employed. On the other hand, this finding could be considered as a negative sign, as our population are not fully aware for the medical and preventive values of the physical exercise. This indicates their lack of knowledge regarding the health benefits of physical exercise, which needs to be more emphasized in the future.

Ebru, (2013) from his study concluded that the physical exercise is one of the key components in obesity treatment and one of the best predictors of long-term maintenance of weight loss. Unfortunately, we found that motivation to maintain or decrease body weight (*control weight, obtain weight-loss benefit*) were cited by 84.8% and 81.6 %. Most probably this could be attributed that our study population's mean BMI was (24.64 kg/m²) within the normal range of BMI.

Exercise can be a healthy, safe and inexpensive way to achieve deep and better sleep. Jennifer, (2004) suggested that the exercise in general improves sleep for the most people and helps to manage sleep disorders such as insomnia. Surprisingly, about $\frac{3}{4}$ of our respondents believe that the physical exercise improves sleep. Our result may justify that our respondents are having no sleep disorder problems in which the majority of them were young, healthy, and employed.

The reasons, why people engage in physical exercises, may differ within different age group, as a result of changing values, life tasks, goals, and health circumstances over time,(Diyanah et al. 2012). However, what is still less well understood is the extent to which these variable motivational

factors contribute to the gender disparity in a regular physical exercise performance. Gender contributes differently to the physical exercise performance. This study examined whether factors of motivations contributed differently in the gender of the individuals to performing physical exercises regularly. Contradict with previous works, (Clare, Alexandra, Youjeong, Brian, Michael, & Freda, 2012; Mohd, Hafazah & Syed, 2012; Sebastião et al. 2011; Bergman et al. 2008) which reported that, men were significantly more likely to perform physical exercise regularly, and they attributed their findings that women facing many barriers as lack of time, cost, the desire to do other things, as well as to greater involvement in domestic chores. The result in our study found that more than half (53.7%) of the participants were females. They showed higher motivation to physical exercise performance than males. This finding consistent with Stevinson and Hickson (2013) who stated that the highest proportion (53.8%) in performing exercises were females. This finding could be explained that females may experience a sense of pride associated with exercise or some degree of guilt or shame if they do not exercise (Wilson, Rodgers, Fraser, & Murray, 2004). Additionally, females were more interested in their body images; specifically, we noticed that the mean scores for *controlling body weight and decreasing body weight* were higher among females. Further, the males were more likely to be engaged in work or job, as well as having a desire to do other tasks.

When this relationship was examined in the gender difference statistically, the differences of all these score means (except two) were not significant. Males exhibited significantly higher mean score for two motivation items "*to have effect on the sex life*" and "*to feel better about my appearance*". These findings support Allison et al (2005), who found that the central concern of adolescent males was impressing others, and building relationships particularly with females through focusing on the physical appearance of their bodies. Therefore, males are more likely to be subjected to higher pressure. In contrast, such reasons for engaging in physical exercise do not appear as prominent among females. Moreover, these findings are supporting Li F (1999), who stated that females showed a higher level of intrinsic motivation while males were more externally motivated.

Conclusion

Those who are young, unmarried, lower income, lower BMI and no chronic illness have higher motivating reasons in doing physical exercise.

Physical exercise motivations in both gender were equal, since the variation of all the motivation score's means (except two) were not significant between the genders. Males exhibited higher levels of extrinsic motivations. All motivating factors related to the disease prevention through

physical exercise showed lower rates and small score means. This may indicate that our participants were intrinsically motivating people. On the other hand, this finding could be considered as a negative sign where our respondents are not fully aware of the medical and preventive values of the physical exercise. Therefore, this lacking of knowledge among our population regarding the health benefits of physical exercise needs to be more emphasized in the future.

Limitation

The height & weight were indicated by participants, not measured by the researcher. In addition, our populations were adults only. However, one of this study's strengths, it may be considered as the first study to investigate the motivating factors in performing physical exercises.

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References:

- Allison** Kenneth R., Adlaf Edward M., Irving Hyacinth M., Hatch Janelle L., Trevor F. Smith, Dwyer John J.M., & Goodman Jack, (2005). Relationship of vigorous physical activity to psychologic distress among adolescents. *Journal of Adolescent Health*, 37 (2), 164–166
- Aura** B., Silvia T., & Sorin Ş. (2014). Unified Sports a Social Inclusion Factor in School Communities for Young People with Intellectual Disabilities. *Procedia-Social and Behavioral Sciences*, 117, 21-26
- Bergman** P, Grjibovski AM, Hagströmer M, Bauman A, & Sjöström M. Adherence to physical activity recommendations and the influence of socio-demographic correlates - a population-based cross-sectional study. *BMC Publ Health* 2008, 8, 367
- Carl** J. Caspersen, Kenneth E. Powell, & Gregory M. Christenson (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Rep.* 100 (2), 126-31.
- Clare** M. Lenhart, Alexandra Hanlon, Youjeong Kang, Brian P. Daly, Michael D. Brown, & Freda Patterson. (2012). Gender Disparity in Structured Physical Activity and Overall Activity Level in Adolescence: Evaluation of Youth Risk Behavior Surveillance Data. *ISRN Public Health* Volume 2012 <http://dx.doi.org/10.5402/2012/674936>.
- Deci**, EL, & Ryan RM. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychol Inquiry*, 11, 227-268.

- Diyanah** I. A., Hafazah A. K., & Mohd Z. M. (2012). Comparing the walking behaviour between urban and rural residents. *Procedia -Social and Behavioral Sciences*, 68,406-416.
- Duncan**, Craig R Hall, Philip M Wilson & Jenny O. (2010). Exercise motivation: a cross-sectional analysis examining its relationships with frequency, intensity, and duration of exercise. *International Journal of Behavioral Nutrition and Physical Activity*,7, 7
- Ebru** Cubukcu (2013). Walking for Sustainable Living. *Procedia-Socialand Behavioral Sciences*, 85, 33–42
- Gulap** Monica. (2014). Study on the Importance of Physical Education in Fighting Stress and a Sedentary Lifestyle among Students at the University of Bucharest. *Procedia -Social and Behavioral Sciences* 117, 104-109
- Hopkins** M.E., DavisF.C., Van Tieghem M.R.,Whalen P.J.& Bucci D.J.(2012) Differential effects of acute and regular physical exercise on cognition and affect. *Neuroscience.*, 215 (26), 59-68
- Jennifer** D. Irwin (2004) Prevalence ofUniversity Students' Sufficient Physical Activity: A Systematic Review. *Perceptual and Motor Skills*. 98, 927-943.
- Li F.** (1999). The exercise motivation scale: Its multifaceted structure and construct validity, *Journal of Applied Sports Psychology*, 11, 97-115
- Lindsay** R Duncan, Craig R Hall, Philip M Wilson, & Jenny O, (2010) . Exercise motivation: a cross-sectional analysis examining its relationships with frequency, intensity, and duration of exercise *International Journal of Behavioral Nutrition and Physical Activity*,7:7 doi:10.1186/1479-5868-7-7,
- Margot** A Koeneman, Marieke W Verheijden, Mai J M Chinapaw, & Marijke Hopman-Rock (2011). Determinants of physical activity and exercise in healthy older adults: A systematic review. *Int J Behav Nutr Phys Act*. 8: 142
- Mohd** R.N., Hafazah A.K.,& Syed S. Z. (2012). Human Behaviour and Activities in Relation to Shah Alam Urban Park during Nighttime. *Procedia-Social and Behavioral Sciences*, 68, 427–438
- Pate** R. (1983).A new definition of youth fitness. *Physician Sports Med*.11: 77-83
- Rabiatul** A. N., Sabarinah S. A. & Azni Z. A.(2013). Physical Activity and Human Comfort Correlation in an Urban Park in Hot and Humid Conditions, *Procedia -Social and Behavioral Sciences*, 105, 598-609
- Rodríguez-Romo** G, Cordente CA, Mayorga JI, Garrido-Muñoz M, Macías R, Lucía A,& Ruiz JR. (2011). Influence of socio-demographic correlates on the adherence to physical activity recommendations in adults aged from 15- to 74 years Madrid, Spain. *Rev Esp Salud Publica.*, 85 (4): 351-62.
- Ruth** Sullivan mail, Sanjay Kinra, Ulf Ekelund, Bharathi A.V., Mario Vaz, Anura Kurpad,..... Hannah Kuper (2011). Socio-Demographic Patterning

of Physical Activity across Migrant Groups in India: Results from the Indian Migration Study. *PLoS ONE*, 6 (10): e24898. doi:10.1371/journal.pone.0024898

Sabina M., Alina A. T., & Bogdan I.V. (2014). Theoretical Approaches to Building a Healthy Lifestyle through the Practice of Physical Activities. *Procedia-Social and Behavioral Sciences*, 117, 86–91

Schuit AJ, Feskens EJ. & Seidell JC. (1999). Physical activity in relation to socio-demographic variables and health status of adult men and women in Amsterdam, Doetinchen and Maastricht. *Ned Tijdschr Geneesk.* 24;143 (30),1559-64

Sebastião Sequeira, Cristina Cruz, Diogo Pinto, Luís Santos, & Adilson Marques (2011). Prevalence of barriers for physical activity in adults according to gender and socioeconomic status *Br J Sports Med*, ;45: A18-A19 doi:10.1136/bjsports-2011-090606.59.,

Silberner Joanne (2010) "100 Years Ago, Exercise Was Blended Into Daily Life". *npr.org*. 2010. Retrieved 23 November

Stevinson, M. Hickson (2013). Exploring the public health potential of a mass community participation event. *J Public Health* doi: 10.1093/pubmed/dfd082

Szostak J, & Laurant P. (2011), The forgotten face of regular physical exercise: a 'natural' anti-atherogenic activity. *Clin Sci* 121(3), 91-106.

Trost SG, Owen N, Bauman AE, Sallis JF, & Brown W. (2002). Correlates of adults' participation in physical activity: review and update. *Med Sci Sports Exerc.*;34 (12), 1996-2001.

Tudor I-D., Grigore V., & Tudor M. (2014). The Importance of Group Sports Activities in Adult Lifelong Education and in Improving the Quality of Life, *Procedia - Social and Behavioral Sciences*, 117, 9–15.

U.S.A. Department of Health and Human, (2008). *The 2008 activity guidelines for Americans*. Washington, DC: U.S.A.

Wilson PM, Rodgers WM, Fraser SN. & Murray TC. (2004). Relationships between exercise regulations and motivational consequences in university students. *Research Quarterly for Exercise and Sport*, 75(1):8191. PubMed Abstract.

POST-TRAUMATIC STRESS DISORDER AND HEALTH PERSPECTIVE: VICTIMS OF MOTOR VEHICLE ACCIDENTS IN JORDAN

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Abstract

Motor vehicle accident survivors who develop post-traumatic stress disorder have become an important health issue. Trauma resulting from Motor Vehicle Accidents has been attracting of increasing concern, with death from injuries is projected to reach 8.4 million in 2020 as compared to 5.1 million in 1990, particularly in developing countries including Jordan. A descriptive phenomenological approach was used for this study to identify and explore the lived experience of post-traumatic stress disorder of individuals who have been involved in a motor vehicle accident in Jordan. Seven themes were explicated from the participants' transcripts of interview: feeling frustrated at a diminishing health status; struggling to maintain a state of independence; harboring feelings of not being able to recover; feeling discriminated against and marginalized by society; feeling ignored and neglected by health care professionals; feeling abandoned by family; moving toward acceptance through having faith in God. The current social services policies of the Jordanian Health Care System have given little credence to the health care needs of people with PTSD. As a result of this inattention, there is a noticeable lack of processes and protocols concerning care of the mentally ill and people with PTSD. The lack of policy direction has also led to a lack of health resources in this area including specialized clinics. Access to the limited services continues to place patients in vulnerable situations. Lack of policy direction has also impacted on access to health benefits. Presently, support of people with PTSD primarily falls to the family within Jordanian culture. Social support includes providing physical, emotional and financial assistance. Although change is taking place, it is slow and spasmodic.

Keywords: Psychiatric/Mental Health, Transcultural Health, PTSD, Motor Vehicle Accident, Lived Experiences

Introduction:

Trauma resulting from Motor Vehicle Accidents (MVAs) in Jordan is a phenomenon of increasing concern (World Health Organization, 2002). Approximately 8,000 individuals sustain trauma yearly MVAs, which ranks highest among all vehicle types (The Jordan Department of Statistics, 2006). Among other passenger-carrying vehicles, buses registered the second highest rate of accident involvement (Jordan Department of Statistics, 2006). Based on the report, the most prevalent group of road users are car and bus drivers. Car and bus drivers constitute approximately 60% of all MVA trauma events (Jordan Ministry of Health, 2005).

Furthermore, the report indicated that people involved in these traumatic events were primarily between 18 to 60 years old (Jordan Department of Statistics, 2006). The most frequent causes listed for MVAs and subsequent hospitalization included speeding, failing to stop at traffic lights and failure to abide by traffic regulations (Jordan Ministry of Health, 2005; Jordan Ministry of Information, 2006). The availability of high-speed highways has contributed to an increase in MVAs and its corollary post-traumatic stress disorder (PTSD), which is now recognized by the Jordanian Government as a major public health problem.

In the majority of countries, a license to drive a motor vehicle can be obtained at 17 years (e.g. UK, France, Denmark, and Sweden), whereas most Jordanian obtain their permit licensure at 18 years but plan to reduce the age to 17 years. Despite the additional year in being able to obtain a driver's license in Jordan the incidence of motor vehicle accidents for this age group is extremely high as compared to other age groups in the country. The main causes of accidents for this adolescent group were speeding and high vehicle occupancy (Jordan Department of Statistics, 2006) drinking violations, aggressive behavior on the road, and joyriding (Jordan National Highway and Safety Department, 2007).

Unlike developing countries, majority developer countries, social health care services are well established to provide the required assistance to patients with post-traumatic stress disorder (PTSD). In Middle Eastern countries including Jordan, the social protection systems are either non-existent or under-developed, placing patients who have developed PTSD in the unenviable position of having to rely on self or family for support and care (Jonsson & Halabi, 2006). Traditionally, care of the sick or ill person has been the obligation of family members, through the extended family structure (Clapp & Beck, 2009). Parents, grandparents and adult children were expected to provide support and look after the well being of their family members especially in relation to health problems. The presence of PTSD in a family member significantly increases the burden of care for families.

The Jordanian Government has initiated health care reforms. Examples of the reforms aimed at improving the quality of life for all Jordanians. According to the Ministry of Health (2002) report, the 1999 [the researcher needs to observe for the newly released health bylaws] health reforms were a significant step forward making the health of the Jordanian people a priority.

The outcome of the implementation of these reforms, the first national health strategies for PTSD patients in Jordan, addressed the health care needs of all Jordanians including the care of people with PTSD. However, the Jordanian health strategies have failed to achieve their stated outcomes in terms of health care services. Reasons for the ineffectiveness of the reforms were attributed to a lack of understanding and interpretation of the reforms, limited resources, poor service delivery, and the socio-economic situation of the country (Jonsson & Halibi, 2006). The continuing ineffective nature of the Jordanian health care system and a serious lack of health care professionals have exacerbated the lack of appropriate care and treatment for people suffering from PTSD with little evidence of improvement in the near future.

Study Purpose And Significance

This study was undertaken with the purpose of explicating the lived experience of PTSD as articulated by motor vehicle accident victims who have developed PTSD as a result of the accident. This study used a descriptive phenomenological approach to inquiry (Colaizzi, 1978). This study is significant as it addresses a previously unexplored phenomenon. As such, the findings of this study have the potential to contribute to extant knowledge about the experience of PTSD and contribute to academic and clinical debate and future directions of inquiry to inform health care policy and professional health care practice concerning PTSD in Jordan.

Research Design

The experience of PTSD is a human response to a traumatic event lived out in the everyday lives of many people. As the study is located in lived experience a phenomenological methodology is an appropriate research approach for exploring the phenomenon of PTSD.

The philosophical underpinnings of phenomenological thought are consistent with the values of nursing practice, the uniqueness of the person, the importance of personal discovery, acceptance of life situations, the need for exploration of meaning, constructed reality and the potential for personal growth. In this context, phenomenology as a philosophical framework and research methodology can provide knowledge about aspects of a person's life in health and illness, which cannot be accessed by observation alone

(Munhall, 2001).

The population Sample

Purposive sampling was the primary mode of participant recruitment for this study. The purposive sampling method has been singled out as the most appropriate means of participant recruitment as it provides an opportunity for the researcher to select potential participants who are best positioned to provide rich descriptions of their experiences (Clifford, 1997; Polit & Beck, 2008). Purposive sampling is an acknowledged method for a qualitative study (Minichiello et al., 1999; Munhall, 2001).

Fifteen (15) participants were recruited at the Orthopedic unit in Amera Basma Hospital, Irbid Jordan.

Data was collected by face-to-face in depth interviews. Interviews were digitally recorded and transcribed verbatim. Individuals who met the inclusion and exclusion criteria were invited to participate in this study. The inclusion and exclusion criteria for participation in the study are presented in table 1.

Data analysis

Data analysis was informed by Colaizzi's (1978) eight-step phenomenological method as well as two additional steps as outlined below. Colaizzi's (1978) eight-step framework for analyzing qualitative data includes (1) transcribing all the participants' descriptions; (2) extracting significant statements; (3) creating formulated meanings; (4) aggregating formulated meanings into theme clusters (refer these clusters back to the original protocols to validate them, note discrepancies among or between various clusters, and avoiding temptation of ignoring data or themes that do not fit); (5) developing an exhaustive description of the phenomenon; (6) formulating the exhaustive description into an unequivocal statement of identification of the structure; (7) validating the findings (the structure) with the participants; (8) integrating information from the validating interview into the final description. Two additional steps were included: participants sharing their metaphors and/or pictorial representations of their experiences and a review of literature in relation to the findings of the study making it a 10 step approach to analysis.

Significant statements explicated from the participants' interview transcripts were then reread several times to obtain a sense of their respective meaning. The fundamental question asked by the researcher was: "what is the meaning of the experience of PTSD inherent in each significant statement?"

Formulated meanings were developed from each significant statement and then sorted into theme clusters. The researchers reviewed

significant statements and formulated meanings. The following table provides a succinct example of three significant statements and corresponding formulated meanings for Seven themes were explicated from the participants' transcripts of interview: Feeling frustrated at a diminishing health status; Struggling to maintain a state of independence; Harboring feelings of not being able to recover; Feeling discriminated against and marginalized by society; Feeling ignored and neglected by health care professionals; Feeling abandoned by family; Moving toward acceptance through having faith in God.

Results

Themes

Seven themes were explicated from the participants' transcripts of interview: Feeling frustrated at a diminishing health status; struggling to maintain a state of independence; harboring feelings of not being able to recover; feeling discriminated against and marginalized by society; feeling ignored and neglected by health care professionals; feeling abandoned by family; moving toward acceptance through having faith in God.

Theme one: Feeling frustrated at a diminishing health status

The participants in this study spoke of the frustrations they felt regarding their inability to attend to the simple everyday activities such as of caring for themselves and their families as a result of a gradual decline in their physical strength and mental capacity. For example, a participant stated, *'my health was good until I had the car accident. I can no longer think clearly and my physical health is now poor. I feel frustrated that I cannot do what I used to'*.

Disturbed sleep patterns fuelled by flashbacks and nightmares exacerbated the situation. In the absence of no tangible improvement in their health status participants became increasingly angry and frustrated. One participant mused, *'I think I became more irritable when I could not sleep. I just screamed and stayed in the room by myself'*.

Anger and frustration fed into a negative cycle in which there appeared to be from the participants' perspectives a downward spiral into a world of disability, restriction, and reliance on others.

Theme Two: Struggling to maintain a state of independence

For the participants of this study the struggle to maintain a state of independence was thwarted with difficulties, which encompassed feelings of extreme tiredness, loss of energy, a reluctance to rely on others, and a strong desire to regain control over one's life. This was expressed by a participant, who stated, *'I used to prepare breakfast for myself, now I have lost that*

ability. To lose one's independence is a terrifying experience. It is a constant struggle not to give in and not having to rely on others. I want to regain my independence, but it is so difficult...you lose your independence and you become totally dependent on others. I can't concentrate; I have lost my ability to think clearly'.

However, at times the struggle to once again be independent became overwhelming to the point that some participants expressed the thought of wanting to give up. One participant articulated that, *'I have always been in control of my life. Now everything is such a struggle. I want to be my old self not having to rely on others. At times I feel so tired I just want to give up trying'.*

Theme Three: Harboring feelings of not being able to recover

The very thought that recovery may never be a reality engendered in a number of the participants feelings of fearful apprehension. Inability to pay for hospitalization, medical and psychiatric consultation, and medication surfaced questioning uncertainty about what seemed to them to be an unknown future about the possibility of recovery. As time passed hope of recovery gradually dwindled only to be replaced with a growing sense of hopelessness. This experience was explained by a participant as, *'...like being a beggar always asking for help.*

It makes you feel terrible to ask or receive help from others even if they are family and friends. It is quiet humiliating but what else can I do? Without help I fear I will never recover'.

Theme Four: Feeling discriminated against and marginalized by society

Feeling discriminated against and marginalized by society was for a number of participants a disquieting and humiliating experience that engendered feelings of rejection, dejection, and a sense of imprisonment. One participant in the study felt that, *'being a person with PTSD is like being a prisoner. No one wants to know you or be associated with you. They avoid you as if there is something wrong with you'.*

Seeking support in once close friends, and neighbors was met with suspicion, fear, and distance. One participant reported that, *'when I asked my friends and neighbors for help because of my condition they turned their backs and walked away. They think I'm crazy and don't want anything to do with me. Society is much the same. Society just laughs at you and wants nothing to do with you. It just wants you to keep out of sight'.*

Theme Five: Feeling ignored and neglected by health care professionals

Feeling ignored and neglected by health care professionals engendered in a number of the participants a sense of vulnerability at not

receiving what they believed to be appropriate quality care. One participant explained, *'all I received from the hospital staff was neglect and rudeness. The way they spoke to me and looked at me was as if there was something odd about me, as if I was not human. They didn't seem to care or have any idea what I was going through nor did they even try to understand. I just wanted to leave and never come back even if it means not getting over this condition'*.

In the face of neglect and being ignored some of the participants resorted to asking their families to take over their hospital care and provide the emotional and physical support expected to be provided by hospital staff. The stress of being treated in this manner left some participants in an emotional and psychological state of wanting to 'escape' from the hospital and never to return. One participant articulated this experience saying, *'I had to depend on my family to take care of me while I was in hospital not on the nurses. They seemed to have no idea about what I was suffering from. Each time I asked for help to move because I had no energy they just ignored me. Being ignored is a terrible feeling'*.

Being ignored and neglected by health care professionals led to self-doubt and questioning the legitimacy of their illness. One participant who reported described this experience that, *'when hospital staff treat you as if there is nothing wrong with you, treat you as if you are not ill, don't respond to your requests for assistance, you start to think what is wrong with me? Am I making all this up? Is this the type of person I am? At one stage I was really afraid that I was going mad'*.

Theme Six: Feeling Abandoned by Family

Feeling abandoned by family engendered in the participants' moments of quiet desperation and at times fearful apprehension that the very fabric of daily living – family love and support - had dissipated to the point of being non-existent. Indeed, a participant of the study stated that, *'I desperately need my family to stay and be with me whatever happens. I fear each day that will not happen. It is only a matter of time till they leave me because of my illness. There have already been signs that they are preparing to leave. Without them I have no life or hope for a future'*.

Loss of family support was exacerbated by multiple losses including diminishing health, loss of employment, financial insecurity, and physical incapacity. Belief that family would be there in times of need eroded in the face of family fears, and misunderstanding about the nature of the participants' illness. Family support was tenuous which was reliant on the ability of the participant to contribute to daily financial needs of the family. One participant explained, *'you know...if you live with children or relatives whom you are able to support financially; they are more willing to*

look after you [however] your chances of being neglected or abandoned are higher if you are not able to support them. Family can be fickle at times especially when you become a burden. I thought they would be there for me but they weren't'.

Theme Seven: Moving toward acceptance through having faith in God

Having faith in God was an anchor amid, overwhelming physical and emotional difficulties, frustrations, uncertainties, self-doubt, family abandonment, social rejection, quiet moment of desolation and despair. Belief that Allah would be their raft through turbulent and uncertain seas of living with PTSD provided a much needed buffer and a source of strength and resolve to 'survive' these traumatic times. This belief was expressed by one participant who said that, *'if I have to survive and get through this ordeal it will be because of God. Each day I pray to God that I will recover. God is my only source of hope and comfort in this difficult time'*, God is my strength. I believe He will come to my aid and be my protector'. Having faith in God was also a source of strength for the participants in coming to a point of acceptance of their illness and associated disabilities and limitations. Reaching the point of acceptance that life had forever changed as a result of their accident and subsequent illness surfaced feelings of personal liberation that gave rise to being able to look at the future in new and affirming ways within the context of their disabilities. One participant expressed that, *'it is time to accept my situation if I want to be happy once again and get on with my life'*. There are many things I cannot change but there are things I can. It is God's will what has happened to me and I must accept it. I have faith in Him to guide my future'.

Discussion

The experience of PTSD was one of the frustration at a diminishing health status among all participants. A gradual waning of strength exacerbated by sleep deprivation, flashbacks, and nightmares coupled with feelings of loss of independency and control over one's life surfaced feelings of anger and frustration. However, amid the frustration of diminishing strength and inability to care for self, participants spoke of their struggles to maintain a sense of independence. Johansen, Schanke and Frosile (2009) in their study of the impact of post-traumatic stress on severely injured patients found that the participants of their study described similar experiences to those of this study in which feeling physically and emotionally restricted because of PTSD engendered feelings of frustration and anger.

Similarly, findings to both this present study and that of Johansen, Schanke and Frosile (2009) were explicated in studies by Lauterback, Vora and Rakow (2005), Karatzias and Chouliara (2008), and McNutt and

Postmus (2002) concerning the relationship between PTSD and self-help problems. Lauterback et al. (2005) and Palyo, Winer, Schwagler and Ang (2007) posited a direct relationship between the physical health status of individuals who have experienced trauma (PTSD), and the trauma event itself. The findings of both of these studies suggest that trauma exposure impacts significantly on an individual's physical health status to the extent that the ability of the person to perform their daily activities are severely compromised, leading to feelings of frustration. The above mentioned studies are consistent with the findings of this current study in which the inability to care for self as a result of developing PTSD impacted on the participants to the extent that they became angry and frustrated.

For the participants of this study, the struggle for independence was thwarted with difficulty that encompassed feelings of extreme tiredness, lack of energy, a reluctance to rely on others, and a strong desire to regain control over one's life. However, at times the struggle to once again be independent became overwhelming to the point that some participants expressed the thought of wanting to give up.

Ray and Vanstone's (2009) study concerning the impact of PTSD on family relationships revealed that their participants' history becomes present and viewpoint loses all meaning other than never-ending repetition of the individual's struggle to become independent, which is similar to those PTSD patients of Jordan.

The findings of Zeilani's (2008) and Jonsson and Segesten's (2004) study, which studied the notions of struggle and independence were theoretically consistent with findings of the current study. Zeilani (2008) suggested that everyday life after serious illness has the potential to give rise to many challenges and struggles impacting on all aspects of a person's life. Jonsson and Segesten (2004) posit similar views to that of Zeilani (2008) in suggesting that the very thought that recovery may never be a reality can engender feelings of fearful apprehension. The inability to pay for hospitalisation, medical and psychiatric consultation, and medication can create uncertainty about their future. With the passing of time hope of recovery gradually dwindles only to be replaced with a growing sense of hopelessness. Carlson, Greenberg, Rubin and Mujica-Parodi's (2010) recent study found that social isolation that is not self-imposed can result in significant anxiety for the person being isolated. Similarly, Sayce (2001) found that social attitudes and responses toward individuals with a mental illness in USA and Britain have a significant element of stigma and discrimination attached leading to rejection of the people involved. Studies by Sellers and Shelton (2003), and Laffaye et al.'s (2008) found that losing one's social status and social connections can be extremely isolating leaving the person feeling abandoned and marginalized. Turner and Avison (2003)

suggested that the victim may also feel that nothing will ever be the same – precluding the use of the past to build the future. However, Carlson et al. (2010) suggested that when victims feel betrayed by individuals in their social support network, feelings of self-blame and blame of others may contribute to feelings of isolation and marginalization.

Feeling ignored and neglected by health care professionals engendered in a number of the participants a sense of vulnerability at not receiving what they believed to be appropriate quality care. In the face of neglect and being ignored some of the participants resorted to asking their families to take over their hospital care and provide the emotional and physical support expected to be provided by hospital staff. The stress of being treated in this manner left some participants in an emotional and psychological state of wanting to ‘escape’ from the hospital, and never to return. Being ignored and neglected by health care professionals led to self-doubt and questioning the legitimacy of their illness. Although a number of participants spoke of relying on family for support and care while in hospital, other participants spoke of being abandoned by family as a consequence of having PTSD.

Litz (2008) explored challenges for researchers, decision makers, and care providers in providing health care interventions for patients with PTSD. The findings indicated that patients felt ignored by nurses, as they became the subject of inflexible routines, which made no allowances for individual differences or special health care needs such as PTSD sufferers.

Litz (2008) study also found that participants became increasingly frustrated at not receiving appropriate care. The participants in this current study expressed similar views when describing their experiences of the health care delivery services in Jordan. A study by Maercker and Muller (2004) investigated two samples – one of 178 former prisoners of war in East Germany who had developed PTSD and 151 recently traumatized crime victims who developed PTSD. The findings of their study suggest that the survivors of a traumatic event who develop PTSD are likely to be in “extreme need of support from health care professionals” (p. 345). Similar findings by Laffaye et al. (2008) indicated that the extent to which the experience of PTSD are consensually validated or invalidated by society, particularly by health care professionals, might have a significant effect on the person’s psychological adaptation and ability to cope.

Blanchard and Hickling’s (2007) found that poor social health care services have the potential to have a negative psychological impact on people suffering from PTSD. Similar findings to both this present study and that of Blanchard and Hickling (2007) were explicated in studies by Vranceanu et al. (2007), Laffaye et al. (2008) and Beck et al. (2009) in which poor health care delivery was identified as a significant contributor to the

development of behavioural changes among PTSD patients. The findings revealed that behavioural changes impacted negatively on the person's pattern of daily living. Feeling abandoned by family engendered in the participants moments of quiet desperation and at times fearful apprehension that the very fabric of daily living – family love and support - had dissipated to the point of being non-existent. Loss of family support was exacerbated by multiple losses including diminishing health, loss of employment, financial insecurity, and physical incapacity. The belief that family would be there in times of need eroded in the face of family fears, and misunderstanding about the nature of the participants' illness. Family support was tenuous which was reliant on the ability of the participant to contribute to daily financial family needs.

Using a baseline survey to identify the prevalence of family support in individuals with PTSD, Adams and Boscarino's (2006) found that there was a strong relationship between the level of economic security of the family and level of family support. Also, the current study and Adams and Boscarino (2006) has similar findings were explicated in a study by Norris, Friedman, Watson, Byrne, Diaz and Kanasty (2002) concerning the relationship between, family stress, PTSD, and family abandonment. The findings indicated that family stress as a result of a family member developing PTSD can lead to the person being abandoned by family. These findings are further corroborated by Jordan Ministry of Health (2007) in positing that changes to the Jordanian family situation as a result of a family member being involved in a traumatic event and subsequently developing PTSD leads to family stress and may lead to family disintegration or the abandonment of the family member.

The notion of faith as a human experience has been the focus of many disciplines in PTSD patients. One example provided by a sufferer of PTSD (Murphy & Bradley. 2010) described faith as being the anchor through difficult times and a source of strength in her recovery. Faith was the impetus to moving on: I want my work to please me as well as others, but if my spirit isn't pleased with it, I'm not finished. I go home and pray on it, I ask God to give me that feeling of satisfaction. Similar findings to those of Murphy and Bradley (2010) and this current study were identified in Tan et al.'s (2008) study about the experience of motor vehicle accident victims among six orthopaedic patients in which the notion of optimism in PTSD sufferers as a consequence of a MVA was explored. The findings suggest that one of the ways in coming to terms with and overcoming their illness experience was through their Christian faith. God was their source of strength in moving toward acceptance and hope of recovery. At times of feeling they were losing control of their lives; they asked God to take control as they moved to accepting God's will. Zielani (2008) suggested that

moving toward acceptance is essential for continued existence.

The findings of the above mentioned studies are consistent with the findings of current study in which the participant's spoke of having faith in God helped them to come to a moment of acceptance of their condition despite fears that they may never recover.

Despite the differences in the socio-cultural context of this study the findings are consistent with other studies worldwide. However, not all themes explicated in this study were found in one other single study. The combination of themes suggest that victims of PTSD and their families in Jordan are at a significant disadvantage as a result of the many barriers in accessing appropriate support and treatment

Conclusion

The current social services policies of the Jordanian Health Care System have given little credence to the health care needs of people with PTSD. As a result of this inattention, there is a noticeable lack of processes and protocols concerning care of the mentally ill and people with PTSD. The lack of policy direction has also led to a lack of health resources in this area including specialized clinics. Access to the limited services continues to place patients in vulnerable situations. Lack of policy direction has also impacted on access to health benefits. Presently, support of people with PTSD primarily falls to the family within Jordanian culture. Social support includes providing physical, emotional and financial assistance. Although change is taking place, it is slow and spasmodic.

References:

- Adams, R. E. & Boscarino, J. A. (2006). Predictors of PTSD and delayed PTSD after disaster: the impact of exposure and psychosocial resources. *Journal of Nervous & Mental Disorders*, 194(7), 485-493.
- Andermann, L. (2010). Culture and the social construction of gender: mapping the intersection with mental health. *International Review of Psychiatry*, 22(5), 501-512.
- Blanchard, E. B., Hickling, E. J. (2007). After the crash: assessment and treatment of motor vehicle accident survivors. *American Psychological Association*, 32, 45-47.
- Bryant, R. A., O'Donnell, M. L., Creamer, M., McFarlane, A. C., Clark, R. C. & Silove, D. (2010). The psychiatric sequelae of traumatic injury. *American Journal of Psychiatry*, 167, 312-320.
- Chen, Y. Y. & Koenig, H.G. (2006). Traumatic stress and religion: is there a relationship? A review of empirical findings. *Journal of Religion and Health*, 45(3), 371-381.
- Clapp, J. D. & Beck, J. G. (2009). Understanding the relationship between

- PTSD and social support: the role of negative network orientation. *Behaviour Research and Therapy*, 47, 237-244.
- Clifford, C. (1997). *Qualitative research methodology in nursing and health care*. London: Churchill Livingstone.
- Colaizzi, P. E. (1978). Psychological research as the phenomenological view of it. In: R Valle, M. King (Eds.). *Existential phenomenological alternatives for psychology: theories and methods*, 183-210. London: Sage.
- De Jong, J., Komproe, I., Spinazzola, J., Van der Kolk, B. & Van Ommeren, M. (2005). DESNOS in three post-conflict settings. *Journal of Traumatic Stress*, 18, 13-21.
- Exline, J. S. (2002). Stumbling blocks on the religious road: fractured relationships, nagging vices, and the inner struggles to behavior. *Psychological Inquiry*, 13, 182-189.
- Grundy, P. (2010). Recovery from post-traumatic stress is possible: current treatment choices for PTSD. <http://www.suite101.com/content/recovery-from-posttraumatic-stress-is-possible-a19>.
- Hobfoll, S. E., Canetti-Nissim, D., Johnson, R. J., Varley, J., Palmerei, P. A. & Galea, S. (2008). The association of exposure, risk and resilience factors with PTSD among Jews and Arabs exposed to repeated acts of terrorism in Israel. *Journal of Traumatic Stress*, 21, 9-21.
- Jonsson, A. & Halabi, J. (2006). Work related post-traumatic stress as described by Jordanian nurses. *Accident and Emergency Nursing*, 14, 89-96.
- Jonsson, A. & Segesten, K. (2004). Guilt, shame and a need for a container: a study of posttraumatic stress among ambulance personnel. *Accident and Emergency Nursing*, 12, 215-223.
- Jordan Department of Statistics (2006). *Overview of Jordan Population and Statistics*. Retrieved January 10, 2007. <http://www.jds.gov.jo>.
- Jordan National Highway Safety Department (2007). *Fatal accident reporting system*. Retrieved January 25, 2008. <http://www.dsp.gov.au>.
- Karatzias, T. & Chouliara, Z. (2009). Cognitive appraisals and physical health in people with posttraumatic stress disorder (PTSD). *Medical Hypotheses*, 72, 444-447.
- Kashdan, T. B., Barrios, V., Forsyth, J. P., & Steger, M. F. (2006). Experiential avoidance as a generalized psychological vulnerability: comparisons with coping and emotion regulation strategies. *Behaviour Research and Therapy*, 44, 1301-1320.
- Laffaye, C., Cavella, S., Drescher, K. & Rosen, C. (2008). Relationship among PTSD symptoms, social support, and support source in veterans with chronic PTSD. *Journal of Traumatic Stress*, 21(4), 394-401.
- Lauterbach, D., Vora, R. & Rakow, M. (2005). The relationship between posttraumatic stress disorder and self-reported health problems.

Psychosomatic Medicines, 67, 939-947.

Layne, C. M., Waren, J., Shalev, A. & Watson, P. (2007). Risk, vulnerability resistance and resilience towards an integrative conceptualization of post-traumatic adaptation. In M. J.

Friedman, T. M. Kean, & P. A. Resick (Eds.) PTSD: science and practice: a comprehensive handbook. New York: Guilford Press.

Maercker, A. & Muller, J. (2004). Social acknowledgement as a victim or survivor: a scale to measure a recovery factor of PTSD. *Journal of Traumatic Stress*, 17(4), 345-351.

Mcnutt, L. A., Carlson, B.E., Persaud, M. & Postmus, J. (2002). Cumulative abuse experience physical health and health behaviours. *Ann Epidemiol*.

Minichiello, V., Sullivan, G., Greenwood, K. & Axford, R. (1999). *Handbook for research methods*. Sydney: Addison Wesley Longman.

Ministry of Health. (2005). Overview of Jordan Healthcare System. Retrieved January 12, 2006. <http://www.moh.gov.jo.hm.htm>.

Ministry of Health. (2002). Overview of Jordan Healthcare System. Retrieved February 20, 2003. <http://www.moh.gov.jo/reform>.

Ministry of Information, (2006). Overview of Jordan Information. Retrieved January 25, 2007. <http://www.moi.gov.jo>.

Munhall, P. L. (2001). *Phenomenology: a method*. In nursing research a qualitative perspective, (3rd ed.). Boston: MA. Jones & Barlett.

Murphy, G. & Bradley, C. (2009). PTSD survivor speaks: art, hope & healing.

<http://healmyptsd.com> .

Olatunji, B. O., Cisler, J. M. & Tolin, D. F. (2007). Quality of life in the anxiety disorders: a meta-analytic review. *Clinical Psychology Review*, 27, 572-581.

Polit, D. F. & Beck, C. T. (2008). *Essentials of Nursing Research: methods, appraisal and utilization*. (5th ed.). Philadelphia: J. B. Lippincott Co.

Ray, S. L. & Vanstone, M. (2009). The impact of PTSD on Veterans' family relationships: an interpretative phenomenological inquiry. *International Journal of Nursing Studies*, 46, 838-847.

World Health Organization. (2002). A 5 year WHO strategy for road traffic injury prevention. Retrieved September 23, 2003. www.who.com.

Zeilani, R. S. (2008). *Experiencing intensive care: women's voices in Jordan*. Thesis submitted to the University of Nottingham for the degree of Doctor of Philosophy.

Table 1. Selection criteria for the study	
<i>Inclusion criteria</i>	
<ul style="list-style-type: none"> • Men and Women who have been involved in a MVA • Have, as a consequence of the accident developed PTSD <ul style="list-style-type: none"> • Over the age of 18 years • Deemed competent to participant in the study by a qualified psychiatrist <ul style="list-style-type: none"> • Willing to share their experiences of PTSD • Can speak English 	
<i>Exclusion criteria</i>	
<ul style="list-style-type: none"> • Unduly distressed (meaning unable to control one's emotion; reacting to the memory of initial trauma) <ul style="list-style-type: none"> • Exhibit florid/severe symptoms of PTSD • Present as overtly vulnerable 	

Table 2

Selected Example of Three Significant Statements and Corresponding Formulated Meanings for Theme 1		
SIGNIFICANT STATEMENT (AND NO.)	FORMULATED MEANING	THEME
I am disabled both physically and mentally. I am unable to even help myself. I feel there is no hope and I am unable to care for myself. At times I just want to die	The experience of PTSD limits a persons' capacity to care for self.	<i>Feeling</i>
It has been a difficult time in my life. I lost my independence to do for myself and I need to depend on others. I have no strength to do for myself. I have to depend on others.	The experience of PTSD is to live with the frustration of not Being able to do things for yourself.	<i>health</i>

INTERDISCIPLINARITY IN RESEARCH OF MODERN FAMILY

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Abstract

This article discusses the possibilities of using the knowledge of social anthropology for the development of social work. Social work often uses common terminology, approaches and research techniques together with other social sciences. Particular segment of social work as well as social anthropology focus on similar subjects - family, group, community. In these cases, social work can benefit from the research techniques of social anthropology. In our paper, we focus on the use of participatory visual methods to work with the family and the community. Participatory video is a set of techniques to involve a group or community in shaping and creating their own film on the topic of their own interest. It is the way of bringing people together to explore. It can be a highly effective tool to engage and mobilise marginalised people and to help them implement their own forms of sustainable development based on local needs. The article is one of results of particular research tasks in the project reg. CZ.1.07/2.3.00/20.0209 - Development and support of multidisciplinary scientific research team for the study of contemporary family UHK.

(Max. 250 words)

Keywords: Social work, education, community, family, participatory video

Introduction

Research as well as teaching of social work is based on a number of other disciplines, e.g. psychology, sociology, law and others. Social work is a multidisciplinary field, and it is natural that during its development we are looking for further inspiration in other fields.

Our attention is thus turned to the discipline, which has common a lot with a social work, often dealing with the same problem, the same types of clients and research is mainly based on qualitative methods. That discipline is social anthropology, which took us just with an emphasis on a thorough understanding of the social situation as well as its cultural outreach.

We cannot talk about strictly anthropological approach in social work, but rather about the interaction of anthropology and social work. Anthropological perspectives in social work began to apply to a greater extent with the development of systematic work on the colonized territories (especially North America, Australia, New Zealand). Given that social work has been indoctrinated with the ruling authority, social work committed in the name of goodness of majority many missteps, especially when working with the indigenous population (displacement, removal of children and their re-education in the mainstream society, etc.). Anthropology helped to understand the functioning of indigenous societies, the importance of their institutes and other cultures, incl. language. Applying socio-anthropological approaches in social work, it also brings with it a new look and new methods in social work. The result of this trend is the so-called culturally relevant social work (Coates and Grey and Yellow Bird, 2008:97-106)

The reason why we decided to think about the possibilities of using research techniques from other disciplines in social work is a relatively common problem that arises with the very role of the researcher. In the case of qualitative research, which is for social work with families or communities typical, even the best will fail to eliminate the influence of the researcher on the actual research situation. In the case of our survey data on clients of social work in their natural environment, to better understand their problems and the causes of adverse social situation or context that led to the situation, a potential distortion may lead to totally erroneous conclusions. The natural environment is disturbed by the presence of the researcher it ceases to be natural and changes the behavior and opinions of the respondents. Furthermore, as the environment, which is usually closed and inaccessible from outside (eg. specific community), the presence of the researcher may be completely impossible.

Despite of that social work faces these new challenges more often, especially in connection with its operations in a multicultural society, faced with a number of ethnic, generational and economic conflicts.

I.

Explaining and representing reality can be as complex as reality itself. While social sciences has been traditionally concerned with the translation of reality through words, images have expanded its influence in society and brought up new challenges and possibilities to understand realities by looking at its iconographic representation. Even though it can give us just partial understanding of reality, images, in photography and video, incorporate well known popular expression *an image is worth more than a thousand words*. Today's world is immerse in the permanent use of images in many contexts and with different objectives. When facing this

gigantic and universal contribution, academic research has been opening doors to the use of images to study and to understand social realities. The traditional concern of social sciences of transforming work experiences and social realities in words (Idanez, 2011:282) is opening way to a different understanding of data and information by using images in academic research. The film currently means for anthropologists, cultural historians, sociologists and even other scholars from the humanities only way to document cultural and social phenomena and processes, but due to its unique qualities in the process of interpretation is used in the actual cognitive process studied reality. Visuality helps researchers understand the social life (Rose, 2012: 2).

The evolution of visual technologies created the possibility for almost any person to capture, register, produce and edit images in a way that was not possible even at the end of the 20th century. However, images must be captured by people and people are elements of complex social systems. Most of them are careful on preserving their intimate spaces. As a matter of fact, researchers, community workers and social animators deal with complex (and dynamic) realities where certain spaces are unavailable to their presence. Spiritual, symbolic, familiar or personal spaces are, many times, confined to the members of the groups or communities considered target of research or social intervention. This means that researchers have to stay on the outside of a closed door and a whole field of research and production of knowledge will fall down in the way. Knowledge about marginalized groups or family dynamics, as two examples of restricted spaces, is not possible if not using a *media* to bring out data about those realities.

Participatory visual methodologies were developed by social researchers as a response to the above related obstacles. People were asked to use a camera to register daily situations or to capture what they consider to be a problem or social dynamics affecting them. Research on family dynamics has been using video as a media to observe and reflect about family dynamics with the family members. The Fogo Island case, which originated the concept of Participatory Video methodology, is a sharp example of this “visual discourse based on the perspective of social actors” (Idanez, 2011:281). Innumerable other subsequent experiments driven by organizations and social workers all around the world have shown that visual methodologies can be very useful in scientific research. This tendency grows wider as western science accepts other models of knowledge and opens up a critical discussion on the production of knowledge and the limits of the traditional western comprehension of the world (Santos:2004). The discourse analysis presents itself as a space for reflection and research, considering linguistic, social, and cultural dimensions as important part of the construction of significance (Idanez, 2011:286).

Opening arms to emergent production of knowledge includes having people to participate in the understanding of their realities, as well as to act in their own realities. In what concerns to Participatory Video, participation begins with the action of capturing images of reality according to the perspective of social actors. At the same time PV allows people to develop a conscience and a critical look at their realities, identifying needs, suggesting activities and acting to accomplish an expected social change. This bottom-up approach is in harmony with an evolution of participatory methods developed in the western world in the 1960th of the 20th century, in which Paulo Freire's Pedagogy of the Opressed is an outstanding reference.

Therefore, people that are subject of research are also participating in the process of change of its own reality, collaborating and reflecting about it, in what it is considered an action research process (Voseckova, Truhlarova, Levicka: 2014). In this context of research, Participatory Video appears as a tool to mobilize communities while "documenting the dynamic process of community research" (InsightShare website), to register and to reflect about community problems and social dynamics. With a camera in hand and a look through the lenses, people are empowered to present their own point of view of a social reality, once they are the ones dealing transparently with issues "so often hidden in conventional research; such as: who makes sense? Who chooses what to research? Who edits information? Who presents the information?" (Insight Share website). Participants in PV processes produce genuine data, free from the researcher's aesthetics or interpretation, and add it to the data collected along the research so that "Participatory Video methods complement and enhance other more traditional forms of data collection" (Behnke, cit. InsideShare website). This principle is based on the concept etnomimeze that through alternative ways to view life stories contribute to the search for identity and subjective position in the contemporary world (except film also uses photography and performative art forms). The research results can be understood not only by researchers, but also to the participants themselves, who have to learn to them in an acceptable manner (Ping: 2007).

Participatory Video faces several challenges in order to be considered a successful and credible process of research. Among them, the need to re-evaluate the indicators of success, in order to avoid the disagreement in formal academic expectations; to link PV practitioners with researchers to work as a team; the quality of facilitation to guarantee a professional and ethic serious process. At last it is important not to confuse Participatory Video in research with the more common process of analysis of a film usually ordered by organizations to professionals or lead by an expert community worker with "his" groups.

Participatory Video in research shall be seen as one more process of collecting data valorized by its principles and not a solo data collecting process. Once used in articulation with other quantitative and qualitative data, researchers will find a rich field of contributions for their research.

When considering the practical use of participatory video methods for examining contemporary family we came out of that participatory video will be particularly suitable for the detection of needs or problems. The method was developed to work with a broader group - community, but the family group is significantly narrower (number of members), with a strong structuring. This greatly affects the dynamics of relationships, and therefore it was necessary to modify the method of PV to meet so defined target group. Finally, we decided to use the method of PV as a complementary method to the method of qualitative interview. To verify our assumptions, we were looking for a group that defines itself to its surrounding as an independent community, and which also has significant overlap with the life and family functioning of the group. For the above reasons, we chose Czech expatriate community in south-Portuguese region Algarve. Community comprises about 60 mixed Czech -Portuguese families. Applied long-term access strategy we have reduced the risk of lack of interest in engaging in research so you do research ultimately involved nine families. The research group consisted of eight women and one man aged 25-35 years who lived in Portugal for at least two years and identify themselves with the expatriate community. All respondents graduated (one in Portugal after moving in) and were in relation with the Portuguese partner (husband) for at least one year. One respondent was briefly single. Three respondents had children.

The research has had the task to fulfill two objectives. The primary objective was to gather information on the impact of a foreign country environment to educational styles in a mixed Czech -Portuguese family, the secondary objective was to verify the possibility of using the techniques of participatory video in research of family. The research team had three members, each of them with their expertise profiling represent different perspectives of the research. The entire research was conducted within three weeks in July 2013 and data collection was carried out in parallel by both methods

The main source of information was an interview (with scenario). The interview was videotaped, unless the respondents agreed. Length of the interview was approximately 90 minutes and the place was chosen by each respondent himself in order to feel comfortable (at home, in restaurants, at the beach, etc.)

Along with interviews we held 3 meetings with all involved participants, agreed the topics that participants have to film with creative approach. Videos were saved by participants on web cloud, making the

videos accessible to all participants. The third meeting was the joint evaluation of the first set of videos. The next phase of PV due to the lack of time was not realized. However, already at this stage of the research we uncovered some of the topics that we plan to pursue. Portuguese families usually fairly share paid nannies and grandparents in the children care from the earliest months of life, while in the Czech society is common for mothers caring for children three years or more. Czech mother in mixed families in Portugal try to promote this right to take maximum care of their children at the expense of their own economic independence. Czech mothers consider it important that their children spoke Czech and aware of their cultural roots. Some of the Portuguese partners expressed a desire to learn at least the basics of the Czech language.

To complete the cycle PV we must tape 2 more series of videos that will further develop the exposed subjects. The cycle should be completed by the creation of a joint film able to touch the whole community, which could be performed on public.

The research proceeded with hitch and complications. Finally it appeared the PV needed more time than we planned. It was necessary flexibility to travel about 60 km long coast of the Algarve. When we overcame these obstacles, technical problems in video processing we appeared. For ethical risks we mostly perceived that the video was filmed in people's homes and children often featured in these. For this reason, we have a whole group agreed to a joint film will go only those shots that of the person concerned agrees.

From the beginning, we were aware of the risk of using participatory video methods for research of small closed groups (eg mononuclear family). The aim therefore was to involve the whole family, but it is not always successful. First children, which would possibly related to participation were too low age (not older than 6 years) and also did not speak Czech well. Portuguese partners (husbands) were involved in a qualitative interview only in three cases.

On the other hand, due to a combination of both methods (qualitative interviews and participatory video) we managed to get much more vivid view of the studied reality than what we obtained using only one technique. For the example there was the situation where the interview respondents answered the question "What do you appreciate the Czech Republic? For what are you proud Czech?" They also had the task of shooting video in their homes to capture everything what symbolizes the Czech for them and what they value. They should film objects, customs and traditions and narrate the story of how the artifact got home and why it is important for the respondent (see sample video).

Recordings of the participants were performed at the last third meeting, then the video were discussed and evaluated with the relevance of shots. In the final group evaluation respondents collectively realized that the taking video helped them aware of their relationship to the Czech Republic and the importance of belonging expatriate community in their daily lives.

Finally, we would like to say that the participatory video proved to be a suitable instrument for the research community and other larger groups. The method is able to mobilize a group to a common output (debate) and experience (sharing themselves). For research mononuclear family represents an interesting complementary PV method that allows capturing reality through the eyes of the respondent and the researcher makes it more accessible. We believe we have some good considerations on difficulties found in developing the process in a complete cycle. And also about the use of PV and the opportunity for people to look at their "home dynamics" and symbolic spaces in a different way. Our experience on using PV brought new contributions to the PV method once we used it in a more individual approach instead of a group dynamic. We believe this can bring up new opportunities and open the range of PV as a complementary research tool in situation where researchers disturbance of the situation is inproper. A key advantage we see in particular that the respondents of the research objects become active participants in research and influencing its course and outcome.

In conclusion, I would like to mention the long-term effects of using PV in social research. Social work, as well as action research, are long-term and continuous activities. For this reason, after 14 months we re-visited the community in Algarve. We were wondering whether PV had another impact on the community than just obtain data about the life of Czech families in Portugal. It was shown that the effects of this technique were not negligible. Joint work of the people on video production helped them to realize the importance of cooperation and self-worth in solving daylife problems they decided solve. After more than a year, a community itself established library with Czech literature and a school for teaching children in the Czech language. We were very asked to return and make another film.

Conclusion

From the above result some limitations, risks, as well as benefits for the researcher in the field of social work. The PV method enables researcher to see the world through the eyes (imagination) of surveyed subject. The researcher can repeatedly return to details, which in other forms of research may stay unnoticed. With this method the researcher is allowed to insight into inaccessible places. Particularly the intimate environment of the family and community with closed ties.

Social work can benefit also from fact that the method activates surveyed subjects towards the solution of their problem.

On the other hand, the researcher must take into account the risks of this method. He must anxiously ensure privacy of surveyed persons and predict possible consequences in the form of stigmatization and victimization, especially when publishing movies. A significant problem can also be a low quality of video acquired due to poor equipment and little experience of the surveyed subjects.

We believe that this research method can be successfully used also in the Czech Republic. And as you can see from the example, technologies for creating and editing videos are available to broad population groups, including socially disadvantaged and children. Even among them is not an exception to own a mobile phone capable of recording video. Social work should not lag behind the development of the society and we believe that we will see this method to be more common.

References:

Websites:

InsightShare: *Participatory Video for Research* [online]. [cit. 2013-09-26].

Access in internet: <http://insightshare.org/engage/services/pv-research>

ProPlaneta: *Participatory Video From an Academic Point of View*. [online].

[cit. 2013-09-26]. Access in internet:

<http://www.proplaneta.com/index.php/how-do-we-work/participatory-video>

SANTOS, Boaventura de Sousa.(2004) *A Critique of Lazy Reason*. [online].

[cit. 2013-09-26]. Access in internet:

<http://www.ces.uc.pt/bss/documentos/A%20critique%20of%20lazy%20reason.pdf>

Books and articles:

BAUMHARDT, Fernanda et all (2009). *Farmers Become Filmmakers: Climate Change Adaptation in Malawi*. Participatory Learning and Action, 60, pp. 129-138.

GREY, M., COATES, J., YELLOW BIRD, M. *Indigenous Social Work around the World*, 1st editon, Burlington: Ashgate Publishing Company, 2008, 368 p. ISBN 978-075464838-3

IDANEZ, Maria Jose Aguilar (2011). *Fontes Visuais e Investigacao Visual Aplicada a Animacao Sociocultural* in Lopes, Marcelino de Sousa (coord.) *Metodologias de Investigacao em Animacao Sociocultural*, P. 281-302.

PING, S. *Doing visual Ethnography*, 2nd editon, London: SAGE Publication Ltd. 2007, 234 p. ISBN 1-4129-2348-4

ROSE, G. *Visual methodologies: An Introduction to Researching with Visual Materials*, 3rd edition, London: SAGE publications Ltd. 2012, 386 p. ISBN 978-0-85702-888-4

VOSECKOVA, Alena, TRUHLAROVA, Zuzana, LEVICKA, Jana. New Approach to Teaching of Health Psychology Focusing on Social Work in the Family. In: *Procedia - social and behavioral sciences*. Amsterdam: Elsevier, 2014, s. 324-329.

EVALUATION OF SECONDARY OSTEOPOROSIS WITH BONE MINERAL DENSITOMETRY AND BONE TURNOVER MARKERS

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Abstract

Osteoporosis is as a very complex multi-factorial pathogenesis; thereby any doctor facing a case of osteoporosis must be very careful. Diagnostic procedures are complex and include careful monitoring of the history of patient, physical examination and some laboratory analysis. In this study, 201 patients aged between 50 and 95 years were selected from 4872 patients consulting orthopedic clinics. This group (201 patients: 168 women, 33 men) showed evidence of osteoporosis: BMD_DXA with reduced bone

mineral density, T-score: greater than -2.5 SD, or X-ray signs of non traumatic fractures. Patients also underwent biochemical and instrumental investigations for an assessment of bone metabolism. Age, gender, medical history as well as tests of rheumatic metabolism, calcium-phosphorus and some indices of bone turnover were determined for each patient. Interestingly, our data showed that 104 patients had a vertebral fracture without trauma, 22 hypothyroid patients were undergoing treatment with levothyroxine, 3 patients were suffering from autoimmune thyroiditis, 3 patients were suffering from secondary hyperparathyroidism with vitamin D deficiency, 2 patients were suffering from adenoma with primary hyperparathyroidism, 20 were diabetic patients, 7 patients had monoclonal gammopathy, 7 women had hysterectomy, 7 patients were HCV positive, 4 patients with rheumatoid arthritis had been treated with corticosteroids, 2 patients were suffering from multiple myeloma, and 1 patient had Crohn's disease. There was also 1 suspected case of ulcerative colitis, 5 patients were suffering from celiac disease and other cases described in the paper.

As a result of this diverse association, the approach to treating osteoporotic patients should be then accurate and multidisciplinary. It is then important to perform laboratory tests and investigations for correct diagnosis and adequate treatment.

Keywords: Bone mineral density (BMD), Celiac disease (CD), Standard deviation (SD), Dual-energy X-ray Absorptiometry (DXA), Hepatitis C virus (HCV), and Erythrocyte sedimentation rate (ESR), C- reactive protein (CRP), Tuberculosis (TB).

Introduction

Diagnostic procedures of osteoporosis are complex; they include accurate documentation of the history of the patient, and carrying out physical examinations and laboratory analysis. This approach is the only way to differentiate between primary and secondary osteoporosis (reaching 35% of the cases in women and 20 -50% in men). Moreover, it allows a proper diagnosis for a subsequently correct treatment. The clinical relevance of secondary osteoporosis can be understood as an event in the course of a disease or an epiphenomenon already manifested clinically as primary manifestation of systemic diseases.

The classification of secondary osteoporosis cannot be done without taking into consideration the different nosographic groups. This helps to emphasize the multidisciplinary approach of this event in particular caused by endocrine, iatrogenic consequences, rheumatologic, dysmetabolic, gastroenterological, celiac disease, proliferative hematological cancer, or

proliferative diseases in addition to pharmacological treatment. Several varied conditions can potentially support secondary osteoporosis like, hormonal imbalances (hyperadrenalism, hyperparathyroidism, hyperthyroidism, hypogonadism, hyperprolactinemia, diabetes), intake of certain categories of drugs (corticosteroids, ethanol, phenytoin, tobacco, barbiturates, heparin), in addition to circumstances that favor the development of the disease, such as prolonged immobilization, chronic kidney failure, liver disease, malabsorption syndromes, pulmonary chronic obstructive pulmonary disease, rheumatoid arthritis, sarcoidosis, malignant tumors, or prolonged absences of gravity.

Secondary osteoporosis is clinically common to many diseases and can be the first manifestation of several diseases. It may then become a good diagnostic key in all patients suffering from osteoporosis at a young age, or a bone disease not related to menopausal status and / or age. Therefore, an imperative clinical screening associated with laboratory tests is necessary to determine the cause of the disease or the associated conditions and give the necessary treatment.

Aim of the research:

Based on the considerations outlined above, the purpose of this study is to demonstrate the high incidence of secondary osteoporosis; the importance of a correct diagnosis and a proper multidisciplinary approach in patients with radiographic signs of vertebral collapse and / or bone fractures (femur, humerus, radius, vertebrae) without trauma and /or signs of osteoporosis BMD, is not limited only to healing, but to better specify whether we are facing a state of primitive and / or secondary osteoporosis and consequently for an adequate treatment. Even patients, unrelated to osteoporosis, who are seen occasionally with a request for orthopedic specialist advice (prescription for an adjuvant, example: the brace) deserve to be better studied.

Patients and methods:

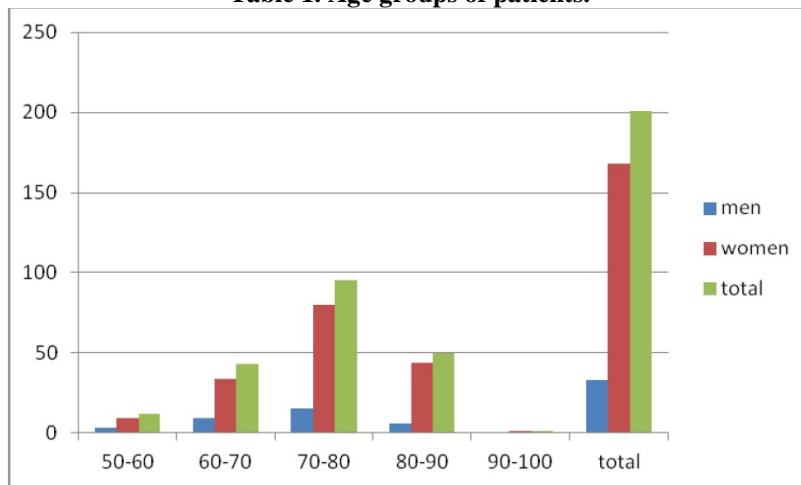
201 patients were selected from a total of 4872 within five years (from December 2002 to February 2008) in the clinic of Orthopedic Surgery in Borgo San Lorenzo at the Center of Polyvalent Social Health, Florence, Italy. These 4872 patients referred to our Center are aged between 3 and 95 years. Among them only 201 patients aged between 50 and 95 years (168 women, 33 men) had evidence of osteoporosis: BMD DXA with reduction of bone mineral density, with T-score: greater than -2.5 SD or X-ray signs of non traumatic fractures.

These patients underwent biochemical and instrumental investigations for an assessment of bone metabolism. On their first visit, age,

gender, and medical history were determined for each patient. Moreover, laboratory tests of rheumatic metabolism and calcium-phosphorus (complete blood count, ESR, CRP, uric acid, creatinine, blood urea nitrogen, serum calcium, phosphorus, magnesium, serum protein electrophoresis, serum electrolytes) and some indices of bone turnover (total alkaline phosphatase and bone, urinary calcium (24hr), phosphaturia, 25- (OH) - and 1,25- (OH) 2-vit.D3, parathyroid hormone) were done.

Patients were divided in five groups according to the age: 50 to 60 years, 60 to 70, 70 to 80, 80 to 90 and 90 to 100. From 50 to 60 years we had 12 patients: 9 women and 3 men, from 60 to 70 years 43 patients: 34 women and 9 men, from 70 to 80 years 95 patients: 80 women and 15 men, from 80 to 90 years 50 patients: 44 women and 6 men and from 90 to 100 one woman only between. The report showed that the group with higher incidence is represented by 95 patients aged between 70 and 80 years, followed by the group aged between 80 and 90 years, adding up to a total of 50 patients. The last age group includes patients aged between 60 and 70 years for a total of 43 patients.

Table 1. Age groups of patients.

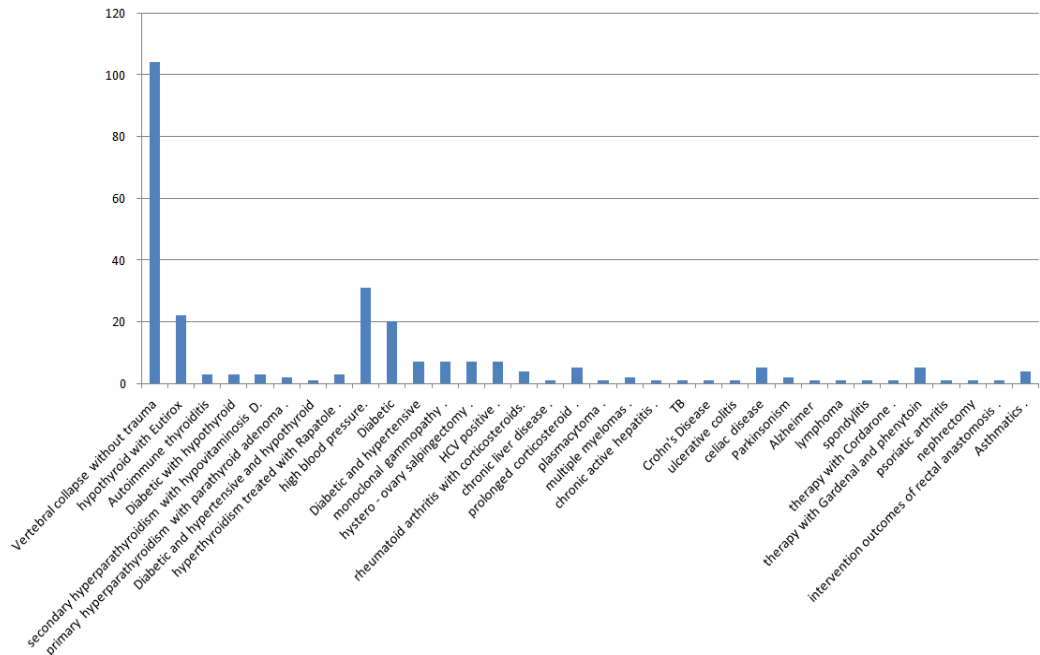


Statistical analysis:

201 patients aged between 50 and 95 years, including 168 women and 33 men, had BMD / DXA with reduction in bone mineral density, with T-score greater than -2.5 or osteoporosis with signs of fractures without previous trauma on X RAY. Data from this study shows: 104 patients having vertebral collapse without a trauma, 22 hypothyroid patients on Eutirox, 3 suffering from autoimmune based thyroiditis, 3 diabetics with hypothyroidism, 3 suffering from hyperparathyroidism secondary to Vitamin D deficiency, 2 having primary hyperparathyroidism with parathyroid adenoma, 1 diabetic having hypertension and hypothyroidism, 3 cases of

hyperthyroidism treated with methimazole. 31 patients suffering from arterial hypertension, 20 diabetics, 7 diabetic and hypertensive patients and 7 cases of monoclonal gammopathy, 7 women who have had hystero ovario salpyngectomy, 7-HCV positive, 4 rheumatoid arthritis therapy with corticosteroids, 1 suffering from chronic liver disease, 5 patients continuously receiving glucocortisteroids, 1 patient suffering from plasmacytoma, 2 multiple Myeloma patients, 1 Suffering from active chronic hepatitis, 1 patient having TB, 1 patient suffering from Crohn's Disease, 1 case of ulcerative colitis, 5 cases of celiac disease, 2 suffering from Parkinson disease, 1 suffering from Alzheimer Disease, 1 lymphoma, 1 ankylosing spondylitis, 1 on amiodarone therapy, 5 on Phenobarbital and phenytoin therapy, 1 case of psoriatic arthritis, 1 who had nephrectomy, 1 suffering from intervention outcomes of recto-sigmoid anastomosis and 4 asthmatics.

Table 2. Diseases and conditions associated with secondary osteoporosis.



Special cases:

In our study series, patients without instrumental BMD evidence of osteoporosis or non traumatic fractures visible on X Ray have been excluded. From the 4872 patients seen in our orthopedic Center, 201 patients had fractures of the femur, post-traumatic vertebral collapse or signs of osteoporosis with BMD DXA T score: greater than -2.5. For correct diagnosis of osteoporosis, accurate documentation of history and physical examination should be done to evaluate the risk factors and exclude secondary forms of the disease. A proper metabolic evaluation should be

performed to exclude other skeletal metabolic diseases and secondary forms of the disease that occur with the reduction of bone mineral densitometry. In addition to the instrumental evaluation and radiography to reveal any asymptomatic vertebral fractures.

Conclusion:

The approach to osteoporotic patients should be accurate and multidisciplinary. Many patients studied in our research had vertebral fractures, parathyroid and thyroid disease, but had not been considered as cases of osteoporosis. It is so important to perform laboratory tests for correct diagnosis and adequate treatment. Given the frequency with which this complication occurs in the cases mentioned above, it is essential to establish a "surveillance" follow up from the outset designed to detect signs of osteoporosis as early as possible so it is important for patients at risk to carry out blood tests and Radiographs at regular intervals in order to closely monitor on one hand the bone metabolism, and on the other its conformation. Again, it is therefore essential for the doctor to be aware of the possibility of the onset of secondary osteoporosis in certain circumstances, and immediately put in place a suitable monitoring protocol. It is very important to have a correct diagnosis and a proper multidisciplinary approach for a patient with radiographic signs of vertebral collapse and / or fragility fractures. The clinical relevance of secondary osteoporosis can be understood both as an event in the course of a disease already manifested or an epiphenomenon clinical initiation of systemic diseases for which osteoporosis may be a key for initial diagnosis.

References:

- Maria Luisa Brandi: Evaluation of fracture risk and fracture prevention: an Italian picture .Clin Cases in Miner bone Metab 2012
- Filippella MG, Faggiano A, Falchetti A, Colao A, Rosa C, Poti C, Musso C, Doveri G, Brandi ML. Risk of fractures and bone abnormalities in postmenopausal women with type2 diabetes mellitus: Clinical Cases Mineral Bone Metabolism 2010
- Wheater G, Elshahaly M, Tuck SP, Datta HK, van Laar JM :The clinical utility of bone marker measurements in osteoporosis.JTransl Med 2013
- Datta HK, Ng FW, Walker JA, Tuck SP, Varanasi SS: The cell biology of bone metabolism-a review. J Clin Path 2008
- Marini F, Brandi ML, Geneticdeterminants of osteoporosis: common bases to cardiovasculardisease, Int J Hypertens 2010
- Lee J, Vasikaran S.Current recommendations for laboratory testing and use of bone turnover markers in management of osteoporosis. Ann Lab Med 2012

- Cianferotti L, Brandi ML. Guidance for the diagnosis, prevention and therapy of osteoporosis in Italy. Clin Cases Miner Bone Metab 2012
- Klein-Nulend J, Bakker AD, Bacabac RG, Vatsa A, Weinbaum S: Mechanosensation and transduction in osteocytes. Bone 2013
- Kobayashi Y, Maeda K, Takahashi N: Roles of Wnt signalling in bone formation and resorption. Jpn Dent Sci Rev 2008
- Bellido T, Saini V, Pajevic PD: Effects of PTH on osteocyte function. Bone 2013
- Agna MS, Calabrò A, Cataldo D, Stolakis K, Dotta F, Nuti R: Circulating sclerostin levels and bone turnover in type 1 and type 2 diabetes. J Clin Endocrinol Metab 2012
- Carey JJ, Licata AA, Delaney MF: Biochemical markers of bone turnover. Clin Rev Bone Miner Metab 2006
- Vega D, Maalouf NM, Sakhaee K: The role of receptor activator of nuclear factor- κ B (RANK)/RANK Ligand/Osteoprotegerin: clinical implications. J Clin Endocrinol Metab 2007
- Leibbrandt A, Penninger JM: RANK/RANKL: regulators of immune responses and bone physiology. Ann N Y Acad Sci 2008
- Cianferotti L, Brandi ML: Guidance for the diagnosis, prevention and therapy of osteoporosis in Italy. Clin Cases in Miner bone Metab 2012

ROLE OF CUTANEOUS AFFERENTS IN THE CONTROL OF FINE MOVEMENTS

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Abstract

An increase in the quantity of afferents has been observed to be less useful to normal individual, therefore to patients suffering from neurological problems. To determine the effect of reduction of cutaneous afferents in the control of fine movements. Sixty healthy individuals, age between 20 and 25 years, were randomized into 2 groups. Main outcome measures: The speed of movements was measured with a specific device constructed specially to this study, related to digital chronometer that detects 1/100 of the second. T-test was performed for outcome measure and to evaluate individual difference within groups in the presence of significance. The position at the edge of the support show an increase in the speed of the fine movement by 82% than the position completely on the support.

Keywords: Cutaneous Afferents, fine movements

Introduction

Concentration and mental focalization permit to filtrate the huge sensory activity and open widely the access to the mental field of one unique sensation. Many authors talked about the importance of cutaneous afferent in

the control of fine movement. Recent experiments were done on healthy individuals compared to pathologic cases, results show that somato-proprioception may have an effect in the control of movement. Visual target remains the best choice to study the mechanism of coordination and guidance of movement. Time of reaction is an important measure for the speed of treatment of the information. The variations of the quantity of cutaneous afferents induce a variation in the control of fine movement in two different positions.

Material and methods

Experiment was done on healthy individuals, which permit more to understand the organization of problems and the analysis of sensorial input in pathological cases. It is very difficult to find a homogenous group of individuals, especially in neurological cases.

60 males, age between 20 year and 25 year and of body mass index between 17 and 27 submit to this experiment at the same experimental conditions. They undergo the same movement in 2 different positions where the quantity of cutaneous afferent only changes but the positions of reference does not change. Conditions of the experiment: Positions of the subjects: Position 1: Sitting in a chair, thigh totally touched the surface of the chair, knee flexed 90 degree, trunk redressed, elbow flexed 90 degree, forearm reposed. Position 2: sitting in a chair, thigh partially touched the edge of the chair, knee flexed 90 degree, trunk redressed, elbow flexed 90 degree, forearm reposed.



Position 1

Position 2

Tools: Digital chronometer (Seiko) that measure a fraction of 1/100 of the second. Special devices produced to measure the speed of movement.



Application:

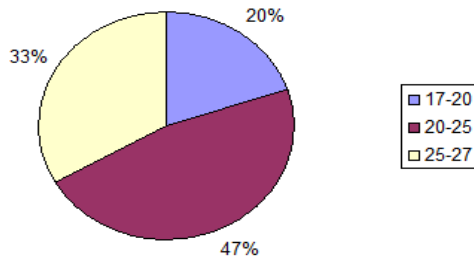


Starting

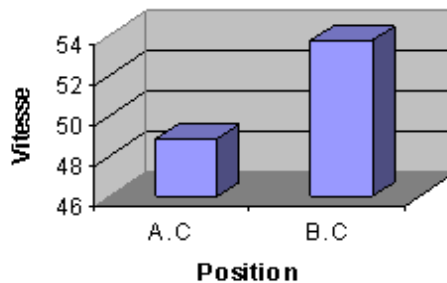
Ending

Speed of movement is calculated by the ratio of distance in cm over the time in seconds.

Statistical results: Repartition of subject according to body mass index. (kg/m²)



- Variation of the means: speed of movement (cm/s).



- Statistic tests:

T- test	T	P
Between mean during sitting totally touched and sitting at the edge of the table.	0.52	0,00

Discussion

The results show that the speed of movement in 82 % of subject sited on the edge of the chair is better than sited in fully contact on chair. These results are not so far from those of Jacque Larue who totally deprives the subject from cutaneous afferents, while we reduce them.

Conclusion

The reduction of 80% of cutaneous afferents from posterior side of the thigh leads to better results in the control of finesse movement. Rehabilitation of neurological cases will get better results when we reduce the quantity of cutaneous afferents.

References:

Larue J, Bard C, Fleury M, Teasdale N, Paillard J(1992). Rôle des afférences proprioceptives et cutanées dans le contrôle des mouvements de pointage en amplitude. *In* : M Laurent, J-F Marini, R Pfister et Therme,

Recherches en A.P.S. 3. Paris. Actio. Université Aix-Marseille II (UFR STAPS). 101-109.

Mouchnino, L., Aurenty, R., Massion, J., & Pedotti, A. (1992). Coordination between equilibrium and head-trunk orientation during leg movement. a new strategie built up by training. *Journal of Neurophysiology*, vol. 67. n° 6: 1587-1597.

Forget, R., and Lamarre, Y. (1987). Rapid elbow flexion in the absence of proprioceptive and cutaneous feedback. *Hum. Neurobiol.* n°6: 27-37.

Bossom, J. (1974). Movement without proprioception. *Brain Research*, 71, 285-296.

Jeannerod, M., Michel, P., & Prablanc, C. (1984). The control of hand movements in a case of hemianaesthesia following a parietal lesion. *Brain*, 107, 899-920.

Forget, R., & Lamarre, Y. (1987). Rapid arm flexion in the absence of proprioceptive and cutaneous feedback. *Human Neurobiology*, 6, 27-37.

Straube A., Botzel K., Hawken M. Paulus W. Brandt T.(1988). Postural control in the ederly. differential effect of visual, vestibular and somatosensory inputs. In : Posture and gait : development, adaptation and modulation. B. Amblard, A. Berthoz and F. Clarac Eds, Elsevier, 105-114.

Bonan I, Yelnik A., Laffont I., Vitte E. et Freyss G. (1996). Sélection des afférences sensorielles dans l'équilibration de l'hémiplégique après accident vasculaire cérébral. *Ann. Réadaptation Méd. Phys.* 39, 157-163.

Forget, R. (1986). Pertes des afférences sensorielle et fonction motrice chez l'homme. Thèse de doctorat. Université de Montréal, pp.172.

Gandevia, S.C., & McCloskey, D.I. (1976). Joint sense, muscle sense, and their combination as position sense, measured at the distal interphalangeal joint of the middle finger. *Journal of Physiology*, 260, 387-407.

Redon, C., Hay, L. & Velay, J.-L. (1991). Proprioceptive control of goal-directed movements in man, studied by means of vibratory muscle tendon stimulation. *Journal of Motor Behavior*, 23, 101-108.

Roll, J.P., Vedel, J.P., & Ribot, E. (1989). Alteration of proprioceptive messages induced by tendon vibration in man: A microneurographic study. *Experimental Brain Research*, 76, 213-222.

Meyer, D.E., Abrams, R.A., Kornblum, S., Wright. (1988). Optimality in human motor performance: Ideal control of rapid aimed movements. *Psychological Review*, 95, 340-370.

Gandevia S. C., Et Burke D. (1992). Does the nervous system depend on knesthetic information to control natural limb movements?, *Behai,ioral and Brain Sciences*, 15, 614-632.

Grossman G. Leigh R. Abel L. (1989). Frequency and velocity of rotational head perturbations during locomotion. *Exp. Brain Res.* 70: 470-476.

- Paillard J. (1991).** Motor and representational framing of space. In: Brain and Space, J. Paillard (ed). Oxford University Press, Oxford. Pp 163-182.
- Schmidt k. m. (eds),** Motor behavior : Progratw ming, control, and acquisition, Berlin, Springer-Verlag. **SCHMIDT R. A. (1975),** A schema theory of discrete motor skill learning, *Psychological Review*, 86, 225-260.
- Mesure S.** les theories de l'apprentissage moteur.
- Adams, J.A. (1977).** Feedback theory of how joint receptors regulate the timing and positioning of a limb. *Psychol. Rev.* 84 (6): 504-523.
- Debu Betina. (2004).** Theories de l'apprentissage et processus mnésiques. Université Joseph fourier. 25-29.
- Dizio P, Lackner Jr (1995).** Motor adaptation to Coriolis force perturbations of reaching movements: endpoint but not trajectory adaptation transfers to the nonexposed arm. *J Neurophysiol* 74: 1787-1792.
- Paillard J. (1986),** Itinéraire pour une psychop&vsiologie de l'action, Paris, Editions Actio.
- Schmidt, R.A., Zelaznik, H., Hawkins, B., Franks, J.S., & Quinn, J.T., Jr. (1990).** motor-output variability : A theory for the accuracy of rapid motor acts. *Psychological Review*, 86, 415-451.
- Jami L. 2000** - Les organes tendineux de golgi sont-ils des capteurs de force ? In Pied équilibre et mouvement. coordination Ph Villeneuve et Weber B. Masson 7-13.

ARE THERE HEALTH DISPARITIES AMONG JORDANIAN OLDER ADULTS? POTENTIAL FACTORS (PART 1)

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Abstract

Older adults in Jordan are confronted with emerging health issues. They have diabetes, hypertension, chronic heard diseases and other conditions causing them to have a poor quality of life compared to other segments of Jordanian population and others in neighbor countries, such as North Africa and Arab countries. This paper will shed light on the health variables and challenges that Jordanian older adults have vis-à-vis biologic, genetic, socio-cultural, environmental factors, health behaviors, and health literacy. Such issues that may be potential seeds of health disparities, placing older adults at higher risk for adverse health outcomes in comparison with other age groups in Jordan as well as their counterparts in surrounding countries.

Keywords: Jordanian older adults, health disparities, health issues

Introduction

The ultimate endeavors to address Jordanian older adults deeply are driven by the lack of relevant inquiries as well as the absence of designated specialized healthcare services targeting Jordanian elders (Mahasneh, 2000). Overtime, Jordanian older adults have faced several health challenges and obstacles, getting in the way of their desirable health outcomes. Various daily life challenges emanating from physical, psychological, social, and environmental aspects disrupt the health status of older adults. Based on a survey conducted by Mahasneh (2000), Jordanian older adults face several chronic diseases as follows: “arthritis (48.6%), high blood pressure (37.4%), diabetes (26.9%), heart problems (14.0%), and accidents and falls (11%)”(p. 43). The same survey revealed that the most of older adults perceive their health status as good (63.6%), poor (26%), and few classified their health status as excellent (10.5%)(Mahasneh, 2000). In Jordan, physical inactivity alongside smoking, obesity, and unhealthy diet have significantly become serious risk factors of non-communicable diseases, such as cardiovascular

diseases, cancer, and diabetes (Al-Nsour, et al., 2012; Zindah, Belbeisi, Walke, & Mokdad, 2008).

Alongside health challenges, Jordanian older adults with chronic diseases have reached a critical position subsequent to the influxes of Syrian refugees. The aspects of this issue are as follows: inadequate healthcare services, disturbance in social cohesion, disruptive living environment, and increasing demand on water resources (Ministry of Planning, 2013). Based on Mahasneh's (2000), the major obstacles that get in the way of having appropriate health services among Jordanian older adults are as follows: high healthcare cost (70.1%), uninsured (14.3%), not appropriate intervention or treatment (7.8%), and the prescribed treatment was not found (7.8%). Such barriers could also impede Jordanian older adults in obtaining the equal chances of healthcare services and widen the gap between older adults and other age groups in the context of desired health outcomes in Jordan.

As a result, the variations in health outcomes are assimilated into something called health disparities. Referring to Centers for Disease Control and Prevention (CDC)'s definition of health disparities, "Health disparities are preventable differences in the burden of disease, injury, violence, or in opportunities to achieve optimal health experienced by socially disadvantaged racial, ethnic, and other population groups, and communities" (2013, para. 1). In other words, the health outcomes differences coming up due to variations in the biological, physical, social economical status, environmental issues, health behaviors, and health literacy between older adults and other age groups are referred to as health disparities. It is noteworthy to look at health disparities in Middle East, North Africa, and Arab countries within the same geographical region as Jordan.

The health policies in the region of the Middle East and North Africa have to undergo a reform in order to eradicate health disparities through expanding the umbrella of health insurance coverage to entail all poor, delivering high quality health services to rural or underserved areas, and tailoring appropriate interventions to poor people in the community (Iqbal, 2006). The Government of Jordan, represented by the Ministry of Health, is commissioned to provide health services to Jordanian people who have governmental insurance; it also functions as a safety network of health insurance for Jordanians who have no health insurance coverage (civil, military, UNRWA, private) (WHO, 2009). Razzak and colleagues' (2011) state that health disparities have risen between the countries regarded as Muslim-Majority Countries (MMC) (48 countries) and non-MMC (142 countries) concerning life expectancy, maternal mortality, and infant mortality rate, in which maternal and infant mortality rates in MMC are twice as high as in non-MMC. The reasons behind these disparities imply the differences of health determinants, "such as education, wealth, and

infrastructure” (Razzak, et al., 2011, p. 662). Although Jordan is one of MMC and has only US\$ 4903 as GDP per capita, it precedes United States in terms of the life expectancy, which has a US\$ 45,790 GDP per capita (Razzak, et al., 2011).

Some of these differences could contribute largely to health disparities in older adults as they experience the common pitfalls associated with healthcare systems in Arab countries. These common pitfalls comprise limitations of the healthcare package in most Arab countries (i.e. dental services), long waiting periods to get healthcare services in the public sector driving people to seek healthcare in private settings, people with mental retardation, low educational status, and living in rural areas. All of these situations make access to healthcare difficult and therefore inadequate (Kronfol, 2012). In the light of health disparities, most of Arab countries lack the comprehensive strategies of prioritizing the health equities as major health outcomes. Only four countries, Jordan, Oman, Morocco, and Sudan have such a strategy (Salem, 2009 as cited in IUSSP Scientific Panel, seminar, 2009). In 2008, the Jordanian strategy was named as “The National Jordanian Strategy for Senior Citizens”, aiming to ameliorate the quality of daily life for Jordanian senior citizens. This strategy is originally based on ‘Arab and Islamic values’, ‘the principles of UN 1991 regarding older adults’, ‘the regional and international action plans’, and ‘the Jordanian referential documents.’ (NCFA, 2008, p. 10).

In United States, Health People has been launched presenting 10-year national objectives to promote the health of all Americans. In the context of pertinent *Healthy People 2020* objectives, the topics categorized under Older Adults group are the most likely to be applicable for Jordanian older adults. Older Adult is a new field that has been added to *Healthy People 2020*, intending to improve the quality of life in elders. Such topics include ameliorating behavioral determinants, eliminating health disparities among minorities, and promoting the quality of healthcare services and its access (Healthy People, 2014). These goals are in concordance with what the Jordanian professionals are attempting to fulfill within the upcoming few years, cultivating the proposed strategies of older adults, in particular, the *National Jordanian Strategy For Senior Citizens. Healthy People 2020* project contains health objectives that could be beneficial to Jordanian health professions.

I. Significance of the problem

In order to explore health disparities objectively in Jordan, it is important to report briefly the essential efforts being spent by Jordanian health authorities to deliver the essential health services to all Jordanian

people prior to pointing out the roots of health disparities. The World Development Indicators show that the public health expenditure in Jordan is 4.3% of GDP, which is the highest among the other countries in the Middle East and North Africa (as cited in Iqbal, 2006). In addition, it is common for some Jordanian people to enroll in more than one health insurance (World Health Organization and Jordan's Ministry of Health, 2011).

Despite the large public health expenditures and wide-spread health insurance to promote the health status of Jordanian people, including older adults, the way the Jordanians live stands in opposition to what the healthcare professionals intend to recommend regarding healthy diet and exercises. It is clearer than any other time that obesity, unhealthy diet, and low physical activity are essential reasons behind the increasing burden of chronic diseases on healthcare services system in Jordan, and it will continue to be over upcoming years (Zindah, et al., 2008). Zindah and colleagues (2008) recommend that it is important to educate the Jordanian people about the importance of physical activity and raise their children in active play rather than spending time on the computer or television, and urge the policy makers who can help by establishing a positive atmosphere that encourages people to partake in daily physical activity.

The economical factor also comes to play in the court of health disparities, attenuating the combined endeavors to promote the health status of older adults over the whole country. In 2006, the percentages of poverty are different from one area or governorate to another, varying from the lowest poverty level in Amman (9.43%) to the highest level in Mafraq (22.98%) (World Bank, DOS, 2009). These huge discrepancies in poverty offer different levels of healthcare quality targeting older people in Jordan.

Health Expenditures in 2002

Country	Health Expenditure (% of GDP)			Health Expenditure (US\$ per capita)
	Public	Private	Total	
Algeria	3.2	1.1	4.3	77
Arab Republic of Egypt	2.4	3.6	6.0	79
Islamic Republic of Iran	2.9	3.1	6.0	104
Jordan	4.3	5.0	9.3	165
Lebanon	3.5	8.0	11.5	568
Morocco	1.5	3.1	4.6	55
Syria	2.3	2.8	5.1	58
Tunisia	2.8	2.8	5.6	126
Republic of Yemen	1.0	2.7	3.7	23
Middle East and North Africa	2.9	3.0	5.9	89
Lower-middle-income countries	2.5	3.3	5.8	75

Table 1. World Development Indicators (as cited in Iqbal, 2006).

Biologic and Genetic Issues

The prevalence of diabetes among Jordanian people is considered as one of the highest ratios in the region and the world, in which the prevalence of diabetes was 13.4% (14.9% in males, 12.5% in females) (Ajlouni, Jaddou, & Batieha, 1998). Gallagher, Gebhard, and Nash (2008) have posited an explanation for the high incidence of diabetes and obesity in Jordan is what is called “starvation or thrifty gene” (p. 9). They justified their postulation based on a theory proposed by James Neel in 1962, stating Pima Indians had experienced periods of feast and famine on a regular basis, pushing these people to keep fat in order to face the time of famine. Thus, a thrifty gene has developed contributing to these people becoming over-weighted and vulnerable to diabetes (NIDDK, n.d.). Jordanian medical professionals observe that the historical roots of living as “nomadic Bedouins” in the past make the Jordanian population more vulnerable to diabetes (Ajlouni, personal interview, 2008 as cited in Gallagher, et al., 2008), similar to Pima Indians (NIDDK, n.d.). This point could be used to explain the high relative risk of having diabetes in Jordanian people, as a thrifty gene could have developed in the same way as it did in the Pima Indians. The strategy of combating diabetes in Jordan implies the holistic approach, recommending eating healthy food, encouraging physical activity, controlling hyperglycemia, improving diabetes management, as well as minimizing the modifiable risk factors of diabetes (“MENA Diabetes Leadership,” 2010). Zindah and colleagues (2008) reported that a Behavioral Risk Factors Surveillance Survey (BRFSS) issued by the MOH in collaboration with the CDC revealed performing physical activity on a daily basis is followed by less than half of Jordanian adults only.

Sociocultural Issues

In terms of social structure, most of the Jordanian older adults who participated in Mahasneh’s survey (2000) live with their spouses and unmarried children (44.3%). In addition, 38% of the sample lives without any assistance at home. Not being safe at home reported by older participants in the same study is due to family issues, fearing of living alone, uncomfortable winter temperatures (Mahasneh, 2000). The common life style that Jordanian people have become accustomed to puts them at a higher risk for developing chronic diseases (i.e. diabetes) as a result of a lack of physical activity on a daily basis (Gallagher, et al., 2008). In addition, the high membership cost of fitness centers, which could reach JD1000 annually, gets in the way of practicing regular physical activities and exercises (Naffa, personal interview, 2008 as cited in Gallagher, et al., 2008). Another reason contributing to low physical activity is that the local authorities have not paid enough attention to “prominent parks or public recreational areas” in

concordance with the dramatic change in infrastructure in Amman (Gallagher, et al., 2008). As a member of the Jordanian culture, Jordanians consider their job is a kind of exercises that perform on a routine basis, overlooking the standard definition of exercise, which denotes the practicing activities for a defined time on a regular basis. This cultural view arises from lack of the awareness of the importance of performing exercises as preventive strategy against the health issues.

In terms of economical conditions, Jordan is considered as an upper-middle income country (GDP \$ 28.87 billion in 2012), around 0.1% of its population are under international poverty headcount ratio (\$1.25 a day) and 13.3% under poverty headcount ratio at national poverty line (The World Bank, 2012), which place Jordanian older adult at stake with financial burdens while seeking for healthcare services. In addition, older adults with some of chronic diseases could get in their way of finding job opportunities. For instance, people with mental health problems are likely to have less education chances and job opportunities, which in turn, put these patients at higher risk for being poor in their life and vice-versa, and as a result, less life chances leading to disruptive mental health (World Health Organization, Mental Health and Poverty Project, 2010). On the other side, continuous influxes of refugees from surrounding countries, in particular, Syria, contributes to disturbing the social cohesion, which is one of the distinguished features of Jordanian culture. Consequently, older adults have less social support as a result of lack of social cohesion, and face “increased social tension, violent crime, targeting of certain groups, human rights violations, and, ultimately, conflict.”(Ministry of Planning, 2013, p. 101). As a result, more health disparities become prominent, depriving older adults with chronic diseases of the appropriate assistance from their social context in a timely manner.

Environmental Issues

Geographical distribution of Jordanian population affects the quality of healthcare services provided by health professionals. Alongside health inequities based on rural-urban differences, people living in rural areas are largely exposed to poverty and social exclusion issues (Boutayeb & Helmert, 2011). Jordanian elders face these challenges while intending to get high quality healthcare services in the major urban areas coming from rural areas. Despite presence of appropriate, designated, health infrastructure, geographic disparities are clear and shown through the number of beds in hospitals per capita in the capital, Amman, and some rural governorates (3:1) and, by the same token, the number of physicians working in Amman compared to some other rural governorates (3:1) (World Bank, 1997). The previous geographic disparities could not be explained by the variation in population between

Amman and other cities. In 2012, the Jordanian population in Amman was 2,473,400 and in the second ranked city, Irbid was 1,137,100 (DOS, 2012).

Remarkably, the quality of healthcare services delivered by hospitals is significantly varied over the different regions in Jordan vis-à-vis gender, age and region; people living in south have less quality of health services than who living in north (Abu-Kharmeh, 2012). As a result, older adults could be treated unequally based on the region they reside in resulting in health disparities.

Health Behaviors

Jordanians are increasingly accustomed to be more westernized in their daily routine denoting less actively engaged, eating unhealthy food, and living under stressful situations (Haddad, Al-Ma'Aitah, & Grace Umlauf, 1999). Developing social marketing programs that promote health promotion could be effective in encouraging people to perform several types of exercise in light of the inadequate preventive healthcare (Haddad et al., 1999). In the light of Jordan's Behavioral Risk Factors Surveillance Survey (BRFSS) 2007 and Jarash and Ajloun s' (Two Jordanian governorates) BRFSS 2012 conducted by Al-Nsour (2012), physical inactivity deprives a lot of Jordanian people, including older adults, of health benefits associated with higher physical activity levels and regular exercise. Such benefits play a positive health role through protecting individuals from various health issues, such as premature death, chronic diseases, less aerobic capacity, and muscle weakness (PCPFSRD, 2008).

Regarding Jordanian older adults, on the first hand, they are less likely to participate in health-promoting behaviors ($B=-0.126$) in comparison with adult population. On the other hand, Jordanian adults are more likely to engage in the physical actives ($B=0.135$) compared to Jordanian older adults ($B=-0.150$) (Ammouri, 2008). And thus, this is a distinct discrepancy in adopting health promotion activities on a daily basis, which in turn, could raise health disparities in the context of the desired health outcomes between older adults and other age populations.

In addition, women could be more vulnerable to adverse health outcomes related to sedentary life characteristic of the Arab custom, which hinders women from exercising in public (Haddad, Al-Ma'aitah, & Umlauf, 1998) impacting older adult women more than older adult men. In addition to the previous point, the problem of not incorporating exercise into daily life or not making it a higher priority in the life of Jordanian people has risen due to lack of efforts spent from schools, universities, and local organizations in community (Haddad, et al., 1998). Therefore, it is recommended that surveys targeting healthy life style components, including physical activity and healthy diet based on age groups, should be conducted to address this issue

deeply, provide necessary information, and tailor the appropriate interventions for Jordanian older adults. Convincing these people that physical inactivity and lack of exercise contributes to chronic illness is an important goal for an intervention and is essential in promoting well-being and a higher quality of life regardless of their current level of health.

Health Literacy

The Health Resources and Services Administration (HRSA) has conceptualized health literacy as “the degree to which individuals have the capacity to obtain, process and understand basic health information needed to make appropriate health decisions and services needed to prevent or treat illness.” (HRSA, n.d., para. 1). Health literacy is a multi-dimensional, entailing "seven distinct dimensions: functional literacy, factual and procedural knowledge, awareness, a critical dimension, an affective dimension and attitudes." (Frisch, Camerini, Diviani, & Schulz, 2012, p. 124). In which age, educational status, and income predict to which extent older adult engages in physical activity (Browning, Sims, Kendig, & Teshuva, 2009) considering their existing health conditions.

Jordan, represented by the Jordanian Ministry of Education, intended to eliminate illiteracy to reach 5% in 2010 (UNESCO, 2003). The World Bank reported that the illiteracy rate reached 8.9%, which is the third lowest illiteracy rate among Arab countries in 2009 (World Bank, 2009). However, a half of Jordanian older adults are illiterate (50.7%) and only around one third have less than a high school education (30.2%) (DOS, 2004 as cited in NCFA, 2008). Unlike younger adults, older adults are more vulnerable to inadequate health literacy with aging (Zamora & Clingerman, 2011) correlating to general health literacy, resulting in poor undesired outcomes (Pearce & Clark, 2013). In addition to the previous point, significant correlation has been shown in the pertinent studies between health literacy and cognitive ability of older adults (Serper, et al., 2014). Alongside, the full lack of health literacy studies in Jordan; healthcare professionals need to be made aware of comprehension of health information by older adults with chronic diseases. Thus, the proposed interventions (i.e. distributing brochures, poster, flyers, informational meetings, and surveys alongside getting family, younger generations, and peers involved by primary healthcare providers at local centers) should comply with the characteristics of Jordanian older adults themselves

In addition, social myth about falls, injuries, and fractures that pertains to the ability to exercise at an advanced age plays a major role in hindering the older adults' willingness toward performing regular exercise, demanding more effort to be undertaken to eradicate such misconceptions. In light of the previous discussion, combating the health illiteracy among older

adults should be an important priority that Jordanian authorities have within the upcoming few decades. Because of close-knit family structures, Jordanian culture has a high level of social support. Social support could play a major role in encouraging the physical activity in middle-aged and older adults (White, Wójcicki, & McAuley, 2012). Some demographic issues, such as illiterate older adults, could get in the way of the sustainability of regular exercise on a weekly basis which might be addressed by close-knit family structure; highly educated older adults are more likely to engage in physical activity than others (Browning, et al., 2009). However, health literacy studies focusing specifically on Jordanian older adults are regrettably lacking.

Conclusion

Jordanian older adults with chronic diseases have increasingly confronted several emerging health issues that get in the way of the successful aging in their later life. Such health issues could arise from health discrepancies between older adults and other segments of the Jordanian population vis-à-vis biologic, genetic, socio-cultural, and environmental factors, health behaviors, and health literacy. The *National Jordanian Strategy For Senior Citizens* has been launched as a primary step in an attempt to shed light on this fastest-growing group in the Jordanian population, rather than leaving them forgotten as age. All health disparities related-issues necessitate prompt actions and combined efforts spent by personnel in both private and public sectors, in which their efforts are directed toward health research, education, and practice as well as infrastructure specific to older adults.

References:

- Abu- Kharmeh, S. (2012). Evaluating the Quality of Health Care Services in the Hashemite Kingdom of Jordan. *International Journal of Business and Management*. 7(4),p.195-205.
- Ajlouni, K. K., Jaddou, H. H., & Batieha, A. A. (1998). Diabetes and impaired glucose tolerance in Jordan: prevalence and associated risk factors. *Journal Of Internal Medicine*, 244(4), 317-323.doi:10.1046/j.1365-2796.1998.00369.x
- Al-Nsour, M. (2012). Non-communicable diseases risk factors survey in Ajloun and Jarash Governorates: Jordan-2012. Retrieved July 1, 2014 from: http://www.emphnet.net/Portals/0/EMPHNET%20Report%20New3_10212012.pdf
- Ammouri, A. (2008). Demographic differences in health promoting lifestyle of adult Jordanians. *Jordan Medical Journal*. 4(48), 1-9. Retrieved October 4, 2014 from:

<https://dspace.ju.edu.jo/xmlui/bitstream/handle/123456789/34014/3.pdf?sequence=1>

Boutayeb, A., & Helmert, U. (2011). Social inequalities, regional disparities and health inequity in North African countries. *International Journal For Equity In Health*, 10doi:10.1186/1475-9276-10-23

Browning, C., Sims, J., Kendig, H., & Teshuva, K. (2009). Predictors of physical activity behavior in older community-dwelling adults. *Journal Of Allied Health*, 38(1), 8-17.

Department of Statistics [Jordan], Macro International Inc.(2008). *Jordan Population and Family Health Survey 2007*. Retrieved September 17, 2014 from: <http://dhsprogram.com/pubs/pdf/FR209/FR209.pdf>

Department of Statistics. (2012). *Estimated Population of the Kingdom by Sex and Age Group, at End-year 2012*. Retrieved September 25, 2014 from: http://www.dos.gov.jo/dos_home_e/main/Demograghy/2012/2-5.pdf

Frisch, A., Camerini, L., Diviani, N., & Schulz, P. J. (2012). Defining and measuring health literacy: how can we profit from other literacy domains?. *Health Promotion International*, 27(1), 117-126.

Gallagher, H., Gebhard, M., Nash, W., Occhipinti, N., & Walker, B. (2008). *The Jordanian Diabetes Crisis: International Economic Development Program 2008*. University of Michigan. Retrieved September 13, 2014 from: <http://www.umich.edu/~ipolicy/Policy%20Papers/diabetescrisis.pdf>

Haddad, L., Al-Ma'Aitah, R., & Grace Umlauf, M. (1999). Health Promotion Behaviors among Jordanians. *International Quarterly of Community Health Education*. 2(18), 223 - 235

HealthyPeople. (2014). *Physical activity*. Retrieved July 2, 2014 from: <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=33>.

Iqbal, F. (2006). *Sustaining gains in poverty reduction and human development in the Middle East and North Africa*. Washington, DC: The World Bank.

IUSSP Scientific Panel on Health Equity and Policies in the Arab World. (2009). *Social and health policies for equity: approaches and strategies*. London, United Kingdom. Retrieved September 16, 2014 from: <http://archive.iussp.org/Activities/hequity/reportlondon09.pdf>

Kronfol, N. M. (2012). Access and barriers to health care delivery in Arab countries: a review. *Eastern Mediterranean Health Journal*, 18(12), 1239-1246.

Mahasneh, S. M. (2000). Survey of the health of the elderly in Jordan. *Medical Journal of Islamic Academy of Sciences*, 13(1), 39-48. Retrieved October 4, 2014 from: <http://www.medicaljournal-ias.org/Belgelerim/Belge/MajaliUYIEJSXHQV82275.pdf>

- MENA Diabetes Leadership Forum 2010 Dubai. (2010). *Diabetes: The hidden pandemic and its impact on the Middle East and northern Africa*. Retrieved September 14, 2014 from: http://www.novonordisk.com/images/about_us/changingdiabetes/PDF/Leadership%20forum%20pdfs/MENA%20Forum/MENA_Diabetes_briefing_book_EN.pdf
- Ministry of Health, Non-Communicable Diseases Directorate. (2010). *Cancer Incidence in Jordan 15th Report*, Jordan Cancer Registry. Retrieved September 20, 2014 from: <file:///Users/audaihayajneh/Downloads/Annual%20Incidence%20of%20cancer%20in%20Jordan%202010.pdf>
- Ministry of Planning and International Cooperation [Jordan], U. N. (2013). *Host community support platform: Needs assessment review of the impact of the Syrian crisis on Jordan*. Retrieved September 17, 2014 from: <http://arabstates.undp.org/content/dam/rbas/doc/SyriaResponse/Jordan%20Needs%20Assessment%20-%20November%202013.pdf>
- National Council for Family Affairs. (2008). *National Strategy for Senior Citizens*. Retrieved July 8, 2014 from: <http://www.ncfa.org.jo/Portals/0/eldery%20strategy%20en.pdf>
- Pearce, T. S., & Clark, D. (2013). Strategies to Address Low Health Literacy in the Older Adult. *Topics In Geriatric Rehabilitation*, 29(2), 98-106.
- President's Council on Physical Fitness & Sports Research Digest. (2008). *Physical Activity Guidelines for Americans*, 9(4), 1-8.
- Razzak, J., Khan, U. R., Azam, I. I., Nasrullah, M. M., Pasha, O. O., Malik, M. M., & Ghaffar, A. A. (2011). Health disparities between Muslim and non-Muslim countries... [corrected] [published erratum appears in EAST MEDITERRANEAN HEALTH J 2011; 17(2):948]. *Eastern Mediterranean Health Journal*, 17(9), 654-664.
- Salem, M. (2009). *Health for all: Inequity in health policies in the Arab countries*. Paper presented at the IUSSP international seminar. London, UK.
- Serper, M., Patzer, R., Curtis, L., Smith, S., O'Connor, R., Baker, D., & Wolf, M. (2014). Health Literacy, Cognitive Ability, and Functional Health Status among Older Adults. *Health Services Research*, 49(4), 1249-1267. doi:10.1111/1475-6773.12154
- The Health Resources and Services Administration (HRSA). (n.d.). *About Health Literacy*. Retrieved October 4, 2014 from: <http://www.hrsa.gov/publichealth/healthliteracy/healthlitabout.html>
- The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). (n.d.). *Obesity associated with high rates of diabetes in the Pima Indians: Obesity and diabetes*. Retrieved September 13, 2014 from: <http://diabetes.niddk.nih.gov/dm/pubs/pima/obesity/obesity.htm>

- The World Bank, Department of Statistics [Jordan]. (2009). *Hashemite Kingdom of Jordan: Poverty update*. Retrieved September 20, 2014 from: <https://openknowledge.worldbank.org/bitstream/handle/10986/3137/479510ESW0v20P1C0disclosed011118191.pdf?sequence=1>
- The World Bank. (2009). *Education Reform for the Knowledge Economy II*. World Bank, Washington ,DC.
- U.N. Data. (2012). *Net Migration Rate*. Retrieved Aug 30, 2014 from: <http://data.un.org/Data.aspx?q=net+migration+rate&d=PopDiv&f=variableID%3a85>.
- White, S. M., Wójcicki, T. R., & McAuley, E. (2012). Social cognitive influences on physical activity behavior in middle-aged and older adults. *Journals Of Gerontology: Series B: Psychological Sciences And Social Sciences*, 67B(1), 18-26.
- World Bank. World Development Indicators. 2012.
- World Development Indicators, CD-ROM 2004 as cited in Iqbal, F. (2006). *Sustaining gains in poverty reduction and human development in the Middle East and North Africa*. Washington, DC: The World Bank
- World Health Organization, Jordan's Ministry of Health. (2011). WHO-AIMS Report on Mental Health Systems in Jordan. Amman.
- World Health Organization, Mental Health and Poverty Project. (2010). *Mental health and development: targeting people with mental health conditions as a vulnerable group*. Retrieved Aug 31, 2014 from: http://whqlibdoc.who.int/publications/2010/9789241563949_eng.pdf.
- World Health Organization. (2009). *Country cooperation strategy for WHO and Jordan 2008–2013: Jordan*. Retrieved July 1, 2014 from:http://www.who.int/countryfocus/cooperation_strategy/ccs_jor_en.pdf?ua=1
- World Population Data Sheet. (2009). Retrieved Aug 30, 2014 from: http://www.prb.org/pdf09/09wpds_eng.pdf.
- World, B. (1997). *Hashemite Kingdom of Jordan : Health Sector Study*. Washington, D.C.: World Bank.
- Zamora, H., & Clingerman, E. M. (2011). Health Literacy Among Older Adults: A Systematic Literature Review. *Journal Of Gerontological Nursing*, 37(10), 41-51.
- Zindah, M., Belbeisi, A., Walke, H., & Mokdad, A., (2008). Obesity and diabetes in Jordan: findings from the Behavioral Risk Factor Surveillance System, 2004. *Preventing Chronic Diseases*,5(1),1-5.

ARE THERE HEALTH DISPARITIES AMONG JORDANIAN OLDER ADULTS? PROPOSED INTERVENTIONS (PART II)

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Abstract

Several factors including access to health care, and the cost, and quality of that health care are varied among the population of Jordanian citizens, including older adults. Furthermore, there is a paucity of both formal instruments devoted to screening health outcomes relevant to older adults in Jordan, and also desired outcomes following proposed interventions to enhance health outcomes in older adults. Several strategies will be proposed for implementation as guidelines for healthcare providers in this paper. In addition to those strategies, myriad of interventions mentioned in this paper are driven by theoretical or conceptual models, and might eventually contribute to the promotion of healthcare. Finally, such interventions could also be useful in terms of their desired health outcomes at the end of the predetermined interventions targeting older adults in Jordan.

Keywords: Jordanian older adults, health disparities, interventions

Introduction

The Access, Use, Cost, and Quality of Healthcare

Historically, Jordanian older adults, in particular those who have chronic diseases, confront a myriad of health issues vis-à-vis access to and use, cost, and quality of healthcare. In common sense, proposed health strategies are regarded as successful when they are shown to make health coverage expansion, healthcare quality enhancement, and health cost minimization their high priorities.

Healthcare quality is defined as health services that are efficacious, effective, and efficient in terms of the most up-to-date clinical practices, which in turn achieve the clinical needs of patients and the goals of healthcare providers (Mosadeghrad, 2013). Aspects of the quality of health services in the Hashemite Kingdom of Jordan were addressed from the patients' standpoint in a 2012 Abu-Kharmeh study as follows: reliability, availability, assurance, empathy, responsiveness, efficacy, tangibility, and

communication. These terms were defined as the ability to, offer a desired health service, obtain appropriate services when and where patients need, feel safe about services provided, understand and recognize patients' needs promptly, provide health services in a timely manner, be efficient, offer any required physical facilities, and deliver comprehensive information about service to the receivers, respectively. Abu-Kharmeh also revealed that the highest dimensions of healthcare services ranked by participants were responsiveness and assurance, whereas reliability was the last. In the same study, Abu-Kharmeh classified the degree of the quality offered by Jordanian hospitals as moderate (2012). In the context of demographic and geographic distribution variables, significant differences were not found in healthcare services based on social status, but were found based on gender, age, and region. In other words, a male more than 55 years old and living in the south of Jordan might still have a lower quality of health services than a younger female counterpart in the north (Abu-Kharmeh, 2012). Although this provides a significant benefit for female Jordanian older adults living in the north, it also calls into question the quality of healthcare services offered to older adult patients in the southern regions of Jordan.

In regard to healthcare access, as previously mentioned, patients living in the south of Jordan have a lower quality of healthcare services (Abu-Kharmeh, 2012), and confront transportation issues while looking for better quality services in the north of Jordan. Based on the *Jordan Population and Family Health Survey 2007* showed by the Department of Statistics (2008), older adults who live in rural areas tend to have less education. The discrepancies between urban and rural areas are also shown through antenatal care, breast cancer screening, and Pap smear tests, which are most likely to be offered to women living in urban areas compared to rural ones (Department of Statistics, 2008).

Although differences in the quality of health services are significant for female Jordanian patients (Abu-Kharmeh, 2012), 62% of Jordanian women face at least one issue vis-à-vis the healthcare access according to the *Population and Family Health Survey 2012* (Nsour, et al., 2013). These issues were listed under several categories as follows: knowing where to go, getting permission to go for treatment, getting money for treatment, distance to health facility, using means of transportation, not wanting to go alone, and no female provider. Many of these issues relate specifically to cultural influences, and play a crucial role in accessing healthcare for Jordanian women. For instance, getting permission to go for treatment, not wanting to go alone, and not having female providers available are all issues that are inherent in Jordanian culture. However, the other issues listed pertain to a lack of knowledge about appropriate health services, financial issues, and geographical and transportation options. Consequently, Jordanian older

adults, in particular women, are being impacted by the cultural norms and considerations as an influential cornerstone in the healthcare access.

Pertaining to healthcare cost, Jordanian older adults with chronic diseases and risk factors such as diabetes and obesity are faced with rising healthcare costs and healthcare professionals who pay little attention to preventive health care (Zindah, Belbeisi, Walke, & Mokdad, 2008). In addition, a tremendous burden has recently emerged from recent political difficulty in Syria, and the subsequent refugee influx that applies continuous pressure on the healthcare resources offered (Ministry of Planning, 2013), particularly in the northern region of Jordan. As reported by the Ministry of Planning in Jordan, the health services and resources such as medications, equipment, and specialists that were considered adequate have been undercut due such refugees' influxes (2013). These challenges, in turn, pushed the Ministry of Health to spend USD 53 million, including USD 20 million for vaccines, in 2013 (Ministry of Planning, 2013).

Generally, health costs are continuously rising, placing financial burdens on individual families (Abu Saif, n.d.), including Jordanian older adults with chronic diseases, who are looking for healthcare services. This situation is exacerbated in Jordanian people classified as low-income, and renders them vulnerable to health issues compared to those classified as high-income (Dinara Seijaparova & van Holst Pellekaan, 2004). In order to mitigate this limited healthcare access and high cost, specifically for the elderly, the Jordanian government and the private sector have partnered to broaden insurance coverage in an attempt to combat health disparities arising from poverty in rural or underserved areas in the Middle East and North Africa (Iqbal, 2006). For example, the Jordanian Ministry of Health (MOH) intends to offer minimum insurance coverage for all Jordanian people having no health insurance and for all Jordanian older adults aged 60 years and older (Abu Saif, n.d.) to confront the vulnerability to disease in later life.

Measurement and Data Collection Issues

It is not surprising that the measurement of health outcomes in older adults has not been addressed specifically within this segment of population in the Hashemite Kingdom of Jordan, and most of studies merely debate health outcomes as a whole in the Jordanian population, which are inadequate to unearth all pertinent health outcomes. The measures offering such outcomes are still derived from the information gleaned in national and governmental surveys, such as Behavioral Risk Factors Surveillance Surveys (BRFSSs) and Demographic and Health Surveys (DHSs). In an attempt to glean information relevant to the population's health variables, a small number of Jordanian BRFSSs and DHSs have been reported at either the level of governorates, such as *Jarash and Ajloun's BRFSS* conducted by Al-

Nsour in 2012, or the level of the kingdom as a whole, such as *the Jordanian BRFSS 2007* and *Jordan: Population and Family Health Survey (JPFHS) 2012* (DOS, 2013). Therefore, health outcomes regarding older adults have been addressed as only a part of Jordanian population in such surveys. As known, such studies relied on surveys' use of questionnaires as cornerstone instruments. For instance, the JPFHS is comprised of two questionnaires; the Household Questionnaire and the Woman's Questionnaire. These questionnaires were accompanied by in-person interviews (DOS, 2013). According to NCFA, in 2008, there were only one PhD. and 20 Master's theses addressing issues relevant to Jordanian older adults. Thus, few of the studies targeting the health outcomes and behaviors in older adults as separate population segment, have been conducted in Jordan.

In addition, any pertinent information obtained about health behaviors and outcomes in Jordan's population relied on self-reporting and as such, the answers are influenced by personal judgment, subjectivity, and several other confounding variables, including social desirability, cultural norms, and the presence of required facilities. For instance, the participant classifies their physical activities as either vigorous or light physical activity depending on the extent to which their breathing becomes more difficult (Browning, Sims, Kendig, & Teshuva, 2009). In addition, conducting studies relying on self-reporting in older adults could foster potential for inaccurate findings as a result of illiteracy; especially, 50.7% of Jordanian older adults are illiterate (Department of Statistics, 2004 as cited in NCFA, 2008).

In regard to data collection procedures, geographical areas or settings could play a role in how accurate findings are pertaining to Jordanian studies. Jordan is partitioned into twelve governorates, in which surveys could target people in the north, central, and south areas of Jordan who live in either urban, rural, or Badia areas, or in refugee camps (DOS, 2013). Thus, it is important to bear in mind that the nature of participants living such geographical areas is taken into account while generalizing the findings at the level of the kingdom as a whole. In addition some research, such as Mohammad, Kassim, and Yasir s' 2013 study, addressed Jordanian older adults living in nursing homes. However, no other technology-based measures or tools are used to gain information relevant to older adults in Jordan. Statistical analysis is usually done to present findings pertaining to health behaviors based on a logistic regression and adjusted for several demographic and health variables such as age, sex, marital status, education, income, and employment; as was shown in Al-Nsour and colleagues' 2013 study. The participants in such studies could be recruited from outpatient clinics and community primary health centers as in Ammouri's study (2008). Some data related to health outcomes are extrapolated from global and local organizations that aim to compare health data between several

countries. For instance, a 2011 Boutayeb and Helmert study utilized data resources from World Health Organization (WHO), United Nations Development Program (UNDP), United Nations Children's Fund (UNICEF), and the World Bank.

Pertaining to the instruments created originally in English, such as the Health Related Quality Of Life (HRQOL Short Form-36), have been translated into Arabic and validated in some Arab countries including Jordan. However, several different dialects exist between Arab countries, and could impact the translation process, whereby the some questions or items included in the translated instrument might not be appropriate to the Jordanian population. Based on a review of literature, few studies took linguistic issues such as this into consideration while translating the instrument from its resource language into Arabic (Khalaila, 2013), rendering the translated questionnaires incomprehensible by some Jordanian participants. Therefore, it is crucial to establish the reliability and validity of the translated instrument into Arabic using the trilingual translators' method, that is, the translators are each familiar with Modern Standard Arabic, regional colloquial Arabic dialects, and the instrument-resource language (Khalaila, 2013).

Strategies for Delivering Culturally Sensitive Services

The strategies devoted to older adults should take into account Jordanian culture, so that healthcare providers can make a concerted effort to prevent miscommunication and culturally incompetent interventions. Jordanian culture dictates respectfulness toward individuals who have attained old age in society; a practice in line with all religions and social traditions pervasive among Jordanian people (NCFA, 2008). One of these strategies set out to target Jordanian elders was *The National Jordanian Strategy For Senior Citizens*, which was issued in 2008 by the National Council for Family Affairs (NCFA). The National Jordanian Strategy for Senior Citizens aims to enhance the quality of daily life for Jordanian senior citizens. This strategy is originally based on Arab and Islamic values, the principles of UN 1991 regarding older adults, regional and international action plans, and the Jordanian referential documents (NCFA, 2008). In order to approach holistic care in terms of older adults, NCFA has explored six directives: the citizens and their development, healthcare for senior citizens, physical environment that supports senior citizens, social welfare for senior citizens, scientific studies and research, and databases, and legislations (2008). Two of these are implicitly linked to culturally sensitive healthcare that professionals need to be aware about while dealing with older adults: healthcare for senior citizens and social welfare for senior citizens directives.

The healthcare of senior citizens has been made a high priority in the aforementioned strategy comprising preventive, curative and rehabilitation healthcare services. This in turn necessitates medical staff training in regard to delivering comprehensive healthcare services for older adults in Jordan (NCFA, 2008). Additionally, the implementation of social care for senior citizens is imperative in order to combat the negative social and psychological consequences arising from changes in social and family structures such as living alone after children leave the house as adults. These consequences entail feeling alone, financially unstable, and insecure (NCFA, 2008). The same strategy urges health decision makers to found social, cultural and recreation clubs as an alternative plan to mitigate the negative consequences which older adults face following staying alone at their homes.

Another aspect of Jordanian culture is that the older adults tend to accept health information without hesitation, and this is especially true of female older adults who often do not like to argue with decisions made by male older adults (Al-Makhamreh, 2005 as cited in Al-Makhamreh, Hasna, & Al-Khateeb, 2011). Therefore, healthcare providers should confirm that the female older adults concur with what has been taught. In addition, health professionals should involve other family members if at all possible in the health teaching process for older adults in order to cultivate their beneficial support and ascertain the sustainability of their interventions. The reasoning behind this strategy include the idea that family is the basic unit of the Jordanian community and that older members in families are appreciated and cared for by other younger members (Al-Makhamreh et al., 2011).

Interventions Project Targeting Jordanian Older Adults

Few issues have been addressed about Jordanian older adults in the context of interventions tailored to their population. As previously mentioned, the NCFA reported that only one PhD. dissertation and 20 Masters theses were conducted until 2008 vis-à-vis older adult issues. Thus, there is an urgent need to create interventions aimed at enhancing the health and life conditions that these older adults live within. Based on Sidani and Braden (2011), the interventions are designated and divided into three main categories: the method relied on theory, the empirical approach, and the experiential approach. In regard to this paper, the proposed interventions will be grounded using some components from a conceptual framework called the *Commission on Social Determinants of Health*. Following this foundational grounding, two intervention components, two intervention variables, and three outcomes variables will be presented throughout the paper.

Commission on Social Determinants of Health (CSDH)

In order to combat healthcare inequity and health disparities between older adults and other age groups, between groups living in urban and rural areas, and between males and females in Jordan, the Commission on Social Determinants of Health (CSDH) framework will address the issue and guide the proposed interventions specifically targeting the latent health disparities in Jordanian older adults. The World Health Organization defines health equity as the absence of preventable differences among categories of people as they are defined based on social, economic, demographic, or geographic characteristics (2014).

It is noteworthy to elaborate on the CSDH framework prior to using some of its components to direct the proposed interventions. The framework of the Commission of Social Determinants of Health (CSDH) purports to assist policy makers in making appropriate decisions (Figure 1). This model has been shown by Solar and Irwin (2007) to actually contribute to narrowing gaps in health equity in developing countries, rather than merely focusing on diseases (CSDH, 2008). This model depicts the reciprocal pathways between diseases and social factors in terms of social and political context that result in unequal socioeconomic classes (Solar & Irwin, 2007). As shown in Figure 1., social position is comprised of several variables, including income, education, occupational status, gender, and ethnicity, and contributes to social inequality (Solar & Irwin, 2007). As a result, the final outcomes of social position and its variables directly yield social determinants of health among individuals, and then social position of those individuals indirectly influences their well-being and general health. This in turn, feeds back to political and socio-economic contexts and social locations (Solar & Irwin, 2007).

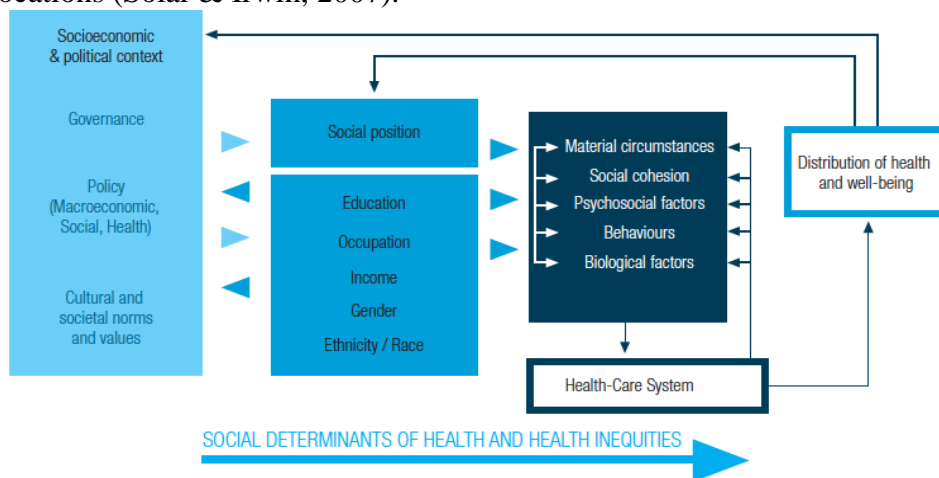


Figure 1. The Social Determinants of Health by Solar and Irwin (2007) as cited in WHO-CSDH 2008.

Despite this proposed conceptual framework that elaborates the role of social context in terms of the prevalence of diseases, challenges have emerged that involve both a paucity of evidence pertaining to gaps shown in health equity and also which types of interventions should be implemented to best close that gap (CSDH, 2008). However, the WHO has endeavored to address health inequity as it pertains to individuals' early life experiences, their physical and social environment, and their job satisfaction, as well as to whether or not there is a significant relationship between social satisfaction and bias, socio-cultural habits, global and local economics, and governmental strategies to tackle health inequity (CSDH, 2008).

The components of CSDH utilized to tailor the interventions that target health disparities among Jordanian older adults are as follows: socio-economic position such as gender, income, and education, psychosocial and behavioral factors such as social circumstances, the interventions provided by their healthcare system, and finally their health related quality of life, which is an indicator of the distribution of health and well-being (Figure 2). Based on the CSDH framework in figure 1, socio-economic position comprises social and economic factors that facilitate, promote, or impede the health status of people. Also, the underlying social and economic processes determine the variant positions that individuals employ in social context (Solar & Irwin, 2007).

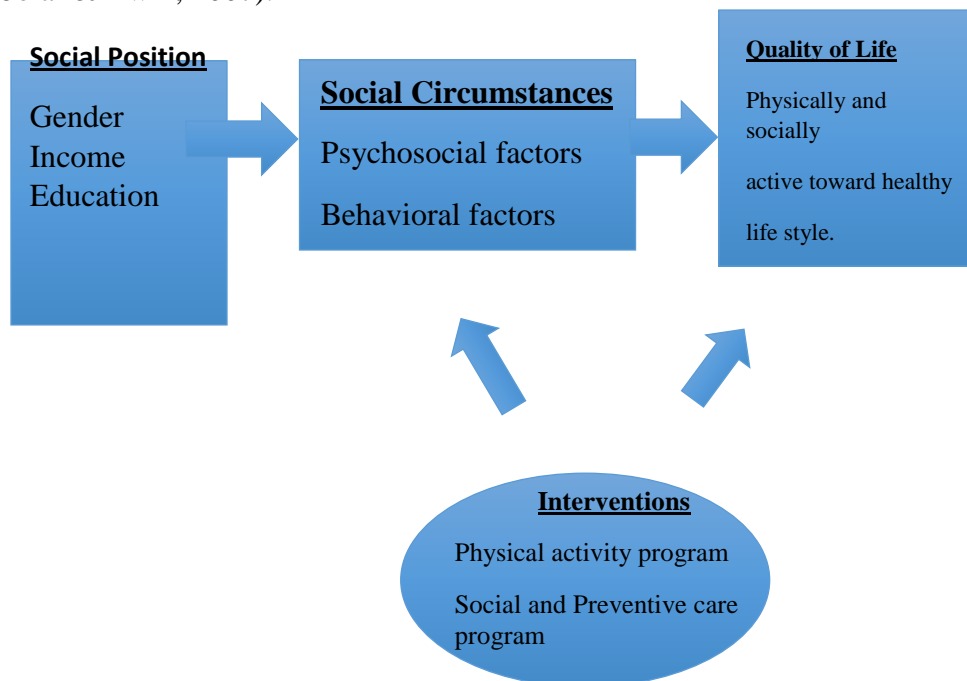


Figure 2. The adopted CSDH model of Jordanian older adults.

Thus, the demographic and health variables of older adults as well as their psychological and behavioral variables play a crucial role in determining their health status and their well-being. The proposed interventions in this paper are used in place of the healthcare system component in the CSDH and the phrase health related quality of life is used in lieu of the term well-being regarding older adults as well (Figure 2).

Intervention Components

Encouraging physical activity

In Jordan, risk factors such as obesity, unhealthy diet, and low physical activity get in the way of desired health outcomes and make people more vulnerable to chronic diseases, impeding the seamless function of healthcare services system over time (Zindah, et al., 2008). As reported in Ammouri 's 2008 study, Jordanian older adults are less likely to partake in physical activity, stress relieving behaviors, and behaviors aiming to ameliorate the health as a whole. In concordance with Jordanian culture, health behaviors could not be explicitly shown as distinct behaviors on a regular basis. For instance, physical exercise is not an essential component of the daily activities of Jordanian people (Gallagher, Gebhard, Nash, Occhipinti, & Walker, 2008). Zindah and colleagues (2008) reported that less than a half of the Jordanian population takes part in physical activity on a continuous basis, which predisposes them to obesity, and thus diabetes.

The strategy of combating diabetes in Jordan implies a holistic approach and recommends eating healthy food, increasing physical activity, controlling hyperglycemia, improving diabetes management, and minimizing the modifiable risk factors of diabetes ("MENA Diabetes Leadership," 2010). The most impactful feature of Jordanian culture in terms of causing poor health outcomes such as high ratio to diabetes is its citizens not taking preventive healthcare into consideration (Kamel Ajlouni, Personal Interview, February 25, 2008 as cited in Gallagher, et al., 2008), thereby predisposing them to several health issues. This point necessitates combined efforts to increase the level of awareness regarding the vital role of preventive healthcare. As a result, the intervention components are directed to encourage physical activity and promote social and preventive healthcare through a positive influence on psychosocial and behavioral factors resulting in a higher quality of life among Jordanian older adults.

Promoting social and preventive healthcare

According to the Solar and Irwin framework (2007), psychosocial factors include life, social, and living condition stressors. Jordanian older adults confront psychosocial conditions and life stressors in later life that are attributed to living alone, particularly when other family members leave to

build their own lives (NCFA, 2008). Thus, this group is most likely to have unequal opportunities to receive healthcare in comparison to other age groups. Such stressors could be triggers for complicated consequences that could result in somatic diseases, and in turn social inequalities in health (Solar & Irwin, 2007).

Behavioral factors can be referred to as either health promoting, which include behaviors such as exercise and eating well, or health harming, which include behaviors such as smoking and obesity (Solar & Irwin, 2007). In Jordan, physical inactivity alongside smoking, obesity, and unhealthy diet have become significant risk factors for non-communicable diseases such as cardiovascular diseases, cancer, and diabetes (Al-Nsour, et al., 2012; Zindah, Belbeisi, Walke, & Mokdad, 2008). As a member of the Jordanian culture, older adults do not take regular exercise or physical activity into account while living their daily life, and consider their past activity level or their current job as adequate exercise for someone their age. This in turn places Jordanian older adults at higher risk for social and health-related inequalities compared to other age groups, particularly those much younger. In light of the aforementioned explanation of psychosocial and behavioral factors in Jordanian older adults, the following intervention components contribute directly to the complicity and mitigation of factors related to a high quality of life. As social influence and subsequently social support increases, they will serve to replace the subjective cultural norms (Courneya, Plotnikoff, Hotz, & Birkett, 2000) that the older-age Jordanian population has toward not engaging in physical activity. NCFA (2008) posts a myriad of vital points enforcing the role of preventive healthcare, including conducting educational sessions about preventive care and healthy living to senior citizens, involving family members in preventive care education activities, and training healthcare professionals to offer preventive services to older adult citizens.

Intervention Variables

Mode of Delivery: the most salient step in changing unhealthy behaviors to healthy ones in older adults is identifying those older adults who have the capability to make decisions under their health and social circumstances. Therefore, they decide what they perceive as important, what they can do based on their health conditions, and what they deem helpful to their health. Therefore, it is necessary to conduct health behavior assessment sessions to recognize the appropriate physical activities that older adults prefer as their conditions permit. In this paper, some of the proposed intervention components of physical activity enhancement are extrapolated from the 2011 Lee and colleagues' study, in which three health assessments and one in-person intervention in six months could be scheduled for

Jordanian older adults. This, in turn, purports to demonstrate value of working together as a team, and encourages participants to get involved in team activities, outdoor exercises, and supervised group-walk periods (Lee, et al., 2011). In regard to social and preventive healthcare promotion, the scheduled sessions will involve social meetings among older adult participants, allowing them the opportunity to talk to each other about their life experiences while performing exercises and walk-group sessions. In addition, the presence of key persons in these social meetings heartens the importance of physical activity and the role of preventive care in promoting their quality of life.

Intervention dose: Relied on 2011 Lee and colleagues' study, there could be six designated intervention sessions in as many months. The first three sessions are separated by a two week timeframe, and the final three sessions are separated by a 4 week timeframe. These sessions entail group physical activity and walk-group periods (15 minutes) to increase the physical activities among Jordanian older adults. Thus, at the end of each session, physical activity spent by each participant will be measured to evaluate the increase in her/his physical activity (Lee, et al., 2011).

Pertaining to social and preventive healthcare promotion, the Jordanian older adult participants attend a workshop at the end of each session discussing the importance of physical activity engagement and the acceptance of preventive care as a part of Jordanian cultural norms. In addition, interventions that are distributed through health education about preventive healthcare and the health benefits of exercise via brochures, poster, flyers, informational meetings, and surveys alongside getting family and peers involved in encouraging older adults to participate in walking sessions will vary according to the characteristics of Jordanian older adults themselves, in which age, educational status, and income predict to what extent an older adult engages in physical activity behavior (Browning et al., 2009).

The ultimate goal: On one hand, this six-month program aims to assist the older adult participants to meet their physical needs. The guidelines of physical activity, which will be used in this program, will be pulled from *2008 Physical Activity Guidelines for Americans*, in the publication *Healthy people 2020*, particularly the *Active Older Adults* chapter. Older adults who have no limitations can follow the same guidelines for adults, focusing on moderate intensive and vigorous aerobic exercises, such as "150 minutes (2 hours and 30 minutes) a week of moderate intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous intensity aerobic". They can also do regular exercises according to their conditions and tolerance (Physical Activity Guidelines for Americans, 2008). On the other hand, the target benchmarks of social and preventive healthcare promotion

are as follows: increasing the level of knowledge about social and preventive healthcare tolerated by older adults as well as their health benefits; changing the attitudes and intentions of older adults about preventive healthcare regardless of the nature of work that they are involved in, and enabling older adults to perceive regular physical activities as worthy of inclusion in their daily life.

Outcome Variables

Physical activity reporting using Jordan's BRFSS:

The utilized instrument in collecting the information about healthy behaviors including physical activity is BRFSS. The measurement of this health behavior could be conducted through the Ministry of Health and Ministry of Social Development planners, healthcare professionals, and faculty members who contribute significantly in evaluating the effectiveness, efficacy, and efficiency of the tailored interventions. The following definition to operationalize vigorous and moderate activity could be followed: vigorous activity was defined as any type of work that causes large increases in breathing or heart rate for at least 10 minutes continuously, while moderate activity was defined as any type of work that causes small increases in breathing or heart rate for at least 10 minutes continuously (Al-Nsour, 2012). As a result of a lack of health literacy tools measuring the comprehensive of the proposed question, using tools relied on self-reporting necessitates additional efforts to coach the participants how to use such instruments.

Social support measuring using older persons' utility scale (OPUS):

The older persons' utility scale (OPUS) reported in a 2006 Ryan, Netten, Skatun, and Smith study could be used to measure the domains that older adults need to meet for help and assistance. OPUS purports to measure social service interventions for older people integrated in defined domains (personal care, social participation, control over daily living, food and nutrition, and safety). Each domain could be operationalized as follows: all needs were met, there were low needs, and there were high needs. The last operational concept entails physical or mental health consequences if those needs are not met for a while (Ryan et al., 2006).

Therefore, Jordanian culture has a high level of social support, which in turn, could play a major role in meeting these needs of older adults and preventing the physical or mental health consequences. Social relations contribute significantly to high life satisfaction and loneliness relieving (McAuley, et al., 2000), and this is linked to exercises performing, leading genuinely to subjective well-being enhancement among older adults (McAuley, et al., 2000) as depicted in adopted model of CSDH (Figure 2).

Quality of Life (QOL) using WHOQOL-BREF:

World Health Organization has defined this concept as individuals' perceptions of their position in the life in terms of the culture and values that they live with and how that associated are with goals, expectations, standards and concerns (1996). The instrument, that could be used to operationalize the QOL among the older adults, is WHOQOL-BREF. This instrument has been translated and culturally validated into several Arabic versions (Al Sayah, Ishaque, Lau, & Johnson, 2013). However, the dialect of each Arab country should be taken into account while selecting a particular version. The negative health perception also play a major role in the well-being among Jordanian people aged 60 years and older as reported in a study conduct in one of the Jordanian governorates, Al-Karak (Youssef, 2005); 44.0% of the participants had a negative health perception associated with arousal of depressive symptoms. Thus, the change of negative perception about the health behaviors among older adults is associated with less psychological consequences, leading to mitigate their health issues and high quality of life.

Conclusion

Several issues have emerged pertaining to health cost, access, and quality of Jordanian older adults. Some of those could be potential causes of health disparities between older adults and other age groups. CSDH, as a conceptual framework, might be the best framework utilized to guide and drive the proposed intervention aiming to eradicate the latent health disparities and enhance the quality of life among older adults in Jordan. Healthcare preventive, social care, and physical activity partaking denote a backbone of the effective interventions in achieving the aforementioned goal of. Eventually, the ultimate outcome of the mentioned interventions is well-being promotion of older adults. Because of close-knit family structures, Jordanian culture has a high level of social support, which in turn, contributes genuinely to assist in setting up successful interventions relied on the social context in Jordan.

References:

- Abu Saif, J. (n.d.). *Jordanian experience: Keeping out-of-pocket spending under control*. WHO EMRO. Retrieved November 6, 2014 from:<http://www.emro.who.int/pdf/about-who/universal-health-coverage/jordanian-experience-keeping-out-of-pocket-spending-under-control.pdf?ua=1>
- Abu-Kharmeh, S. (2012). Evaluating the Quality of Health Care Services in the Hashemite Kingdom of Jordan. *International Journal of Business and Management*. 7(4),p.195-205.

- Al Sayah, F., Ishaque, S., Lau, D., & Johnson, J. (2013). Health related quality of life measures in Arabic speaking populations: A systematic review on cross-cultural adaptation and measurement properties. *Quality Of Life Research*, 22(1), 213-229. doi:10.1007/s11136-012-0129-3
- Al-Makhamreh, S., Hasna, F., & Al-Khateeb, E. (2011). The forgotten few: the social context of ageing and alzheimer's disease in jordan. *British Society of Gerontology*.1(21), pp.?? Retrieved November 10, 2014 from: <http://www.britishgerontology.org/DB/gr-editions-2/generations-review/the-forgotten-few-the-social-context-of-ageing-a-2.html>
- Al-Nsour, M. (2012). Non-communicable diseases risk factors survey in Ajloun and Jarash Governorates: Jordan-2012. Retrieved July 1, 2014 from: http://www.emphnet.net/Portals/0/EMPHNET%20Report%20New3_10212012.pdf
- Al-Nsour, M., Zindah, M., Belbeisi, A., Rolle, I., Walke, H., Strine, T., & ... Mokdad, A. (2013). Frequent mental distress, chronic conditions, and adverse health behaviors in the behavioral risk factor surveillance survey, Jordan, 2007. *Preventing Chronic Disease*, 10E140. doi:10.5888/pcd10.130030
- Ammouri, A. (2008). Demographic differences in health promoting lifestyle of adult Jordanians. *Jordan Medical Journal*. 4(48), 1-9. Retrieved October 4, 2014 from: <https://dspace.ju.edu.jo/xmlui/bitstream/handle/123456789/34014/3.pdf?sequence=1>
- Boutayeb, A., & Helmert, U. (2011). Social inequalities, regional disparities and health inequity in North African countries. *International Journal For Equity In Health*, 10doi:10.1186/1475-9276-10-23
- Browning, C., Sims, J., Kendig, H., & Teshuva, K. (2009). Predictors of physical activity behavior in older community-dwelling adults. *Journal Of Allied Health*, 38(1), 8-17.
- Commission on Social Determinants of Health (CSDH). (2008). *Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health*. World Health Organization: Geneva.
- Courneya, K., Plotnikoff, R., Hotz, S., & Birkett, N. (2000). Social support and the theory of planned behavior in the exercise domain. *American Journal Of Health Behavior*, 24(4), 300-308.
- Department of Statistics [Jordan], Macro International Inc.(2008). *Jordan Population and Family Health Survey 2007*. Retrieved September 17, 2014 from: <http://dhsprogram.com/pubs/pdf/FR209/FR209.pdf>
- Department of Statistics. (2013). *Jordan Population and Family Health Survey 2012*. ICF International: Calverton, Maryland USA, Amman, Jordan. Retrieved September 25, 2014 from:

- file:///Users/audaihayajneh/Downloads/38-JordanDHS2012Preminalryreport-English_26_3_2013%20(1).pdf
- Dinara Seijaparova, D., & van Holst Pellekaan, J. (2004). *Jordan: an evaluation of world bank assistance for poverty reduction, health and education a country assistance evaluation*. The World Bank: Washington, D.C. Available November 5, 2014 from:<http://www.oecd.org/countries/jordan/36488523.pdf>
- Gallagher, H., Gebhard, M., Nash, W., Occhipinti, N., & Walker, B. (2008). *The Jordanian Diabetes Crisis: International Economic Development Program 2008*. University of Michigan. Retrieved September 13, 2014 from: <http://www.umich.edu/~ipolicy/Policy%20Papers/diabetescrisis.pdf>
- Iqbal, F. (2006). *Sustaining gains in poverty reduction and human development in the Middle East and North Africa*. Washington, DC: The World Bank.
- Khalaila, R. (2013). Translation of Questionnaires Into Arabic in Cross-Cultural Research: Techniques and Equivalence Issues. *Journal Of Transcultural Nursing*, 24(4), 363-370. doi:10.1177/1043659613493440
- Lee, R. E., Medina, A. V., Mama, S. K., Reese-Smith, J. Y., O'Connor, D. P., Brosnan, M., & ... Estabrooks, P. A. (2011). Health is power: An ecological, theory-based health intervention for women of color. *Contemporary Clinical Trials*, 32(6), 916-923. doi:10.1016/j.cct.2011.07.008
- McAuley, E., Blissmer, B., Marquez, D., Jerome, G., Kramer, A., & Katula, J. (2000). Social relations, physical activity, and well-being in older adults. *Preventive Medicine*, 31(5), 608-617.
- MENA Diabetes Leadership Forum 2010 Dubai. (2010). *Diabetes: The hidden pandemic and its impact on the Middle East and northern Africa*. Retrieved September 14, 2014 from: http://www.novonordisk.com/images/about_us/changingdiabetes/PDF/Leadership%20forum%20pdfs/MENA%20Forum/MENA_Diabetes_briefing_book_EN.pdf
- Ministry of Planning and International Cooperation [Jordan], U. N. (2013). *Host community support platform: Needs assessment review of the impact of the Syrian crisis on Jordan*. Retrieved September 17, 2014 from: <http://arabstates.undp.org/content/dam/rbas/doc/SyriaResponse/Jordan%20Needs%20Assessment%20-%20November%202013.pdf>
- Mohammad, H., Kassim, N., Yasir, A. (2013). Older Adult Social Needs Nursing Home. *Medical Journal of Babylon*, 10(3), p. 625-631. Retrieved November 6, 2014 from: http://www.uobabylon.edu.iq/uobColeges/filesshare/articles/repository1_publication16063_27_2922.pdf

Mosadeghrad, A. M. (2013). Healthcare service quality: towards a broad definition. *International Journal Of Health Care Quality Assurance (09526862)*, 26(3), 203-219.

National Council for Family Affairs. (2008). *National Strategy for Senior Citizens*. Retrieved July 8, 2014 from: <http://www.ncfa.org.jo/Portals/0/elderly%20strategy%20en.pdf>

Nsour, F., Saleh, K., Aranki, I., Obaid, B., Sweidan, M., Abu-Haidar, A.,..., Cross, A. (2013). *Jordan: Population and Family Health Survey 2012*. Department of Statistics, Amman, Jordan, ICF International, Calverton, Maryland, USA. Retrieved November 1, 2014 from: <http://dhsprogram.com/pubs/pdf/FR282/FR282.pdf>

Physical Activity Guidelines for Americans. (2008). *President's Council on Physical Fitness & Sports Research Digest*, 9(4), 1-8.

Ryan, M., Netten, A., Skatun, D., & Smith, P. (2006). Using Discrete Choice Experiments to Estimate a Preference-Based Measure of Outcome--An Application to Social Care for Older People. *Journal Of Health Economics*, 25(5), 927-944.

doi:<http://dx.doi.org/10.1016/j.jhealeco.2006.01.001>

Sidani, A., & Braden, C. J. (2011). *Design, evaluation, and translation of nursing interventions*. Chichester, West Sussex ; Ames, Iowa : Wiley-Blackwell

Solar O & Irwin A (2007). *A conceptual framework for action on the social determinants of health*. Discussion paper for the Commission on Social Determinants of Health. Geneva, World Health Organization. Retrieved November 10, 2014 from: http://www.who.int/social_determinants/resources/csdh_framework_action_05_07.pdf

World Health Organisation. (1996). WHOQOL-BREF: Introduction, administration, scoring and generic version of the assessment. Retrieved November 16, 2014 from: http://www.who.int/mental_health/media/en/76.pdf

World Health Organization. (2009). *Country cooperation strategy for WHO and Jordan 2008–2013: Jordan*. Retrieved July 1, 2014 from: http://www.who.int/countryfocus/cooperation_strategy/ccs_jor_en.pdf?ua=1

Youssef, R. (2005). Comprehensive health assessment of senior citizens in Al-Karak governorate, Jordan. *Eastern Mediterranean Health Journal*, 11(3), 334-348.

Zindah, M., Belbeisi, A., Walke, H., & Mokdad, A., (2008). Obesity and diabetes in Jordan: findings from the Behavioral Risk Factor Surveillance System, 2004. *Preventing Chronic Diseases*, 5(1), 1-5.

DEFECTIVE CALCIUM PUMPS IN NEURONS IN THE AGING BRAIN AND IN PARKINSON'S DISEASE

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Abstract

The plasma membrane Ca^{2+} -ATPase (PMCA) pumps play an important role in the maintenance of precise levels of intracellular Ca^{2+} , quintessential for the optimal functioning and long term survival of neurons. In this paper, we review evidence showing alterations in the PMCAs in aging brain. Additionally, we provide evidence showing defects in these transporters in Parkinson's disease (PD). PMCA activity and protein levels in brain synaptic plasma membranes (SPMs) decline progressively with increasing age. The PMCAs undergo functional and structural changes when exposed to reactive oxygen species known to be generated in the aging brain and in neurodegenerative disorders such as PD. The major changes in the PMCAs include rapid inactivation, formation of aggregates, internalization from the plasma membrane and fragmentation by proteases. Reduction of PMCA levels as occurs in aging and under conditions of oxidative stress may play an important role in compromised neuronal function in the aging brain and in PD. Therapeutic strategies that protect the PMCAs and stabilize $[\text{Ca}^{2+}]_i$ homeostasis have the potential of serving as novel interventions in preventing and/or slowing down the degeneration of neurons in various chronic neurodegenerative disorders.

Keywords: Brain aging, Parkinson's disease, calcium, neurons, oxidative stress

Introduction

Neurons rely on calcium (Ca^{2+}) signaling to regulate a wide array of important cellular processes such as the release of neurotransmitters, signal

transduction, induction of gene expression, synaptic plasticity, and learning and memory formation (Foster & Kumar, 2002) (Foster & Norris, 1997). Following the transduction of the Ca^{2+} signal, neurons need to return the intracellular calcium $[\text{Ca}^{2+}]_i$ to baseline levels within milliseconds in order to prepare the cell for the next round of stimulation. Defects in the handling of Ca^{2+} and consequent overload is believed to result in cytotoxicity eventually leading to neuronal cell death (Miller, 1991). The various mechanisms for restoring baseline resting $[\text{Ca}^{2+}]_i$ following neuronal excitation include sequestration into the endoplasmic reticulum and mitochondria, buffering by Ca^{2+} binding proteins, and extrusion across the plasma membrane by the $\text{Na}^+/\text{Ca}^{2+}$ exchangers (NCXs) and the plasma membrane Ca^{2+} -ATPase pumps (PMCA) (Blaustein, 1988; Carafoli, 1992). The PMCA pumps are regulated by the Ca^{2+} sensor protein calmodulin (CaM), which induces conformational changes within the protein causing the C-terminal autoinhibitory domain to move away from the active site of the enzyme, thus relieving autoinhibition and resulting in several-fold activation (Enyedi et al., 1989; James et al., 1988). The PMCA pumps represent the major high affinity transport system at the plasma membrane responsible for the fine tuning of resting free $[\text{Ca}^{2+}]_i$ and counteracting transient increases that occur during Ca^{2+} signaling (Strehler & Zacharias, 2001). The PMCA proteins are coded by four different genes that produce four distinct isoforms termed PMCA 1, 2, 3 and 4. Neurons express all four isoforms of the protein and have multiple splice variants formed by alternative splicing of mRNA, attesting to the very complex nature of Ca^{2+} dynamics in nerve cells.

Dyshomeostasis of Calcium in the Aging Brain: Role of the Calcium Pumps

There is an extensive body of literature showing that defects in Ca^{2+} homeostasis underlie neuronal dysfunction. If left unchecked, elevated levels of $[\text{Ca}^{2+}]_i$ lead to cytotoxicity and eventual cell death. Evidence from our laboratory and work of others has shown alterations in Ca^{2+} regulating systems in brain neurons with increasing age (*reviewed in* (Foster & Kumar, 2002; Gibson & Peterson, 1987; Squier & Bigelow, 2000; Thibault, Gant, & Landfield, 2007; Wojda, Salinska, & Kuznicki, 2008; A. Zaidi, 2010)). Aged neurons have elevated levels of voltage-gated Ca^{2+} channels, the major system involved in the influx of extracellular Ca^{2+} . To make matters worse, aged neurons have decreased activity of the NCXs, the sarco-endoplasmic reticulum Ca^{2+} -ATPases (SERCAs) (Gomez-Villafuertes, Mellstrom, & Naranjo, 2007; Martinez, Vitorica, & Satrustegui, 1988; Thibault, Hadley, & Landfield, 2001; Verkhratsky & Toescu, 1998) (Michaelis, 1989; Michaelis et al., 1996; Michaelis, Foster, & Jayawickreme, 1992; Michaelis, Johe, & Kitos, 1984; Yao et al., 1996) and the PMCA (A. Zaidi, Gao, Squier, &

Michaelis, 1998), (Lipman, Chrisp, Hazzard, & Bronson, 1996). The resultant effect of age-associated changes in the proteins that regulate Ca^{2+} is an elevation in $[\text{Ca}^{2+}]_i$ which is consequently detrimental to the health of neurons.

Our laboratory has been interested in the PMCAs for the last 20 years (A. Zaidi et al., 2003; A. Zaidi, Fernandes, Bean, & Michaelis, 2009; A. Zaidi et al., 1998; A. Zaidi & Michaelis, 1999). We were the first to show a progressive and significant decline in the activity (~50%) of the PMCAs in SPMs isolated from rat brain at five different ages covering the life span of the animal (Lipman et al., 1996; A. Zaidi et al., 1998). Reduction in PMCA activity is associated with a statistically significant decrease in maximum velocity (V^{max}) with no appreciable change in the affinity of the enzyme for Ca^{2+} (K_{act}) (A. Zaidi et al., 1998). An approximately 20% reduction in PMCA protein is observed at 34 months, the highest age of rats we tested, compared to the 5 month young adults (A. Zaidi et al., 1998). The disproportional loss of activity vs protein levels indicate modifications in the protein that cause inactivation without complete removal from the SPMs. A more recent study on lipid raft microdomains isolated from SPMs at different ages has shown similar results, i.e., a disproportional loss of PMCA activity vs its protein levels (Jiang et al., 2014). Age-related reduction in the PMCA in SPMs and lipid rafts may be attributed to multiple causes such as decreased synthesis, altered stability, abnormal trafficking/targeting to SPMs, structural alterations leading to enhanced removal from the synaptic terminals, or modifications leading to reduced immunoreactivity, although none of these possibilities have been experimentally confirmed and validated. Lowered PMCA activity and protein levels in SPMs as observed with increasing age is likely to contribute to the disruption of Ca^{2+} homeostasis, a hallmark of aged neurons.

Oxidative Stress and the PMCAs

Post-translational modification to proteins and lipid peroxidation are major contributors of neuronal dysfunction in normal aging and in the pathophysiology of several neurodegenerative disorders including Parkinson's disease (PD). Reactive oxygen species-mediated oxidative modification of proteins may involve altered conformation, misfolding, aggregation and oxidation of amino acid residues. To determine the vulnerability of the PMCAs to oxidative stress and to identify the pattern of oxidative modification that may appear on the protein upon exposure to oxidants with physiological relevance, we performed a series of studies using a variety of experimental approaches (A. Zaidi et al., 2003; A. Zaidi et al., 2009; A. Zaidi & Michaelis, 1999). Exposure of synaptic membranes to oxidizing agents such as H_2O_2 , peroxynitrite and peroxy radical generating

agents for a brief period of time (10 min at 37°C) caused rapid inactivation of the PMCA (A. Zaidi & Michaelis, 1999). Loss of activity was due to a significant reduction in V^{\max} with no change in the affinity for Ca^{2+} or K_{act} consistent with our observations in the aging brain (A. Zaidi et al., 1998). The major structural alteration was the formation of high molecular weight aggregates of PMCA which were reversed by the addition of a reducing agent (dithiothreitol) and chaotropic agent (urea). These data suggested the contribution of the oxidation of cysteine residues to form disulfide bonds and increased hydrophobic interactions between PMCA molecules, respectively (Souza dos Santos, Saraiva, Ferraz da Costa, Scofano, & de Carvalho-Alves, 2007; A. Zaidi & Michaelis, 1999).

To determine whether the effects of oxidants on the PMCA are a direct oxidation of the protein or mediated indirectly via lipid peroxidation, we purified the PMCA protein from its membrane environment. Red blood cell membranes rich in one of the isoforms (PMCA 4) were utilized for these studies. The purified PMCA protein was reconstituted into mixed micelles made from the phospholipid phosphatidylcholine and exposed to increasing doses of H_2O_2 for 10 minutes at 37°C (A. Zaidi et al., 2003). As in the case of synaptic membranes, the PMCA in red blood cell membranes was rapidly inactivated and formed high molecular weight aggregates suggesting a direct effect of the oxidant on the protein.

In the next series of studies, we used primary neurons to assess the effects of oxidants on the PMCA (A. Zaidi et al., 2009). The logic was to investigate the effects of oxidative stress on the PMCA in a system closer to the physiological one, with antioxidant defense mechanisms in place. Primary cultured neurons (cortical) were exposed to increasing concentrations of the superoxide free radical generating agent paraquat. (Smith & Heath, 1976). A 24 hour exposure to paraquat (5 μM – 100 μM) resulted in significant changes in PMCA activity which exhibited a biphasic response (A. Zaidi et al., 2009). While low concentrations of paraquat (5-25 μM) activated PMCA basal activity by ~two-fold and abolished its sensitivity to CaM, higher concentrations (50-100 μM) inhibited both basal and CaM-stimulated PMCA activity. Paraquat treatment also led to aggregate formation and calpain-mediated proteolysis of the PMCA protein (A. Zaidi et al., 2009). Our results are consistent with several studies investigating the effects of excitotoxic agents and neurotoxins on the PMCA present in neurons (Hajimohammadreza et al., 1997; Kip & Strehler, 2007; Pottorf et al., 2006; Wang, Roufogalis, & Villalobo, 1989; Wang, Villalobo, & Roufogalis, 1988; A. Zaidi et al., 2009), and in non-neuronal cells (Bruce & Elliott, 2007; Marian, Mukhopadhyay, Borchman, Tang, & Paterson, 2008; Xiao et al.).

Increase in oxidative stress and elevations in $[Ca^{2+}]_i$ have also been linked to the activation of caspases, enzymes that mediate apoptosis, a form of programmed cell death (Berridge, 1998). The link between the PMCAs and apoptosis was established when PMCA 4b was shown to be degraded by caspase 3 (Paszty et al., 2005; Paszty et al., 2002; Schwab et al., 2002). Cleavage by caspase forms a 120 kDa truncated form of the PMCA minus its CaM-binding autoinhibitory domain. (James et al., 1989; Papp et al., 1989; Wang et al., 1988), As expected this form is fully active even in the absence of CaM (Paszty et al., 2005; Paszty et al., 2002), a condition that would help the cell to counteract the increased Ca^{2+} load and protect it against death (Schwab et al., 2002). However, under severe and more chronic conditions, the PMCAs may be down-regulated further impairing Ca^{2+} homeostasis and promoting cell death.

The PMCAs and Neurodegeneration

While the contribution of overall neuronal Ca^{2+} dysregulation in age-associated neurodegenerative disorders has been experimentally validated (*reviewed in* (Bezprozvanny & Mattson, 2008; Green & LaFerla, 2008; Mattson, 2007; Wojda et al., 2008)), the specific contribution of the PMCAs is just beginning to be elucidated. Conceptually, there are two major ways by which the PMCAs may either contribute to the initiation and progression of neurodegenerative diseases or be impacted by these chronic conditions. Any change in PMCA function is likely to disrupt neuronal Ca^{2+} homeostasis and elevate $[Ca^{2+}]_i$ which may promote the generation of abnormal forms of peptides/proteins such as the amyloid beta peptide in Alzheimer's disease and alpha synuclein in PD. Conversely, events downstream from the accumulation of the pathological forms of these peptides/proteins may disrupt energy homeostasis, increase membrane excitability, promote the formation of free radicals, elevate membrane-associated oxidative stress, and activate proteolytic enzymes all of which may consequently have an inhibitory effect on PMCA function. Convincing experimental support for either one or both of these possibilities is still lacking in the literature.

The PMCAs have been found to be significantly down-regulated in experimental models of global ischemia-reperfusion injury and seizures (Paszty et al., 2005). In preliminary studies, we found that exposure to hypoxic conditions led to a significant decline in PMCA activity with no change in its protein levels (*unpublished observations*). Evidence suggests that the suppression of PMCA activity is not simply due to the disruption of ion gradients and altered energy homeostasis due to lowered ATP levels, but rather due to a direct oxidative modification and degradation of the PMCA protein (Lehotsky et al., 2002). The relationship between the PMCAs and Alzheimer's disease, the most common neurodegenerative disorder, was first

demonstrated by functional inactivation of the PMCA by the amyloid beta peptide (Mark, Hensley, Butterfield, & Mattson, 1995; Mark, Lovell, Markesbery, Uchida, & Mattson, 1997; Mattson, Mark, Furukawa, & Bruce, 1997). More recent studies have further validated the involvement of the PMCA in Alzheimer's disease (Berrocal et al., 2009). PMCA activity in human brain tissue from Alzheimer's disease patients shows altered affinity to Ca^{2+} as compared to age-matched controls (Berrocal et al., 2009) suggesting structural/conformational changes in the Ca^{2+} binding sites in the protein. More interestingly, addition of exogenous amyloid beta peptide to control brain simulated many of the effects observed in Alzheimer's disease brain (Berrocal et al., 2009).

In our laboratory, we are studying the PMCA in PD, the most common movement neurodegenerative disorder. In a cell model of PD, we exposed the dopaminergic cell line SH-SY5Y neuroblastoma cells to the Parkinsonian mimetics methyl phenyl pyridinium (Zaidi A, 2009) and 6-hydroxydopamine (A. R. Zaidi, A; Clark, S; Elliot, K and Ramlow, P 2012). We observed a significant loss of activity and protein levels upon exposure to these neurotoxins. Preliminary studies on human brain tissue from PD patients are consistent with the cell model showing a very significant reduction in PMCA activity. Overall, the findings presented here suggest that the loss of the PMCA is a common theme across several neurodegenerative diseases. Further studies are needed to elucidate the underlying mechanisms and determine whether the observed changes in the PMCA pumps are a cause or consequence of the disease. Therapeutic approaches that can protect the PMCA and stabilize $[\text{Ca}^{2+}]_i$ homeostasis may be capable of slowing or even preventing neuronal degeneration. The PMCA is therefore presenting themselves as novel drug targets for therapeutic interventions in various chronic degenerative disorders.

Conclusion:

The plasma membrane Ca^{2+} -ATPase (PMCA) pumps are critical to the maintenance of precise levels of intracellular Ca^{2+} , quintessential to the functioning of nerve cells. The PMCA in the SPMs and lipid raft microdomains diminish progressively with increasing age. PMCA loss also occurs in Alzheimer's disease and Parkinson's disease, the two most common neurodegenerative disorders. This may be due to elevated levels of oxidative stress present in brain neurons in these chronic disorders. Downregulation of the PMCA may further elevate the levels of intracellular Ca^{2+} leading to Ca^{2+} overload, subsequent cytotoxicity and eventual cell death. Strategies that protect the PMCA from oxidative damage and/or elevate its expression in neurons represent novel future therapeutic interventions.

References:

- Berridge, M. J. (1998). *Neuronal calcium signaling*. *Neuron*, 21(1), 13-26.
- Berrocal, M., Marcos, D., Sepulveda, M. R., Perez, M., Avila, J., & Mata, A. M. (2009). *Altered Ca²⁺ dependence of synaptosomal plasma membrane Ca²⁺-ATPase in human brain affected by Alzheimer's disease*. *FASEB J*, 23(6), 1826-1834.
- Bezprozvanny, I., & Mattson, M. P. (2008). *Neuronal calcium mishandling and the pathogenesis of Alzheimer's disease*. *Trends Neurosci*, 31(9), 454-463.
- Blaustein, M. P. (1988). *Calcium transport and buffering in neurons*. *Trends Neurosci*, 11(10), 438-443.
- Bruce, J. I., & Elliott, A. C. (2007). *Oxidant-impaired intracellular Ca²⁺ signaling in pancreatic acinar cells: role of the plasma membrane Ca²⁺-ATPase*. *Am J Physiol Cell Physiol*, 293(3), C938-950.
- Carafoli, E. (1992). *The plasma membrane calcium pump. Structure, function, regulation*. *Biochim Biophys Acta*, 1101(2), 266-267.
- Enyedi, A., Vorherr, T., James, P., McCormick, D. J., Filoteo, A. G., Carafoli, E., & Penniston, J. T. (1989). *The calmodulin binding domain of the plasma membrane Ca²⁺ pump interacts both with calmodulin and with another part of the pump*. *J Biol Chem*, 264(21), 12313-12321.
- Foster, T. C., & Kumar, A. (2002). *Calcium dysregulation in the aging brain*. *Neuroscientist*, 8(4), 297-301.
- Foster, T. C., & Norris, C. M. (1997). *Age-associated changes in Ca(2+)-dependent processes: relation to hippocampal synaptic plasticity*. *Hippocampus*, 7(6), 602-612.
- Gibson, G. E., & Peterson, C. (1987). *Calcium and the aging nervous system*. *Neurobiol Aging*, 8(4), 329-343.
- Gomez-Villafuertes, R., Mellstrom, B., & Naranjo, J. R. (2007). *Searching for a role of NCX/NCKX exchangers in neurodegeneration*. *Mol Neurobiol*, 35(2), 195-202.
- Green, K. N., & LaFerla, F. M. (2008). *Linking calcium to Abeta and Alzheimer's disease*. *Neuron*, 59(2), 190-194.
- Hajimohammadreza, I., Raser, K. J., Nath, R., Nadimpalli, R., Scott, M., & Wang, K. K. (1997). *Neuronal nitric oxide synthase and calmodulin-dependent protein kinase IIalpha undergo neurotoxin-induced proteolysis*. *J Neurochem*, 69(3), 1006-1013.
- James, P., Maeda, M., Fischer, R., Verma, A. K., Krebs, J., Penniston, J. T., & Carafoli, E. (1988). *Identification and primary structure of a calmodulin binding domain of the Ca²⁺ pump of human erythrocytes*. *J Biol Chem*, 263(6), 2905-2910.
- James, P., Vorherr, T., Krebs, J., Morelli, A., Castello, G., McCormick, D. J., . . . Carafoli, E. (1989). *Modulation of erythrocyte Ca²⁺-ATPase by*

- selective calpain cleavage of the calmodulin-binding domain. J Biol Chem, 264(14), 8289-8296.*
- Jiang, L., Bechtel, M. D., Bean, J. L., Winefield, R., Williams, T. D., Zaidi, A., . . . Michaelis, M. L. (2014). *Effects of gangliosides on the activity of the plasma membrane Ca²⁺-ATPase. [Research Support, N.I.H., Extramural]. Biochim Biophys Acta, 1838(5), 1255-1265. doi: 10.1016/j.bbamem.2014.01.003*
- Kip, S. N., & Strehler, E. E. (2007). *Rapid downregulation of NCX and PMCA in hippocampal neurons following H₂O₂ oxidative stress. Ann N Y Acad Sci, 1099, 436-439.*
- Lehotsky, J., Kaplan, P., Matejovicova, M., Murin, R., Racay, P., & Raeymaekers, L. (2002). *Ion transport systems as targets of free radicals during ischemia reperfusion injury. Gen Physiol Biophys, 21(1), 31-37.*
- Lipman, R. D., Chrisp, C. E., Hazzard, D. G., & Bronson, R. T. (1996). *Pathologic characterization of brown Norway, brown Norway x Fischer 344, and Fischer 344 x brown Norway rats with relation to age. J Gerontol A Biol Sci Med Sci, 51(1), B54-59.*
- Marian, M. J., Mukhopadhyay, P., Borchman, D., Tang, D., & Paterson, C. A. (2008). *The effect of hydrogen peroxide on sarco/endoplasmic and plasma membrane calcium ATPase gene expression in cultured human lens epithelial cells. Open Ophthalmol J, 2, 123-129.*
- Mark, R. J., Hensley, K., Butterfield, D. A., & Mattson, M. P. (1995). *Amyloid beta-peptide impairs ion-motive ATPase activities: evidence for a role in loss of neuronal Ca²⁺ homeostasis and cell death. J Neurosci, 15(9), 6239-6249.*
- Mark, R. J., Lovell, M. A., Markesbery, W. R., Uchida, K., & Mattson, M. P. (1997). *A role for 4-hydroxynonenal, an aldehydic product of lipid peroxidation, in disruption of ion homeostasis and neuronal death induced by amyloid beta-peptide. J Neurochem, 68(1), 255-264.*
- Martinez, A., Vitorica, J., & Satrustegui, J. (1988). *Cytosolic free calcium levels increase with age in rat brain synaptosomes. Neurosci Lett, 88(3), 336-342.*
- Mattson, M. P. (2007). *Calcium and neurodegeneration. Aging Cell, 6(3), 337-350.*
- Mattson, M. P., Mark, R. J., Furukawa, K., & Bruce, A. J. (1997). *Disruption of brain cell ion homeostasis in Alzheimer's disease by oxy radicals, and signaling pathways that protect therefrom. Chem Res Toxicol, 10(5), 507-517.*
- Michaelis, M. L. (1989). *Ca²⁺ handling systems and neuronal aging. Ann N Y Acad Sci, 568, 89-94.*

- Michaelis, M. L., Bigelow, D. J., Schoneich, C., Williams, T. D., Ramonda, L., Yin, D., . . . Squier, T. C. (1996). Decreased plasma membrane calcium transport activity in aging brain. *Life Sci*, 59(5-6), 405-412.
- Michaelis, M. L., Foster, C. T., & Jayawickreme, C. (1992). Regulation of calcium levels in brain tissue from adult and aged rats. *Mech Ageing Dev*, 62(3), 291-306.
- Michaelis, M. L., Johe, K., & Kitos, T. E. (1984). Age-dependent alterations in synaptic membrane systems for Ca²⁺ regulation. *Mech Ageing Dev*, 25(1-2), 215-225.
- Miller, R. J. (1991). The control of neuronal Ca²⁺ homeostasis. *Prog Neurobiol*, 37(3), 255-285.
- Papp, B., Sarkadi, B., Enyedi, A., Caride, A. J., Penniston, J. T., & Gardos, G. (1989). Functional domains of the in situ red cell membrane calcium pump revealed by proteolysis and monoclonal antibodies. Possible sites for regulation by calpain and acidic lipids. *J. Biol. Chem.*, 264(8), 4577-4582.
- Paszty, K., Antalffy, G., Penheiter, A. R., Homolya, L., Padanyi, R., Ilias, A., . . . Enyedi, A. (2005). The caspase-3 cleavage product of the plasma membrane Ca²⁺-ATPase 4b is activated and appropriately targeted. *Biochem J*, 391(Pt 3), 687-692.
- Paszty, K., Verma, A. K., Padanyi, R., Filoteo, A. G., Penniston, J. T., & Enyedi, A. (2002). Plasma membrane Ca²⁺ATPase isoform 4b is cleaved and activated by caspase-3 during the early phase of apoptosis. *J Biol Chem*, 277(9), 6822-6829.
- Pottorf, W. J., 2nd, Johanns, T. M., Derrington, S. M., Strehler, E. E., Enyedi, A., & Thayer, S. A. (2006). Glutamate-induced protease-mediated loss of plasma membrane Ca²⁺ pump activity in rat hippocampal neurons. *J Neurochem*, 98(5), 1646-1656.
- Schwab, B. L., Guerini, D., Didszun, C., Bano, D., Ferrando-May, E., Fava, E., . . . Nicotera, P. (2002). Cleavage of plasma membrane calcium pumps by caspases: a link between apoptosis and necrosis. *Cell Death Differ.*, 9(8), 818-831.
- Smith, P., & Heath, D. (1976). Paraquat. *CRC Crit Rev Toxicol*, 4(4), 411-445.
- Souza dos Santos, P., Saraiva, D. F., Ferraz da Costa, D. C., Scofano, H. M., & de Carvalho-Alves, P. C. (2007). Trifluoperazine protects brain plasma membrane Ca(2+)-ATPase from oxidative damaging. *Exp Brain Res*, 177(3), 347-357.
- Squier, T. C., & Bigelow, D. J. (2000). Protein oxidation and age-dependent alterations in calcium homeostasis. *Front Biosci*, 5, D504-526.
- Strehler, E. E., & Zacharias, D. A. (2001). Role of alternative splicing in generating isoform diversity among plasma membrane calcium pumps. *Physiol Rev*, 81(1), 21-50.

- Thibault, O., Gant, J. C., & Landfield, P. W. (2007). *Expansion of the calcium hypothesis of brain aging and Alzheimer's disease: minding the store. Aging Cell, 6(3), 307-317.*
- Thibault, O., Hadley, R., & Landfield, P. W. (2001). *Elevated postsynaptic [Ca²⁺]_i and L-type calcium channel activity in aged hippocampal neurons: relationship to impaired synaptic plasticity. J Neurosci, 21(24), 9744-9756.*
- Verkhatsky, A., & Toescu, E. C. (1998). *Calcium and neuronal ageing. Trends Neurosci, 21(1), 2-7.*
- Wang, K. K., Roufogalis, B. D., & Villalobo, A. (1989). *Characterization of the fragmented forms of calcineurin produced by calpain I. Biochem. Cell Biol., 67(10), 703-711.*
- Wang, K. K., Villalobo, A., & Roufogalis, B. D. (1988). *Activation of the Ca²⁺-ATPase of human erythrocyte membrane by an endogenous Ca²⁺-dependent neutral protease. Arch. Biochem. Biophys., 260(2), 696-704.*
- Wojda, U., Salinska, E., & Kuznicki, J. (2008). *Calcium ions in neuronal degeneration. IUBMB Life, 60(9), 575-590.*
- Xiao, Y., Cui, J., Shi, Y. H., Sun, J., Wang, Z. P., & Le, G. W. *Effects of duodenal redox status on calcium absorption and related genes expression in high-fat diet-fed mice. Nutrition.*
- Yao, Y., Yin, D., Jas, G. S., Kuczer, K., Williams, T. D., Schoneich, C., & Squier, T. C. (1996). *Oxidative modification of a carboxyl-terminal vicinal methionine in calmodulin by hydrogen peroxide inhibits calmodulin-dependent activation of the plasma membrane Ca-ATPase. Biochemistry, 35(8), 2767-2787.*
- Zaidi, A. (2010). *Plasma membrane Ca²⁺-ATPases: Targets of oxidative stress in brain aging and neurodegeneration. World Journal of Biological Chemistry, 1(9), 271-280.*
- Zaidi A, A. S., and Ramlow, P. (2009). *The plasma membrane Ca²⁺-ATPase and Parkinson's disease. [Abstract]. Free Radical Biology and Medicine, 47 (supplement 1).*
- Zaidi, A., Barron, L., Sharov, V. S., Schoneich, C., Michaelis, E. K., & Michaelis, M. L. (2003). *Oxidative inactivation of purified plasma membrane Ca²⁺-ATPase by hydrogen peroxide and protection by calmodulin. Biochemistry, 42(41), 12001-12010.*
- Zaidi, A., Fernandes, D., Bean, J. L., & Michaelis, M. L. (2009). *Effects of paraquat-induced oxidative stress on the neuronal plasma membrane Ca(2+)-ATPase. Free Radic Biol Med, 47(10), 1507-1514.*
- Zaidi, A., Gao, J., Squier, T. C., & Michaelis, M. L. (1998). *Age-related decrease in brain synaptic membrane Ca²⁺-ATPase in F344/BNF1 rats. Neurobiol Aging, 19(5), 487-495.*

Zaidi, A., & Michaelis, M. L. (1999). Effects of reactive oxygen species on brain synaptic plasma membrane Ca(2+)-ATPase. Free Radic Biol Med, 27(7-8), 810-821.

Zaidi, A. R., A; Clark, S; Elliot, K and Ramlow, P (2012). [Abstract]. Free Radical Biology and Medicine, 53(S2).

IMPACT OF LEADERSHIP STYLES ON LEADERSHIP OUTCOME (EFFECTIVENESS, SATISFACTION AND EXTRA EFFORT) IN THE PRIVATE HEALTHCARE SECTOR IN JORDAN

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Abstract

Background: It can be concluded from past studies that the grounds for day to day exchanges amid leaders and workers are based on leadership styles, and work procedures are assisted and boosted by them.

Purpose: To investigate the nature and importance of leadership styles and behaviours of head nurse managers is the purpose of this research; its purpose also includes their influence on diverse organizational outcomes that are part of leader's efficiency and job satisfaction of workers, together with their readiness to give more input to their work.

Methodology: 24 participants were head nurse managers out of the total sample of 96; rest of the sample comprised of juniors. There were 45 things that were a part of The Multifactor Leadership Questionnaire (MLQ, Form 5-X) employed in this study to recognize and determine the important leadership styles together with their results.

Findings: The transformational leadership style was discovered to be the most frequently employed style by the outcome of this research. The results also disclosed that amid the overall score of transformational leadership (TRL) and independent variables there was a positive correlation ($r=0.661^{**}$, 0.585^{**} and 0.504^{**} for leader effectiveness, staff job satisfaction, and extra effort, respectively).

Conclusion: The quality of nursing services is greatly increased when there

is an improvement in the development of transformational leadership that in turn boosts nurses' satisfaction and additional efforts.

Keywords: Leadership styles, Head nurse managers, Quality of services

Background

The quality of services that the patients obtain is influenced by the leadership styles; additionally, the subordinates of a head nurse are influenced by the diverse parts that the head nurse performs (Squires et al., 2010). The skill, to efficiently oversee other nurses, controlling work, and guiding other nurses and nursing students, are the parts performed by the head nurse. The quality of services at the hospital relies on the leadership styles (Schreuder et al., 2011; Alloubani et al., 2014).

With the help of diverse approaches, the theoretical and practical importance of this research can be examined. The theoretical importance of this research is obvious in minimum three sections: quality, leadership style, and health results and performance.

The positive impact on the professional development of health sector administrators can be witnessed if viewed from the practical side. The initial stage that will develop the beginning will be the investigation and conclusion of the present standing of the leadership and management performance; it may then proceed to the required development and training later on.

There is a necessity to develop Jordan together with the institutions that can generate useful health managers and leaders in Jordan; for that purpose, it is necessary to employ such policies that can facilitate its development. A health system is adopted in Jordan to function as a model for different nations in that area together with acting as a perfect environment to facilitate more research into leadership; this model is generally appreciated as well as being very useful.

The part performed by the leaders and leadership especially in healthcare facilities was emphasized by most of the researchers (Tyagi, 1975). The leadership scale was the basis of this research developed by (Bass, 1985). Many factors like the sources of difference amid leadership styles, working of employees and quality of nursing services in the private health care sector in Jordan will be emphasized by this research.

Aims

The aim of the present study was to explore the nature and the status of leadership styles of head nurse managers and its effects on the quality of services. It was also to evaluate the correlation between perceived leadership styles and certain organizational consequences such as leader effectiveness, staff job satisfaction and staff willingness to exert extra effort.

This research hopes to determine the characteristics and properties that are necessary for overcoming barriers to acquiring effective leadership strategies and identifies the prerequisite skills that leaders and leaderships require if they are to be effective.

Materials and Methods

Setting and Design

Descriptive, cross-sectional design and correlation formed the basis of this research at the three private hospitals in Jordan. Explanations of the trend of present interest sans any manoeuvring are depicted by the descriptive design (Brink and Wood, 2001); while the interpretations of certain subset of the population simultaneously with regard to the independent variables will be possible by the cross-sectional designs (Polit & Beck, 2004); and for the accumulation of great quantities of information regarding certain trend can be achieved by the correlation design (Polit and Beck, 2008).

Population and Sample

In order to know the required sample size, an aptness sampling process was applied. At least 90 participants were necessary to increase the credibility of the outcomes (24 head nurse managers and 72 raters (subordinates)); this was known after it was imparted on a power analysis employing a power approximation of 0.80 and a medium effect size, for a two-tailed test with $\alpha = 0.05$.

Instruments

The Multifactor Leadership Questionnaire (MLQ) has 45 items; nine of them calculate the results of leadership while 36 of them calculate and assess important leadership styles and efficiency behaviour. A five-point ranking measurement is employed to evaluate all items. Hence, to calculate and assess the degree of a particular leadership style as transformational, transactional or laissez-faire the commonly accepted tool is MLQ. It has undergone demanding reliability and validity inspection. After being reassessed many times, the current version is the MLQ 5X. This current version has been employed in nearly 300 research programs, doctoral and master's dissertation papers internationally between 1995 and 2004, as stated by (Avolio et al., 2004). MLQ employs the following anchors: 0 = not at all, 1 = once in a while, 2 = sometimes, 3 = fairly often, and 4 = frequently, if not always.

An MLQ that employs a rating scale has a major advantage that the results that it conveys are highly authentic, constant and generates higher

variability due to which the researcher is facilitated to build greater differences amid the participants (Johnson & Christensen, 2007).

Out of the two ways of MLQ, initial is the one in the leader is inquired to rate his personal leadership style or behaviour and that is the self-rating way; while in the other way the juniors are asked to rate their leader which is the rater way.

Data Collection Procedure

From May 2013 to September 2013, data were accumulated from head nurses and staff nurses who were employed in various departments in the hospitals that were under investigation.

In order to enroll the respondents, the researcher went many times to different departments. It was at the discretion of the respondents if they wanted to be a part of the study or not; also they were given the option to remove themselves from the research at any point. Any kind of queries on behalf of the participants was catered to. Researcher made them take part in the research after they were briefed about the targets and importance of the research. An informed permission was attained by the respondents who were ready to take part in the research before the data accumulation. The permission form was signed by every respondent that evidently pinpointed that the participation in the research was solely by choice on the behalf of the participant. To offer instructions, every questionnaire was accompanied by a cover letter. The respondents were finally given the questionnaire by the researcher to answer.

Throughout the entire process of the research, not only the moral factors were taken into account; also all the rights of the respondents were guaranteed. There was a guarantee of retaining the secrecy and anonymity of the gathered data and the researcher made sure to satisfy the respondents that the information was being collected merely to conduct the research. The respondents were free to fill the questionnaire at any appropriate place of their choice. The researcher inquired from the respondents if they had any additional queries or comments regarding the research, once the data was gathered.

Results

Together with the demographics, sample and leadership styles effect; the result sections also imparts a summary of the research conclusion. The opinion of the respondents regarding the leadership styles together with dependent variables that comprised of usefulness, worker job satisfaction, and additional effort were described by the research outcomes.

This research needed head nurse managers and their staff nurse juniors in study hospitals as its target population. Out of the total of 96

respondents of the research, 72 juniors and 24 head nurse managers consented to participate in the study; they were able to finish the multifactor leadership questionnaire and 96% was their aggregate response rate.

Cronbach's Alpha (Reliability Analysis)

The reliability of the accumulated data together with the items arranged on the questionnaire is displayed by the reliability analysis of the study. Table 1 shows the great reliability of all the items placed on the questionnaire.

Table 1: Cronbach's Alpha (reliability analysis)

	Cronbach's Alpha	Valid	Excluded a	Items No.
Transformation leadership style	0.908	95	1	20
Transactional leadership style	0.759	96	0	12
Laizzes-faire leadership style	0.730	96	0	4
Dependent Variables	0.798	96	0	9
Multi-factor leadership	0.824	95	1	45

Gender

As deduced from Table 2, out of the aggregate of 96 respondents participating in this research the male participation was 46 (47.9%) while the female participation was 50 (52.1%). A minor difference was found in response on the basis of gender as deduced by the T-test outcome.

The T-Test displays the important P value of 0.49 for equality of means. The value is unimportant because it is more than 0.05; this signifies that in the private sector the influence of gender is nil on the leadership styles of the people. When it comes to the performance of the leaders in Jordan, gender seems to be irrelevant. .

This conclusion opposes the debate of Gill (2006) that leaders of different genders behave in a different way, as implied by many researchers.

Marital Status

There were 54 married respondents who accounted for 56.2%; while unmarried respondents accounted for 43.75% of the research outcomes (Table 2).

The independent sample T-Test having the P value 0.27 is displayed by the table; this is unimportant as the value is over 0.05. The leadership styles in the private sector is unaffected by the marital status. Hence, the performance of the leaders in private healthcare sector in Jordan is unaffected by the marital status.

Age

Out of the three age groups, 50% of the results of the study were offered by the young group -22 to 30 years; next group accounted for 38.5% of the results of the research and they were between the ages of 31-40 years; the last group was the smallest group and they were over 40 years.

To show the association amid age and leadership styles in the private healthcare sector in Jordan, the outcomes of (table 2) show statistical analysis with ANOVA values. The P-value is 0.18 as stated by the row of table 1; this does not depict a strong association. The value being unimportant shows that leadership styles are not influenced by age.

Experience

Table 1 reveals that results were affected by 34.4% by the response of those people whose experience in the concerned field was 1-5 years. This was followed by 30.2% (29 participants), and that was contributed by those people whose work experience in the concerned field was 6-10 years. People with 11-15 years of experience contributed only 20.8% to the research results. This percentage was further reduced by people who had 16-20 years of work experience; merely contributed to 5.2% while 9.4% of the research result was contributed by people with over 20 years of work experience in the related field.

Table 1 also reveals that the leadership styles of people in the private sector in Jordan are not influenced by experience. The ANOVA outcomes of this category show that the P-value is unimportant because it is 0.64 (table2).

Table 2 T and F- Test distribution of Participants regarding their demographic data.

Variables		Frequency	Percentage	Mean	S.D	T&F-test	P value
Gender	Male	46	47.9%	2.54	0.35	-0.68	0.49
	Female	50	52.1%	2.59	0.32		
Marital Status	Single	42	43.75%	2.61	0.20	1.07	0.27
	Married	54	56.25%	2.53	0.41		
Leaders & Raters	Leader	24	25%	2.62	0.32	0.83	0.40
	Rater	72	75%	2.55	0.34		
Age	22-30 y	48	50%	2.594	0.29	1.70	0.18
	31-40 y	37	38.5%	2.597	0.37		
	> 40 y	11	11.5%	2.39	0.35		
Experiences	1-5 y	33	34.4%	2.62	0.23	2.31	0.64
	6-10 y	29	30.2%	2.53	0.34		
	11-15 y	20	20.8%	2.59	0.42		
	16-20 y	5	5.2%	2.80	0.34		
	> 20 y	9	9.4%	2.31	0.34		

Comparing Leadership Styles Subscales and Dependent Variable

Table 3 consists of the means, standard deviations, and t-test value for every sub-scales of leadership style in private sector hospitals. All the leadership styles are important if they are at 0.05 level and are attached certain values as revealed by Table 3. Many interesting aspects were revealed by table 3; the reason being that the mean value of the transformational leadership style (2.96) was greater than other leadership styles, similarly, the standard deviation value was of other leadership styles was less than the value of transformational style (0.55). Nursing management comes after transformational leadership styles.

Leadership style greatly influenced the effectiveness, satisfaction and extra effort as displayed by their mean value (3.03, 2.95 and 2.86 respectively). It was suggested by the data that value is near the mean; the reason being that the standard deviation values (0.60, 0.66 and 0.64) were minor, and this reveals that the variation in data is insignificant.

Table 3: Comparing leadership styles subscales and dependent variables for participants point view

Leadership Styles	N	Mean	SD.	D.F.	T-test	P value
Transformation leadership style	96	2.96	0.55	95	52.7	<0.001
Intellectual stimulation	96	3.00	0.69	95	42.4	<0.001
Individual Consideration	96	3.00	0.79	95	36.8	<0.001
Inspirational motivation	96	3.00	0.66	95	43.9	<0.001
Idealized Influence (Behavior)	96	2.95	0.68	95	42.1	<0.001
Idealized Influence (Attributed)	96	3.07	0.69	95	43.5	<0.001
Transactional leadership style	96	2.08	0.60	95	33.9	<0.001
Contingent reward	96	2.57	0.76	95	32.7	<0.001
Management-by-Exception(Active)	96	2.31	0.88	95	25.5	<0.001
Management-by-Exception (Passive)	96	1.37	0.85	95	15.7	<0.001
Laizzes-faire	96	1.20	0.91	95	12.8	<0.001
Effectiveness	96	3.03	0.60	95	48.8	<0.001
Extra effort	96	2.86	0.64	95	43.4	<0.001
Satisfaction	96	2.95	0.66	95	43.2	<0.001

Comparing Leadership Styles for Leaders and raters' Point of View

The values of means, standard deviations, and t-tests of leadership styles together with leaders and their valuations by raters are displayed in Table 4. All the leadership styles are important at the level of 0.05 and possess certain value, as obvious from Table 4. It can be concluded that transformational leadership style is pursued by the leaders of the Private Hospitals. The reason being that the mean value is higher of the transformational leadership style (2.91) as compared to other leadership styles, if viewed from the leaders' point of view. Additionally, the standard deviation value as compared to other leadership styles is lesser of transformational leadership style (0.42). On the contrary, if observed from the raters' point of view, the transformational value of the mean (2.97) is higher than the mean of other leadership styles.

Additionally, it can be deduced that raters believe that the leaders pursue the transformational leadership style because the standard deviation value of transformational leadership style (0.58) is less than the other leadership styles for private hospitals.

Table 4: Comparing Leadership Styles for leaders and raters' point of view on leadership styles

		Leaders (n=24)				Raters (n=72)			
		Mean	SD	T-test	P	Mean	SD	T-test	P
1-Transformational leadership		2.91	0.42	33.9	<0.001	2.97	0.58	42.8	<0.001
A	Intellectual Stimulation	2.88	0.60	23.2	<0.001	2.97	0.63	40.0	<0.001
B	Inspirational Motivation	2.96	0.46	31.0	<0.001	2.97	0.68	37.0	<0.001
C	Individualized Consideration	2.97	0.53	27.2	<0.001	2.93	0.71	34.7	<0.001
D	Idealized Influence Behaviour	2.83	0.47	29.1	<0.001	2.94	0.67	36.7	<0.001
E	Idealized Influence Attribute	2.91	0.57	24.6	<0.001	3.06	0.68	37.9	<0.001
2- Transactional leadership		2.42	0.43	27.1	<0.001	1.97	0.61	27.3	<0.001
A	Contingent reward	3.04	0.55	26.8	<0.001	2.42	0.77	26.6	<0.001
B	M-by-E (Active)	2.73	0.75	17.8	<0.001	2.17	0.88	20.7	<0.001
C	M-by-E (Passive)	1.47	0.88	8.1	<0.001	1.34	0.84	13.3	<0.001
3- Laissez-faire		1.07	0.92	5.7	<0.001	1.25	0.92	11.5	<0.001
Score range: 0 (not at all) to 4 (frequently if not always)									

Correlations between Leadership Styles Subscales and Dependent Variables

By employing Pearson Product-Moment correlation, the transformational leadership style, transactional leadership style, laissez-faire leadership style and their subscales with dependent variables (Effectiveness, Extra effort and Satisfaction) are presented in Table 5. There was a positive correlation of all transformational leadership style subscales with all dependent variables. As obvious from table 5, the strongest correlation amongst all leadership styles and dependent variables was between the transformational leadership style and Effectiveness, Extra effort, and Satisfaction ($r = 0.661^{**}$, $r = 0.504^{**}$ and $r = 0.585^{**}$ at $P\text{-value} < 0.001$).

The most negative association amongst all sub styles of transactional leadership was the correlation amid management by exception passive with effectiveness and satisfaction ($r = -0.348^{**}$ and $r = -0.320^{**}$ at $P\text{-value} 0.001$). On the other hand, there was a positive association between the overall contingent reward sub style of transactional leadership (TAL) and Effectiveness and Satisfaction ($r = 0.228^*$ at $P\text{-value} 0.026$ and $r = 0.301^{**}$ at $P\text{-value} 0.003$). There was an important yet negative relationship of the overall correlations between Laissez-Faire leadership style and dependent variables

Table 5: Correlation coefficient between extra effort, effectiveness, and satisfaction variables and leadership styles (transformational, transactional and laissez-faire) for participants point view

Leadership style	Dependent Variable	Effectiveness	Extra Effort	Satisfaction
Transformational Leadership (TRL)	Pearson Correlation	0.661**	0.504**	0.585**
	P value	<0.001	<0.001	<0.001
Intellectual Stimulation IS	Pearson Correlation	0.500**	0.378**	0.546**
	P value	<0.001	<0.001	<0.001
Individual Consideration IC	Pearson Correlation	0.574**	0.443**	0.532**
	P value	<0.001	<0.001	<0.001
Inspirational motivation IM	Pearson Correlation	0.598**	0.374**	0.453**
	P value	<0.001	<0.001	<0.001
Idealized Influence – Behaviour IIB	Pearson Correlation	0.513**	0.419**	0.408**
	P value	<0.001	<0.001	<0.001
Idealized Influence – Attributed IIA	Pearson Correlation	0.608**	0.472**	0.467**
	P value	<0.001	<0.001	<0.001
Transactional	Pearson Correlation	0.031	-0.076	0.068

Leadership (TAL)	P value	0.767	0.464	0.510
Contingent Reward CR	Pearson Correlation	0.228*	-0.019	0.301**
	P value	0.026	0.852	0.003
Management-By-Exception- Active MBEA	Pearson Correlation	0.200	-0.002	0.187
	P value	0.05	0.981	0.068
Management-By-Exception-Passive MBEP	Pearson Correlation	-0.348**	-0.140	-0.320**
	P value	0.001	0.174	0.001
Laissez-Faire LF	Pearson Correlation	-0.401**	-0.238*	-0.326**
	P value	< 0.001	0.019	0.001
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).				

Discussion

To ascertain leadership styles and behaviours, many researches have been carried out (Walumbwa & Lawler, 2003; Leithwood, 2001).

Respondents were handed out questionnaires to disclose their ideal leadership styles. The most known styles that were adopted by the leaders, according to the research, were transformational and transactional leadership styles while the Laizzes-fair style was not a favourite. Hence, it can be deduced by this outcome that leaders are transactional as well as transformational (Bass, 2008).

When compared in the data, it can be deduced that the favourite leadership style adopted is transformational leadership style. Hence, the past research is substantiated by the current research that contrary to transactional leadership styles, the most adopted one is the transformational leadership styles (Avolio et al., 2004; Bass et al., 2008).

The debate that there is a positive association between the transformational leadership style and behaviours with the organizational consequences is strongly supported by the results of this research. This is on the grounds that the outcomes of the research show that there exists an important positive correlation amongst transformational behaviours and particular organizational outcomes like leader effectiveness, job satisfaction, and employee readiness to put in additional effort. But as noted by others, the prominent one was transformational leadership (Abualrub & AlGhamdi, 2012).

It was possible for the successful nursing leaders to increase employee satisfaction by adopting transformational leadership styles, as observed by a current research after assessing the association between leadership styles of nurse managers and organizational consequences (Casida & Parker, 2011). If head nurses practise transformational leadership styles, it

will not only have an impact on nurses' job satisfaction but also on the quality of nursing applications and patient care (Clavelle et al. 2013).

Lowe et al. (1996) was of the opinion that a positive association is encouraged with workers' opinion of the work if there is contingent reward. This theory is verified by this research by deducing that the contingent reward subsection achieved the maximum points of amongst transactional leaders, meaning that on the grounds of task achievement head nurses offer significant benefits. Leaders favour transactional leadership qualities, as suggested by Zaleznik's (1993). This was verified by many other researchers who confirmed the existence of contingent reward (Keegan & Hartog, 2004; Zagorsek et al., 2009).

Except for some respondents, the others did not favour the laissez-faire leadership style; additionally, a prominent negative correlation was present amid Laissez-faire behaviours and some organizational consequences. A positive relation is fostered with employees, as voiced by Lowe et al. (1996); when there are false impression and blunders then passive management by exclusion should be taken into account. Likewise, absent leadership or laissez-faire is considered to be negative type of leadership; generally it is not regarded as a leadership style (Bass & Avolio, 1995); whatsoever it remains to be a sound point. The results of this research do not confirm to the research of McGuire and Kennerly (2006), but it substantiates the results of Suliman (2009) and Failla and Stichler (2008). This leadership style was not agreed by many respondents.

The perfect leadership association is displayed if there is a score of 3.0 or more on the entire subsections of transformational leadership as suggested by Bass and Riggio (2006). There should be 2.5 average rating of contingent reward and active management by exception while less than 1.0 should be the score for passive management by exception and laissez-faire leadership. As indicated by Bass (1998), the average ratings of this research of transformational leadership and all the transactional subsections, together with laissez-faire leadership were approximately the same as the ideal average ratings.

Conclusion

It can be deduced from enough evidences from this study that the most familiar and widespread style of leadership is transformational style. Keeping this research in mind, an examination was made of the association between the apparent leadership styles, many organizational outcomes that include a leader's usefulness together with job satisfaction and performance of the workers. There is a requirement to enhance the present state of leadership, training models and development programs for senior employees of the healthcare sector.

In conclusion, as deduced from the study findings, the quality of nursing services is greatly improved by the additional development of transformational leadership.

References:

- Abualrub, R.F. & Alghamdi, M.G. (2012). The impact of leadership styles on nurses' satisfaction and intention to stay among Saudi nurses. *Journal of nursing management* 20 (5), 668-678.
- Alloubani, A.M., Almatari, M. & Almukhtar, M. (2014). Review: Effects of Leadership Styles on Quality of Services in Healthcare. *European Scientific Journal* 10(18),118-129.
- Avolio B.J., Bass B.M. & Zhu F.W.W. (2004). Multifactor leadership questionnaire: manual and sampler set. 3rd ed: Menlo Park, CA: Mind Garden, Inc.
- Bass B.M. (1985). *Leadership and performance beyond expectations*: Free Press New York.
- Bass B.M. (1998) *Transformational leadership: Industrial, military, and educational impact*: Lawrence Erlbaum.
- Bass. (2008) *handbook of leadership: Theory, research & managerial applications*. 4 ed: New York: Free Press.
- Bass, B. M., & Avolio, B. J. (1995). *The multifactor leadership questionnaire – 5x short form*. Redwood: Mind Garden.
- Bass B.M., Bass R., Bass R.R. (2008). *The Bass handbook of leadership: Theory, research, and managerial applications*: Free Pr.
- Brink, P. & Wood, M. (2001). *Basic Steps in Planning Nursing Research. From Question to Proposal*, Boston, MA, Jones and Bartlett Publishers.
- Casida, J., & Parker, J. (2011). Staff nurse perceptions of their nurse manager leadership styles and outcomes. *Journal of Nursing Management*, 19, 478-486.
- Clavelle, J.T., O'Grady, T.P., Drenkard, K., (2013). Structural empowerment and the nursing practice environment in magnet1 organizations. *J. Nurs. Adm.* 43 (11), 566–573.
- Failla, K.R. & Stichler, J.F. (2008). Manager and staff perceptions of the manager's leadership style. *Journal of Nursing Administration*, 38(11), 480-487.
- Gill, R. (2006). *Theory and practice of leadership*. Thousand Oaks, CA: Sage.
- Johnson B., & Christensen L.B. (2007). *Educational research: Quantitative, qualitative, and mixed approaches*. Thousand Oaks, CA: Sage Publications, Inc.
- Keegan, A.E. Den Hartog, D.N. (2004) Transformational leadership in a project-based environment: a comparative study of the leadership styles of

- project managers and line managers* 1. *International Journal of Project Management*. 22(8):609-17.
- Leithwood, K. (2001), School leadership in the context of accountability policies, *International Journal of Leadership in Education*, 4(3), 217–35.
- Lowe KB, Kroeck, K. G. & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: a meta-analytic review of the MLQ literature. *Leadership Quarterly*.7(3):385-425.
- McGuire, E. & Kennerly, S.M. (2006). Nurse managers as transformational and transactional leaders. *Nursing Economics*, 24 (4), 179-185.
- Polit D.F. & Beck C.T. (2004). *Nursing research: Principles and methods*. 7th ed. Philadelphia: Lippincott, Williams & Wilkins.
- Polit, D. F. & Beck, C. T. (2008). *Nursing study: Generating and Assessing Evidence for Nursing Practice*, Philadelphia, Lippincott Williams & Wilkins.
- Schreuder, J., Roelen, C., Zweeden, N., jongsma, D., klink, J. & Groothoff, J. (2011). Leadership effectiveness and recorded sickness absence among nursing staff: a cross-sectional pilot study. *Journal of Nursing Management*, 19(5), 585-595.
- Squires, M., Tourangeau, A., Laschinger, H. & Doran, D. (2010). The link between leadership and safety outcomes in hospitals. *Journal of Nursing Management*, 18, 914–925
- Suliman, W.A. (2009). Leadership Styles of Nurse Managers in a Multinational Environment. *Nurse Administration Quarterly*. Vol. 33, No. 4, pp. 301–309
- Tyagi, A. R. (1975). *Public Administration*, Delhi, Atma Ram and Sons.
- Walumbwa, F. O. & Lawler, J. J. (2003). Building effective organizations: transformational leadership, collectivist orientation, work-related attitudes, and withdrawal behaviors in three emerging economies. *The International Journal of Human Resource Management*, 14(7), 1083-1101.
- Zagorsek, H., Dimovski, V., & Skerlavaj, M. (2009) Transactional and transformational leadership impacts on organizational learning. *Journal for East European Management Studies*. 14(2):145 - 65.
- Zaleznik, A. (1993) Managers and leaders: Are they different. *Contemporary issues in leadership*. 3:36-56.

MORAL RIGHT IN ISLAMIC LAW

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Abstract

The issue of intellectual property rights concerns various aspects, as well as the generous (moral copyright) legal thoughts and legal regulations at the legislative situation within a short period of time. However, was this the right roots derived from the revealed legislation confiscation for centuries? Allah says in the Holy Qur'an: "Indeed, it is We who sent down the Qur'an and indeed, We will be its guardian" (Surat Al-Hijr verse 9). We should save Allah's Qur'an from every twist and modification, and the Qur'an sources of Islamic law. This is because it is eternity at every time and place. However, we reassure those who are tempted to doubt the greatness of this religion and its universality by providing infallible proofs.

The idea of this research is to establish the copyright moral rights in Islamic law, by taking the advantages and indications which is inspired by the Qur'an and the Sunna. Furthermore, we also considered sahaabah's (Prophet Muhammad companion) unparalleled effort in checking hadiths science, the attributes of the Prophet, the greatest proof of coverage, and the immortality of this religion which is Allah.

Keywords: Intellectual property, islamic law

1. Introduction

Islamic Sharia often results in either a positive or negative consequences. Intellectual effort is legitimate, and this gives the author the authority to include the meaning of the word "Right" (Al sayed R., *Protection of copyright and related rights under Syrian law on intellectual property*, for detail see WIPO/IPR/DAM/03/DOC.3).

The concept of Right (Abu El-Fadel J., 2003) has different meanings based on the perspective it is being considered from. Thus, the author will restrict himself to some of the meanings which serve as the content of this research. Consequently, right is a duty to be sure of. Right (in the terminology) is the competence of the law empowered under authority or commissioned by the author, and it has a value. One of these rights is

copyright known as moral right. Hence, a note of the terminological concept signifies the right to Islamic law (Babelli M., 2006).

Firstly, the requirement for the approval of the legislature for this jurisdiction to look at Sharia is the basis of this study. It is the establishment of the moral right of the author in the Islamic law based on sources. However, this is the content of the first section of this paper. Also, in this section, the researcher will address the nature of copyright in Islam as described by the legislative development and concept, together with the basis for this right.

Secondly, the author considers the right to authority and the right to property. In the second section of the paper, we would discuss the result of the nature of this right, which is entitled “The nature of the moral right in Sharia and its properties”.

However, we hope we have addressed this study on what is moral right in Islam and the comprehensive nature of the briefing.

2. Preamble

Some scholars believe that both the Financial and Moral rights of the author should be protected in Islamic law by Al-Jarrh and Al- Ta’deel science (Alnajjar A., 2000 p24). Thus, this was observed during the third Islamic era.

The researcher did not agree to the viewpoint that Islamic rules are derived from the Holy Qur’an and Sunna. Therefore, author rights should be protected through the Holy Qur’an and Sunna, which will be demonstrated through this study.

Sharia provisions are derived from the Holy Qur’an and Sunna. However, we must consider this right on the basis of the Qur’an before returning to the Sunna and the authors. Allah says “Recite in the name of your Lord who created man from a clinging substance. Recite, and your Lord is the most Generous- Who taught by the pen ‘(Surat Al-‘Alaq, verses 1-4). Anthropology Al-Alusi said that these (Sura Al-Alaq) was the first words of the Holy Qur’an (Al-Alusi M. 178 Ah, P. 3). Thus, he addressed Allah and Prophet Muhammad (peace be upon him) through the question: what are they reading? and what is the idea and proof of these verses?

Since reading is based on understanding what was written, writing is the main method of expressing what is in the mind or thoughts (Ibn Khaldun). Writing brings the author’s ideas into existence. Thus, the moral right of the author is often protected through writing.

Can one read without writing? Obviously, one cannot read without writing. Thus, writing reflect the physical appearance of the copyright moral, since writing is noted as a method to express what lies behind thoughts and

meanings; and the meanings of such ideas wandering in a sake columnist, expressed his moral copyright form.

Writing has a different interpretation to elaborate on the previous verses, (so that Allah created all things and does not make you incapable of reading) (Tantawi M., 1998, P453; Abu Ja'far T., p163).

From this point, we can establish that copyright moral embodied in writing has been referenced in the Qur'an, and Prophet Muhammad (Peace upon him) established a general rule in Islamic law. However, all of this is related to the importance of science and its place in Islam.

Islam is against lying falsely and promise punishment to those who lies falsely in the day of doom. Thus, the Holy Qur'an in many verses speaks against lying falsely saying: "Woe that Day, to the deniers" (verses 15,19,24,28,34,37,40,45,47,49, Surat Al-Mursalat). Also, it promised severe punishment to people who lie about Prophet Muhammad (Imam Ibn Alhjjaj M. 2005 P5).

All the novels and scholarly research span from the companions and their exploration of the narrators. All of this, points to the recognition of the moral right of the author to check a proposition of his companions.

3. The concept of the Moral right of the Author in Islamic law and its Elements

In order to access and clarify the meaning of the moral copyright, we will divide this section into two parts. In part 1, the copyright moral definition in Islamic law will be studied, while in part 2, the copyright moral elements in Islamic law will be discussed.

4.1. Definition of the Moral Right in Islamic law.

"The source of Islamic moral judgment is basically on etiquette and behavior. In the past, the cost of paper and ink and efforts in copying was been paid for, but not the creativity or effort of the scribes. Thus, the making of copyright in those ages does not carry any meaning beyond the competence of the owner, as praise earned rate is acceptable and the defamation is denied" (Ablouti M. 2001).

Prophet Muhammad (Peace be upon him) urged Muslims to unfurl the science, as all Muslims are required to notify and published Qur'an and Hadith to others who are not informed (Al-baghwi M. 1983. P289).

However, we can define the moral right as: "the author's effort in the classification of the functions of literary merit and respect". While retaining the right to modification and revision of this definition, we can draw elements constituting this right in the next section.

3.2. Elements of the Moral Right of the Author in Islamic law

The elements of moral right in Islamic law include the Right of publication and the Right of modification (Al-najjar A. Op.cit P53).

3.2.1. Right of Publication

The right to publication includes:

- The first district is a published content and that there is no law in the Islamic law that deny the author of his right to choose how he wants to publish the content.
- The second district regarding their right to bring his knowledge came into existence, but there are controls on Islamic law that prohibit this right. Allah says “Those who hide the clear verses and the guidance We have sent down after We have clarified them in the Book for the people shall be cursed by Allah, and cursed by the cursers” (Al-Baqarah, verse 159).

3.2.2. The Right of Amendment and Revision

In the right of amendment, the author enjoys the exclusive right to modify, change and amend his views. This right of modification could result from change in culture or environment, or what is more suitable to people. However, when Omar Ibn Alkhattab (The second Prince of Muslims) was asked by some people the reason he changed his view, He said: time and ideas changes (Al-Drami, Al-Okail K., 2004 p188).

4. The Nature of the Moral right of the Author and its Properties

Although we have noted the concept of the right to language and terms, we did not consider the type of right. In addition, we did not show the place of other rights. Thus since the aim of this study is to know the nature of the moral right of the author in Islamic law, we must address this concept in two fundamental issues:

First: In divisions in Islamic law, the property is on the use of money; and there is no doubt that physical objects can be acquired through the use of money. However, is it non-physical things (moral) that are subject to ownership? In order for us to answer this question, we must discuss this idea. Through the divisions of the rights, we can see how adapting Sharia will help us to determine the nature of the right. Thus, we will discuss this in the first part of this section.

Second: If we reach the first part of this section in ascertaining the nature of this right, the result that distinguishes it and that extends from the nature of the right, we will have a mechanism under part 2 of this section beside the characteristics of the moral right in Islamic Sharia.

5.1. Divisions of Rights in the Islamic Law

Islamic jurisprudence divides rights into several types according to the different considerations:

1. As the right holder: It is divided into three types:-
 - The right of Allah: This type of rights cuts across the nations and not to particular individuals.
 - Human right: This right is to an individual or specific group.
 - Common right: Right people have in common or have together.
2. As the supporting force: This right divides Muslim scholars as the binding force into two types. They are the right of judicial and religion rights (Al-Anzawi A.)
3. As an object: It is divided into two parts: personal right (as determined by the law of another person) and real right (which is determined by the law of a person towards a particular right) (Al-Asiri A. Op.cit P185).
4. As the nature of the object: It is divided into two; financial right and moral right.

Furthermore, Mohammed Al-bouti observed that moral rights are designed in an idiosyncratic term which corresponds to financial rights. The main right of the seller is to take the fee of the object he sold, while the main right of buyer is to take what he bought.

Beside the financial right which is applicable to tangible object, there is moral right which is applicable to intangible things such as the Right of pre-emption. The right to sue, the right of divorce, the right to paternity, and other rights related to human dignity is equivalent to financial rights. Thus, it emerges based on the viewpoint of Islamic Jurists (Al-Bouti M. Op.cit).

Al-bouti indicates various substantive points. He sees that the rights related to human dignity are moral rights, and the basis for the distinction of moral rights is the essence of the author's rights to be content. Therefore, the ratio of the workbook is a manifestation of respect for the dignity of the author. Given the copyright, moral right is distinct from financial rights and cannot be inserted.

We also find that this right is one of shared rights to suspend the right of the nation. Thus, Allah Almighty says” Those who hide the clear verses and the guidance We have sent down after We have clarified them in the Book for the people shall be cursed by Allah and cursed by the cursers” (Al-Baqarah verse 159).

Consequently, people have the right to suspend, allow the author's right to be in proportion with the non-aggression, and distort and misrepresent this clarification which is really common in Islamic law.

This right entails the supporting force on both sides, a religious side, as Allah says: "Are they equal, those who know and those who do not know? Only those with minds will remember" (Az-Zumar verse 8). The point of this verse is that Allah gives a place in the world for scientists, and distinguishes them from those who do not know.

Consequently, Islam has devoted religious penalty to those who violate this right as indicated earlier. Therefore, the assault on the workbook through misrepresentation or impersonation is a cruel lie forbidden in sharee'ah, because lying here is very bad (Al-Najjar. A Op.cit P.270). It might also be the penalty of the words of an owner; hence, this is legally punishable due to the theft of an author's thought without proper citation or referencing. This is so-called scientific theft or plagiarism (ibid. P269).

Penalties in Islamic Sharia also have a judicial side and it is discretionary. Hence, we can see that Islamic law recognizes moral rights as opposed to financial rights. Also, it recognizes the moral right in the ownership and his circle of properties as the ownership of the utility.

5. Characteristics of Islamic Law Copyright

We found through research on the nature of the right that moral right is the ownership in accordance with the concept of capacity service ownership in Islamic law. In addition, we found that it contains some things in common e.g. Allah and people, and include religious and judicial sanction. What are the characteristics that could be draw inspiration from nature? Here, we can derive the following properties of moral right:

- 1- **The right does not end with death:** Prophet Muhammad (peace be upon him) says: "When a human dies, his work would be cut-off except three things: ongoing charity or benefit, praying for forgiveness, and his usefulness and benefit to science" (narrated by Al-bukhaari). And this is evident in modern anthropology constant fare of death and the repeated moral right of the author, in the sense that this knowledge remains even after death. When an author dies, his work will continue. However, the continuity of this work means that his work was not cut-off and is an ongoing charity.
- 2- **The right of inheritance:** This property derives from the fact that this right is personal and proves to the author. Since the author right is intangible as well as his personal right (such as the right of name), so his personal right is not inherited.
- 3- **The right does not involve with prescription:** Nonprescription rule is derived from Islamic jurisprudence which is based on the rule of legality contained in the Hadith. Prophet Muhammad (peace and blessings of Allah) does not vitiate the right of

Muslim with the passage of time (Al-jbouri Y., 2003, P641). Consequently, an author has the right to be content so that this moral right can become outdated with the passage of time.

6. Conclusion

We have tried through this dedicated rooting of the moral right in the Islamic Shariah, since our revelation to master creation. Further, we adapted to the moral right of Islamic law, and discussed the nature of the right and the nature of the characteristics emphasized by the moral right of the author.

At the end of this research, it can only be said that immortality, coverage, and the greatness of this religion has a say to his companions. In addition, it protects them from any aggression (denatured or quotation) which constitutes theft of scientific thoughts of authors.

Dr. Fahmy M believed that the spirit that dominates the Islamic legislation refuses to acknowledge the rights of authors. However, the assassination of a work that is legal is rejected by Islamic Sharia law and by the words of the Prophet (do no harm).

7. References

- Abu El-Fadel J., Lessan Al-Arab, library.islamweb.net.2003.3
- Abu Ja'far al-Tabari, Jami statement on the interpretation of the Qur'an, knowledge House, Beirut, part (28-30)
- Al-Alusi M., The spirit of meanings in the Qur'an and the great seven disproportionately, 178 Ah
- Al-Anzawi A, Moral rights in Islamic law, Arabic document and its role in community service, intellectual property rights and methods of protection doctrine and law, published on the site <http://www.arabcin.net/arabic/nadweh/print>
- Al-baghawi Abu Mohammed, Explaining the Sunna, The Islamic office-Damascus, Beirut, 1983.
- Al- bouti M., A symposium on cultural and Social Center of the Dawa mosque in Paris from 13 to 14 January 2001, for the particular site <http://www.bouti.net/article.php>
- Al-jubouri Y., A brief explanation of the civil code, part II, House of culture, Oman 2003, p. 641
- Al-Okail K., Legal protection of patents, industrial designs, Arabic League for Security Sciences, the threshing machine and the search for Center, intellectual property rights, Riyadh, issue 336, 2004, p. 188.
- Al-qurtubi A., Li Ahkaam al-Qur'aan, modern House, Cairo, part I, 1, 1994, .
- Babelli M. A, Journal for monthly Darul Uloom Deoband, India. Motorcars 1427. Issue: 12, year: 30 Drami in his Sunan, Baab men left thing and change 1/162

Fahmy M., Moral rights in Islamic law, available on:

<http://www.barasy.com/index.php?name>

Hashanah S., Protection of copyright and related rights under Syrian law on intellectual property, available on: WIPO/IPR/DAM/03/DOC.3

Ibn Al-Hajjaj M. Sahih Muslim, scientific library, Beirut, Lebanon, first edition, 2005,

Tantawi M., The interpretation of the Quran, Egypt's Renaissance Center for printing and publishing, 1998 vol. XV

Zidane A., Entrance to study Islamic law institution message, Beirut.

IRAN AND THE UNITED STATES AND THE NEW MIDDLE EAST SETTLEMENT

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Abstract

This study offers an analysis about the motives of the regional settlement between Iran and the United States in the Middle East. In addition, this paper examines the decline of American hegemony both globally and regionally which in turn ended the unipolar era of the international system. The study claims that due to this radical shift some regional powers have emerged. In doing so, this paper highlights the strategic changes that paved the way for such adjustments, which began at the fall of the Iraqi and Afghan regimes. As a result, this has formed the case of a regional vacuum due to the absence of an active Arab role and the failure of the US war on terrorism. Therefore, this study submits that the political landscape in the region and the decline of the US are contributing variables to highlighting Iran as a first alternative for the United States in the region. In fact, the ease in the relations between Tehran and Washington is the result of the overall changes that have swept the region. This is clear evidence for the emergence of Iran as a first and an alternative power to the United States. However, this shift and the new balance in the relations does not absolutely represent Iran as an alternative for America in the region but rather its emergence as an absolute power due to its military expansion and influential politics in the region. This paper argues that the expansion of the Islamic state's geographical extent in Syria and Iraq as well as the failure of the international coalition led by the United States to end this expansion marked a turning point and an urgent need for US administration to accept Iran as a regional power. Indeed this shift is marked as one of the least viable solutions out of the Syrian and Iraq deadlock, and as a partner indirectly in the international war on the Islamic state. In short, the paper concluded that the United States' influence in the Middle East region was declining slowly in the light of the expansion of Iranian influence in the region and different parts of Africa and Latin America. This has created an appropriate international atmosphere to accept Iran's presence in the Middle East as a substitute for the United States. This emergence of the new power may pave the way to a new sectarian violence.

Keywords: Hegemony, power, Islamic state, regional

Introduction:

The international system witnessed dramatic changes, which in turn affected its collapsed structure after two and a half decades of the Eastern bloc fall, the features of a new international system started to appear due to a series of retreats in the hegemony of the United States as a single dominant force, which forced the US to sign settlements.

The consequences of the United States Leadership's retreat, Chaos and Crises in International System as well as the Middle East, the rise of the Iranian regional influence in the Levant will lead to settlements between two contradictory forces (Iran vs. United States). This in turn will strengthen the United States acceptance for the emergence of a new regional power in the most attractive arena since this arena has been a strategic area for the U.S. interests.

Geneva Convention is a quantum leap in the history of the Iranian-American relations after decades of the radical speech control over their political one. The radical speech is replaced by a conciliatory one, which in turn seeks an international solution to ensure Iran's right to nuclear weapons, and the right of the West to adopt international procedures concerning the nuclear program of Iran in order to calm the international community, the United States and its allies in particular.

This convention facilitated the process of signing regional settlements and indirect partnerships in the war on terrorism, Syria, Iraq and Yemen, which has been in the midst of the international and regional compromises. There are varieties of changes that provided a forum for a serious discussion about the international and regional developments after taking into consideration all the internal and external factors that affect its frame. The first factor is the Change in the American response because of its failure in the war on terrorism. Second, the success of Iran in filling power vacuums in Syria as well as its expansion in Tikrit, which is one of the main obstructions of the Islamic State in Iraq. Third, Iran is spreading its influence with the rise of the Houthis in Yemen with an international and American silence.

The geographic expansionism of the Islamic State in Syria and Iraq, and the failure of the international alliance led by the United States to stop this expansion are stated to be an urgent need for the United States to accept Iran as a regional dominant force. Furthermore, it highlighted the importance to accept Iran as a solution for its retreat from Syria and Iraq and an indirect partner in the international war on the Islamic State.

Theoretical Framework of the study:

The political settlements between Iran and the USA in the Middle East have created a wide controversy between academics and thinkers at global and regional levels. This happens in the light of Iran's policies that have been largely successful in the Levant, giving itself an unprecedented degree of influence there at the expense of the United States, and after entering the competitive arena because of the increasing conflicts in Syria and Iraq.

In order to understand the negotiations over the relationships between Iran and the USA, it should be noted that there are many theories that explain this converting. According to the realist theory, the international system is concerned with states that always act in accordance with their national, economical or political interests. Therefore, the more powerful the state is the less wars and violence will arise. Based upon this theory, Iran having a nuclear weapons capability can potentially increase its influence as well as avoid military confrontation. Besides, America sees that the military confrontation with Iran will threaten its influence in the Middle East.

Alliance formation theory (Balance of Power) is connected with relationships of security cooperation between two or more sovereign states in order to avoid dilemmas. In this view, Iran regional and international alliances have magnified the urgency for diplomatic solutions. In addition to the balance of threat theory, which maintains that attaining the military and nuclear capabilities is the most important concern of the countries that is defined as power plus perceived aggressiveness. The Iranian threat and the fear it produced by attaining these capabilities became a powerful driver for establishing a balance threat in order to seek survival in the international system.

Theory of games assume that the situation is a win-lose problem, and they respond very aggressively, or competitively, trying to get as much as possible for themselves, and consequently as little as possible for their opponents. This tends to increase the opposition of the other side, cause the conflict to escalate. A cooperative conflict, on the other hand, can often improve even win-lose situations, as the parties can learn more about what each needs and then determine together the fairest way to cooperate.

The last theory is the international negotiations, which examines negotiation and its research methodology. In his book, Mohamed Badr Aldin talked about the theoretical methodology of international negotiations. He assumed that there are four dimensions, which offered some explanations about the international negotiations process. The first dimension defined negotiations as collection of processes in which two or more parties with conflicting and compatible goals and interests and seek to reach agreement on a transaction by a swap. The second one considers negotiations as a

strategic interaction between two parties. This interaction is defined as a collection of behavioral patterns, which is expressed by individual parties that are cooperating to make decisions. The third one considers negotiations as a joint decision-making process in which points of views are used in order to reach an agreement. As for the last dimension, negotiations are defined as a bargaining process between two parties seeking to reach an agreement to settle a matter of mutual concern or resolve a conflict.

The history of U.S.-Iranian relationships after the arrival of the Islamic Revolutionary to Government:

Throughout recent history, the United States and Iran have engaged in a diplomatic relationship. Relations have been up during the reign of the Shah, but mostly down since the 1979 Islamic Revolution and subsequent hostage crisis at the U.S. Embassy in the Iranian capital. Therefore, the USA has imposed some of the unilateral sanctions on Tehran like the American's sanctions, collective sanctions like the European's ones and the international sanctions, which are imposed by the United Nations Security Council.

The hostage crisis at the U.S. Embassy in Tehran signals a thaw in the U.S.-Iranian relationship. As a result, comprehensive sanctions were imposed against Iran over its nuclear program. During Ahmadinejad terms in office, the relations between the two countries witnessed many changes, which weaken the case for better relations. This period is characterized by the severe aggression against the West, which was in turn followed by the USA's radical speech that is called "Axis of Evil". The speech describes Iran as an active state sponsor of terrorism, which threatened the American's interests as well as its allies all over the world. Relations continued to be negative to reach the threat of military invasion against Tehran. The international response to Iran's nuclear program was strong because of the Iranian revolution that is raised in 2002 when an Iranian opposition group reveals that Iran is developing nuclear facilities at Arak.

Diplomatic relations between both countries started to get better after the election of Hassan Rouhani, the Iranian's President, who wanted to rebuild diplomatic relations with Western powers, and deal with other countries on the basis of mutual interest. Since Iran is an active member in the international arena because of the series of changes that happened in the Middle East, which help Iran to be a fundamental and affective player in the area, especially after the evolution of Syrian conflict with Iraq.

The motives that contributed to the normalization of relations between Iran and the US after the crisis of the nuclear program:

The absence of the Arab role in the Middle East, Iran's flourishing influence in Syria and Iraq, the Chinese and Russian growing influence,

which happens due to the American retreat from the global stage are all strategic factors that play a vital role in creating regional and Middle Eastern compromises between Iran and the US.

The American Retreat from the Middle East:

World War, in which George Push invaded what is called "terrorism" after the historic events on September 11, is formed a compound curve in the military policy of the US, and speeding up the collapse of the American Strategic Society because of it's failure in Afghanistan, Iraq and Syria wars in two rounds. The first round is represented by the destruction of two states, and spending 6 trillion Dollars. The other one characterized by the invasion of the Islamic State, which is failed after the expansion of the Islamic State at the expense of the American's allies, despite of building an international alliance that consisted of almost 50 states, which participated in air strikes that invaded the Islamic State's influence which in turn failed to achieve any tangible progress. Hence, U.S. military technological superiority is no longer assumed to the dominant force in the Middle East due to internal structural factors. The internal factors is caused because of the retreat of the American economy, while external ones happened due to the retreat of the American's influence and dominance in at the global and the regional levels because of the withdrawal of the US's military from the two states with no results. Based upon the previous perspective, it is clear that Iran is the single most dominant force in the region that ensures the regime's survival and without any competitors to fight Iran in Syria and Iraq, which will bring it considerable achievements in these conflict arenas.

Besides, the United States no longer needs access to Middle East under any foreseeable circumstances is defined by the coming together of a number of factors. The change in Washington priorities and increase its concern in East Asia according to a document that issued in January 2012, and the strategic changes in Iranian-American relations, resulting in the advancing of Iran across the Middle East. In the emerging of the Iranian influence, these primordial identifications have come to the fore. Lastly, the absence of the United States concern in the Middle East is happened due to US shale revolution "shale Gas", which contributed to the loss of the Gulf Oil. The availability of large quantities of shale gas will further allow the United States to consume a predominantly domestic supply of gas, which means to be free of the daily Middle East affairs duties that are imposed through the efficiency of the Gulf Oil. It also considered a focal point for the Asian Policy.

The Growth of the regional and the international influence of Iran:

Iran holds a position of immense strategic importance because located in the most important strategic region in the world. It is, in effect, a vital link between Asia, the Middle East and Europe. Besides, it is located between the Arab Gulf in the south and Russia in the north. Besides, its proximity to the Orient, in which there is oil wells, increases its importance. In addition, Iran's location along the east-west trade route and oil wealth has raised its regional position, and allowed it to hold much more significance.

Iran's geographic position plays a significant role in its political and strategic presence among the great states. It also affected its rule as a regional player especially after the Islamic revolution in 1979, which considered being a quantum leap in the regional and global emergence of Iran, and Iran is no longer subordinated to the US during Shah Government.

After the failure of the American's Administration in its war against terrorism and the retreat of its global and regional hegemony, Iran expanded its influence throughout the Middle East taking advantage of the crisis in the Levant and its regional alliances in order to be one of the most prominent players in the arena. Moreover, the international atmosphere after Geneva Convention paved the way to the emergence of Iran in the light of the American and Israel's fears.

America's war against terrorism contributed to the reinforcement of Iran's position as a regional force. Washington provided an opportunity for Iran to gain a regional and international position after the collapse of the Afghan and Iraq regimes, which were a direct threat to Tehran. Therefore, Iran consolidated its dominance in Iraq and Lebanon. Iran is also became the dominant power in other Arab states; Gaza, the Middle of Asia, Africa, and Latin America. The fall of the Iraqi regime and America war in Iraq are vital factors that helped Iran to be a dominant force and political indicator in the region.

Iran's endeavors to possess the tools of the military, political and the economical hegemony and influence have not been stopped during the Islamic revolution in 1979 till these days. According to a report issued by the Pentagon on August 2010, Iran will have an army with 20 million soldiers. Moreover, Iran is supporting groups, organizations and states that threaten the American's interests and allies, which means that Iran is undeniably the most influential external force across the Middle East.

On the other hand, Iran does not deny its main political clear goal, taking into consideration that it is a superpower with huge geopolitical capabilities – **population** (75 million people), **area** (1,6 square kilometers), **and it saves almost 30 million Dollar from oil and gas wealth every year.** Moreover, Iran has an ancient Persian civilization with a huge conventional

military force. In order to have all the elements of the superpower state, Iran must have *nuclear weapons* capabilities.

There is no doubt that Iran's growing regional expansion and the spreading number of its political alliances allowed it to extent its influence throughout the Arab world, and meet its strategic interests because of its regional and international force in the Middle East without competitors. This happened after the withdrawal of the United States administration from the Levant as a direct player as a result of its military withdrawal from Iraq.

The absence of the Arab leading role:

The absence of the Arab leading role regarding US's influence was not happening because of the absence of the Arab dimension caused by the Arab nationalism throughout the past decades. The absence of such a role caused by the political and ideological changes of the Arab communities, which in turn shifted from nationalism to the Islamic part. Also, the absence of Russia from the regional arena for more than two decades resulting granting *America* the legitimacy to spread its *hegemony* over the entire world; and the Gulf war, which divided the Arab response into supporter and oppositionist.

Changes that affected the structure of the regional and international system revealed the Crisis in the Arab World's Leadership. The absence of the regional stability, the divisions in the Arab world, the regional raging conflicts are all a real dilemma of an active Arab role in the region resulting in the division without focusing of the common denominators in order to get out of the recent crisis.

The Arab region did not witness the emergence of a leadership for its interactions except by the existence of a case of solidarity regarding some issues like the Palestinian one. Patterns of the emergence of the Arab leadership characterized by the hegemony of an Arab State to occupy the system or the distribution of this system between two states or more through multiple periods. The Arab situations that were ended in the first decade of the second millennium, is followed by a serious of security, political, economical, cultural, American and Israeli penetrations.

The hegemony of the United States over the Arab's decision-making process resulted in the subordination of the authority foundation in the Arab region to the United States without taking into consideration the Arab priorities. These priorities are exhausted from the burdens of division due to the blind subordination and the absence of an independent Arabic program in order to lay the foundation of the missing regional stability throughout the emergence of the era of Arab dependency.

The weakness of the role of the Arab League in finding a solution for the regional issues is caused by the retreat of the Arab role in general, and its

subordination to the ruling regimes in the Arab countries. The role of the Arab League is limited to provide a political cover regarding the foreign interventions in the Arab states that witnessed conflicts and crises like Syria, Libya and Iraq with no consequences about finding a solution to the Arab response.

The absence of the Arab role led to the emergence of foreign players in the Arab crises, growth of the Iranian influence in Syria and Iraq and the acceptance process of the United States for the rise of the Iranian leverage in the region as the beginning of a settlement in the region between Tehran and Washington.

Geneva Convention and the beginning of the coup in the Iranian-American relations:

After passing almost three and a half decades of international sanctions on the Islamic Republic of Iran, which in turn revealed the solid, will of this State, these sanctions have collapsed to bring an end to the isolation of Iran, much needed relief from international sanctions, and a new chapter in U.S.-Iran relations.

Relations between Iran and the United States improved dramatically due to a variety of factors. One of them is the election of Barack Obama as a president for the United States. After taking office, President Obama declared his determination to build confidence among all parties and pave the way for comprehensive talks on all aspects of Iran's nuclear program. Talks also carried the prospect of a broader dialogue on a wide range of issues regarding the formulation of understanding for their enmity.

Iranian presidential election, 2013 played a vital role in normalizing Iran's relations with the United States. President Rouhani, who won these elections, has made the climax of a dramatic shift in relations between the United States and the Islamic Republic of Iran, which in turn ended the hostility between the two forces and pave to have an interim Geneva Convention.

Geneva Convention considered to be a shifting point in the history of the Iranian-American relations after hostility for decades. It is also considered to be an international confession in which Iran is a nuclear force. This is reflected Iran's position both regionally and globally. Geneva Convention provided Iran with the right to have 20% of its *reserves* of *uranium*. This comes within the conditions of Iran's sovereignty and its right to have nuclear technology.

Geneva Convention was created as a result of the international failure to weaken Iran throughout imposing tough sanctions on its regime. On the other hand, Iran has faced sanctions from the US by a strategic scheme,

which is based on setting up alternatives for its economy to suppress these sanctions or reduce their impacts on its economy and animal life.

There is no way to understand the equation of Geneva Convention without understanding the American restricted options in depth after the regional and the global changes. In his book, *Strategic Vision: America and the Crisis of Global Power*, Zbigniew Brzezinski, an American political scientist and geostrategist, argued that there is no military solution to Iran's problem. He also stated the importance of engaging Iran in the regional settlements.

By this logic, the United States seek to normalize relation with Iran in order to withdraw from the Middle East with no losses, keep its old allies and build new alliances with partners, who were enemies in its war on terrorism these days.

The Iranian and the American Policy in the light of the increasing power of the Islamic State in Syria and Iraq, and the threat of the regional security and Iran's interests:

The power of the Islamic State and its military increased in Syria and Iraq, and some scattered areas in Africa and East Asia. The failure of the international alliances led by the United States to stop the Islamic State's geographic expansion forced the international parties to accept Iran as a regional force, a solution to withdraw from the Levant and an indirect partner in their international war on the Islamic State.

The American Failure in its war on the Islamic State:

The withdrawal of the U.S. military from Iraq and the Sectarian war rise in Syria and Iraq have increased the influence of the Islamic State, and made justifications to create an atmosphere to expand its influence at a regional level due to its inflammatory speech in the media.

After its withdrawal from Iraq, The United States occupied the region once again and formed an international alliance, which included more than 50 foreign and Arab states in order to destroy the Islamic State. The goal that was set by the United State did not achieve any goals, but the influence of the Islamic States has increased more and more everyday, and its speech harmony regarding what is called "Sectarian War" that happen in the regions.

Washington's World War 1 on terrorism or what is called "al-Qaeda-Islamic militant organization" after September 11 attacks has no consequences, instead the support as well as the geographic expansion of Al-Qaeda have expanded. Although the number of its fighters did not exceed hundreds and the restrictions over its expansion in the borders of Afghanistan, the success of al-Qaeda-Islamic militant organization is a tragedy for the United States administration in the equation of triumph.

Today, World War 2 on the Islamic States is facing the same conditions of the World War 2 on al-Qaeda-Islamic militant organization. Factors of failure shaping the new war on terrorism are more than the ones of the previous war on al-Qaeda. Taking into consideration what is happening in the world, the strikes of the international alliance could not have the ability to size the geographic expansion of the Islamic State, and instead the Islamic State continued its battles in Syria and Iraq despite of the heavy air attacks and Iran's air military intervention.

The government of Abu Bakr al-Baghdadi, a successor to the Islamic State previous leader Abu Omar al-Baghdadi, has contributed to a major development concerning the work of its variety state agencies, the formation of its institutions and their accurate and specific tasks. These institutions combine the nature of the institutions in the modern State and its tasks on the one hand, and the nature of the Islamic State and its working conditions that are described as ambiguous and complex on the other hand. That's what made us to be in front of such a strange case, especially the case of the fusion between the State's image and the secret organizations at the same time. In this way, the Islamic State is an exception it terms of its institutions and what is happening all over the world, which resulted in the energy and power of the Islamic State to face the international alliance.

The complexities of regional conditions and the overlap of its denominations, which were presented as a representative for the Sunni to challenge the Iranian and Western aggression, have deepened the emergence of the Islamic State in Syria and Iraq, and expanded its public support resulting in its emergence as a central party in the sectarian proxy in the near future.

The rising costs of the American war on Islamic State may create an American internal refusal to continue the war, which will lead to an end in favor of the Islamic State. A report issued by one of the US research centers demonstrated that the costs of the military campaign led by the United States against the Islamic State in Syria and Iraq is almost 13-22 billion dollars a year in the case of an escalation in the military actions.

The factors that contribute to the failure of the international war on the Islamic State started to be clear in the light of the decline of international choices regarding air strikes without any ground intervention. This in turn will weaken the chances for an international alliance success to eliminate the Islamic State because the Islamic State is using unorganized military mechanisms.

The Iranian-American war against Islamic State:

The acceptance of the United States and Iran to establish diplomatic relations is reflected on the sensitive files in the Middle East. The most

dangerous one of them all is the war on the Islamic State, which is considered to be the deadliest war in human history.

The major turning point in the development of polices between the two states in the Levant was the drafting of the Geneva Conventions. This resulted in the forge of serious partnership in the war on terrorism in order to dismantle and fight the Islamic State in Syria and Iraq that is considered to be a central enemy to the states' interests in the region.

The U.S. and Iran have moved into a state of détente that is resulted in the deletion of Iran and Hezbollah from the list of terrorists' threats of Washington annual security report, which noted to Iran and Hezbollah's efforts in the war against the Islamic State.

This step comes drastically with Iran's movements in Syria and Iraq. This happened because of its battle in Tikrit that led by the General Qasim Sulimani and the emergence of the United States as a central party in the battle. This emergence came up as a result of the military and the political orders regarding carrying out air strikes, which will show the real partnership in the war on the Islamic State and the understanding between the two nations in some of the core cases in Iraq.

Meanwhile, the U.S. Secretary of State, John Kerry, permitted that "Iran's stepped-up military strikes against Islamic State targets will be positive". All these military and political responses will reflect a state of satisfaction inside the White House concerning Iran's military operations in Iraq, which in turn would contribute to seal future settlement agreements in the region.

Obama's administration has markedly worked to achieve its goals in the Middle East through the formation of international and regional alliances. These alliances will help to achieve their goals at low cost, in cooperation with their allies in bearing the burdens of the future duties of crisis that is similar to the vase in Libya and the international war against the Islamic State (Leading from Behind and sharing the burden with allies).

The expansion of the Islamic State's influence and its threats to the Iranian-Western interests in the region were a new key point to build cooperative relations between the two states, which will begin a new stage of settlements into the theaters of traditional conflicts powers.

Syria and Iraq are circles of settlements between Iran and the United States:

As the conflict in Syria entered its fifth year, the international focus is no longer on the destruction of Bashar Al-Assad's government. The changes, which exhausted the international forces by the rise of the Islamic State of Iraq and the Levant, forced them to change their responses in order to withdraw from the regional crisis with less casualties and consequences.

Declining the importance of Gulf Oil in the American's Strategy has been one of the main motives, which contributed to settlements with Iran, especially after the internal changes that happened in Iran due to the imposed sanctions that weaken the local economy. This in turn has reflected on the internal Iranian policy that described as flexible when negotiating with the West about nuclear weapon. It also reflected on the United States' urgent need to have an alliance to fill the vacuum after its military withdrawal from Afghanistan, a partner in its war on the Islamic State, Syria and Iraq and a strategic alliance of Turkey that started to have an independent response towards the Syrian file.

The factors that will lead to settlements between Iran and the United States do not appear to be limit to the Islamic Republic of Iran, which has continued to pursue a strategy throughout its sphere of influence, using political, economic, and military tools to promote its agenda. Iran's growing alliances in the East and the West have created a new American response regarding the regional equation. The Russia-Iran Strategic Alliance has been one of the most significant alliances that started to play as one of the main competitors against the American hegemony in the regional equation, which has resulted in the change of the American response about the war in Syria. The US decision to free Syria from a tyrannical regime was due to the Russian involvement in the war and its response to the Syrian System, which considered its last favorite battleground located on the eastern coast of the Mediterranean Sea.

China-Russian's growing global influence in the Middle East has been carrying a number of factors that affected the structure of the dominant forces in the region, which in turn reflected on the creation of new settlements on the nuclear issue and the acceptance for Iran's growing influence in Syria and Iraq.

This change came up because of the American retreat from the regional issues in order to rearrange its priorities in the Levant without causing threats to its strategic interests in the region.

Iran's military and political influence in Syria and Iraq is one of the main factors that affect the settlements between Iran and the United States and the nature of these settlements, its shape and context. The most important issue is that the United States did not struggle to stop the Iranian's influence in the region; instead, it supported the influence expansion of Iran by providing Iran's allies with military services in Iraq. Besides, the international alliance led by the United States continued its invasion against the positions of the Islamic States influence in order to degrade and ultimately destroy” Islamic State militants extend into Syria and Iraq.

Based upon the United States' strategic responses towards the Syrian System, and the permission of John Kerry, the Secretary of State, about

America's willing to negotiate with Bashar Al-Assad, the President of Syria, these permissions revealed that the change in the American response was due to the effect of the Iranian-Russian response on this file. This considered as a big challenge to the American's Administration and an instrument to embarrass America in front of its alliances in the region.

The fact the America and Iran normalize their relations caused a huge development, which reflected on the regional arena. This normalization has been made in order to formulate harmonious responses for the war on the Islamic States and end the Syrian crisis, which will be a new beginning to settlements in the Levant in which Iran will fill the vacuum that the United States left.

What is happening now has happened before, when the United States agreed to retreat from Iraq at the end of 2011 according to a security agreement between the new Iraq and Iran, the Middle East has become a region of influence between Iran and the United States' alliances.

The Iranian-American settlements were unforgettable during the war on Iraq and Afghanistan. The new geopolitical scene The new geopolitical scene in the region is paving for new settlements with the regional situation, which started to form itself through the emergence of players but with more influence than before as a result of their military and political victory due to the confession in which Iran is the dominant force in the region.

In this scene, Iran's power system as a developing country accomplished without any competitors in the regional arena. The Arab Gulf States and Turkey are working as inactive supporters in the region according to an international guidance, which will make Iran the single biggest winner from these settlements due to its increasing influence and battles in Syria and Iraq. Furthermore, Iran is an alternative to the United States without making concessions on the role of old allies. Therefore, the American interests required that the Middle East should not be an independent strategic force away from the American influence.

Conclusion:

The decades of conflicts between Iran and the United States ended with the beginning of a new era in the diplomatic, military and security relations regarding their war against the Islamic State. This war has been considered as a dangerous aggressor to the interests of both nations in the Middle East because of its control over Syria and Iraq regions, and the inability of the international alliance to stop its expansion through Damascus and Baghdad.

A variety of motives as well as strategic factors played a vital role in the emergence of Iran as international and regional force at the expense of the retreat of the United States, the world's dominant international force

against the international regional system. This retreat resulted due to China Russia's presence in the theater of the conflict and the support of their allies in the region. These regional and international factors have made significant changes in the nature of the Iranian-American relations to control their war on the Islamic State. This in turn has forced the United States to accept settlements with Iran, which was forbidden for the United States to accept them in the past.

Geneva Convention described as a fertile ground to hold political Iranian-American compromises in the Middle East. These compromises have confined to end Iran's nuclear crisis in a way that will keep Iran as the national dominant force and calm the international community regarding the nuclear program. Moreover, they have also confined to the American's acceptance for Iran's influence expansion in Syria and Iraq in a way that will maintain the good self-image of the United States, which have failed to end the crisis due to the increasing influence of the Islamic State in the regions.

The ambiguous situation in the Middle East, in the light of the growing influence of Iran and the Islamic State, is starting to be clear because of the retreat of the United States from the region because of the restrictions imposed on its interests. That in turn will pave the way for the emergence of a new stage of a sectarian conflict that will lead to a great sectarian war.

References:

List of Arab References:

James E. Dougherty, "*Contending Theories of International Relations*", (Beirut, Universal Institute for Publish and Distribution, 1985)

Zaid, "*International Negotiations*", (Cairo, Shorouk International Bookshop, 1991)

Al-Obaidi, Mohammad, "*A Study of International Sanctions Imposed on Iran*", Journal Regional Studies 8, number 25 2015)

Hamadah, Amal, "*Restricted conflict: The Middle East in the Irannian-US interaction*", (Cairo, Journal International Studies, vol. 50, number 196, April 2014)

Atawi, Fatima, "*The Eurasian triangle and the Iranian nuclear program*", (Ramallah, BeirZeit University, Abu-Lughod Institute 2011)

Saleh, Mohamed, "*American Study: Iraq and Afghanistan Wars cost U.S. 6 trillion dollars*", (Washington: The Middle East, 12541, 30th March 2013)

Motaweh, Mohamed, "*Renewed Priorities: The trends of Obama's Second Administration in the Middle East*", (Cairo, The Journal of International Studies, 1st of July 2013)

Al-Srouji, Mohamed, "*United States foreign policy since independence to the mid-of the twentieth century*", Alexandria, Alex Book Centre, 2005)

Afifi, Jamil, "*The reasons for the growing Iranian role in the region*", (Cairo, The International Policy, 11th September 2011)

Al-Said, Dalal, "*The Leadership Crisis in the International and Regional Systems*", (Cairo, The Journal of International Policy, 196, index 1, April/2014)

Al-Katib, Ahmad, "*An American enrollment: 'the possibilities for the emergence of regional leadership in the Middle East'*", (Cairo, The Journal of International Policy, 198, index 2, October/ 2014)

Al-Marhoun, AbdAlJalil, "*The return of the reformists and the future of Iran's nuclear program*", Al-Dojah, Al-Jazeera Centre for Studies, 2013)

Qandeel, "*The Nuclear Deal is in the Balance*", The Journal of the Middle East Affairs, 146, Autumn 2013)

Eldaba, Ahmed, "*Affiliation: Iran Economy Tools in facing Sanctions*", (Cairo, The International Policy, 1st April 2014)

Abdulhai, Waleed, "*A Revision of a Strategic Vision: American and The Crisis pf Global Power*", Al-Doha, Al-Jazeera Centre for Studies, 11th July 2013)

Abu Al-Ma'ali, Mohamed, "*War on the Islamic state declares to start*", Al-Jazeera net, 20th October 2013)

Abu-Haniah, Hassan, "*Structural construction for the Islamic State in the Islamic State Organization*", Al-Jazeera net, 22nd February 2015

Al-Doweri, Fayez, "*The possibility of failure in the strategy of fighting the organization*", Al-Jazeera net, 14th October 2014)

Dergham Raghida, "*Obama responded to the desire of Iran and Russia in victory*", Riyadh, Al-Hayat Newspaper, 28th January 2013)

Al-Dasouqi, Abu Bakr, "*The Shifts of Power in the Middle East*", (Cairo, The Journal of International Policy, 1st January 2014)

Al-Said, Radwan, "*Obama's Administration and the New Middle East*", Riyadh, Al-Hayat Newspaper, 16734, 27th January 2009)

Websites' Links:

A link for Military areas

<http://www.moqatel.com/openshare/Behoth/Siasia21/TawazonKiw/index.htm>

A link for Military Affairs "Balance of Powers and Balance of Interests"

<http://www.moqatel.com/openshare/Behoth/Siasia21/TawazonKiw/index.htm>

Donia Alwatan, The history of US-Iranian relations. Why The United States cut off diplomatic relations with Iran? What are Rouhani vows to reset Iran's relations with the United States? What are the popular and the international responses? An analytical reading. 28th September 2013.

<http://www.alwatanvoice.com/arabic/news/2013/09/28/441290.html>

Al-Abadi, Said, "Middle East variables reality and future prospects", Noon Post website, 25th May 2014.

<http://www.noonpost.net/content/2823>

Khaled, Noha, "US policy shifts and their consequences on the Middle East 1", Noon Post website, 1st May 2014.

<http://www.noonpost.net/content/2628>

Khaled, Noha, "US policy shifts and their consequences on the Middle East 2", Noon Post website, 4th May 2014

<http://www.noonpost.net/content/2657>

Abbas, Firas, "The Iranian vision and its strategic regional importance and position", Hammurabi Centre for Research and Strategic Studies,

<http://hcrsiraq.org>

Sowailym, Hussam, "US evaluation of Iran's military strength", Al-Ahram Newspaper, 1st February 2011.

<http://digital.ahram.org.eg/articles.aspx?Serial=485865&eid=209>

Escalation of the campaign against the state's organization could cost 55 million, Al-Jazeera net, 30th September 2014.

<http://www.aljazeera.net/news/ebusiness/2014>

Al-Jazeera net, "Washington cancelled Iran and Hezbollah from the List of Terror Threats", 17th March 2015.

<http://www.aljazeera.net/news/international/2015>

Reuters News Agency, "An American Leader: Commands issued to the implementation of US-led strikes in Tikrit", 25th March 2015.

<http://ara.reuters.com/article/topNews/idARAKBN0ML2HX2015032>

Al-Jazeera net, Kerry: "Any attacks against Iran will be positive", 13th December 2014.

<http://www.aljazeera.net/news/international>

List of Foreign References:

Inside Iran's Fury, Stephen Kinzer, Smithsonian magazine, October 2008.

<http://www.smithsonianmag.com/people-places/inside-irans-fury-11823881/?no-ist>

website International crisis Group, U.S.-Iranian Engagement: The View from Tehran, 2 Jun 2009.

<http://www.crisisgroup.org/en/regions/middle-east-north-africa/iraq-iran-gulf/iran/B028-us-iranian-engagement-the-view-from-tehran.aspx>

website NPR, Krishnadev Calamur, 'We Have To Negotiate In The End' With Syria's Assad, Kerry Says, MARCH 15, 2015.

<http://www.npr.org/blogs/thetwo-way/2015/03/15/393174770/we-have-to-negotiate-in-the-end-with-syrias-assad-kerry-says>

TELEOPERATED SYSTEM WITH ACCELEROMETERS FOR DISABILITY

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Abstract

This project involves the implementation of a teleoperated arm using an embedded platform based on a reconfigurable logic device (FPGA) configured and programmed in VHDL for Atmega 328p, using servomotors MG996R brand and a communication terminal with accelerometers, scheduled language C. the system is incompatible with teleoperated robotic autonomy (understood as the case where control and decision making are performed by the robot itself). That is why robots are teleoperated tasks perception of the environment, complex manipulation that are performed by humans and planning, ie, the operator acts in real time closed loop control high level. The evolved systems provide sensory feedback to the operator environment (strength, distance). In this manipulation we used an anthropomorphic arm with automatic controllers that replicate the movements of the operator.

Keywords: Teleoperated, FPGA, Servomotors

Introduction:

Our teleoperated robotic arm has 9 MG996R servo motors, whom rotate in degrees (angle), we can control the angle of rotation of the engine and make all the moves we would like to do with the teleoperated robotic arm. It also has accelerometers ADLX345 that serves to measure static acceleration (like gravity) in applications where we need to measure the inclination. But it also serves to measure dynamic acceleration (according to how we will move). Its high resolution provides information on changes of inclination of less than 1.0 °. We try do projects focused on improving the quality of life of disabled, which is why we realized that if the bionic prototype collect the functions of existing prosthesis but to lower price both in cost and maintenance could encourage that in our country many students and skilled dare to get involved in this branch of robotics, as many of today's designs are very expensive and foreign production, so purchasing on our

state is almost exclusively for people with great economic solvency. Between advantages for construction was employed the use of recycled materials very low cost, such as printers engines, we can get aluminum structures doors and windows. So its cost target value is \$150.00 U.S. (materials only) compared to other countries with a cost of \$30,000 to \$60,000 U.S, is very important to emphasize that our prototype has the same function, except that they have aluminum instead have a plastic or fiber.

I.

Teleoperator is a machine that enables a human operator to move about, sense and mechanically manipulate objects at a distance. Most generally any tool, which extends a person's mechanical action beyond her reach, is a teleoperator.

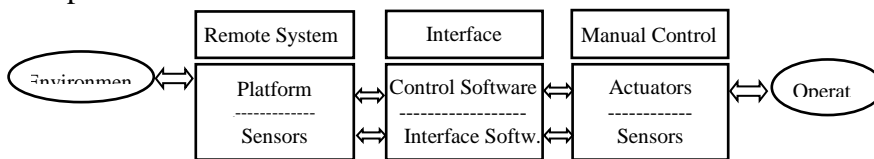


Figure N°01. Information flow in a teleoperation system

The main function of Teleoperator system is to help the operator to perform and carry out basic tasks that facilitate the development of their daily activities and overcoming the limitations of their disability. Within the last three decades, different teleoperation systems have been developed to allow human operators to execute tasks in remote or hazardous environments, in a variety of applications, our priority is in disabled and rehabilitation system. Teleoperation system tasks are distinguished by the continuous interaction between the human operators, teleoperator system and the environment. With the development of electronics devices and technology, the application of teleoperator becomes much wider and more indispensable than before. To efficiently control teleoperators, many different control approaches have been proposed. One particular need that still has not been effectively addressed seems to be dealing efficiently with significant time delays experienced by teleoperation systems since they can easily cause deterioration in system response as well as cause instability.

First we must consider that for our prototype, is necessary know the proportions with which work us, in this case the human arm, and the degrees of freedom that need our structure (shafts and joints) able to fully emulate the functions of the limb. For our prototype we think convenient to use aluminum for being a lightweight metal, its low cost and because our team is very easy to work with. Then according to the weight that each part of the arm, proceed to do the calculations of the forces necessary for the arm to

move and can support the weight we want to support with ease and maneuverability for the operator, after obtaining design forces, supporting choose motors 50% over the design forces to avoid wear, fatigue and breakdowns.

Then choose the sensors, plates and other electronic components which need to operate the teleoperated robotic arm. We have to make a program which detects the pulses on the axes (x, y and z) space which is why we use a gyroscope, we detect that signal which doing some math calculations were spent in degrees ($^{\circ}$) for to make the servo motor has the same degree that the gyroscope. Now with the plans and respective calculations proceed to the assembly, for it put us cut aluminum with the measured data and joined by bolts and nuts, adjust the servo motors which are not loose when turning. Then we make the respective wiring feeds the battery and signal integrated circuit which is in the plate.

Materials: Below we present the materials that we used for the proposed research platform: (03) Atmega 328P, (03) Accelerometers ADLX345, (20) meters of cables, (09) Servo Motors MG996R 7.2V, (05) Aluminum Iron 6m, (05) Batteries NI-MH 1.2V, balance 1 Charger Imax b6, (60) Stoboles, (03) resistors 10K, (03) capacitors 16MHz crystal, (01) fiber plate

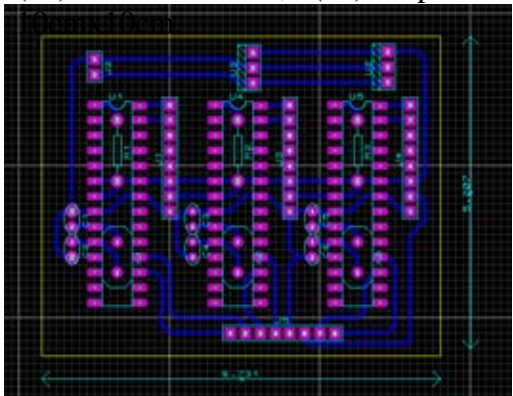


Figure N°02.CI board designed ISIS

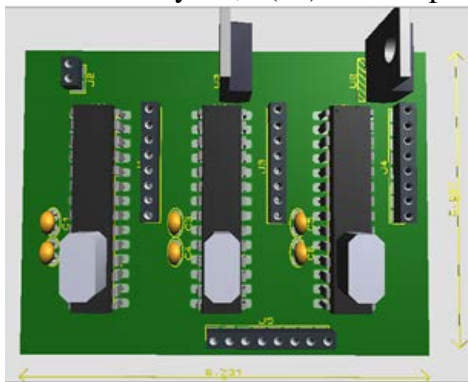


Figure N°03.CI board designed ARES

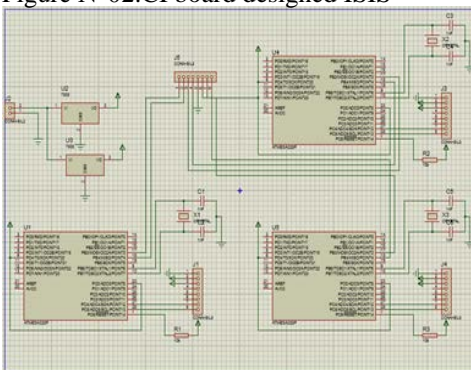


Figure N°04.CI board designed ISIS

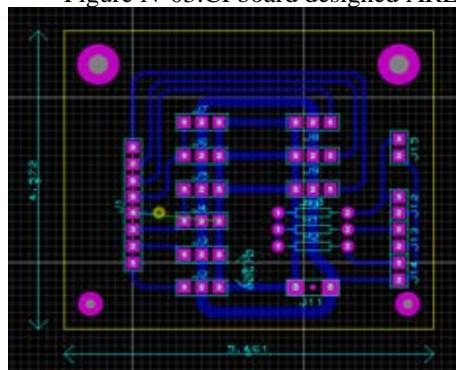


Figure N°05. CI 3D diagram ISIS (Connections)

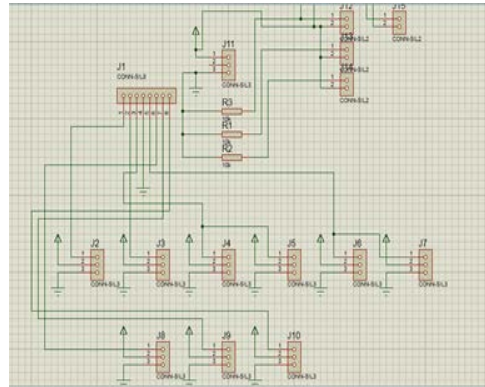
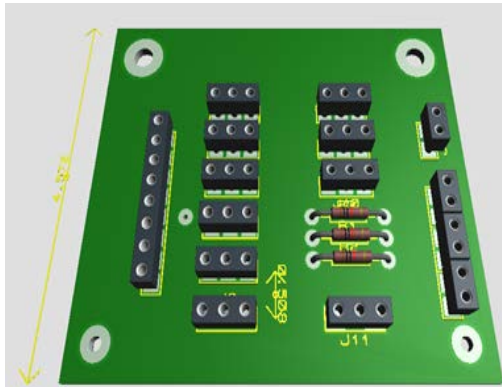


Figure N°06. CI 3D diagram ARES (Connections) Figure N°07. Teleoperated (Schematic Capture)

Programming of Teleoperated

```

#include <Wire.h>
#include <ADXL345.h>
#include <Servo.h>
ADXL345 adxl;
Servo myservox;
Servo myservoy;
int pos = 0;
int valx;
int valy;
void setup()
{
  adxl.powerOn();
  myservox.attach(11);
  myservoy.attach(12);
}
void loop(){
  int x,y,z;
  adxl.readAccel(&x, &y, &z);
  valx = x;
  valy = y;
  valx = map(valx, -255, 255, 0, 179);
  valy = map(valy, -255, 255, 179, 0);
  myservox.write(valx);
  myservoy.write(valy);
}
////////////////////////////////////
#include <Wire.h>
#include <ADXL345.h>
#include <Servo.h>
ADXL345 adxl;
Servo myservox;
Servo myservoy;
int pos = 0;
int valx;
int valy;
void setup()
{
  adxl.powerOn();

```



```
myservox.attach(11);
myservoy.attach(12);
}
void loop(){
int x,y,z;
adxl.readAccel(&x, &y, &z);
valx = x;
valy = y;
valx = map(valx, -255, 255, 0, 179);
valy = map(valy, -255, 255, 179, 0);
myservox.write(valx);
myservoy.write(valy);
}
////////////////////////////////////
#include <Wire.h>
#include <ADXL345.h>
#include <Servo.h>
ADXL345 adxl;
Servo myservox;
Servo myservoy;
int pos = 0;
int valx;
int valy;
void setup()
{
adxl.powerOn();
myservox.attach(11);
myservoy.attach(12);
}
void loop(){
int x,y,z;
adxl.readAccel(&x, &y, &z);
valx = x;
valy = y;
valx = map(valx, -255, 255, 0, 179);
valy = map(valy, -255, 255, 179, 0);
myservox.write(valx);
myservoy.write(valy);
}
}
```



Figure N°08. Teleoperated System



Figure N°09. Teleoperated (Practicing)

Conclusion:

With this project, we help people: as elderly, disabled, hospitals, industries, schools, rehabilitation. Suitable for people who have lost an arm in an accident or illness, so our design must fulfill the same functions as a human arm. Can also serve as a rehabilitation team upper limbs, as it has a 3D workspace that allows freer movements excellent for functional therapy exercises in a virtual reality environment, therapy would aim at improving mobility severely weakened arm in patients with stroke, brain trauma skull and other neurological damage.

References:

- M. Zhu and S. E. Salcudean, "Achieving Transparency for Teleoperator Systems under Position and Rate Control," IEEE/RSJ International Conference on Intelligent Robots and System, Pittsburgh, PA August 5-9, 1995.
- T. B. Sheridan, "Teleoperation, Telerobotics and Telepresence: A Progress Report," Control Engineering Practice, Vol. 3, No. 2, pp. 204-214, 1995.
- P. Batsomboon, and S. Tosunoglu, "A Review of Teleoperation and Telesensation System," 1996 Florida Conference on Recent Advanced in Robotics, Florida Atlantic University, Florida, April 11-12, 1996.
- P Milgram and J. Ballantyne, "Real Word Teleoperation via Virtual Environment Modelling", International Conference on Artificial Reality & Tele-existence ICAT' 97, Toky, December 3-5, 1997.
- S. Hong, B. S. Km, and S. Kim, "Artificial Force Reflection Control for Teleoperated Mobile Robots," Mechatronics, pp. 707-717, 1998.
- H. K. Lee, and M. J. Chung, "Adaptive Controller of A Master-Slave System for Transparent Teleoperation," Journal of Robotic Systems, 15(8), pp. 465-475, 1998.
- G. Niemeyer, and J. E. Slotine, "Towards Force-Reflecting Teleoperation Over the Internet," IEEE International Conference on Robotics & Automation, Leuven, Belgium, 1998.

ANALYSIS OF DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN EGYPT (1970-2013)

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Abstract

Egyptian economic conference came (the future of Egypt) to prove the importance and necessity of Foreign Direct Investment (FDI) for Egyptian economy development. Actually, the strong competition between the different countries to attract more of (FDI) is considered an important factor that forces us to identify the environment of the investment in Egypt. This competition requires not only exerting efforts to attract these investments, but also using it as efficiently as possible. The Arab world is an important source for this investment, which focuses on infrastructure, industry, hotels and services. Although, it is obvious to all the importance of (FDI) in increasing the domestic capital accumulation, its role in Egyptian economy is still limited and this requires more work to attract the biggest and the best (FDI) to achieve economic and political stability in Egypt.

The importance of this study is to help the decision-makers to know the properties and appropriateness of the climate of (FDI) in Egypt, its international indicators, the quality and effectiveness of economic and legislative policies. This study aims to identify and measure the most important economic factors affecting the inflow of (FDI) to Egypt during the period (1970-2013). The study used SPSS, Eviews and Statgraphics software to select the optimal econometric model that explains the functional relationships between (FDI) as the dependent variable and 13 economic independents variables related to (FDI). The study also attempts to predict the size of (FDI) and its determinants for the next five years, which helps economic responsible personnel to improve the environment of (FDI) in Egypt.

Co-integration equation shows that the variables (Gross Domestic Production, Households' Expenditure, and Degree of Commercial Exchange) have a positive impact on (FDI), while the variables (Inflation, Unemployment, General Government Expenditure, Exchange Rate, and Interest Rate) have negative effect on (FDI), also the significant effect of the variables (Population, Domestic investment, Savings, and the Balance of

Goods and Services) does not appear. The explanatory power model is 83.3%; which is high.

Keywords: Foreign direct investment, Egypt

Introduction

The international economic arena has witnessed unprecedented transformations since the beginning of the nineties that were represented in spread of economic globalization through opening markets and removing commercial limitations. This was represented in the steady increase of international trade and the size of its financial exchanges. One of the most important of these financial exchanges is (FDI) which has become of the most remarkable landmarks of international economy and a feature of its globalization¹.

(FDI) inflow to a certain country as part of its total investment or total constant capital can reflect how much investment in that country depends on foreign investment. It may also reflect ability of this country to attract these investments. Generally, compared to other sorts of financial inflow (such as investment portfolio, bonds, loans and other), FDI is significantly the least fluctuated financial inflows².

(FDI) forms one of the influential variables that affect development and growth of countries. It is an indicator for openness of economy and its ability to deal and cope with international developments in the light of spreading globalization phenomenon, increased transformation towards free market mechanisms and dominance of multinational companies on movement of goods and services. Arab countries face difficulties in obtaining domestic capital sufficient for achieving the required level of investment of its natural and human resources. Most of these countries are characterized by reduced average of gross domestic production per capita (GDPC) and reduced growth rates of national production compared to developed countries. As a result, level of investment is low there. Therefore, those countries became interested in attraction of foreign investment as means for overcoming shortage of financial and local sources through providing suitable investment climate via drawing up modern organizational and legislative frameworks as well as providing what is needed for facilitating works of investing companies³.

Competition among countries is becoming even tougher for attracting more (FDI) through removal of barriers, granting required incentives and guarantees. Loans are no longer an attractive source of foreign finance due to their increased cost and as some developing countries are unable to repay them. Because countries, particularly developing ones, need foreign sources of finance as their domestic sources are weak due to insufficiency and

inefficiency of their savings, (FDI) has become increasingly important at the international level because of the returns it achieves for host countries.

According to theories and economic literature, (FDI) represents one of the most significant capital for the important role it plays in transfer of technology and recent techniques, in addition to its participation in capital accumulation, increasing the efficiency of human capital and improvement of skills and experience. Moreover, it has positive impacts on growth and economic development. It takes part in increasing exports and decreasing imports. Consequently, it improves balance of trade, balance of payments and investment efficiency. It raises the level of domestic savings and reduces unemployment.

Literature shows that the most important reasons for transfer of capital are: difference among countries regarding rates of expected return on investment (ROI), response to massive and fast growth of products' markets abroad, increasing average per capita income in host countries, benefiting from comparative advantages in host countries, variety of risks, making use of specialization in certain knowledge by transferring and investing it in other countries⁴.

1- Definition and Kinds of Foreign Direct Investment

Herbert Feis (1930) was one of the first users of (FDI) concept. He called it foreign investments that do not influence stock exchanges. Inflow of foreign capital is inflow of economic resources to others with the purpose of using it abroad⁵. World Trade Organization (WTO) defines (FDI) as the investment that occurs when an investor based in one country (the home country) acquires an asset in another country (the host country) with the intent to manage that asset⁶. United Nations Conference of Trade and Development (UNCTAD) defined (FDI) as an investment of foreign finance (not national one) in constant capital assets in a given country, It is an investment that involves a long-term relationship and reflects interest of an investor in another country that has the right of management and control of these assets from his foreign country or from country of residence whether this investor is an individual, a firm or an organization⁷.

The Organization for Economic Cooperation and Development (OECD) defines (FDI) as an investment based on achievement of sustainable economic relations with institutions. It is particularly the investment that gives the ability of real influence on management of institutions using investment through establishment of new institution, affiliated one, a branch or shares in a previously existing institution, shares in a new institution or giving long-term loans⁸. In addition, the International Monetary Fund defines (FDI) as a group of different operations guided to influence market and

manage an organization located in a country other than the home country of parent organization⁹.

According to the criterion established by the Fund, investment becomes direct when the foreign investor owns 10% or more from shares of the capital in a business organization and from the number of votes there. This share has to be enough for giving the investor the right to take part in management of the organization¹⁰. It is clear that the portion of 10% is an indicator for possessing a high degree of influence, or perhaps controlling management of the project. However, if investment is less than 10%, it is not considered (FDI); and is described as short-term. In this case, it represents other forms of private capital inflow such as investment portfolio and bank loans. These forms of transfers do not have direct influence on production or on management of the local project that they participate in its finance. Thus, (FDI) is an inflow of economic resources to others with the intend of using them outside the borders of the country that owns these resources; or a group of inflows generated by transfer of investment capital to host countries with the purpose of maximizing profits and fulfilling targeted benefits. Moreover, it can participate with domestic capital in establishment of various projects in these countries.

Thereupon, two concepts of foreign investment must be distinguished from each other: the first one is the narrow concept related to the direct kind. The second concept is the broad one that encompasses the two kinds; direct and indirect. It must be noted that (FDI) does not always mean new investments created by foreign organization. In many cases, it is not investment with the real meaning but simply transfer of possession of existing assets from local organizations to foreign ones through merger or getting existing assets.

Foreign direct investment is not an alternative for local investment. On the contrary, it complements them. Although, some people relate trends of local investment to those of foreign investment, there is no concrete proof that factors affecting foreign investment also affect local investment¹¹. Confusion has always occurred between foreign direct investment and portfolio investment till 1968 when they were distinguished from each other¹². They can distinguished also by the fact that (FDI) includes all financial investments in constant assets while foreign portfolio investment includes all financial investment in governmental and institutional bonds as well as all kinds of bank loans and shares.

(FDI) is also defined as a group of inflows resulting from transfer of investment capital to host countries in order to maximize profits and fulfill targeted benefits in participation with domestic capital so as to establish various projects in those countries¹³. It can be defined as possessing by investor of part of investments in certain project or all investments of the

project, besides participation in management of the project with a national investor or overall control of management and organization in case of possessing the whole project. In addition, it takes place when an investor transfers a quantity of financial and technological resources and technical experience in all fields to the host country¹⁴. Foreign investor is defined as that firm which possesses assets in a firm (or production unit) affiliated to a country other than home country. Possession is having a share that equals 10% of ordinary shares or of the votes of the administrative board of domestic firms or the same proportion in other firms¹⁵.

Categorization of foreign direct investment counts on the used criterion. Economic studies and research indicate that there are many kinds of (FDI). They can be divided into five kinds: joint investment, investment completely owned by foreign firms, projects or processes of aggregation, processes of merging or possessing and multinational companies¹⁶. In addition, investment can be divided according to other criteria such as the legal form, international management methods, sort of economic activity and forms of property¹⁷.

Foreign investor's economic incentives that influence inflow of foreign direct investment to the host country can be classified into three kinds: investor who looks for markets, investor who looks for raw materials and natural resources, investor who looks for efficiency. A fourth kind can also be added that is investments looking for services.

Table (1): Economic Incentives for flow of Foreign Direct Investment¹⁸.

Investment according to Incentive	Explanation	Main Determinants in Host Country
Looking for Markets	In this case, the investor invades protected markets of host country. Investment is extension of export strategy.	Size of market Growth rate of market Closeness to regional and international markets Preferences and taste of local consumers Structure of competitive markets
Looking for Raw Materials, Natural Resources and Assets	A foreign investor produces primary products for foreign markets and export to them.	Availability of natural resources Availability of inefficient workers with low wages Availability of technical and pioneering assets including individuals and production units Availability of infrastructure such as ports, electricity supply and communication
Looking for Efficiency	An investor seeks achievement of gains related to efficiency or uses foreign direct investment more efficiently and thus increasing export opportunities.	Low cost of resources and assets Low cost of production inputs such as transportation, communication and intermediate inputs of production Membership of a national convention of integration that encourages establishment of national business networks

From the previous table, it is clear that this classification participates in helping countries to follow appropriate strategies to attract and localization of investments through identification of influential factors that attract each kind of investors¹⁹. (FDI) can also be classified into horizontal investment that replaces exports with local production to overcome trade restrictions and vertical investment that divides the vertical series of production and transforms a section of it into sites with less cost, i.e. vertical (FDI) leads to more flow and efficiency via flow of production in all their production stages among construction existing mostly in different countries.

Although (FDI) is important, it forms only 8% of total constant capital worldwide²⁰. Significance of foreign direct investment has increased internationally as it became one of the most important sources of investment projects in developing countries. Beginning from the first half of eighties, this kind has become a main element of development strategy elements whether in developed or in developing countries because they integrate into their strategies the development of their investment climate and adaptation of this climate to globalization requirements and market economy in order to attract more shares of investments²¹.

It can be briefly stated that the importance of (FDI) is due to the following: international aids and loans that were basic source of finance have decreased, it is considered more secure and profitable for host countries compared with indirect foreign investment, it is considered one of the means of technology localization and access to markets, it is considered a resource of capital and administrative experience, the more a country is able to attract it, the more competitive it becomes; and finally development of infrastructure elements and increase the degree of merging into the new international system²².

2- Determinants of Foreign Direct Investment:

Foreign direct investments flow into a certain country to make use of three categories of advantages: competitive advantages: including trade name, patent, technology and marketing; location advantages: including big markets, reduced cost of materials and distinguished infrastructure; and finally advantages of integration among countries. Advantages of the second category (location advantages) are those depending directly on policies of concerned countries, its institutions and economic circumstances. Consequently, if appropriate investment climate exists, economic factors will control determinants of foreign direct investment²³.

UNCTAD mentioned in its report in 1998 a group of determinants for attracting foreign direct investment. Important determinants of them are: size of national market that is measured by gross national product, economic growth rate of the country that hosts investment which is measured by

growth rate of gross national product, average per capital income that is measured by average gross national product per capita, availability of scale economies, policies and programs of privatization, trade and tax policies, availability of raw materials, availability of workers, availability of technology and innovations, and finally availability of basic infrastructure²⁴. Moreover, UNCTAD investment guide added the following factors: geographical location, labor productivity, tariff and non-tariff barriers, merging of host country into international economy, rate of trade exchange, availability of infrastructure, and degree of economic and political stability in the host country²⁵.

More factors can be added, as well, through the attraction model of explaining flows of (FDI).such as: size of country, distance between it and other countries, existence of common values, common languages and Colonial history, and international conglomerates²⁶.

Determinants of foreign direct investment in a given country can be gathered in three categories²⁷:

- ✓ Determinants related to policies: They include group of policies concerning foreign direct investment, i.e. policies that affect economic, social and political stability. They are represented in laws that regulate entrance of an investor into a country, criteria of dealing with firms affiliated to foreign investor, policies related to structure and mechanism of markets particularly regarding degree of competition and acquisition policies, international conventions on foreign direct investment, privatization policies, foreign trade policy including categories of duties on foreign trade, tariff and non-tariff barriers, consistency of these policies with those related to foreign direct investment and tax policies.
- ✓ Determinants of Business facilitation: They include activities that facilitate the climate of production and trade business such as efforts for encouraging investment, investment incentives, administrative efficiency, post-investment services, efforts for making good reputation and attract investment, efforts for facilitating investor's businesses, incentives granted to foreign investor, costs of making businesses including costs of encountering corruption and administrative inefficiency, social services including availability of multi-language schools, standard of living and post-investment services.
- ✓ Economic Determinants: They are related to a group of traditional economic factors such as available natural resources, size of market, labor productivity, other inputs and sort of infrastructure that was mentioned previously.

Achieving the prerequisites or what is called new generation of foreign direct investment encouragement policies improves economic determinants of host country and increases its ability to attract more

investments. Malaysia targeted foreign direct investment based on export in the sector of electronics without existence of former industrial export base to be the biggest source of electronic semiconductors in the world in a decade's time²⁸.

3- Multinational companies and Foreign Direct Investment:

Multinational or transnational companies are considered one of the most prominent phenomena of foreign direct investment. They are companies that own, manage or practice directly or indirectly an investment activity (production, marketing, services...) outside the borders of home country regardless of number of countries that host its branches. Multinational companies are defined as units that possess or manage assets abroad²⁹. According to 2002 statistics, there are 65 thousand multinational companies worldwide. 234 companies of them are in two Arab countries: Tunisia (142 companies) and Oman (92 companies). About 850 thousand affiliated companies or 4317 branches of them in 17 Arab countries; more than 48% of them are in Tunisia. Number of these companies went up to 69 thousand in 2004 employing 54 million persons with sales of 19 trillion US dollars which was double the value of world exports³⁰.

There are any economic theories explaining the existence of multinational companies such as: theories based on incomplete markets and incomplete competition, theories based on existence of protection or protective measures taken by multinational companies to ensure return on proportional benefits, theories relying on life cycle of goods and stages of their development, and theories counting on location as a significant pivot for selecting suitable headquarter for investment.

Property in multinational companies takes the following forms: A branch owned completely by foreign investor: In this case, foreign investor owns more than 50% of the total shares (such as cars industry); Joint Venture: where foreign investor owns less than 50% and more than 10% of shares; and Franchise: where foreign investor owns less than 10%.

There are many administrative styles in multinational companies such as: the central style in decision making, i.e. all decisions are made in the main headquarter in home country and then they are generalized in branches; decentralized style of decision making, meaning that there is a high degree of freedom to act and to make decisions in all branches with simple degree of control on branches from parent corporation; and the geographic style of administration and decision making that is integration and geographical dispersion in practicing activities and making decisions at the level of branches.

Regarding kind of activity, there are industrial multinational companies, trade multinational companies and multi-owned companies. As

for the degree of integration of companies and kind of transferred technology, there are vertically integrated multinational companies whose activity is limited to extractive and manufacturing industries, and horizontally integrated companies whose technological levels are varied and include consumables (beverages, detergents, foods...). Companies that transfer technology (usually old one) to other countries seek to expand abroad due to change in supply and demand conditions in their home headquarters.

4- Climate and Environment of (FDI) in Egypt and Legislation Related

If it had not been for the late political events that Egypt has been undergoing from 2010 till now, Egypt would have progressed to the level of (FDI) hosting countries in Africa and Middle East. According to analysis of investment climate in Egypt, it is noted that Egypt has witnessed a period of political stability beginning from 1993 to 2010. On the social level, Egypt's population is nearly 90 million people. Consequently, it represents the largest consumer market perhaps in Africa and may be in the Middle East³¹. As for standard of living, Egypt occupies the 100th rank internationally among 142 countries in the arrangement of countries according to per capita income which is a low rank³². Concerning health, health coverage is 202 physicians for 100 thousand people in 2010³³. Regarding education, unfortunately Egypt is still in the list of the worst 10 countries based on illiteracy rate in 2010 (28%) and the seventh internationally³⁴. As for labor, manpower in Egypt in 2010 reached 23.8 million people and unemployment rate reached 9% in 2010. However, the most distinguishing feature of the unemployed category is that it consists mostly of graduates of universities and institutes (about 20%)³⁵.

Regarding economic reformations, the Egyptian government tended to correct structural imbalances in the Egyptian economy in the light of applying the agreement signed with the International Monetary Fund and World Bank in 1991 through adopting a comprehensive economic reform program which aimed to fulfill financial and monetary stability, restore macroeconomic balance as first phase of the program, and increase economic growth rates as following phase through a group of measurements and reforms such as economic stabilization policies (financial reform like rationalization of public expenditures and increasing public revenues, monetary reform via liberalization of interest rates, exchange rates and terms of granting credit) and structural adjustment programs. As for, indicators of economic performance, they will be tackled in the optimal econometric model. They include gross national product, inflation, unemployment, balance of trade and balance of payments).

Concerning legislative reforms, the Egyptian government has implemented different policies on a large scale to attract (FDI) since beginning the reform process and economic openness through adjustment of its legislations and assessment of tax and financial incentives starting with Law No. 43 of 1974 that was a real beginning for encouraging Arab and foreign capital³⁶. Next was Law No. 59 of 1979 with the purpose of attracting foreign investments. Then was Law No. 159 of 1981 that cancelled Law of 1974³⁷. In 1989, Investment Law No. 230 was ratified. It made the General Authority for Investment the body responsible for dealing with investors. It allowed foreigners to own 100% of project.

After that, Law of Investment Guarantees and Incentives was issued as No. 3 of 1998. It cancelled law No. 159 of 1981³⁸. Then, Law No. 8 of 97 was amended by Law No. 83 of 2002³⁹, Law No. 13 of 2004, Law No. 94 of 2005, Law No. 19 of 2007, Law 114 of 2008 and then Law 133 of 2010⁴⁰.

Egypt is considered one of the developing countries that suffer shortage of its domestic savings. Therefore, it needs (FDI) inflows to participate in financing its economic projects. It is known that (FDI) has positive and negative impacts on economies of host countries which can be summed up as follows:

✓ **Participation of (FDI) in Capital Formation:**

According to data of UNCTAD (2010), it is remarkable that in 1993 (FDI) participated greatly in the process of capital formation in Egypt because its participation reached 13.7% compared to 6.4% in developing countries. However, this indicator went down noticeably from 1995 to 2003 till it reached 1.8% in 2003 compared to 9.5% in developing countries. Nevertheless, this indicator went up once again from 2004 to 2010 compared to developing countries till it reached 47.8% while developing countries had 12.9% in 2006⁴¹.

✓ **Participation of (FDI) in Financing Development:**

When comparing (FDI) with loans inflow, portfolio investment, workers' remittances and official development aids, it can be noted from tables of World Bank that the main source that Egypt counts on to finance its development is workers' remittances from abroad, then the official development aids with slight difference. However, (FDI) always came in the third or fourth rank; its proportion did not exceed 15% from total capital inflow to Egypt in 1994 and 1998 or 19,5 in 2000. Yet, (FDI) was on top of capital inflow to Egypt from 2005 to 2008. Then, workers' remittances came on top beginning from 2009⁴².

✓ **Participation of (FDI) in Economic Growth:**

Comparing foreign direct investment balance to gross domestic product, it can be noticed that the proportion is logical as for developing countries⁴³.

✓ **Impact of (FDI) on Balance of Payments:**

(FDI) plays a direct and great role in financing the gap in balance of payment from 1993 to 2001⁴⁴.

✓ **Impact of (FDI) on Some Other Economic Variables:**

(FDI)'s participation in creating job opportunities form 1993 to 2010, for example, was little compared to total number of employees in the state that was 0.06% in 1993⁴⁵.

5-Assessment of Investment Climate according to International Indices:

These developments can be recognized through improvement of the compound index of investment climate that depends on total economic indices including inflation rate, and internal and external balance. Although, there is apparent improvement in the ability of Arab countries to attract this investment, they could attract only 4.8% of gross foreign direct investment on the international level⁴⁶.

✓ **Index of Country's Performance in Attracting Foreign Direct Investment:**

It measures the current status in a country regarding its actual share of inward foreign direct investment flows internationally proportionated to the state's share of world's gross national product. Average of three years is calculated to limit effects of seasonal factors. Egypt had lowest performance from 1997 to 2004 as it was among the group of states with low performance. Then, it witnessed improvement beginning from 2006 as it became one of foreign direct investment attractive countries.

✓ **Index of Country's Capabilities of Foreign Direct Investment Attraction:**

It measures ability of a country to attract foreign direct investment through 12 elements (growth rate of gross domestic product, average per capita income, exports proportionated to gross domestic product, spread of cell phones, average per capita energy consumption, expenditure on research and development proportionated to gross domestic product, postgraduate students proportionated to total population, country's sovereignty rating, country's proportion of natural resources exports to the world, proportion of imports of electrical appliances' spare parts in the world,

proportion of country's exports of services to the world and country's proportion of accumulative balance of inward foreign direct investment of the world.

✓ **Human Development Index:**

Egypt occupied the rank No. 106 in 1993 among 164 countries with a proportion of 0.611. Egypt considered to be of medium human development because its index rose to .62 on 2010⁴⁷.

✓ **International Competitiveness Index:**

It has been issued since 1979 by the World Economic Forum in Davos in cooperation with international academic experts and international networks consisting of 109 partner organizations. It is considered an important tool in formation of economic policies and guiding investment decisions. This index consists of two main indices. Growth index of competitiveness measures ability of world economies to achieve constant rates of economic growth and its overall performance on the intermediate and long run. On the other hand, Business index of competitiveness measures ability of economic units at the level of organization to achieve competitiveness⁴⁸. Egypt had decline in this index from 4.03 in 2001 to 3.96 in 2005 as Egypt suffered from instability of policies (13.6%), inefficient education (13.4%) and finance difficulty (10.6%)⁴⁹.

✓ **Ease of Doing Business Index:**

The World Bank in cooperation with International Finance Corporation depends for analysis of this index on many aspects that cover the life cycle of investment project⁵⁰. These aspect are project establishment index, number of procedures, cost as a proportion of per capita income, minimum capital for beginning a project, index of getting licenses, number of procedures, workers employment index, working hours rigidity index, difficulty of firing form work index, appointment cost index (proportion of salary), property registration index, number of procedures, period (work day), cost (proportion of property value), legal rights index, credit information index, investor protection index, extent of disclosure index, direct responsibility index, index of shareholder's suits, tax payment index, number of paid taxes, gross taxes as proportion of trade profits, export and import documents, export and import period, export and import cost, contracts implementation index, period and cost of solving trade conflicts and index of project's closure. It is noticed that Egypt occupied rank No. 141 in 2006 among 155 countries. After that, it declined to 94 in 2010 due the reforms made in the last period⁵¹.

✓ **Index of Legislations Related to Investment and Developments of New Economy:**

This index has interest in measuring how much laws regulating investment are complicated, how available knowledge economies are, governmental electronic programs, ratification of electronic signature system and procedures of electronic trading⁵².

✓ **Transparency Index:**

Egypt witnessed improvement in transparency indicator from 2.84% in 1996 to 3.1% in 2010 to be in the category of countries with dark orange color that include China after it had been one of the countries with red color (indicating high rates of corruption).

Table (2): Egypt's Stature in General Indices of Measuring Investment Climate from 1993 to 2010⁵³

Year	Index of Country's Performance in Attracting (FDI)	Index of Country's Capabilities of (FDI) Attraction	Ease of Doing Business Index	Human Development Index	Competitiveness Index	Transparency Index
1993	46	83	-	106	-	-
1994	42	80	-	109	-	-
1995	50	83	-	112	-	-
1996	73	90	-	-	-	41
1997	99	88	-	120	-	-
1998	103	64	-	119	-	66
1999	106	69	-	105	-	63
2000	102	72	-	115	-	63
2001	110	71	-	120	51	54
2002	113	70	-	120	-	62
2003	126	75	-	119	58	72
2004	98	81	-	111	62	77
2005	66	85	141	113	53	70
2006	25	87	165	122	63	70
2007	29	88	126	123	71	105
2008	50	92	114	-	77	115
2009	56	88	106	-	81	111
2010	57	-	94	101	70	98

The following Table shows Egypt's Stature according to indices of measuring countries' risks 1993-2010:

- ✓ Egypt is one of the countries with moderate risks since 1999 as it occupies rank No. 100 internationally at the end of 2010 according to compound index of country's risks⁵⁴.

- ✓ Egypt witnessed fluctuation in Euromoney index so it became once one of countries with high risks and once one of the countries with moderate risks (2006-2010) as it achieved rank No. 64 of 185 countries in September 2010⁵⁵.
- ✓ Egypt had slight increase in institutional index since 2007 which allowed it to be one of countries with moderate risks and became in rank No. 73 in 2010⁵⁶.
- ✓ Regarding Coface index, Egypt had speculative grade B during the period from 2003-2010.

Table (3): Egypt's Stature in Indices of Country's Risks Measurement⁵⁷.

Year	Compound Index of Country's Risk	Euromoney Index	Institutional Index of Country's Assessment	Coface Index
1996	67.5	45.7	-	-
1997	71.3	55.4	-	-
1998	70.8	34.1	43.2	-
1999	68.3	52.3	45.4	-
2000	69.3	56.4	51	-
2001	68.8	52.6	47.1	-
2002	67.5	50.3	45.5	-
2003	66	49.2	41.1	
2004	69.3	49.4	44.4	B
2005	68.8	47.4	48	B
2006	68.8	50.2	46.7	B
2007	69	50.9	51.4	B
2008	65.5	52.1	50.7	B
2009	66.3	-	51.4	B
2010	65.3	57.4	51	B

5- Previous Empirical Studies Related to Selected Economic Variables:

- ✓ **Foreign Direct Investment and Gross Domestic Product:** Domestic product is considered a basic determinant for foreign firms searching for new markets or increase in its share of host countries' markets. Countries with great domestic product are suitable for many local and foreign firms to invest their money. Empirical Studies proved existence of a positive relation between gross domestic product and inflow of foreign direct investment. According to a study by UNCTAD on flow of foreign direct investment to 42 developing countries, it was found that domestic product is an important determinant of attracting foreign direct capital⁵⁸.
- ✓ **Foreign Direct Investment and Inflation:** Inflation is constant increase in the general level of prices for a long time. There are many methods for measuring inflation. The most important of these methods are standard number of consumer's price, standard number of product prices and reduced gross domestic product. Inflation rates have direct impact on

pricing policies and size of profits and consequently on movement of capital. They also affect production costs which foreign firms are interested in. Increasing inflation rate leads to corruption in investment climate and makes it go into danger area whether the investor is local or foreigner. Inflation is considered an indicator for weak national economy. Hence, there is a negative relation between inflation rate and inflow of foreign direct investment. In a study, it was found that countries that can control inflation so that it is no more than 20% achieve remarkable success in attracting foreign direct investment⁵⁹. A study conducted by Harms showed that inflation rate has negative impact on attraction of foreign direct investment⁶⁰.

- ✓ **Foreign Direct Investment and Government Expenditure:** Increase of government expenditure and increase of its proportion of domestic product indicate that excessive government expenditure hinders economic growth and leads to budget deficit, tax increase and low incomes. Consequently, demand on goods and services decreases so savings and investment decrease⁶¹. There is a negative relation between government expenditure and inflow of foreign direct investment as proven by Montfort's study⁶².
- ✓ **Foreign Direct Investment and Deficit of Current Account Balance:** Cases of current account balance deficit indicate state of imbalance in balance of payments which hinders investment inflows. Most studies indicate that huge imbalance in balance of payments is a result of the state's great reliance on its capabilities. Hence, cases of long term deficit lead to increase in future taxes, low per capita income, reduced demand on goods and services, and consequently reduced savings and reduced investment. Thus, there is negative relation between current account balance and inflows of foreign direct investment. Tcha's study indicates that current account balance has negative impact on foreign investments⁶³.
- ✓ **Foreign Direct Investment and Domestic Savings:** There are two impacts of domestic savings on foreign direct investment. The first one is proportional and leads to increase in investment, production and size of market⁶⁴. Consequently, it leads to increase of foreign direct investment. The second impact is negative because domestic savings results to increase in foreign direct investment, particularly for non-oil countries⁶⁵.
- ✓ **Foreign Direct Investment and Exports:** Exports in General and industrial exports in particular are considered an important determinant of foreign direct investment inflow that is directed to export. Most studies discussed this adverse causality relation. Exports are considered the new power that moves economic growth in the twenty first century. A study by the World Bank highlighted the significance of exports in

investment inflow⁶⁶. In addition, an applicable study on investment of Japan in UK found that exports have positive impact on investment of Japan in UK⁶⁷.

- ✓ **Domestic Investment:** can be defined as investment of money in different fields and available opportunities of investment in local market regardless of kind of used investment tool. Accordingly, the money that organizations or individuals invest inside a country is considered used investments such as real estate, stock, gold and foreign currencies⁶⁸. Domestic investment is divided, as for the body implementing it, into: private investment which is carried out by the private sector and public investment which is implemented by the public sector. Regarding its most important kinds, they are international aids (loans and grants) portfolio investment (including purchase of private and public bonds from the stock exchange). (FDI) may result in decline in domestic investment or competition with domestic investment in host countries instead of encouraging more domestic investments in a way that limit its impact on economic growth in those countries⁶⁹. Competition occurs to financing part of (FDI) requirements by domestic market or because of competition between foreign investment firms and local firms. The first case results in shortage of savings in domestic market which are supposed to go to domestic investment. The second case results in exit of some local firms which are incapable of competing at least in the short term⁷⁰. When direct foreign investment compete with domestic investment, increase participation of domestic investment in added value through development of production equipment and technology transfer which local organizations make use of via foreign firms and via processes of merging and acquisition⁷¹. When foreign investment resorts to getting domestic loans, they increase interest rates and consequently reduce domestic investment. This fact influences participation of domestic investment in domestic product and in economic growth⁷².

6- The Empirical Study:

The Empirical Study aims to build an optimal econometric model to study determinants of foreign direct investment flow in Egypt from 1970 to 2013 and to predict this rate in future years in the light of those variables. This helps to draw up economic policies and to make decisions. In order to achieve this, research tackles the following:

(6-1) Variables and Period of Study:

The study depended on time series data from 1970 to 2013 of the following variables⁷³:

Table (4): Variables Used in the Study	
Symbol of Variable	Description of Variable
Y	Foreign Direct Investment (dependent variable) FDI
X1	Gross Domestic Product GDP
X2	Inflation INF
X3	Unemployment UNEMP
X4	Population POPU
X5	Gross Government Expenditure GGD
X6	Households' Expenditure HOUD
X7	Monetary Reserve TR
X8	Domestic Investment (gross formation of fixed capital) GFCE
X9	Savings SAVI
X10	Balance of Goods and Services (DBCGS)
X11	Degree of Trade Exchange OPEN
X12	Exchange Rate EXCR
X13	Interest Rate INTR

Used Statistical Analysis:

✓ Descriptive Statistics for Variables of the Study:

Mean and Median are used as measurements for central tendency. Standard deviation and quartiles used as measurements for desperation.

✓ Jarque-Bera Test for Data Normal Distribution:

H0 and H1 are formulated as follows:

H0: The variable follows normal distribution (i.e. there is no difference between variable distribution and normal distribution).

H1: The variable does not follow normal distribution (i.e. there difference between variable distribution and normal distribution).

Judgment rule is based on level of probability of Jarque-Bera test. If probability is more than 0.05, H0 cannot be rejected (i.e. variables follow normal distribution). If probability is less than or equals 0.05, H0 can be rejected and H1 is accepted (variables do not follow normal distribution).

✓ Dickey Fuller Test of Unit Root to Test Stability of Study Variables:

H0 and H1 are formulated as follows:

H0: the variable includes unit root (i.e. it is not stable).

H1: the variable does include unit root (i.e. it is stable).

Judgment rule is based on level of probability of T test. If probability is more than 0.05, H0 cannot be rejected (i.e. the variable is stable). If probability is less than or equals 0.05, H0 can be rejected and H1 is accepted (i.e. the variable is not stable). The test can be conducted once again after taking differences of integration degree test of the variable. If the variable becomes stable after taking first differences, the variable is integrated of the first degree. It is represented by the symbol I (1). If the variable becomes

stable after taking second difference, the variable is integrated of the second degree. It is represented by the symbol I (2) and so on.

✓ **Co-integration Test:**

Regression analysis measures impact of independent variables on dependent variables. However, in case of non stability (not stationary) in time series, the regression gained from variables of time series is spurious regression. In this case, it is allowed to use co-integration method that studies the relation among unstable time series. In addition, it solves the problem of spurious regression that may occur among unstable time series. Therefore, before conducting co-integration test, stability of variables will be tested through Augmented Dickey Fuller test of Unit Root.

✓ **Time Series Analysis:**

In order to predict dependent variable, explaining variables are predicted first. Statgraphics program was applied. The program selects and decides preferences among many models. It selects the best model to predict variables for a future period based on various criteria such as:

RMSE = Root Mean Squared Error

RUNS = Test for excessive runs up and down

RUNM = Test for excessive runs above and below median

AUTO = Box-Pierce test for excessive autocorrelation

MEAN = Test for difference in mean 1st half to 2nd half

VAR = Test for difference in variance 1st half to 2nd half

The following is applying that to study variables

(6-2) Descriptive Statistics of Study Variables:

Descriptive statistics aims to describe study variables as for central tendency, desperation and distribution. In addition, descriptive statistics include some graphs that illustrate the sequence of variables' values. Following is applying this to study variables:

Table (5): Descriptive Statistics of Study Variables

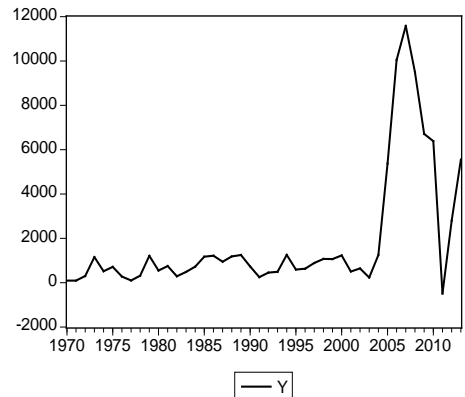
Study Variables	Mean	Standard Deviation	Greatest Value	Least Value	Quartiles		
					First 25%	Middle 50%	Third 75%
Y (FDI)	1868.23	2843.93	11578.10	482.70-	466.75	743.29	1246.4
X1 (FDP)	71606.17	70159.22	271972.80	7682.49	23035.725	42492.95	90454.45
X2 (INF)	10.68	5.89	23.86	2.10	4.93	10.19	15.51
X3 (UNEMO)	8.14	2.25	12.70	4.83	5.9325	8.30	10.05
X4 (POPU)	57.72	13.67	82.06	36.34	45.15	57.88	69.125
X5 (GGD)	8820.39	7622.12	31768.68	1867.86	3726.975	5649.73	11057.35
X6 (HOUD)	53319.24	55148.48	220752.00	5030.65	15706.675	30662.13	67310.15

X7 (TR)	10760.65	10755.44	37028.50	163.24	1611.275	8902.75	16975.4
X8 (GFCF)	13775.55	11555.71	41054.30	885.96	5819.8	11303.36	17897.675
X9 (SAVI)	14282.09	10835.56	39809.59	3468.35	4592.45	12431.72	17923.5
X10 (DBCGS)	4736.12-	4502.25	350.92-	- 22120.28	0	3575.49-	0
X11 (OPEN)	0.52	0.12	0.82	0.32	0.42	0.52	0.605
X12 (EXCE)	2.72	2.23	6.87	0.39	0.7	3.23	5.1975
X13 (INTR)	13.61	2.97	20.33	7.60	12	13.31	15

The previous table shows that:

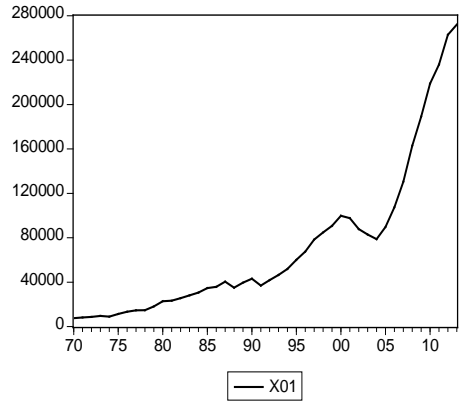
Dependent Variable Y “Foreign Direct Investment in Million Dollars” (FDI):

According to time series, development of this variable shows, as presented in the graph, that from 1970 to 2005 ranged from 94.6 to 5376.6 million dollars. Then it suddenly leapt in 2006 and 2007 to be up to 10042.8 and 11578.1 million dollars respectively. Then, it declined once again in the following period to reach its lowest level in 2011 when the value was 482.7- million dollars which is a negative number indicating escape of foreign capital due to political circumstances that took place in that year. Then, it increased again to reach 5553 million dollars in 2011. This indicates fluctuation in value of this variable particularly from 2005 to 2013. The mean during study period was 1868.23 million dollars with standard deviation of 2843.93 which represented only 2.6% of gross domestic product. This indicates reduction of foreign direct investment value in Egypt.



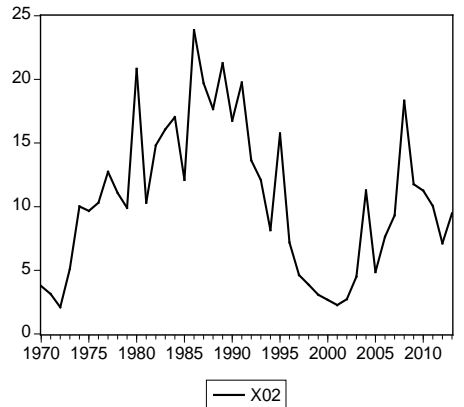
Gross Domestic Product (GDP) X1 in Million Dollars:

It is apparent that the value of gross domestic product was constantly increasing during the period of study except for year 2004 when a slight reduction occurred as gross domestic product was 82923.7 million dollars in 200; then it decreased to 78845.2 in 2004. The mean during study period was 76606.17 million dollars with standard deviation of 70159.22 million dollars. The least value was 7682.49 million dollars in 1970. It was 271972.22 million dollars in 2013 which indicates increase of gross domestic product.



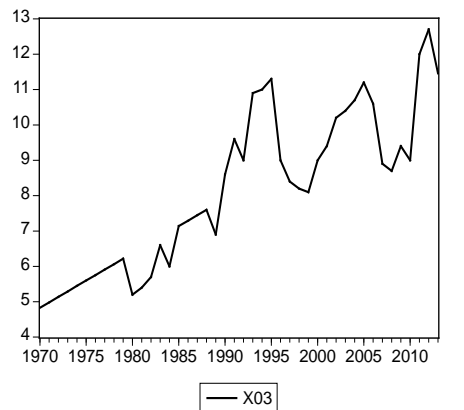
Inflation (INF) X02:

The level of inflation was fluctuating during study period. It reached its lowest level, 2.0%, in 1972. Then, it rose till it reached its highest level, 23.86%, in 1986. The mean during the study period was 10.68% with standard deviation of 5.89%.



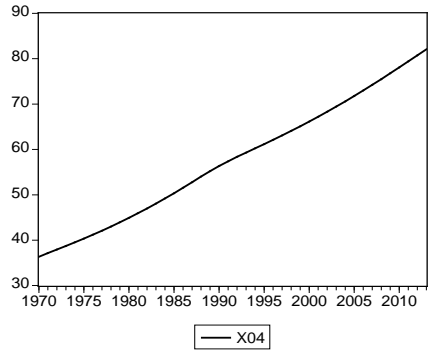
Unemployment (UNEMP) X3:

It is obvious that the general trend of unemployment rates is increasing continuously in spite of the decrease in some years. The mean of unemployment rates was 8.14% with standard deviation of 2.25%. It worth noting that unemployment rates in Egypt are estimated from surveys through samples. Also, concepts related to unemployment may vary. Therefore, it is rough statistics with no accurate numbers about unemployment rates



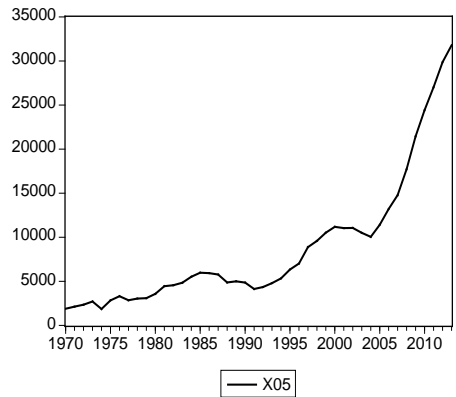
Population (POPU) X4 Million People:

The population increased with similar growth rate during study period as it was 36.34 million people in 1970; this number reached 82.06 million people in 2013. Annual growth rate during that period was 2.9%.



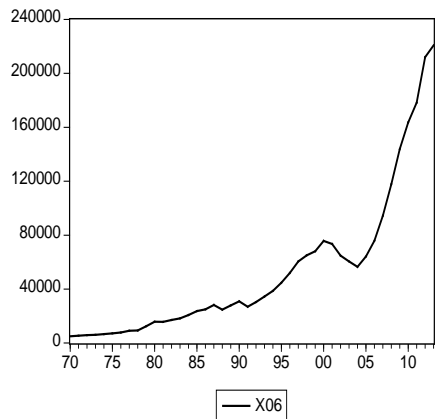
Gross Government Expenditure (GGD) X5 in Million Dollars:

According to the graph, it is obvious that government expenditure was continuously increasing during study period. Increase rate was going up from 2005 to 2013. The least value of government expenditure was 1867.86 million dollars in 1974. This expenditure reached 31768.68 million dollars in 2013. Average government expenditure during this period was 8820.39 million dollars with standard deviation of 7622.12 million dollars.



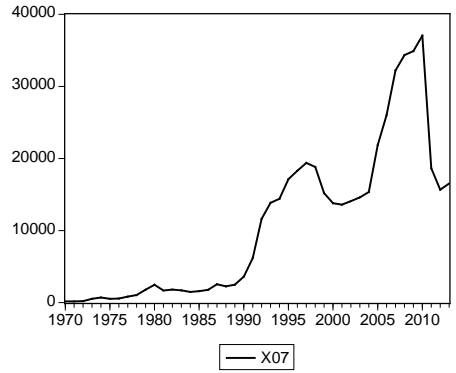
Households' Expenditure (HOUD) X6 in Million Dollars:

After studying chronic development of households' expenditure, it became clear that it was increasing continuously during study period except for the time from 2000 to 2005 in which it decreased. Then, it increased again from 2005 to 2013. The least value of households' expenditure was 5030.65 million dollars in 1970. However, this expenditure reached 220752 million dollars in 2013. Average households' expenditure during the period was 53319.24 million dollars with standard deviation of 55148.48 million dollars. The increase in households' expenditure is mainly due to the increase of population.



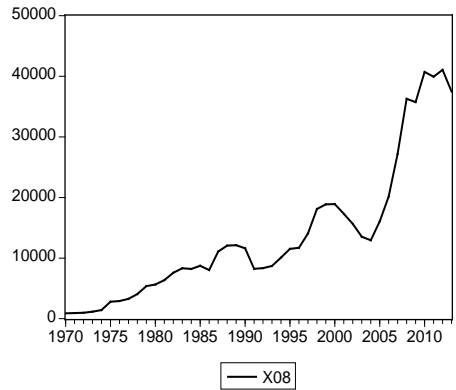
Monetary Reserve (TR) X7 in Million Dollars:

According to the graph, it is obvious that the general trend of the monetary reserve was increasing constantly. However, a sudden decline occurred from 2011 to 2013 because of political instability as the monetary reserve decreased from 37028.5 million dollars in 2010 to 18637.5, 15672.5, 16536.2 in 2011, 2012 and 2013 respectively. The mean of the monetary reserve during study period was 10760.65 million dollars with standard deviation of 10755.44 million dollars.



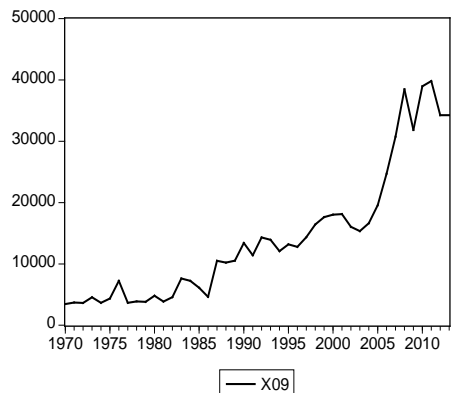
Domestic Investment (Gross Formation of Fixed Capital) X8 (GFCF) in Million Dollars:

The general trend of domestic investment was increasing except for the periods 1991-1993 and 2000-2005. The least value of domestic investment was 886 million dollars in 1970. It reached 41054.3 and 37477.1 in 2012 and 2013 respectively. The mean during study period was 13775.55 million dollars with standard deviation of 11555.71 million dollars.



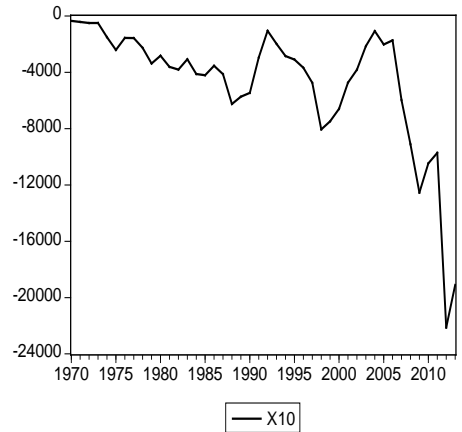
Savings (SAVI) in Million Dollars:

According to the graph, it is obvious that the general trend of savings was increasing despite the decline in some years that witnessed slight decrease such as 2009. The least value was 3468.35 million dollars in 1970. However, the greatest value was 39809.59 million dollars in 2011. The mean was 14282.09 with standard deviation of 10835.56 million dollars.



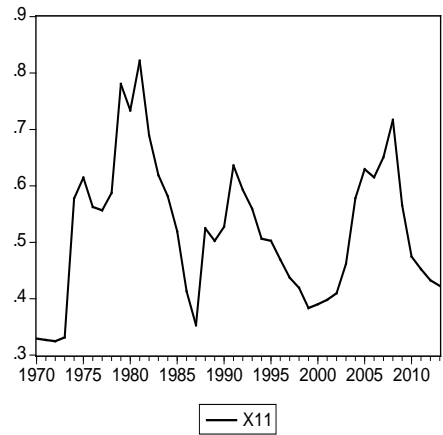
Domestic Balance of Goods and Services (DBCGS) X10 in Million Dollars:

According to the graph, the balance of goods and services was passive throughout study period which means that this balance was suffering from constant deficit. However, this deficit became sever in some years such as 1990, 2009 and 2012. The least value of deficit was 350.92- in 1970 but the greatest value of deficit was 22120.28- in 2012. The mean of the deficit of goods and services balance was 4736.12 million dollars with standard deviation of 4502.25 million dollars.



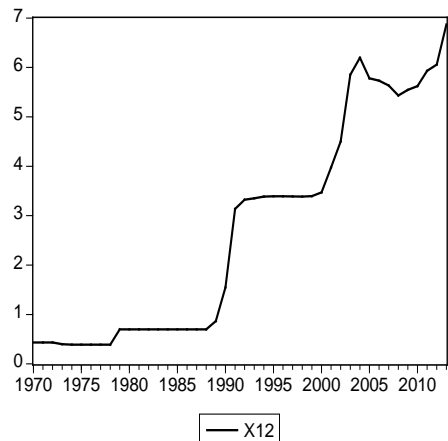
Degree of Trade Exchange (OPEN) X11:

The degree of trade exchange fluctuated during the period of the study. It increased in some years such as 1975, 1979, 1981, 1991 and 2008 and decreased in some years such as 1987 and 1992. The mean during study period was 52% with standard deviation of 12%. The least value was 32% in 1970 and the greatest value was 82% in 1981.



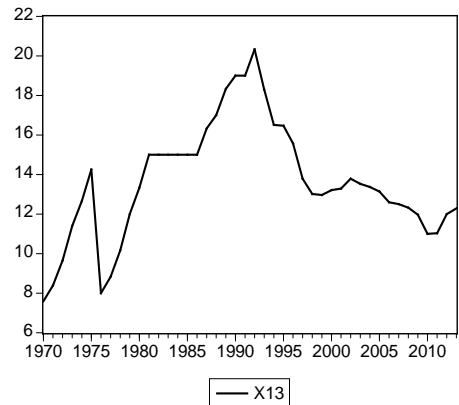
Exchange Rate (EXCR) X12:

According to the graph, it is clear that exchange rate was stable during the period from 1970 to 1978 around 0.4. Next, it suddenly increased to 0.7 in 1979. It kept stable around this rate till 1989. In 1991 it increased to 1.5. Then, it leapt to 3.14 in 1992 and kept stable around this rate till 2001. After that, it kept increasing till it reached 4.5 in 2002. It continued to increase until it reached 6.87 in 2013. Those sudden leaps in exchange rates may be due to the policies implemented by the state liberate exchange rate or stabilize it...etc.



Interest Rate (INTR) X13:

Interest rate increased in 1975 to reach 14%. Next, it decreased in 1976 to reach 8%. Then, it increased again in 1981 to reach 15%. It continued to increase to reach the maximum rate of 20% in 1992. After that, it declined to range from 11% to 12% during the last four years. The mean of interest rate was 13.61 % with standard deviation of 2.97%.

**(6-3) Data Normal Distribution Test:**

Data Normal Distribution Test is conducted through measures of Skewness, Kurtosis and Jarque-Bera. The following are the results of applying this test to study variables.

Table (6): Results of Applying Jarque-Bera Test to Study Variables

Variables	Skewness	Kurtosis	Jarque-Bera	Probability
Y (FDI)	0.27	6.61	2.38	0.464
X1 (FDP)	0.32	2.21	1.21	0.450
X2 (INF)	0.34	2.21	1.99	0.370
X3 (UNEMP)	0.17	1.85	2.66	0.265
X4 (POPU)	0.09	1.82	2.63	0.268
X5 (GGD)	0.64	2.90	2.42	0.312
X6 (HOUD)	0.65	1.04	2.51	0.095
X7 (TR)	0.86	1.84	1.47	0.065
X8 (GFCF)	0.19	2.45	1.79	0.075
X9 (SAVI)	0.06	2.09	2.24	0.216
X10 (DBCGR)	0.19	2.25	1.74	0.471
X11 (OPEN)	0.32	2.55	1.12	0.571
X12 (EXCE)	0.36	1.59	4.60	0.100
X13 (INTR)	0.12	2.82	0.17	0.916

From the table, it is clear that P-Value of Jarque-Bera test is more than 0.05 for all variables of the study. Therefore, it is valid for conducting statistical analysis.

(6-4) Augmented Dickey Fuller Test of Unit Root:

To test stability of variables, Augmented Dickey Fuller Test of Unit Root was applied on study variables. Results were as follows:

Table (7) Results of Applying Augmented Dickey Fuller Test on Study Variables

Variables	Dickey Fuller Test of Variables at Level		Dickey Fuller Test of Variables at 1 st Difference		Integration Degree
	T Value	P-Value	T Value	P-Value	
Y (FDI)	-1.866	0.3446	-5.157	0.0001	I(1)
X1 (FDP)	-2.296	0.9999	-3.695	0.0483	I(1)
X2 (INF)	-1.984	0.2926	-10.639	0.000	I(1)
X3 (UNEMP)	-1.329	0.6076	-6.276	0.000	I(1)
X4 (POPU)	-2.499	0.1000	-1.964	0.301	-
X5 (GGD)	-4.434	0.6413	-3.642	0.0499	I(1)
X6 (HOUD)	-2.004	0.2998	-3.993	0.0124	I(1)
X7 (TR)	-0.618	0.4884	-5.730	0.000	I(1)
X8 (GFCF)	-1.407	0.5696	-4.019	0.0032	I(1)
X9 (SAVI)	-0.153	0.9366	-7.318	0.0000	I(1)
X10 (DBCGS)	-0.431	0.8944	-6.922	0.0000	I(1)
X11 (OPEN)	-2.399	0.1478	-5.719	0.000	I(1)
X12 (EXCE)	-0.081	0.6605	-3.885	0.0046	I(1)
X13 (INTR)	-2.277	0.1387	-5.792	0.000	I(1)

From the table, it is obvious that all variables are instable at level as P-value in Augmented Dickey Fuller Test is more than 0.05. These variables become stable after taking the first difference because the mentioned probability valued is less than 0.05. This indicates that these variables are integrated of the first degree and that they are valid for conducting co-integration test except for the variable X04 (population) which did not become stable after the first difference. Therefore, it was excluded from the model.

(6-5) Co-integration Test:

Because all variables are instable at level and integrated of the first degree, co-integration test can be conducted on these variables in order to test the balanced relation among these variables on the long term. Results were as follows:

Table (8) Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Values at 0.05 Level	Prob.**
None *	0.767050	270.3696	197.3709	0.0000
At most 1 *	0.726305	209.1784	159.5279	0.0000
At most 2 *	0.686848	154.7574	125.6154	0.0003
At most 3 *	0.57322	105.9926	95.75366	0.0082
At most 4 *	0.482352	74.52030	69.81889	0.0201
At most 5	0.420428	46.86498	47.85613	0.0618
At most 6	0.322157	23.95541	29.79707	0.2023
At most 7	0.104081	7.624169	15.49471	0.5064
At most 8	0.069118	3.008156	3.841466	0.0828

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

According to the table, it is obvious that:

- Trace test indicates that there are five co-integration relations among variables at the probability level of 0.05 because at most 5 the value of trace was less than the critical value at probability level of 0.05. Trace value was 46.86 whereas the critical value was 47.856 at the level of 0.05. Calculated probability level was 0.0618 which was more than 0.05 which indicates existence of five balanced relations among variables on the long term.

To represent balanced relation between dependent variable and independent variables using co-integration the following regression equation was used:

Table (9): Estimation of Common Co-integration Coefficients

Variable Symbol	Variable Description	Coefficient	Standard error	T Test	Probability Level
Static		7267.7			
X01(GDP)	Real Gross Domestic Product	0.015	0.006	2.679	0.013
X02(INF)	Inflation	94.341-	22.024	4.284-	0.000
X03(UNEMP)	Unemployment	266.162-	89.623	2.970-	0.012
X05(GGD)	Government Expenditure	0.8429-	0.146	5.755-	0.000
X06(HOUD)	Households' Expenditure	0.134	0.061	2.214	0.037
X11(OPEN)	Trade Exchange Rate	2067.629	391.008	5.288	0.000
X12(EXCR)	Exchange Rate	916.773-	127.99	7.1625-	0.000
X13(INTR)	Interest Rate	82.362-	26.883	3.064-	0.005

0.833 = R square

From the previous table, it is obvious that:

- ✓ **The variables of:** real gross domestic product, households' expenditure and trade exchange rate have positive impact on foreign direct investment as:
 - A million-dollar increase in gross domestic product leads to a 0.015 million-dollar increase in foreign direct investment.
 - A million-dollar increase in households' expenditure leads to a 0.134 million-dollar increase in foreign direct investment.
 - 1% increase in trade exchange leads to a 2067.6 million-dollar increase in foreign direct investment.
- ✓ **The variables of:** inflation, unemployment, government expenditure and exchange rate have negative impact on foreign direct investment as:

- 1% increase in inflation rate leads to a 94.341 million-dollar decrease in foreign direct investment.
- 1% increase in unemployment rate leads to a 266.2 million-dollar decrease in foreign direct investment.
- A million-dollar increase in governmental expenditure leads to a 0.8429 million-dollar decrease in foreign direct investment.
- One-pound increase in exchange rate leads to a 916.8million-dollar decrease in foreign direct investment.
- 1% increase in interest rate leads to an 82.4 million-dollar decrease in foreign direct investment.
- ✓ **The variables of:** population, domestic investment, savings and balance of goods and services were not included in the model because their probability was not stable.

The explanatory power of the model was R square = 0.833, i.e. the explanatory variables in the model illustrate about 83.3% of the changes that occur to foreign direct investment which is high explanatory ability.

(6-6) Using the Model for Prediction:

To predict the dependent variable, independent variables are predicted first. Then, using the model, the dependent variable is predicted. To predict the independent variables, Statgraphics program is used to select the best model for predicting independent variables according to many statistical criteria. Results were as follows:

Table (10): Results of Predicting Study Variables

Years Variables	Used Model	2014	2015	2016	2017
Real Gross Domestic Product (million dollar)	ARIMA(1,1,2)	286455	294794	301757	301757
Inflation Rate	ARIMA(1,1,2)	%16.31	%14.4	%13.3	%12.5
Unemployment	ARIMA(1,1,2)	%11.4	%11.6	%11.8	%12.0
Governmental Expenditure (million dollars)	Exp smoothing	33956	36122	38287	40453
Households' Expenditure (million dollars)	ARIMA(2,2,2)	236684	259133	275085	287912
Trade Exchange Rate	Random walk	0.422	0.424	0.426	0.428
Exchange Rate	ARIMA(0,1,1)	7.33	7.49	7.64	7.80
Interest Rate	Random Walk	%12.4	%12.5	%12.6	%12.7
Estimations of independent variable (foreign direct investment)		8816	9994	10279	10029.8

Results:

After analyzing study data, the researcher found the following results:

- ✓ Average Foreign direct investment represents only 2.6% from average gross domestic product which indicates reduction of its value.
- ✓ From normal distribution test, it was found that study variables follow normal distribution.
- ✓ From augmented Dickey Fuller test of unit root, it is obvious that the variables are integrated of the first degree i.e. they become stable after taking the first difference. This indicates that they are integrated with equal degrees so these variable are valid for conducting co-integration test except for the variable X04 (population) which did not became stable after the first difference. Therefore, it was excluded from the model.
- ✓ Estimation of co-integration equation showed that the variables of real gross domestic product, households' expenditure and trade exchange rate have positive impact on foreign direct investment. However, variables of inflation, unemployment, government expenditure and exchange rate have negative impact on foreign direct investment. Probability of variables of population, domestic investment, savings and balance of goods and services did not appear. The explanatory power of the model is 83.3% which is high explanatory ability.
- ✓ Independent variables were predicted using various models selected via the statistic program Statgraphics as choice was according to many statistic criteria. The best models were chosen for prediction.
- ✓ After predicting independent variables, it was possible to predict the dependent variable (foreign direct investment). It was found that it increases when the variables that have positive impact on it increase. However, this increase remains a slight one. Hence, it is necessary to improve investment climate so that it can increase in a way that participates in enhancing development.
- ✓ The Egyptian government must:
 - Make legislative frameworks to protect and encourage these investments.
 - Facilitate procedures of inflow of direct investments.
 - Offer proper guarantees and incentives; and liberate remittance of profits and capital.
 - Facilitate administrative procedures especially through adopting one-window system.
 - Establish new agencies to support and encourage these investments.
 - Issue new laws or update previous ones.

References:

1. Bilal Momo, The impact of foreign direct investment and domestic investment on economic growth, University of Kasdi Mirbah, Algeria, 2013.
2. Buthaina injury. The impact of FDI in economic growth in Jordan (1990-2006), studies of Administrative Sciences, Vol. 36, Number 2, Jordan, 2009.
3. Dina Omar, The impact of exports on FDI flow in selected Arab countries, the development of Iraq, the number (39), Iraq, 2007.
4. Wishah Razak. Determinants of FDI, Arab Planning Institute, Kuwait, without date.
5. Samarkand Kawkab Elgamil, Recent trends in international financial business, Dar Elkhamid for publication, Jordan, 2001.
6. www.wto.org/ecommerco/0066/pdf.15.
7. UNCTAD. World Investment Report 2007. UN, New York, USA, 2008.
8. OCDE. Définitions de référence détaillées des investissements internationaux, Paris, 1983.
9. Ibrahim Ngouhou. Les investissements directs étrangers en Afrique Centrale: attractivité et effets économiques, Université de sud Toulon-Var, France.
10. Amira Hassaballah Mohammed, Determinants of Foreign direct and indirect investment (Comparative Study: Turkey, South Korea, Egypt), Aldar Elgamaia, Alexandria, p. 19, 2004.
11. Hatem Alkaranshawy. Investment in the context of globalization: trends and requirements, investment and financing conference, the Arab Organization for Administrative Development, Cairo, 2006.
12. Mira Wilkins. Two literatures, two story lines: is a general paradigm of foreign portfolio and foreign direct investment feasible? Transnational corporation, vol 8, no 1, April 1999.
13. Saad Al-Kawaz. Foreign investment flows and their impact on the economies of developing countries, the development of Iraq, Mosul, 2005.
14. Abdulsalam Aboqahv. International Business Management, Second Edition, Dar Alishaa, Alexandria, 1998.
15. Hassan Khidr. Foreign Investment, definition and issues, Magazine Development Bridge, Arab Planning Institute, Kuwait, number 32, 2004.
16. Hassan Kharboush, Abdalmoatiy Rida. Investment and financing between theory and practice, Zahran Publishing House, Oman, 1999.
17. Farid Al-Najjar, International investment and tax coordination, Youth University Foundation, Alexandria, 2000.
18. Wishah Razak. Determinants of FDI, Arab Planning Institute, Kuwait, without date. The third column has been done by the author.
19. Deepak Mishra et al., Inflow Private Capital and Growth. Finance and Development, vol 38, no 2, June 2001.

20. UNCTAD. World Investment Report 2003: The shift towards services, New York and Geneva, 2004.
21. Arab Organization for Investment Guarantee, Investment Guarantee Bulletin, Issue second quarterly, Kuwait, 2007.
22. Salem Saeed Alqahtani, the future of investment in Saudi Arabia, Investment and Finance Conference, the Arab Organization for Administrative Development, Cairo, 2006.
23. UNCTAD. World investment report, trends and determinants, p. 89, 1998.
24. UNCTAD. World investment report, trends and determinants, p. 89, 1998.
25. UNCTAD. World Investment Report 2003: The shift towards services, New York and Geneva, 2004.
26. Walid Abd Mawlah, Gravity models for the interpretation of trade flows, the Arab Planning Institute, No. 97, 2010.
27. United Nations. ESCWA, the policies of foreign direct investment and attract interface in the ESCWA region, improve the climate for foreign direct investment and mobilizing domestic savings with the study of cases of Jordan, Bahrain and Yemen, 2007.
28. Faris Fadil. The importance of foreign direct investment in the Arab countries with a comparative study between Algeria, Egypt and Saudi Arabia, and the University of Oran, Algeria, 2004.
29. Arab Organization for Investment Guarantee, Multinational companies and non-traditional relationship to foreign direct investments, bulletin Investment Guarantee, First Issue, 2007.
30. United Nations Conference on Trade and Development (UNCTAD), World Investment Report 2005, New York and Geneva, 2004.
31. <http://capmas.gov.eg/book.aspx>.
32. World Economic Forum. The Global Competitiveness Report, p.386, 2011-2012, <http://www.weforum.org>.
33. United Nations Development Program (UNDP), Human Development Report: The Real Wealth of Nations, Human Development Paths, p. 203, 2010.
34. <http://www.alarabia.net/articles/2012/09/08/236856.html>
35. Central Agency for Public Mobilization and Statistics, Statistical Yearbook, Egypt, 2011.
36. Abdullah Abdulkarim, Investment guarantees in the Arab countries, the House of Culture for Publishing and Distribution, First Issue, Jordan, 2008.
37. Reda Abdelsalam, Determinants of FDI in the era of globalization, modern library, Egypt, 2007.

38. Hussain Mehran, Foreign direct investment in Egypt and the possibilities developed in the light of local, regional and international variables, Egyptian Journal for Planning and Development, Volume VIII, Issue 1, 2000.
39. Law 83 of 2002, the Official journal, number 22 bis, 5 June, 2002.
40. Ministry of Investment, Investment Performance Report for the fiscal year 2009-2010, Egypt, 2011.
41. UNCTAD. Web table5, (FDI) inward as a percentage of gross fixed capital formation, 1990-2010.
42. The World Bank «Data Bank», <http://www.worldbank.org/data/Vieus/Reports/TableVieus.aspx>.
43. UNCTAD. Web table 7. (FDI) inward stock as a percentage of gross domestic product, 1990-2010.
44. The World Bank «Data Bank», <http://www.worldbank.org/data/Vieus/Reports/TableVieus.aspx>.
45. Amira Hasaballah Mohammed, Foreign direct investment and indirect economic environment in the Arab determinants, University House, Alexandria, 2005.
46. Arab Organization for Investment Guarantee, The investment climate in 2006, Kuwait, p. 18, 2007.
47. World Economic Forum « The Global Competitiveness Report, from (2001-2002) - (2011-2012).
48. Arab Organization for Investment Guarantee. The investment climate in 2006, Kuwait, p. 105, 2007.
49. Transparency International, Indice de perception de la corruption, Différentes Années, (1996, 2010). <http://www.transparency.org/research/cpi>.
50. The World Bank, The fourth annual report, Washington, 2007.
51. The World Bank and the International Finance Corporation, Doing Business, p. 161, Report 2011.
52. United Nations Conference on Trade and Development (UNCTAD), World Investment Report, New York, 2005.
53. UNCTAD. web table 28. Inward (FDI) performance and potential Index rankings, 1990-2010. http://archive.unctad.org/sections/dite_dir/docs/WIR11_web%20tab%2028.pdf.
- UNCTAD. World Investment Report 2004: The shift towards services, New York and Geneva, p281-289, 2004
- UNCTAD. World Investment Report 2006: (FDI) from Developing and Transition Economies, Implication for Development, New York and Geneva, p277, 2006.
- Transparency International. Corruption perceptions Index, Différentes Années, <http://www.transparency.org/research/cpi>

- World Economy Forum. The Global Competitiveness Report, Différentes Années, <http://www.weforum.org>.
- PNUD. Rapport sur le Développement Humain, Différentes Années, <http://hdr.undp.org>.
- The World Bank and the International Finance Corporation. Doing Business Report, Différentes Années, <http://www.doingbusiness.org/>.
- 54 The PRS Group. International Country Risk Guide.
55. Euromoney. Country Risk September 2010: Full Results.
56. Institutional Investor. Institutional Investor Magazine, 2011.
57. The World Bank. World Development Indicators, 1997-2004. <http://www.iaigc.net/?id=7&sid>
58. UNCTAD. World Investment Report 1999. UN, New York, USA, 2000.
59. Omar Sakr, Issues of economic globalization and contemporary, University House, Lebanon, 2001.
60. Nauro F. Philip Harms and Henrich W. Urspring. Do Civil and Political Repression Really Boost Foreign DI, Journal of Development Economics, vol 70, no 4, 2002.
61. Paul Samlesson and Michael Mandel, Economy, Alahlia for publication, Jordan , 2001.
62. Karl Montfort. Easing the Way for Foreign Direct Investment. The Economic Journal, no 26, London, 2002.
63. Moon Joong Tcha, A Note on Australia's Inward and Outward Direct Foreign Investment. [www.balckwell-senergy.com/ link/doi](http://www.balckwell-senergy.com/link/doi), 2000.
64. Magnet Ram. Export with External Capital Inflow and Economic Growth in Developing Countries with Special Reference to South Asian Countries. Indian Economic Journal, vol 27, 1980.
65. United Nations. Implication of Euro Currency for the ESCWA Region, New York, 2001.
66. World Bank. DEC Notes, Research Finding, What Determinants Foreign Direct Investment? no 16, Washington, 1996.
67. P.S. Andersen and P. Hainaut. Foreign Direct Investment and Employment in the Industrial Countries. [www.bis.org/pobl/ work61.htu1998](http://www.bis.org/pobl/work61.htu1998).
68. Ghadeer Saad Alhamoud, The relationship between the public and private investment in the framework of the Saudi Economic Development, College of Administrative Sciences, King Saud University, Saudi Arabia, 2004.
69. This is known in the literature of the investment impact of rivalry
70. Kaarima Kodri, Foreign direct investment and economic growth in Algeria, Abu Bakr Belcaid University, Tlemcen, Algeria, 2011.
71. Marouane Alaya et Autres. A quelques conditions les IDE simulant-ils la croissance? IDE, croissance dans les pays mediterraneens, Monde en developpement, vol 37, no 148, 2009.

72. Ali Abdelfattah Aboshrar, *World Economy: theories and policies*, Dar Almasira, 2nd edition, Amman, Jordan, 2010.
73. Data that has been reliable came from the World Bank following site, <http://databank.worldbank.org/data/home.aspx>.