CONTENTS

The effect of Occupational Satisfaction in Mobarakeh Steel Company Employees

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Abstract: Today's human resources play an important role in achievement of society's affair and there is a closely relationship between socio – economical improvements and occupational satisfaction. Occupational satisfaction refers to positive feelings and views people who have to their occupation. This study was undertaken to investigate the impact of occupational satisfaction in Steel Mobarake employees. Statistical society of this cross-sectional study consisted of 6500 employees in Steel MobarakeCo. The study was carried out using online questionnaire. Data analyzed by SPSS software. Findings showed that almost in all scales of occupational satisfaction in comparison with 2010 was observed a striking increase. This study shows that there is a negative relationship between occupational satisfaction and employees' educational degrees as well. Since employees' satisfaction plays an important role in their effectiveness in society and workplace, it is important to consider their willing, because there is a closely relationship between motivation and occupational satisfaction.
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Keywords: Steel Mobarake, Occupational satisfaction, Employee, Motivation.

1. Introduction

Job satisfaction is defined as the positive personal perception towards work or work experiences (Howard, 2002). In fact, job satisfaction has been identified as an important determinant of employee retention, turnover and work performance (Sibbald et al., 1998). Today's human resources play an important role in achievement of society's affair and there is a close relationship between socio – economical improvements and occupational satisfaction. Importance of occupational satisfaction results from this fact that most people spend almost half of their sleep hours in workplace. It refers to positive fleetingness and views people have to their occupations. When one says she is satisfied with his/ her occupation, it means that he likes it very much, or has favorite feeling to it and values for it. Otherwise, job satisfaction was found to be inversely related with turnover of employees (Pathnlanl et al., 2002), i.e., poor job satisfaction is linked to high turnover (Parsons et al., 2002).

Work abandonment enters huge chivvy damages to the organization and substitution of another one in his/her post is very expensive because it decreases productivity. Therefore, doing durable and regular researches in this area prevents from satisfaction reduction and provide situation for employees psycho – physical promotion.

One who is satisfied with his/ her occupation can compensate various material damages by making good (logical) decisions; In fact, he always produces value – added, wealth, and efficiency for organization. In other word, he increases material capital. Satisfied employees have more productivity for organization than unsatisfied ones because the latter's increase problems by making illogical decisions.

In most studies special attention was given to relationship between motivation and occupational satisfaction. Lamborn showed that motivation is an important prediction in occupational satisfaction (Lamborn, 1991). Another significant factor is relationship between age and marriage. Results in another study showed that married employees and those with more precedence have more satisfaction in comparison with young and single persons (Clark et al., 1996).

A researcher showed that the more the digress of employees, the more his expectation in spiritual and material affairs, as a result that leads to desperation and dissatisfaction (Hamermesh, 2001). Other researches proved that with increasing of occupational satisfaction, productivity and creativity improve. In other word, abandonment of work decreases (Terry, 1992).

Another related factor about occupational satisfaction is management. It was proved that there was a closely relationship between management and occupational satisfaction (Billmore, 2006).

2. Material and Methods

This contextual study carried out cross-sectional. Statistical society was consisted of 6500

official employees in MobarakeSteel Co. For evaluating occupational satisfaction in units asked them to complete on line questionnaire in 15 days. During this time 2068 (31.6%) questionnaires were completed. by using demographic feature questionnaire, & questions about age, married status, educational degree, residence, occupation, work place, and precedence of employees were investigated. By using occupational satisfaction questionnaires with 43 questions, amount of employees satisfaction was investigated, mentioned questionnaire involved 6 scales:

1. Satisfaction from occupation,
2. Satisfaction from supervisor,
3. Satisfaction from cooperator,
4. Satisfaction from promotion,
5. Satisfaction from wage,
6. Satisfaction from reward.

Questionnaire validity and reliability (MFJSQ) (Arshadi, 1991).

Most of questions derived from JDI and others designed according to the condition and structural features of company by consultation with experienced persons.

For investigating questionnaire validity, convergent validity was used 40 employees completed occupational satisfaction and JDI questionnaire of Emit that was validated by Arshadi (Arshadi, 1991) and its validity and reliability was.66 and /94 respectively.

1. MobarakeFoolad Job satisfaction questionnaire.
2. Job descriptive index.

Correlation of this questionnaire was. /71 that showed an idealized validity for evaluating questionnaire reliability, test retestmethod was used and 40 employees completed it after 15 days. Results showed reliability was /92. Internal reliability obtained by Cranach & was. /91 that indicated internal consistency. SPSS software for windows ver. 16, was used to analyze findings of the study, and for examining the hypothesis of the study descriptive statistics (frequency, percentage, and standard deviation) and inferential statistics (chi square, analysis of variance, and Pearson correlation) were used.

3. Results

Of all the employees, 43.8% were operators, 55.7% were experts, and 0.5% wasmanagers. Finding showed a tangible increasing in all scales except for cooperator in comparison with 2010. As it was shown in the table, highest amounts belonged to reward and wage with 0.3% and 0.10 respectively (Table 1).

Table 1: Comparison of occupational satisfaction in Steel Mobarake Co. in different years

Scales of occupational satisfaction	Studies years									Changes in comparison with 2010
	2002	2003	2004	2005	2006	2007	2008	2010	2011	
Nature of Job	3.20	3.62	3.72	3.99	3.93	3.99	3.94	3.82	3.92	+0.10
Supervisor	3.10	3.56	3.51	3.55	3.57	3.67	3.63	3.48	3.56	+0.08
Cooperators	3.50	3.63	3.65	3.67	3.63	3.70	3.69	3.64	3.56	- 0.08
Occupational promotion	2.10	2.27	2.25	2.51	2.52	2.60	2.50	2.42	2.52	+0.10
Wage	2.50	2.72	2.58	2.69	2.57	2.52	2.46	2.46	2.74	+0.28
Reward	-	-	-	2.60	2.59	2.74	2.75	2.55	2.68	+0/13
Total satisfaction	2.88	3.17	3.31	3.38	3.31	3.56	3.35	3.22	3.32	+0.10

Results of table 2 showed that there was a striking difference between occupational and total satisfaction. In all scales,managers' satisfaction was higher than employees except from cooperators and wages.

Table 2: analysis of variance according to occupation

Scales	Change source	Total square	Degree of freedom	Mean of square	F	Meaning full level
Nature of work	Occupation	9.494	2	4.747	12.086	0.001
	Bug	809.147	2060	0.393		
	Total	818.641	2062	-		
Supervisor	Occupation	11.272	2	5.64	11.198	0.001
	Bug	1035.854	2058	0.503		
	Total	1047.126	2060	-		
Cooperators	Occupation	5.720	2	2.863	6.829	0.001

	Bug	860.540	2053	0.419		
	Total	866.265	2055	-		
Promotions	Occupation	8.102	2	4.051	4.639	0.01
	Bug	1792.810	2053	0.873		
	Total	1800.912	2055	-		
Wages	Occupation	2.705	2	1.353	4.498	0.011
	Bug	614.716	2044	0.301		
	Total	617.421	2046	-		
Rewards	Occupation	9.554	2	4.777	5.058	0.006
	Bug	1932.283	2046	0.944		
	Total	1941.836	2048	-		
Total	Occupation	2.029	2	1.014	5.054	0.006
	Bug	409.815	2042	0.201		
	Total	411.844	2044	-		

There are differences in amount of occupational satisfaction of employees according to their occupations. These differences are shown in table 3.

Table 3: statistical indexes of occupational satisfaction according to occupation

Scales	Occupation	Frequency	Mean	Standard deviation
Nature of Job	Manager	11	4.18	0.27
	Employees expert	1147	3.97	0.61
	Operator	9.5	3.84	0.66
Supervisor	Manager	11	3.86	0.27
	Employees expert	1146	3.62	0.69
	Operator	904	3.48	0.73
Cooperators	Manager	11	3.73	0.31
	Employees expert	1141	3.51	0.63
	Operator	904	3.61	0.67
Promotions	Manager	11	3.36	0.58
	Employees expert	1142	2.52	0.92
	Operator	903	2.50	0.95
Wages	Manager	11	3.20	0.42
	Employees expert	1139	2.72	0.54
	Operator	897	2.75	0.56
Reward	Manager	11	3.22	0.75
	Employees expert	1140	2.72	0.96
	Operator	898	2.61	0.99
Total	Manager	11	3.68	0.24
	Employees expert	1138	3.34	0.45
	Operator	896	3.30	0.45

Occupational satisfaction of employees differs according to kinds of shift. It was shown in table 4.

Table 4: Statistical indexes of occupational satisfaction according to kinds of shift

Scales	Shift	Frequency	Mean	Standard deviation
Nature of work	Daily work	1.43	3.93	0.61
	Shift work 21.21	940	3.88	0.65
	Shift work 11.21	80	4.07	0.59
Supervisor	Daily work	1042	3.59	0.70
	Shift work 21.21	940	3.52	0.73
	Shift work 11.21	79	3.49	0.69
Cooperators	Daily work	1038	3.50	0.65
	Shift work 21.21	939	3.60	0.65

	Shift work 11.21	79	3.69	0.56
Promotions	Daily work	1040	2.51	0.93
	Shift work 21.21	937	2.52	0.95
	Shift work 11.21	79	2.65	0.92
Wages	Daily work	1036	2.69	0.55
	Shift work 21.21	932	2.78	0.55
	Shift work 11.21	79	2.83	0.54
Rewards	Daily work	1038	2.69	0.96
	Shift work 21.21	932	2.66	1.00
	Shift work 11.21	79	2.72	0.84
Total	Daily work	1035	3.31	0.45
	Shift work 21.21	931	3.33	0.44
	Shift work 11.21	79	3.32	0.45

Note: 21.21 has three shifts and 11.21 is two shift, morning until 3 P.M and 3 P.M until 24:00

Table 5 shows that according to shift, there is tangible difference in employees' satisfaction. In nature of work scale, the highest and lowest means of 4.07 and 3.88 belong to work shift 11.21 and 21.21 respectively. About supervisors with 3.59 and 3.49, it belongs to day work and shift work 11.21.In cooperators with 3.69 and 3.50, employees' satisfaction belongs to shift work employees' 11.21.In wages with 2.83 and 2.69; it belongs to shift work 11.21 and day work.

Table 5: Results of analysis of variance according to shift

Scale	Change source	Total square	Freedom of degree	Square mean	F	Meaning full level
Nature of work	Shift	3.077	2	1.538	3.886	1.21
	Bug	815.564	2060	396		
	Total	818.641	2062	-		
Supervisor	Shift	3.222	2	1.611	3.176	0.042
	Bug	1043.904	2058	0.507		
	Total	1047.126	2060	-		
Cooperators	Shift	6.203	2	3.102	4.404	0.001
	Bug	860.062	2053	0.419		
	Total	866.265	2055	-		
Promotions	Shift	1.487	2	0.744	0.848	0.428
	Bug	1799.425	2053	0.876		
	Total	1800.912	2055	-		
Wages	Shift	4.640	2	2.320	7.738	0.001
	Bug	612.781	2044	0.300		
	Total	617.421	2046	-		
Reward	Shift	0.553	2	0.277	0.292	0.747
	Bug	1941.283	2046	0.949		
	Total	1941.836	2048	-		
Total	Shift	0.642	2	0.321		1.595
0.203	Bug	411.201	2042	0.201		
	Total	411.844	2044	-		

4. Discussions

Findings of this study were come from a questionnaire based on descriptive and inferential statistics, and thus, just reflect the attitude and satisfaction of employees in steel MobarakeCo. Therefore, reports shows that there is a striking difference between managers and employees satisfaction due to their benefits. It is worthy to mention that occupational satisfaction was more in young employees than adults. Inscales, the highest satisfaction belongs to age group 56 and more. In nature of work, the lowest satisfaction belongs to age groups 18-25 about supervisor belongs to age groups 18-25 and 26-35. In employees and promotion equally belongs to 26-35. About wage and reward it belongs to 36-45 and 26-35 respectively. Most

significant factor for adult satisfaction is their presence from early establishment of the company. This study has documented that elevated satisfaction during work was associated with elevation of precedent and post.

Another important finding was that official employees were more satisfied than contractual ones. Investigations show that there is a tangible difference in employees' satisfaction – i.e.in cooperator and promotion based on their educational degree. In cooperators scale highest amount of satisfaction belongs to people with diploma and below diploma. It seems that there is an amicable relationship between employees for need of furlough and other occupational problems. In promotion scale, the highest satisfaction is seen in people with M.A and higher degrees. In comparison with 2010,absolute mean of employees' satisfaction had an increasing about +10.Wage with +0.28 reward with +0.13, work nature and occupational promotion with + 0.10 had tangible differences in comparison with 2010, but cooperators had 8% decreasing. During 9 years ago, highest satisfaction belonged to 2007 after that descending order was seen until 2010. Now with managers' arrangement, it was observed positive changes.

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The explanation of effective factors on the healthy lifestyle of the nursing students' view: A qualitative study

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Abstract: Nurses have a key role in improving the client's health and their lifestyle is effective in representing services to the patients and client. This study aims to investigate the nursing students' perception about the effective factors on their healthy lifestyle. This study was done qualitatively with the content analysis approach and through 20 semi-structured and deep interviews with undergraduate nursing students of Tehran city. The participants were selected through purposive sampling. Data were analyzed using qualitative content analysis. All interviews were recorded, transcribed, and reviewed. Also, codes were extracted. Based on centrality, codes were put in a sub-category and then by reviewing sub-categories again, they were put in categories and finally, a theme was determined. During the process of content analysis, theme on the effective factors on nursing students' healthy life style was revealed. The theme included 9 categories: "the perception of effective factors on health promotion", "having enough time", "inner factors", "work-related factors or activity", "environmental factors", "knowledge and awareness", "individual factors", "social factors", and "perceived priorities". The participants believed that various and widespread factors affected their health promotion level. The extension of these factors demands the complete attention to different health dimensions and how to improve it by person, family, and community.
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Keywords: Healthy lifestyle; Nursing student, Health promotion; Qualitative study; Content analysis

1. Introduction

Reducing health risks and improving health increases longevity, enhances the quality of life, and reduces costs of health care. Today, health promotion, self care, and individuals' health are accentuated (Altun, 2008). Paying attention to the health risks along with individual's lifestyle were recorded well in texts. And it is completely determined that health promotion activities and healthy life style, are important guidelines to facilitate and to maintain health (Haddad et al., 2004). Health World Organization stated that 60% of health quality and individuals' life depends on their behavior and life style (WHO, 2004). In the last document related to the healthy people in 2010, increasing the quality of life, healthy life years and reducing health inequality were expressed as two aims of healthy people (Alpar et al., 2008). To be healthy is the aim of nursing (Pender et al., 2011). Diseases prevention and health promotion is concentration pivot of first care providers' activities or nursing students (Chhim., 2011). Today, nursing students who are future nurses (Soleimani et al., 2005) are the suppliers of health services and it appears that beliefs, views or their behaviors may influence the clinical services that they present for assistants (Chhim., 2011). In terms of health promoting behavior, some texts show that nursing students may be more passive ones in comparison to other students in different fields (Irazusta et al., 2006). Nursing students are responsible for their health and others; however, it is reported that the last priority is to take care of their health (Canadian Nursing Students' Association, 2009). Nursing students in comparison to non-nursing students scored significantly lower on air capacity measure and nursing students had higher diastolic blood pressure (Hensel, 2008). Nursing students do not often perform health promotion activities and when they are learning instructions to care for others, they often neglect to take care of themselves (Stark et al., 2005). Nurses do not perform necessary activities for healthy life style and consequently it can influence work and patients' related consequences.

The problem is that there is no enough knowledge about effective factors in nurses' decisions to have a healthy lifestyle (Hensel, 2008).

Despite the important role of nurses in health promotion, in a widespread search in the library, there was no evidence based on carried researches about the effective factors on health lifestyle from the view of nursing students in Iran and other countries. Therefore, this study aimed to specify nursing students' perception about the effective factors on the health lifestyle.

2. Material and Methods

The current study is a part of a larger study that was conducted using qualitative content analysis approach.

Qualitative content analysis is the content analysis of the content of narrative data to identify prominent themes and distinguished patterns among the themes- primarily using either a template or editing analysis style (Polit and Beck, 2010). The investigated subject in this research was about the effective factors on health lifestyle from the view of nursing students. For this reason 20 nursing students from Nursing Faculties, University of Medical Sciences, Tehran, participated in the semi-structured individual interviews. The participants were selected from June to November 2012by using purposive sampling to achieve data saturation. After selecting the participants, they were interviewed according to their tendencies in free times in classes, allocated rooms by authorities of different faculties, researcher's office, and faculties' campus. After attaining the oral consent and written informed consent by participants, in-depth semi-structured interviews were commenced based on the guidelines of the interview questions including four ones. Data were collected through semi-structured interviews and field notes. All interviews were recorded on MP3 player. Interview questions were focused on health promoting behaviors and the explanation of nursing students' perception about the effective factors on their health promoting behaviors. The minimum and maximum duration of individual interviews was19:30 and 71:28minutes, respectively.

To prevent data bias, all interviews were conducted by one researcher. Observing secrecy principle, confidentiality of data and the participants' names in all stages, assuring participants about keeping secrets related to data analysis, reserving the right of withdrawal of participating in any parts of the study which were about moral points of the study were observed.

In the current study to analyze data, the direct content analysis approach which elementary encoding begins with a research theory or findings was used (Zhang and Wildemuth, 2009).

The aim of direct content analysis is validation or the development of a conceptual framework or theory. The current theory or research can help to focus on research question and provide some predictions about the variables or the relationship between them (Hsieh and Shannon, 2005).

In view of the fact that, the current study was about the health promoting behaviors of Pender's model, the researchers used direct content analysis and determined categories based on the Pender's health promotion model (Pender et al., 2011).

Therefore, one of the researchers at first transcribed any interviews and notes related to study and then studied carefully and line by line and underlined the sentences and key words and encoded any one.

After completing codes, the interview was studied again in terms of the existence of possible code. Then code's integration and summarization was done and those codes which had similar meaning or other similar codes were put together in one category.

Therefore, the initial classification of data was obtained. Then it was attempted to do the same procedure on the other categories. Finally, secondary categories were put in the main category based on the features and common dimensions.

Rigor, in qualitative research are shown through the researchers' attention to detective data and its' confirmation. The accuracy of qualitative studies is to demonstrate the validity of the participants' experiences.

Credibility, dependability, conformability, and transferability are terms that form the scientific approaches to support the study's rigor (Streubert and Carpenter, 2003).

In this regard, devoting enough time for collecting data, interview, and observing samples in sessions' duration, member check, and reviewing elicited codes were used to supply data reliability from the researchers' long term involvement with the subject of the study.

To supply data security, the reliability of results was in favor of the researchers. To confirm data, audit trial was used. Therefore, a comprehensive report of process which has led to a conclusion has been represented. And the possibility of pursuing the research path and carried functions by the researchers has been provided. To transferability of the data in current study, data were investigated by external observers, carefully.

3. Results

A total of 20 nursing students from Nursing Faculties, University of Medical Sciences, Tehran, participated in semi-structured individual interviews.

Nursing students (6boys and 14 girls) who were undergraduate semester 1 to 8, enrolled in the study.

4 participants were married and 16 were single and 6 participants were working in nursing profession and one was employed in non-nursing professionals, and 13 were unemployed.

The result of the views of the interviewees was the main theme of the effective factors on healthy lifestyle which consisted of these categories" the perception of effective factors on health promotion" , "having enough time " , "inner factors" , "work-related factors or activity", "environmental factors", "knowledge and awareness" , "personal factors" , "social factors" , and "perceived priorities".

The perception of the factors affecting health

Participants mentioned to the comprehensiveness of effective factors on health promotion and the individual role as a health promotion factor. One of the participants says:

"If you want to be careful about many things, i.e. our breathing may affect on our health level, it is very comprehensive."(participant7)

Besides expressing a great numbers of effective factors on health, other participants believed that these factors are depended on each other like a chain.

"Factors are great. All are chained. Family can play a role; prepare a suitable environment for you, having quietness, comrade, and all your friends to be together."(Participant12)

Participants believed that effective factors on health do not simply have physical aspect, also they cover other aspects.

"Psychologically, people should live in peace, it is not merely physically. When people do not have mental disturbance they can simply deal with their problems". (Participant 13)

Chained connection between sport, nutrition, happiness, fitness, self-confidence, and make a good communication, were among other items that the participants dealt with them. One of the participants expressed about this item that:

"Sport itself encompasses several aspects. One is its effect on nutrition, other is the relationship with others in that sport especially team sports you have with other people, the other gives him happiness and freshness arisen from it, then it itself causes sport in terms of body shape or suitable appearance, maybe form the individual's appearance well. It causes self-confidence in individuals. This self-confidence causes a good effect in your relationship. All these are connecting to each other in chains."(Participant 14)

It was mentioned to the role of individual, family, and society in health promotion. Problems' effect, search for solutions, and individual's background information were among items that were mentioned by the participants about the role of individual in health promotion.

"Family role, society, the individual, individual's problems can help him/her. For instance, he/she can be prognostic and individual's background information and those who associated with him/her help him/her. "(participant8)

With regarding to the individual role in health promotion, the necessity of commencing the health promotion actions by the individual was among topics that discussed by the participants.

"It is ideal that each person helps to work well on those problems which he/she faces."(Participant12)

Having enough time:

Considering time to do health promoting behaviors included topics that participants believed it.

A participant said: "In my opinion among those factors which are effective is enough time that should be taken."(Participant9)

The significance of enough time was insomuch that some participants understood it as the only effective factors on health promoting behavior.

"I say, I don't think that it is influenced except our time". (Participant15)

Some participants believed that the lapse of time can be considered as away to overcome problems. With regard to this, one of the participants said that *"that time, that time is so important. Time is one of the benefits, by lapsing time, all things will be solved."(Participant12)*

Participants believed that they engaged in more health promoting behaviors at the weekend when they have more free times.

"when I am at home I use things which relate to health, I eat food over time, eat in proper time ,eat grape, drink milk, maybe I forget to take my iron pills during the week, I am tired at night ,but at the weekend both my mom and I are fresh and happy. "(Participant4)

Time had been perceived significant with regard to exercising, having suitable nutrition, having relaxation and asleep.

"All things are prepared some time but you do not time to speed it, for instance, wanting to use those facilities. Then you preferably try to satisfy with some nutrition which is valueless."(Participant7)

With regard to exercising, the participants said that lack of time was a hindrance to do their exercise.

"No, I don't have time. I go walking. But it is said that helpful walking should be more than one quarter and then fats being to burn"(Participant9). With regard to time effect on enough sleep and relaxation, other participant said that "it is only in

terms of asleep, we do not time to sleep, oh yes we do not time at all."(Participant15)

Besides, some participants mentioned to the role of enough time to do religious activities. In this case, one of the participants said that *"my intimate friends and I go to holy shrine saleh or shahriar to holy shrine shah AbdolAzim, these are important for me insomuch that I could do them."(Participant5)*

Participants believed that arranging time can cause their mental and thinking calmness and comfort. *"For instance, in studying, if you study and continue, you will be eased. Do your works, arrange your time."(Participant8)*

Internal Factors

Preparedness, mental calm, motivation, having aim, competition with others, personal features, trust in others, gaining personal satisfaction, interest curiosity and lack of indolence, competence, and personal willingness were among the internal effective factors on improving health. Physical preparation and having well thought to enjoy sport were expressed as internal factors influencing health promotion.

The fourteenth participant says *"our inner factor was that our body should be prepared to exercise it. Suddenly, we should not do heavy exercise that leads to negative effects on us; physically, we should be prepared for that sport. Mentally, we should have an open mind to take pleasure of the sport we are practicing."*With regard to peace of mind, one of the participants said that *"when people are free from any concerns, their food will be made well and when people are nervous and want to do something, it does not answer their needs, and also, it does not satisfy his/her starvation, finally, it is not delicious."(Participant15)*

Also, having motivation was perceived as a related factor by doing health-related behaviors. The impact of motivation was through being careful for them. In this regard, one of the participants stated that: *"I must have its motivation. When one's appearance is important for her/him, therefore, he /she exercise to prevent gain weight, motivation is so important. It leads to achieve the goal…(Participant18 noted).*

On the other hand, among the participants having goal was considered as an effective factor on doing correct behaviors. In this case, one of the participants noted that *"goal is the main thing to man. Whether you have a goal, you know what you are looking for in your life, when you know what you are looking for, and less people will make mistakes." participant 12 said*. The impact of thinking and behavior of competing with friends to see others succeed in their studies were mentioned as a positive factor. In this case, one participant noted that *"I am sure if I have been studying in other school, I may be failed in this one. Because I saw my friends studying, like this example, we have always had a rivalry." The thirteen participants said.*

Individual's personality was considered as an effective factor on doing the health promoting behavior through affecting the aim, motivation, and using competencies. In this case, a participant believed that *"some things depend on the individual's personality."(Participant11)*

"May be some of you, for example, "sh", don't enjoy it that you have one thing that others do not know, for example, she is properly ready to take examinations, but some personalities have it." The eleventh participant said.

Of the participants' views, trust on others was another aspect that had an impact on behavior. In this case, it was more mentioned to the reliable patterns.

"Well, someone who teaches others should be experienced, be a reliable person, because we shouldn't trust on any ones in these cases, for example, to show the correct way."(Participant14)

Also, satisfaction was perceived as an effective factor on the promotion of health. A participant believed that working in an ideal ward in hospital have been led to her more self-satisfaction, therefore, it will be led to the better work.

"When you, as my head nurse, for example, send me to an internal ward, so normally I start my job. But when you ask me to go to emergency, I am in the peak of pleasure, because I love this ward. Really, I feel that my energy will be spent in this ward and I'll work energetically, I work enjoyably (I relish it). Maybe you become more tired but I have self-satisfaction when I work in emergency." The eighteenth participant said.

Also, interest was cited as a factor influencing health *"when you have interest, you follow it to use it."(Participant7)*

The impact of interest on health promoting behavior was so distinguished that the interest to pursue study overcame on the dependency of one participant to family and he could separate from family and moved to Tehran to pursue hisstudy.

"My mom said that I am bored that you go 4 years. It was like that or for instance, I was the last kid, when I wasa high school student, my mom always said I should get up for you every morning to 5 years. She said that study here to be comfort near us, your food is ready, your sleeping set is ready, but I myself didn't accept."(Participant13)

On the other hand, curiosity was perceived as a contributing factor with doing risky behaviors.

"when a father involves in financial problems, surely child is his child(he loves his child),

for instance, he wants something and his/her father says "I don't have ", maybe his child committees a crime or do some works that do not deserve his/her family or him/her self. Now, it is for needing or not for curiosity effect." (Participant12)

Some participants maintained that the individual's will is the first effective factor on health promoting behaviors. *"Well, the first thing that enhances your health level is you. Want, really, you should want to enhance your health level. "*participant 13 said. Finally, in the category of internal factors, the individual's thought was expressed by the participants. They believed that thought cause more peace. *"I like to think, I think it make people calm."(Participant11)*

Activity or work-related Factors

The impact of doing interesting works on health promotion was attained through gaining peace and the participants were believed that even without having enough time, they are trying to do their favorable activities.

"In health promotion, what we like is very effective. For instance, music, film, and also studying calm me. Especially, there are things that I'd really like to read. Even, for instance, it is translation. I like language itself or even, maybe I don't have enough time but I don't leave it. These things make a person to get a deal of peace." Participant3 said. Besides, the expected result was mentioned as the effective factor on health promotion. The participants were believed that conclusion, success in work, and enjoying the achievement of the expected result lead to performing health improving behavior.

"I study because of its enjoyment. If I had not studied hard, I would not have scored 20, for example, if I had been studying hard, I would have scored 15, 16, then I will not study anymore." The tenth participant said.

The perceived hardness of doing activity was another effective factor on health promotion. So that when people realize that they are doing something which is hard for them gave up it.

"Daddy, I become tired, leaves it, I say. I don't go to the pool this time, leave it, some days I used to go walking in the morning, I leave it, it is hard for me."(Participant9)

To overcome internal demands due to the ease of understanding of the health promotion work was among other cases which cited by the participants. One of the participants said that *"now, maybe I love my own car but when I can easily come to school by public transportation systems to consume less gasoline, well, I try to use these." The second participant said.*

Environmental Factors:

Environmental factors influencing the participants' views on health promotion, including external factors that are likely interfere with their health promoting behavior. *"Maybe a man wants to do a thing like that but external factors prevent it." The fifteenth participant noted.* Participants believed that the ability to use existing environmental conditions can affect health. *"It is your surrounding conditions, now maybe the weather circumstances are desirable, your life environment exists, and you can use these cases." The seventh participant said.* The availability of health facilities and other possibilities were perceived among other effective factors on health improving. *"I have got a series of decisions, well, external conditions must be provided for doing it anymore."(participant18)*

The availability of accommodations was so important from their view that because of the lack of accommodations and facilities, the participants expressed leaving the willingness to perform behavior as a related factor with behavior.

"The environment that it can be dormitory environment or, for example, if they give sport equipment, students do work, sports or whatever goes up. Or for example, to study to raise your scientific level, there are some problems that are humorous for people, when there are those problems, people will be disappointed, slightly."(Participant13)

Knowledge and awareness:

Having information and knowledge were among the salient aspects which were emphasized. Besides, knowledge and understanding of the benefits and disadvantages of having an active detriment of other factors on health promotion was conceived.

"If the man himself/herself finds out that what she/he would be doing now benefits his/her, he/she does not harm the health, promote his/her health, raise his/her knowledge and information, certainly, the best one and the best judge is person him/herself."(Participant12)

Furthermore, participants believed that the experience and having background information on health promotion is effective.

"For example, say you are in the hospital, we finally observe some things that we experience before it occurs for us to use, which is mainly background information." The eighth participant said. The participants stated that a trial and error experience may promote health.

"Take a look, one is very curious, I speak about those who are told that this is the correct behavior, however, he/she has the bankroll, she/he says that I want to be proved that this is correct, now, I don't say that these are wrong, no, I want to prove myself that these healthy behavior are more accurate than those of the healthy behavior. Or this healthy

behavior has more serious deficiencies. I continue, if I am doing wrong." The seventh participant said.

They believed that facing problems and the arisen experience of facing it promote health level. Term two participants spoke about the experience of the first term:

"If you get the experiences, we have experienced how to set up the program. For example, we set up traffic in a manner that we set up ourselves into traffic into be busy with studying. For example, when we have came house, allocate more time to rest."(Participant14)

Self-acceptance, understanding abilities and weaknesses, and determining behavioral difficulties through investing them in different situations were among those factors that the participants cited as factors affecting health.

"In my opinion, the main thing to improve mental health is knowing ourselves, that we can do any things for ourselves, I know that I can be able to know myself, my abilities and weaknesses, and behave according to my abilities." (Participant18)

Individual Factors

Participants believed that besides internal and external factors, the type of their decision was effective in health promotion.

"Well, it depends on what decision we take. That decision we take depends on different aspects." (Participant14)

In addition, the participants stressed the importance of learning skills to cope with life problems. One of the participants was noted in this case that *"she should gain her skills, they should have learned how to cope with life problems, these are so important."(Participant6)*

Understanding of the safety, health value and its importance, and knowing the reason to perform health promoting activities were among other individual factors that were expressed by the participants. They believed that as they are serving in nursing profession, they are able to convey their knowing to the clients and playing a role in society health promotion through it.

"*A person must understand, sir, what's health. What's its advantage, why you have to be healthy, what you do to be healthy, for example, why you should do these works? When he/she understands it, others will understand it too, especially, for us who are nurses .I myself, for example, say I don't know this event happen if I do this work, whether my body improve and be healthy. Just go to that client, who came to visit me, I'll explain him/her." The twelfth participant said.*

Participants were reminded that financial independence is the case of doing things independently. A participant stated in this case that *"when I see myself independent of all the other, I do all my works independently, my pleasure, my work, my neatness, my washing, alleged, my neatness, buy clothes, and buy a house…" (Participant5)*

Participants believed that marital status has an impact on health promotion.

"I think that is something that apparently went into the marriage as a kind of relationship more intimate, friendlier, and much easier to get people to express love and the incidence of interest. Inchmeal typically, inchmeal leak on this side and that side." The fifth participant said.

The participants believed that encountering the problem is a better factor to cope with difficulties. In this case, one of the participants stated that *"When people encounter with a problem, it itself can help to improve health level because people involve in the problem to find its solution." (Participant8)*

Social Factors

In the field of social factors, participants believed that to be understood by others in their life environment and work is an effective factor on their health promotion. One of the participants noted that "*when I am understood by my work conditions or really find that what a kind man I am. It is really very important to place you in what ward, very important, well, this help me, and this is a helpful factor." (Participant18)*

The attitude of important people in life stated as a social factor on health promotion too. Also, encouragement, confirmation, and advice to health promoting behavior were understood as effective factors on health promotion by acquaintances from the participants. *"The attitude of some important people in my life is about it, my family and my friends.(Participant 11)*

"Maybe my acquaintances told me how to behave. Well, it itself is effective." The seventh participant said."Maybe are not interested to do any works, but for example, some people approve her/him, that communication is so important." The eleventh participant said. (Participant 11)

Furthermore, participants emphasized the main role of collaboration and cooperation. They mentioned the accompaniment of others as a positive factor influencing health promoting behaviors. *"If our accompanying exists, he/she has a main role, one into the space that he has created, that joyful atmosphere which he/she creates or that healthy relationship which he/she creates. Well, that person is very effective because we are doing all works with him/her." (Participant14)* Social, economic, politic, and managerial conditions of community were expressed as social influences too. *"The system that we have gotten, that system emphasizes other one, this cause to have a good and peaceful system….*

achieving the managerial stability can influence families." (Participant12)

In addition, the participants believed the family's role in health promotion. They expressed the family's role through encouraging, exchanging of information, creating calm, increasing morale, and resolve problems and so on.

"Family's role in mental health, people should be motivated to back home, he will be happy when goes home. How tell you, he would like to go home, with family members to be comfortable."(Participant8)

Difficult living conditions in dormitories on the one hand, and on the other to get intellectual help through the companionship with domiciled dormitory students, the impact of life on dormitory on the experience of making a wider communication, the impact of the homogeneity of dormitory roommates on the enjoyment of life, and so on were among cases which were introduced. One of the participants stated that *"for example, all students are near each other, do all their tasks. Because if you are at home, there are only you yourself, or your cousin or those persons you always see them. But when you go to dormitory environment, there are some people who haven't been seen yet, and then maybe you have many discussions to say."(Participant13)*

Participants were considering loneliness as a factor to think about problems and to find a solution.

"Alone time, it is a good opportunity to think. For instance, I solve many things by thinking." (Participant11)

Perceived Priority

Among other matters affecting health promotion that were expressed by the participants, was a priority that they deserved for their appearance, family, or other issues.

"Of course, I should say that my appearance is so important for me. I don't say that only lesson or my spirit or mind is important, my appearance is so important too."(Participant10)

Participants agreed on the priority of the individual family. So, some participants believed that even if they have a lot of problems, but their family is at peace, they feel comfortable. One of the participant stated in this case that *"well, one thing about my family, for example, my family's comfort gives me peace of mind even if I only involve in so much trouble. But if I see that my daddy felt good, my mom is good, my sisters and brothers are happy, this leads to my peace even if you have so many problems." (Participant11)*

The findings of current study were summarized at table (1).

Table (1) subcategories, categories, and theme of effective factors on health promotion

Sub-category	Category	Theme
Diversity of effective factors on health, promotion behavior, person as a factor for health promotion	the perception of effective factors on health promotion"	
having time, the effect of leisure time on health promotion, investigating health promotion, the impact of time on health promotion behaviors (studying, nutrition, exercise, adequate sleep and rest, perform religious rites), arranging time, and priorities of the program, and its effects on health promotion	"having enough time"	
mental relaxation, motivation, competition and view others' work, personality traits, trust in others, having effective internal factors on aim, self-satisfaction, gain personal satisfaction, interest, readiness, curiosity, personal will and desire, thought, attitude	"inner factors"	
the impact of performing interesting works on health promotion, the expected outcome, the obtained pleasure of performing work, perceived hardness, the ease of using health promotion equipment	work-related factors or activity	
external factors, environmental conditions, presence of facilities and accommodation, cost	environmental factors	
information enhancement, the impact of background information on health promotion, perception of benefits, perception of lack of harm, trial and error, comparison and proving more correct behavior, experience, the impact of gaining experience on planning as an effective health promotion, the person him/herself and self-knowledge	knowledge and awareness	
kind of decision, the impact of life skills on health promotion, perception of health and its related activities, job, having physiologic health, financial independence, marital status, having activity, difficulties	individual factors	the effective

perception of individual by others, attitudes of life important persons, relatives and acquaintances, perception of behavior importance by others, behavior encouragement by others, society attitude, others' support and companionship, cooperating, social, economic, political, managerial, and family conditions, and the characteristics of person's family, the university and dormitory, loneliness	social factors	factors on nursing students' healthy life style
importance and appearance adornment status, priority to family health than personal health, perception of family important problems	perceived priorities	

4. Discussions

In the current study, the factors affecting on health promoting lifestyle in nursing students were widespread and numerous. In this case, the carried study related to the structure of health promotion in nursing students showed that the students' perception of health promotion was related to the students' personal experience and included widespread subcategories (Liimatainen et al., 2001) which mention the result of the current study.

Having enough time was among the factors influencing health promoting behaviors in the students. So, by having enough time, students were performing more health promoting behaviors. In this case, previous studies showed that lack of time can prevent doing health promoting behaviors and often, individuals reported that they were busy, therefore, they have not had enough time to do health promoting behaviors in modern life (Huang et al., 2010). Participants believed that internal factors such as willingness and personal will can influence their health promoting behaviors. In line with the results of this study, in a study, nursing students' healthy lifestyle was related to the person's responsibility for their own health (Liimatainen et al., 2001). In the present study, participants stated that the benefits of the expected result and the ease or difficulty of the work being done are effective on doing health promoting behavior. Also, Wittayapun and colleges found that perceived benefits of action were associated with health promoting behaviors (Wittayapun et al., 2010). In current studies, participants believed that personal factors such as occupation, marital status, and financial autonomy play a role on health promotion. In this regard, the study revealed that these nurses who were working on rotate shift were lower in the lifestyle than those nurses who were working in fix shift. Single nurses with a less work shift were possessed an unhealthy nutritional status. Nurses who were married and worked longer than other nurses had less physical activity (Kim, 2011).

Furthermore, the results of Kemppainen et al (2012) showed that cultural aspects of the place where nurses were employed affect their health promoting activities and this cultural content could be supportive or discouraging. In present study, the participants emphasized the role of environmental factors in health promotion. In this regard, a study on nursing students showed that a healthy community services with environment, housing, leisure time, health, and entertainment related activities were established (Liimatainen et al., 2001). The participants of current study believed that knowledge has an impact on their health promotion. Paulik et al. in their study found that higher levels of knowledge were more likely to adopt health promoting behaviors (Paulik et al., 2010). Also, Peltzer found more knowledge about health promotion, along with a more positive perspective on health promotion. So, knowledge about health promoting with positive perceptions of health among nurses were significantly correlated (Peltzer, 2001). Liimatainen study also showed that students' self-awareness could be involved in decisions about health promotion (Liimatainen et al., 2001).The participants in this study stated that financial autonomy and the perception of their health can lead to the enhancement of their health. There was a significant relationship between income, health perception, and health promoting behaviors in Beser et al. study. So that, people who had higher perceived health had chosen a better health promoting lifestyle (Beser et al., 2007). In this study, the participants mentioned to the role of social factors in health improving behaviors. And they noted that family, economical, social, political, and managerial conditions can influence health promoting behaviors. Also, in a carried study in Hungary, a significant relationship was found between health promoting behaviors and economical and social status. Furthermore, family and social networks were mentioned as interpersonal effective factors on health promotion behaviors. Also, a study conducted on students on Turkey showed a significant relation between lifestyle, health promotion, and social support (Peker and Bermek, 2011).In Liimatainen study, most students believed that health promotion are formed in the context of social services (Liimatainen et al., 2001). In the present study, the perceived priorities of problems and family problems were found to be effective on the participants' health promotion. A study conducted by Lin also revealed that there was a significant relationship between the understanding of health promotion behaviors and health promotion behavior

in family. Furthermore, an understanding of health promoting behavior in family was predicted as promoting individual behavior (Lin et al., 2009).Therefore, by considering the results of the study and other related results of other studies can mention that health lifestyle in the students is placed under the various and different factors which can use some strategic plansabout them. On the other hand, the factors can be considered to increase health lifestyle of their lives and take practical steps in this regard. The results of this study help to nursing policy makers and administrators and authorities to develop practical strategies for the students' healthy lifestyle.

Limitations and Suggestions

Since the study was conducted on a limited number of students, its generalization to other situations and locations should be made with caution. Doing studies in the field of nursing healthy lifestyle in broader aspects of nursing and nursing education in other sections are suggested.

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Iranian Nursing Students Perspective of their Rights in Clinical Evaluation: A Thematic Analysis Study

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Abstract: Nursing education has many challenges, one of which is the students' rights in clinical evaluation. The purpose of this study was to investigate nursing students' perspective of their rights in clinical evaluation. A qualitative study was conducted and analyzed using a thematic analysis approach to identify categories and themes in 13 nursing students (8 female and 5 male). After utilizing purposeful sampling data were collected via semi-structure interviews. MAXQDA 10 was used to organize and explore coded transcripts.The data were classified into four major themes: unawareness of own rights, unfair evaluation, unreasonable expectation & bullying, and unstructured evaluation. The findings indicated that the main concern of nursing students was lack of awareness of their rights. It is argued that nursing students' bill of rights should be developed in Iran.
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Keywords: students' rights, education, clinical evaluation, nursing students, thematic analysis.

1. Introduction

An issue identified within higher education in all disciplines is that of evaluating the performance of students. A significant number of researchers from multiple disciplines address this issue (Oermann et al., 2009, McCutchan, 2010, Chambers, 1998).

Evaluation is an integral part of the education and it is an ongoing process aimed at understanding and improving student learning. It involves systematically gathering, analyzing, and interpreting evidence to determine how well performance matched criteria and standards(McCutchan, 2010).There is a rising movement to define and effectively evaluate clinical competency (Oermann et al., 2009, McCutchan, 2010, Brasler, 1993).

Nursing clinical practice is multidimensional and requires combinations of assessment strategies to both identify and validate nursing competence (Oermann et al., 2009).There is no single agreed standard for evaluating clinical competence (Redfern et al., 2002, Oermann et al., 2009, Chambers, 1998).

Clinical evaluation is one type of performance evaluation, which is defined as a process by which judgments are made about the learner's performance in clinical practice (Glick et al., 2010, Brasler, 1993). It includes two phases: systematic collection and interpretation of data gathered from multiple sources about clinical competence such as observation of the students' performance, and based on these, determine if the student achieved the clinical competencies (Oermann et al., 2009, Chambers, 1998).

Fair and objective evaluation of clinical performance is extremely challenging, and complex process for both students and instructor because it requires the direct observation of students engaged in actual practice in dynamic, challenging, and unpredictable clinical situations (Larew et al., 2006, Carlson et al., 1989).

There are many issues inherent in the clinical evaluation of nursing students because observation and interpretation of performance are subjective. The instructors do not continuously observe all students, and educational environment is incontrollable (McCutchan, 2010). On the other hand, many actions and behaviors involved in the nursing care of patients by nursing students are difficult to objectively define due to their complex nature. It seems that in areas that could not easily be objectified, teachers were hesitant to make decisions properly (Duke, 1996), and students often achieved higher scores in clinical courses than theoretical courses (McCutchan, 2010). Therefore, it is logical that *students are worried about their* rights being violated in clinical *evaluation processes*. "Student's bill of rights" helps to clearly define what students, teachers, and administrators can and cannot do.

Students are hindered by a lack of knowledge of their rights. The rights and

responsibilities would be more widely publicized to the student body if it were formalized in a written document for students to reference and follow. If administrators were to publicize this formalized policy to students, there would be less of a gray area as to what students can and cannot do (Stobart, 2005, Siskind and Kearns, 1997, Clarke et al., 2012). In the other hand teachers and administrators accountable for their decisions and allow students to appeal the decisions they take issue with in a proper manner. It is necessary that students make an effort to know all the rights they have at school.

Many students enter nursing programme with preconceived ideas about their rights. However, little is known about nursing students' rights in clinical setting. This paper reports findings drawn from a large qualitative study conducted in Tehran, Iran sought to explore the students' rights in nursing education.Reviewing the medical literature showed that the clinical evaluation process has been well documented. However, limited literature exists sharing the nursing students' perspective of their rights in clinical evaluation. Therefore, the purpose of this study is to focus on the experiences of the nursing students about their rights in clinical evaluation process.

Background in Iran

Iran is located in Middle East with a population of approximately 75 million. More than 98% of the population is Muslim (FARSI et al., 2010). After the completion of high school, applicants participated in competitive National Higher Education Entrance Examination (NHEEE). Applicants who are achieving highest score generally choose medicine, dentistry or pharmacology. Lower ranking applicants often select courses, including nursing, most often without any particular motivation or interest (TabariKhomeiran and Deans, 2007).

There are more than 160 nursing schools are established in both sector of governmental and non-governmental with annual enrollment approximately about 6000 students. All schools are obliged to follow a basic curriculum established by the Ministry (NikbakhtNasrabadi et al., 2003).The bachelor degree duration is 4 years including theoretical and clinical courses.

Nursing students are trained in skill lab, hospital, community and other educational settings. Clinical courses covered across the four years in the five areas of medical–surgical, obstetric, paediatric, psychiatric, and community nursing. The number of students in each clinical group ranges from 6 to 10 people of both male and female. Generally, the students are assigned to care for patients based on case method in the clinical field. They are under the direct supervision and guidance of the nursing instructors during both the theoretical and clinical instruction for the first 3 years. In the final year, they work under the direct guidance of staff nurses and the collaborative supervision of nurse instructors (FARSI et al., 2010). In the past three years admission of students has doubled. Due to large student enrolment, staff nurses and sessional clinical teachers are commonly engaged to instruct and evaluate nursing students. Many of them have never been trained using evaluation methods, nor have qualifications to practice as teacher and they rely on their working experiences to evaluate students.

Although there are various rules of law protecting people rights in Iran, up to present, there is no bill of rights and rules that protect the rights of students in educational systems; and problems are solved through informal communication between students and educational system. Beside a review of the literature revealed an abundance of discussion papers relate to clinical evaluation, we have not found any study in relation to the students' rights in clinical evaluation and this is probably the first study in this field using a qualitative approach.

2. Material and Methods

A qualitative research design based on thematic analysis approach was employed to explore the comprehension and experiences of Iranian nursing students about respecting their rights in clinical evaluation.

Qualitative research seeks to describe and interpret the subjective meanings of an individual's experiences, in order to achieve a deep understanding of those experiences (Streubert and Carpenter, 2010, Michaud, 2011, Fossey et al., 2002). Thematic analysis is one of the most commonly used methods of qualitative analysis that typically involves a progressive process of classifying, comparing, grouping, and refining groupings of text segments to create and then clarify the definition of categories, or themes, within the data (Fossey et al., 2002, Vamos and Zhou, 2009).

Data collection and analysis

This study involved semi-structured, in-depth interviews designed to elicit information of a respecting student rights with 13 nursing students.

This was held in a place that assured the participant's privacy and confidentiality. At the beginning of the interview, the participants were invited to ask any they might have about the consent form or the procedure. The interview questions were open-ended, beginning with general inquiries. The focuses of the interview questions were the following: What is your comprehension regarding student rights? Would you please share with us your experiences regarding respecting your rights in clinical evaluation? In addition, probing questions

were asked to conduct the interview. Each interview lasted on average between 40 and 60 minutes. The interviews were digitally recorded and verbatim transcriptions were made. Following steps were implementedto analyze the data:

- Familiarizing with the gathered data: Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
- Generating initial codes: Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code;
- Searching for themes: Collating codes into potential themes, gathering all data relevant to each potential theme;
- Reviewing themes: Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis;
- Defining and naming themes: Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme;
- Producing the report: The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis (Braun and Clarke, 2006).

The researchers independently analyzed the data by identifying and categorizing codes. Then, the two authors' codes and their latest analysis development as themes were compared. In areas where the two did not agree, dentitions were clarified and discussions continued until consensus was reached.

Regarding trustworthiness, credibility was established through peer check and prolonged engagement. Two expert supervisors and two other doctoral students of nursing conducted the peer checking. Prolonged engagement with the participants within the research field helped the researchers to gain the participants' trust and a better understanding of the research fields (Fossey et al., 2002, Michaud, 2011, Streubert and Carpenter, 2010).

Participants:

Purposive sampling was used to recruit students from the Bachelor of Nursing programme. Students who had completed their first (year one) were invited to participate in the study.

All participants were informed about the objectives of the study, and written informed consent was obtained in accordance with guidelines of the Tehran medical University. Participants comprised 8 females and five males. Maximum variant purposive sampling will be conducted to capture a wide range of perspectives and experiences relating to the phenomenon. Maximum variation of sampling also enhanced the confirm ability and credibility of data (Streubert and Carpenter, 2010).

Ethical considerations

The study was approved by the university's research ethics committee before beginning of data collection. Participants were informed of their right to withdraw participation or data at any time. Prior to the recording interviews, the purpose of the study was verbally clarified with each participant. Last, those who agreed to participate in the study signed written consent.

3. Results

Thematic analysis of the transcripts identified four themes: unawareness to own rights, unfair evaluation, unreasonable expectation, and unstructured evaluation. The following is a description of these themes, as well as verbatim examples of participant's responses that illustrate them.

Unawareness of own rights

The first theme noted by participants was unfamiliarity to own rights. It is vital that students are thoroughly acquainted with their rights and responsibilities. However, the participants in this study complained that they did not receive any information, formal or informal, about their rights.

'Nobody told me about my rights, but I sure that I have rights although nobody mention it'(female junior).

'…i heard that in some countries, students receive "student rights handbook"; but I have not seen this here yet. It is an intricate situation; I really don't know what my rights *are* or how to handle the situation' *(male junior).*

'There were many instances in which I did not know my rights. Later, I understood that I had rights that nobody respected′ *(female junior).*

The experiences of participants showed that students faced with an unknown and intricate world when they enter educational system. They concluded that they should be looking for their rights.

'…we should ourselves know what is our rights. Many problems can be solved this way'*(female junior).*

'…when we know our rights, nobody can violate our rights. It is up to us to keep our faculty from turning against us′ *(male junior).*

They believed that a large part of problem related to unawareness to own rights:

'We should accept that the problem is partly related to the student's unawareness. The most important factor affecting my rights is to know what

my rights are; it is then that I can pursue them and claim for them' *(male junior).*

The *progress of awareness* can help students to recognize their determine needs and expectations to be met by the educational system. This was echoed by a participant as in:

'…knowing our rights is the first step towards keeping our rights and ensuring our dignity and security at faculty' *(male junior).*

The *Iranian Ministry of Health* and Medical Education published a '*Patient's Bill* of *Rights*' in 2001.Implementation of these supportive laws in hospitals may have increased nursing students awareness of their educational rights.

'…we have the civil rights and Patients' bill of rights; however, there is no bill for the Nurses' or Students' rights. Why not? We would regard each others' rights if we know the rights and if we know that disregarding those rights will result in prosecution'*(female junior).*

In sum, students are not always aware of their rights. It seems that awareness to student rights helps students acquire sensitivity to the total education, especially clinical evaluation and its issues.

Unfair evaluation

Many participants complained about fairness in clinical evaluation. This displeasure confirms that they faced many problems in clinical evaluation. One of the more striking features of finding is the extremely large number of participant expected to report their experiences in this regard. For example a student mentioned:

'It has been repeatedly occurred that I have done my work properly, but my instructor gave me an unfair grade that I did not deserve. That is really unfair' (male junior).

'…you never get what you deserve. Instructors know that they give unfair grade…' (female junior).

'I don't think the clinical evaluation forms reflect what is to be evaluated. It is not based on practical work. Even if they (instructors) evaluate me based on these form, these evaluation is unfair. An evaluation is fair if it design based on accurate criteria'(male junior).

'…i think that it would be good if the instructors were informed how to do fair evaluation'*(male junior).*

One student believed that the instructors not always observant or aware of what the students are doing in the clinical setting:

'…our educator was absent for a couple of days. To prevent our objection, he gave us much better marks in comparison with other groups of the students' (male junior).

Participants complained that assessment for the team project had limited the scope to evaluate individual effort:

'…there are no differences among strong and weak students. Do you think instructors give same grades for equal work? …when students enter in teamwork, it is not wise to give same grades for all members in a group because their respective abilities and level of involvement to the group project varies greatly '(male junior).

Preconceptions about the abilities of male and female students may influence scoring decisions. This was echoed by a female student as in:

'…in the ward, female students often perform better than their male counterparts, but the male students give better score…' (female junior).

In sum, this theme focuses on nursing students experiences about troublesome process of clinical evaluation. It is the responsibility of the University to promote the fair evaluation of student learning in all clinical setting nevertheless, most of students were complained that they should face with innumerable challenges in this era.

Unreasonable expectation& Bullying

Faculties of nursing have a responsibility for defining bullying and executing policies and procedures that address this issue.

Often times the content of the interviews that fell under this theme was focused on the irrational requests. As one student explains:

'Our educator had coerced me to disign a poster for the ward which was not related to our clinical course ... I did not design it. Consequently, I failed that course' (male junior).

Another student said the instructor forced him to do personal duties. The instructor allocated high score for it:

'One of our educators asked the students to make PowerPoint slides and compensate it with a mark of 5 units. Then he used those slides for his other classes …' (female junior).

Other student also echoed this perspective:

'He asked the students to buy meat, lentil, etc. for him; students had to buy them. He usually did not pay them. In case of any objection, the educator hated the objecting student forever. Because the number of educators was not commensurate with the number of students, we had to pass many courses with a same educator. Therefore, we had no choice other than fulfilling that educator's requests without objection' (female junior).

Unstructured evaluation

The best clinical evaluation will include the components of clear standards and goals. Instructors should provide clearly specified and well-designed

methods of assessment, and ensure that students are aware of assessment. Students also have a responsibility to ensure that they understand the evaluation requirements. Participants complained that the instructors have no specific criteria for evaluation:

'When a teacher's evaluation criteria are not clear, his evaluation is by no means unfair' (female junior).

One participant disclosed how their instructors evaluate students for assigning a final grade:

'In the last session of a clinical training course, our instructor said that Mr. A's Mark is 20 (full mark) because I saw him cleaning a patient's vomited materials. He continued that it was the first time seeing a student is tolerating a vomiting circumstance; I feel that he will become a good nurse.

Educators are different; we had an educator that used to write everything in her notebook and grade the students based on his writings.On the other hand, there was another educator who had not any course plan, he always was in delay and was inattentive to us. His evaluations marks were unfair and never matched to our activities' (male junior).

Some participants highlighted the unclear goals as a barrier to appropriate evaluation and another reason for Perplex of students. For example:

'We were two students working together. Our clinical performance was the same. Our instructor said that you were similar; however, as this student's mark in the theory section of the course has been higher than you, he also deserves to have a higher mark in the clinical section' (female junior).

'My instructor work as a staff in orthopedic ward and told us the goals of faculty are for themselves…your duties are everything a ward does and your grade will be based on these works…' (female junior).

Another participant continued the conversation of the concern associated with the goals of clinical courses:

'On the First day our educator gives us the goals of clinical course. But she didn't pay attention to them. We didn't know what we do and how we are evaluated' (male junior).

Another participant complained that the goal sareun attainable or non-specific:

'Most of goals presented to us are repeated in the other wards too. These goals aren't specific. On the other hand some goals will not be met because we don't have facilities needed… we should have go to brain angiography in neurosurgery ward, but our hospital doesn't have angiography unit, they wrote goals without see possibility' (male junior).

'I haven't seen the instructor in the ward. I sure, she relies on our presentation and paperwork such as making pamphlets instead of clinical practice, (male junior).

In sum, the students believed the learning objectives, and how the evaluation will measure students' achievement of those objectives should be clearly explained in the clinical course syllabus. Their criticism focused on clinical evaluation objective and bewildering criteria impacted scores.

4. Discussions

Clinical education is an essential part of the nursing education and includes about 50% of the nursing syllabus. Clinical evaluation is a part of the learning process in the clinical field, and that students should be allowed to express ideas freely (Duke, 1996).

There is a great deal of information found in nursing literature that emphasizes the need to evaluate nursing students' competencies in practice(Carlson et al., 1989, Redfern et al., 2002, Schaffer et al., 2005). This is an attempt to study the students' perspective of clinical evaluation in Iran. It could be considered as a start to detailed studies about nursing students' perspective of their rights in clinical evaluation in Iran.

The finding shows there are many important issues relevant to clinical evaluation. Students are basic elements in educational system, and their views and opinions towards assessment should be investigated to make sure that students are involved on their educational system.

Results show that most students were suffering from a lackof awareness about their rights and responsibilities. So research and education are required in order to increase awareness of students' rights (Kangasniemi et al., 2010).It is important to highlight that education for students does notnecessarilymean theproblem issolved. Nevertheless, students are increasingly serious about their rights (Ruff, 2011), so educational systems need to be prepared to advocate themselves, even from a juridical point of view (Kangasniemi et al., 2010).

The second theme is about the experiences of students about fairness in clinical evaluation. It is indispensable to mention that fairness is fundamentally a socio cultural, rather than a technical, issue (Rogers, 1996, Stobart, 2005, Suskie, 2000). Fair evaluation includes a broad range of intertwined issues, including absence of bias in the assignments (McGowan, 2009, Suskie, 2000), and equitable treatment of all students in the evaluation process (McCutchan, 2010), and using methods and procedures appropriate to students (Suskie, 2000).

The participants complained that the instructors were not informed how to do fair evaluation. Despite the well-documented issues associated with use of inexperienced sessional clinical instructors (Duke, 1996, FARSI et al., 2010) , they are commonly engaged to evaluate nursing students. Sessional clinical instructors are often unfamiliar with the clinical evaluation.

The other problem is Sessional clinical instructors utilized for short period of time. They are often unfamiliar with the nursing curriculum and the clinical objectives (Crytzer, 2011, Duke, 1996).

Another factor for creating dissatisfaction among participant referred to gender bias. Many researchers found that gender does play a great role in student evaluation regardless of their knowledge or abilities (Clarke et al., 2012, McCutchan, 2010, McKay and Tate, 2001, Siskind and Kearns, 1997).

The third theme encompasses the participants' perspective and experiences regarding bullying behavior occurred in clinical evaluation process. Clarke et al (2012) commented that clinical instructors were the greatest source of bullying behaviors (Clarke et al., 2012).

Most nursing educators are socialized to bully nursing students.Therefore, teaching strategy for minimizing bullying may be useful for clinical instructors and should be encouraged within nursing faculties. Students must also be aware of procedures for reporting experiences of bullying(Chambers, 1998, Clarke et al., 2012, Suskie, 2000).

The last theme was related to unstructured evaluation. The participants specified their apprehension from the impact of the absence of instructor on evaluation. McCutchan (2010) were concerned the manner in which instructors not always observant or aware of what the students are doing in the clinical setting *(McCutchan, 2010).*

The high student to instructor ratio and low contact hours can beinterfere with the ability of the instructor as he/she simultaneously teach and evaluate student in clinical setting. It is almost impossible to directly observe how students meet the objectives outlined in the clinical evaluation forms (Duke, 1996, Tanda and Denham, 2009).

Another factor for creating dissatisfaction among the participants was the way instructors interpreted use of the evaluation goals for assigning a grade. All clinical evaluation methods should be clearly related objectives(Duke, 1996, Porter et al., 2011), and be compatible with the instructional approaches used(Rogers, 1996, Tanda and Denham, 2009). Instructors also should utilize clearly specified and well-designed methods of evaluation (McCutchan, 2010).

Participants stated that instructor subjectivity is another problem associated with the clinical evaluation. It is acknowledged that subjectivity is an integral part in performance appraisal (Duke, 1996, Rogers, 1996).

One of the peinciples of evaluation is to avoid bias. But many aspect of nursing practice are difficult to objectively define, therefore itis logical that interpretation of instructors can include bias and thus become subjective (Rogers, 1996, Siskind and Kearns, 1997).

Limitation of the study and suggestion for future study

It is important to highlight the limitations of this study in order for the findings to be interpreted in context. It is implausible to suppose that this geographically localized and relatively small-scale study will reflect entirely the experiences of all nursing students in Iran. Therefore, conducting further studies among nursing students and pursuing nursing instructors' perspective regarding student rights in clinical evaluation are recommended.

Conclusion:

The student rights in clinical evaluation are an intricate concept in nurse education in Iran. It seems that increasing awareness about rights and responsibilities causing students to be more serious about their clinical evaluation. This study has provided some insights and information on the respecting student rights in clinical evaluation. Clinical evaluation must be objective and fair; objective and fair evaluation of clinical performance is challenging because many aspect of nursing are subjective. Evaluation methods should be in harmony with the instructional objectives.

Enacting students' rights should be considered in Iran, this framework ensures that educational systems work effectively and efficiently toward students' rights practice.

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Study on effect of surface stroking technique on pain severity in Arthroscopic knee surgery patients

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Abstract: Pain as a main social problem has involved millions of people. Usually pharmaceutical methods use for treating pain but they have side effects which make them less effective. surface stroking technique is one of the effective ways for reducing pain after surgery. The aim of this study was to evaluate the effect of surface stroking technique on pain severity in in Arthroscopic knee surgery patients. This is a clinical trial study on 60 arthroscopic knee surgery patients who were hospitalized in men's orthopedic ward of Al-Zahra and Kashani hospitals. A two part questionnaire was used for collecting data. Samples were selected using easy continuity method and then they were randomly divided into two groups. In intervention group, besides routine treatments, patients were taking surface stroking technique by the researcher for 20 minutes each day and pain severity was evaluated before and after the surface stroking technique. Data was analyzed using descriptive and inferential statistics and SPSS software. Results showed that there was a meaningful different between mean score of pain severity before and after the surface stroking technique in intervention group ($p < 0.001$) but this difference wasn't meaningful in control group ($p = 0.32$). Also comparing the mean score of pain severity in both groups before any interventions showed that there were no meaningful differences ($p=0.34$) but this difference was meaningful after interventions ($p = 0.001$). Considering surface stroking technique as a safe and effective intervention, it could be used as an easy, cheap and executable method for treating pain in all medical health care centers and even at patient's home.
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Keywords: surface stroking technique, pain, orthopedics, patients

1. Introduction

from the first seconds after birth human being experience pain caused by the very first action he does in this world, breathing(Nikbakht Nasrabadi, 1996) .Pain is a problem that would never be healed properly and accompanies almost every surgical procedure(Hamdy, 2001).One of the most common surgical procedures on muscular skeletal system is arthroscopic knee surgery which has drawn lots of attention because of its reduced post operational effects. Nurses' fear of patient's addiction to drugs and drug's side effects and also considering this surgery as a no aggressive operation, leave patients with unhealed pain And the only factor for releasing these patients from hospital is reduced pain severity(Ebmezar, 2005).

Therefore reducing patients' pain is one of the main medical goals which are often executed by giving them narcotic drugs but these drugs usually have side effects that make them less effective. So they must be used less or be replaced by other methods. (Pouresmail et al., 1999).another category for reducing pain includes non-pharmaceutical treatment. These treatments may completely not heal patient's pain but it can be a help along with other treatments. surface stroking technique is a non medical treatment used for treating acute pain (Jewell Rich G., 2002).

During past years, many studies conducted on using complementary therapies for reducing pain severity in patients and for supporting these methods but busy schedule of nurses, time limitations for bonding a relation between nurse and patient and lack of research background to support them are problems that have challenged using of these methods (Richards KC, Gibson R, Overton-McCoy al., 2000).Existence f doubt among society and even among physicians is one of the main obstacle toward using of these methods by nurses (Potter PA, Perry AG., 2004). This necessitate a powerful and complete research background to support usage of these methods because existence of a scientific guide which is appropriate for nurses can help them to high quality and more scientific health services to patients. Therefore, this study was conducted to assess the effect of surface stroking technique on pain severity in arthroscopic knee surgery patients in men's orthopedic ward.

2. Material and Methods

This is a clinical trial study which conducted on two groups (intervention and control) and in one step. Independent variable was surface stroking technique and dependent variable was pain severity. Samples were all of the men who had arthroscopic knee surgery and were hospitalized. Inclusion criteria included willingness for participating in me study, receiving surface stroking technique, being fully conscious after surgery, having pain of moderate level (scoring of 4-6 in pain severity scale of 10), receiving analgesics based on physicians' prescription, age range of 15-55 years old, having Iranian nationality, being Muslim and speaking Persian. Having history of muscle-skeletal pain, being mentally retarded, being blind, having active mental disorder, having the history of breaking and surgery in lower limb, having addiction to drugs, pain killers and psychotropic substances and having limitations like spinal damages and neurological diseases were exclusion criteria. Data was gathered using a two part questionnaire (it was completed by the researcher). First part included demographic data like employment status, marital status, educational status and age of the patient.

Second part was for measuring pain severity in patients before and after intervention using 10-scale pain assessment tool. This is a standard tool and is one of the most valid and simple ways to measure pain severity and has been used widely in researches inside and outside the country and it has reliability and validity (Closs et al., 1998).The researcher entered research environment a day before patients' surgery and after introducing themselves, explaining goals of the study and receiving written consent from patients, divided them randomly into two groups and intervention and control based on ethical issues and inclusion and exclusion criteria. First patients' demographic data was filled in the questionnaire. The researcher entered the medical center on the surgery day. After surgery, getting into ward and becoming conscious again, selected patients entered the study. Sampling was done using simple continuous method and then 60 patients were selected and randomly divided into two groups. In the intervention group, first the pain severity was measured before applying the intervention. Then researcher gave surface stroking technique for patient's healthy foot, hands and upper parts of the shoulders shallowly for 20 minutes and then measured pain severity again. In control group, at the beginning of the experience and after 20 minutes without applying any intervention pain severity was measured and recorded in the questionnaire. Therefore data was gathered for 4 months, from March 2009 to June 2010 and then was analyzed using descriptive (mean and SD) and inferential (independent t, paired t and chi square) statistics.

3. Results

Results showed that mean (SD) of age in intervention and control group was 29.47 (7.17) and 29.33 (7.39) respectively. Results of t-test showed that there was no significant difference between both groups considering age range, so they were similar considering this variable.

The mean score of pain severity in intervention group before and after receiving surface stroking technique is mentioned in table 1. Statistical paired t with $p < 0.001$ showed that mean score of pain severity in intervention group before and after surface stroking technique has changed significantly.

Table 1. The mean score of pain severity in the intervention group

Intervention group	before massaging		after massaging		Paired t-test	
Mean	SD	Mean	SD	P value	T	
Score of pain severity	5.1	0.84	4.03	0.76	P<0.001	12.99

The mean score of pain severity in the control group at the beginning of the study and after 20 minutes was measured as it is mentioned in table 2. Results of paired t-test with p=0.32 showed that there was no significant difference between the score of pain severity at the beginning of the study and after 20 minutes in the control group.

The mean score of pain severity (SD) before applying intervention was 5.1 (0.84) and 4.9 (0.76) in the intervention and the control groups, respectively. Results of paired t-test showed that there was no significant difference between the mean score of pain severity before applying intervention in both groups.

The mean score of pain severity (SD) after applying intervention was 4.03 (0.76) and 4.83 (0.83) in the intervention and the control groups, respectively. Results of independent t-test showed a significant difference between the mean score of pain severity after applying intervention in both groups ($p = 0.001$).

4. Discussions

Since variables like age, marital status, educational status and employment might have effects on pain severity in patients (Grealish and Lomasney, 2000). Whiteman B so both groups were evaluated to be similar regarding these variables. Results of statistical tests showed that there was no

significant difference between both groups and both groups were similar regarding these variables.

Results showed that there was a significant difference between the mean score of pain severity before and after surface stroking technique in the intervention group ($p < 0.001$). It means that there pain severity was reduced after receiving massage therapy; but considering that the mean difference of pain severity before and after intervention is about "1" and pain is still in the average range, so this method cannot remove all of the patient's pains. Hardener mentioned that the aim of using non medical treatments for pain is to help and complete medical treatments. Applying these methods my not remove all pains but these interventions could be helpful to other pain treatments (Herdtner, 2000).

In Buckley study which was conducted to assess the effect of touching methods on pain severity after surgery in arthroscopic knee patients, results of paired t-test with $p < 0.001$ showed that the mean score of pain severity (SD) in the intervention group was reduced from 5.01 (0.78) to 4.02 (0.65), which confirm the results of the present study (Buckley, 2007).

Wang et al study was conducted to assess the effect of massaging arms and legs after abdominal surgery and the results of paired t-test showed that the mean score of pain severity (SD) after massaging reduced from 4.6 (0.95) to 2.35 (0.76) ($p < 0.001$, $t = 8.154$)(Wang and Keck., 2004). So these results also confirm the results of the present study.

Regarding this matter, Brunner wrote that to decrease the pain after orthopedic surgery complementary medicine methods like mind concentration, inculcating and back massaging could be useful (Smeltzer et al., 2008).

Researchers believe that the difference between mean scores of pain severity is significant in the intervention group because of the specified time duration considered for massaging patients in this group. Probably the time duration of massaging in this study was enough to see the parasympathetic respond and functioning of endocrines which increase the secretion of endorphins and could reduce pain severity in patients.

Table 2. The mean score of pain severity in the control group

Control group	at the beginning of the study		after 20 minutes		Paired t-test	
Score of pain severity	Mean	SD	Mean	SD	P value	T
	4.9	0.76	4.38	0.75	0.32	1

Results of pain severity in the control group showed that there was no significant difference between the mean score at the beginning of the study and after 20 minutes ($p = 0.32$). It means that their pain severity didn't change significantly after 20 minutes.

In a similar study by Richards to assess the effect of massaging on the pain severity of patients in special wards, results showed that after 10 minutes, the mean score of pain severity in the control group did not change significantly (Richards, 1998). Researcher believes that the mean score of pain severity did not change in the control significantly after 20 minutes because routine treatments were not enough to reduce patient's pain and couldn't reduce their pain severity significantly.

There other reason might be that in this study all sample were male and this could have an effect on patient's psychodynamic and physiologic responds toward pain and cause a different result than those studies that had both female and male samples.

Results showed that the mean score of pain severity in both groups was not significantly different at the beginning of the study. This means that pain severity was similar in both groups at the beginning of the study before applying any intervention.

Results showed that there was a significant difference between the mean score of pain severity of the intervention group and the control group after 20 minutes of applying intervention. This difference shows that surface stroking technique could reduce the pain severity in the intervention group's patients.

Bagheri et al (2006) study was conducted to assess the effect of massage therapy on the pain severity of stoke patients and results showed that the mean score of pain severity was reduced from 2.3 to 1.3 after 20 minutes of massage therapy (independent t-test with $p < 0.01$).

Finally, based on the results of the present study and previous similar studies, it could be concluded that among different methods of massaging, light massaging technique or stroking because of its special characteristics like being mild, having no side effects, not being painful and not needing complicated tools could be more helpful than other kind of massaging for reducing pain severity after orthopedic surgeries, in patients who have mild to severe pains and the duration of rehabilitation programs in acute phase is short and limited to hospitalized duration. It is suggested to apply this kind of massaging, which is practicable in a short time, at this phase to prevent or reduce secondary

complications, moving dysfunctions of involved organ and pain severity. By teaching this method to health care providers, patients and their families and encouraging them to apply it after discharging from hospital, it could have an effective role to control pain severity in patients and reduce treatment expenses for families and health care system. Therefore the quality of treatment and caring and also patients' lives would be increased.

The Authors declare that have no conflict of interest in this study and ethical committee approved the study.

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On the functional limitation in below elbow amputation men using Mechanical and Myoelectric prosthesis via TAPES questionnaire

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Abstract: It is well established that the Myoelecterical prosthesis must also be effective, smart, light, strong and high permanence, compared to those of Mechanical prosthesis. It is time consuming and expensive that has ultimately led to significant increases in the price of Myoelecterical prosthesis. Therefore, considering the high cost of these prostheses should be decrease the functional limitation, hence assessment the functional limitations between two groups must be clear and explicit. Therefore this study was conducted in this regard. In this descriptive cross-sectional analytical study, to groups compared to each other from quality of life, participants was two groups of 20 below elbow amputation veterans that use from Mechanical or Myoelectrical prosthesis that refer to central technical orthopedic Kosar. For gathering the data we use TPEAS questionnaire. This questionnaire evaluates participants from 3 items: psychosocial adaptation, functional limitation and satisfaction of life .For data analysis use to t independent and ANOVA test. This research showed that there are significant differences between two groups from functional limitation. The findings identified that the Myoelecterical groups have lower functional limitation in compare to Mechanical group. So that the hypothesis of this research in terms of lower functional limitation in the Myoelecterical group was accepted.
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Keywords: TPEAS questionnaire, Myoelectrical prosthesis, Mechanical prosthesis, functional limitation.

1. Introduction:

It is well established that the limb amputation is a term that separate means or part of a human body. Throughout the history, enduring failure is usually equal to amputation (Jhon *et al.*, 1992). There are 1700000 amputations people who live in the United States of America and 185,000 people yearly are discharged from the hospital with amputation (Edeer 2011).

Several factors such as trauma, infection, tumors, vascular disease, accidents, infectious diseases, and so create an amputation. Yet a high percentage of amputation statistics are in countries at war. so the 68/8% of statistics amputation is due to trauma in the above organ pipe (Jhon *et al.*, 1992; Gerzeli *et al.*, 2008; Atkins *et al.*, 1996). Although recent improvements of human science improve the quality prosthetics and prosthetic limbs but it is costly (Gerzeli *et al.*, 2008; Kahle *et al.*, 2008; Brodkorb *et al.*, 2008)

A person with an amputation is met with a sharp decline in the ability to fulfill his/her activities. In general, a variety of upper limb prostheses are designed and used. They can be split based on kinetic mechanisms of mechanical prostheses, Beauty (cosmetic) and myoelectric.

The researches which compare mechanical prostheses and myoelectric show that myoelectric Prosthetics are more acceptable because of the more power of grip, no need to the total bandage system and increasing the personal ability (Weaver *et al.*, 1988).

Unfortunately, despite the efforts that have been made in the field of prostheses performance, the ability of individuals to use them is not so well and some people do not prefer to use any type of prosthesis (Jhon *et al.*, 1992; Atkins *et al.*, 1996; Biddiss *et al.*, 1988; Mazet *et al.*, 1956).

A very important point that should be considered is that the rehabilitation of the upper limb amputation should be done as a team, in which the Constructive prosthesis is considered as one of the team members (Weaver *et al.*, 1988; Durance and shea, 1998). Despite significant improvement in the area of prosthetic parts with high performance and high aesthetic, patient satisfaction has not improved significantly. Specifically many of the above-limb amputees, straw or prefer not to use prosthesis or use the cosmetic prostheses. Identify factors affecting performance of the upper limb prostheses and evaluation of individual skills in the use of dental prosthesis is very important (Weaver *et al.*, 1988; Durance and shea, 1998).

Despite the importance of identifying factors that affect the performance of prostheses, few studies have been done in this area and researches have shown conflicting results. Roeschelin and Domholdt (1989) found that factors such as age, lack of a dominant hand, the lack of elbow and learning how to use a prosthetic implant

have not a considerable effect on the performance of prosthetic (Roeschelin and Domholdt, 1989).

However Bourough and Book (1991) in their study concluded that a personal training in the use of prosthetic have significant impact on the success and performance of the prosthesis. Studies have shown that people with different levels of amputation of both physical and mental performance, social must be able to adapt to new conditions. In the past, the more physical aspects generally considered, but recently the psychological variables, is more social. Fewer studies have been done in relation to quality of life and there is little literature about quality of life and none have worked exclusively on this issue (Gallgher and Maclachan, 2004). Thus, to obtain valuable results reveal that the policy prescription, buy and the standard implant should be install, classical studies in higher education and research is done.

Seems to be largely a function of the quality of life in people with amputations easily, improving mental and emotional satisfaction in using the prosthesis, artificial performance seems directly related to the quality of life, so it was researchers to assess quality of life between the two groups amputation using simple mechanical joint myoelectric and amputee veterans with equal sample size for orthopedic services Technical Orthopedics Orthotics & Prosthetics Center will visit Tehran Kowsar, TAPES questionnaire to assess quality of life, and then compare the data to.

2. Method

A descriptive cross-sectional study is to compare functional limitation for veterans with unilateral below elbow amputees using two mechanical prostheses and myoelectric unilateral below elbow amputee veterans of our study population center in Tehran Orthotics & Prosthetics Kosar Foundation, formed in 2011.

The plan approved by the Research Council of Tehran University of Medical Sciences Faculty of Rehabilitation offers a referral center providing comments and cooperation Kosar Center officials. All files honored war veterans with amputations below the elbow will get away from the Archive Center. Following hospital records, using the criteria for inclusion and exclusion criteria were not sampled cases that were excluded.

That in each case was given a code number using four wood samples and 40 samples were selected randomly, then, 40 people were randomly divided into two equal groups of 20 which used their current prosthesis last six months.These people have no underlying problems, including heart disease - cardiovascular, diabetes, chemical injury, severe orthopedic conditions such as fractures and bone infections of the upper limb, blindness, lower limb amputation, and physiological illness. they were invited to Kosar center to provide for the orthotics and prosthetics was constructed.

The program participants were invited to the orthoses and prostheses Kosar center and after examination, interview and re-sample matching criteria TAPES questionnaire will be provided. Participants completed questionnaires and returned it. TAPES questionnaire is designed and introduced for the first time in 1999 by Gallagher and Maclachan and used in order to improve the knowledge of prosthesis about individual compliance and improving the services (Gallgher and Maclachan, 2004). The validity and reliability of questionnaire are examined in Iran in 2008 in the satisfactory condition (Fardipoor, 2008).

According to a study that has examined the reliability and validity of the questionnaire to assess quality of life of people with upper limb amputations addressed, the research team in order to examine the validity of the questionnaire, the questionnaire was given to 10 academic experts people, and to their views and corrective actions have been considered.

The reliability of the questionnaire was assessed using Cronbach's alpha coefficient for the overall reliability of the questions related to compliance, social compliance, compliance with limits, exercise limits, functional limitations, social limitations, aesthetic satisfaction, satisfaction, satisfaction with weight and yield Respectively 81%, 78%, 73%, 71%, 75%, 72%, 71%, 77%, 70%, respectively.

Desmond and Maclachan (2005) to assess the validity and reliability TAPES questionnaire, have used TAPES in a study to assess the scale factors for upper extremity amputees.

This study was conducted on 100 men with upper limb amputation, the findings suggest that there is good reliability and validity in 9 subscales of TAPES questionnaire to assess quality of life was amputation of the upper limb (Desmond and Maclachlan, 2005).

Its sections are:

The first part is personal information, the second part consists of three main questions, psychosocial adjustment, activity restriction and satisfaction with the prosthesis, the last sub-section is satisfactory prosthesis The three categories of aesthetic satisfaction, satisfaction, satisfaction with weight and performance are the limitations of activity limitation exercise, functional limitations, and social limitations to bring a rubber The other part to questions about the amount of pain that a person is a member of cut, phantom pain, feeling healthy individuals to own and use average pay.

For data analysis software SPSS version 17 was used to mash Excel., In this study using techniques based on a comparison of independent variables (mechanical and Myoelectric)

Calculate the mean of the dependent variable (compliance, restrictions, satisfaction, performance, style, ...) will draw the necessary tables and then compare the averages and the difference paid to the analysis of data. Methods and 1- Descriptive statistics including: mean, standard deviation

2 - T-test and ANOVA test data used

Obtaining informed consent from all patients, respecting ethical considerations and the principle of secrecy and pledged that there was no risk of physical or mental

Table 1- Studied variables

MYOELECTRIC			MECHANICAL						
S.D.	Average	%	No.	S.D.	Average	%	No.	Year	
7.414	45.42	15	3	9.593	45/89	15	3	Below 35	Age
		20	4			25	5	36-44	
		65	13			60	12	Above 45	
6.393	23.26	15/8	3	6.889	18/75	25	5	Below 15	Time of amputation
		47/4	10			65	13	15-25	
		36/8	7			10	2	Above25	
6.504	21.75	20	4	6.778	17/05	40	8	Below 15	Duration of implant
		55	11			60	12	15-25	
		25	5			-	-	Above 25	
6.353	9.6	15	3	7.087	9/7	25	5	Below5	Duration of current prosthetic
		60	12			40	8	5-10	
		25	5			35	7	Above 10	

Table 2. Descriptive and analytical statistics parameters of mechanical and myoelectric prosthetics group.

T	P value	MYOELECTRIC		MECHANIC		Variable
		S.D	AVERAGE	S.D	AVERAGE	
2.125	0.04	1.436	5.8	2.693	7.25	Limit Sports
1.116	0.272	0.933	4.35	1.997	4.9	Functional limitations
2.075	0.045	2.292	19.1	2.28	20.60	Overall compliance

3. Result:

In the exercise limitation section the average of mechanical was more and showed that the prosthesis of this group are more restrictive than other groups. In this case T statistic was estimated equal to (2.125) and the significance are equal to (0.04), the research hypothesis test at a significance level (0.05> p) was adopted.

In performance constraint section was found that the average of mechanical group is more than other groups and the limitation are higher in this group. In this case T statistic was estimated equal to (1.116) and significance of tests are (0 .272) which this difference was significant

In Public sector limitations the average and limitation of mechanical group are higher than Myoelectric groups. In this case T statistic was estimated equal to (2.090) and significance of tests are (0 .043) which this difference was significant (0 /05> p).

4. Discussion:

The functional limitations due to physical activity are one of the questions in this section, and the effect on the strength and endurance of upper limb prosthesis no person in physical activity, the results were not unexpected (Desmond and Maclachlan 2008).

Da Silva *et al.* (2011) in a study of physical activity and quality of life in people with amputations in southern Brazil showed that there are a significant relationship between quality of life and level of physical activity and mental quality of life of these people. Researchers showed there were no relationship between gender and other variables and there quality of life or level of physical activity.

Rosechlyne and Domoldt (1989) found that factors such as age, lack of a dominant hand, lack of training and the use of prosthetic elbow joint cannot have a significant impact on the performance of the prosthesis (Rosechlein and Domholdt, 1989).

This explains part of the social restrictions imposed on the severed arm of a large variety of social, physical and mental challenges as image and lifestyle changes, changes in self-concept, physical and social function impairment in the use of prostheses and also cause pain in the back. . Complexity and diversity of functions performed by the hands as well as hands important role in communication and conduct of life is clear Resulting in failure and the loss of the member causing mental limitations, physical and gets a great community (Desmond 2007).

Available support systems (social, family, economic) performance improvement (Desmond 2007) enhances the quality of life and reduces the incidence of depression and social problems (Hopman *et al*., 1997).

4. Conclusions:

In this paper, tow groups compared to each other from quality of life, participants was two

groups of 20 below elbow amputation veterans that use from Mechanical or Myoelectrical prosthesis that refer to central technical orthopedic Kosar. The results of TAPES questionnaire and statistically analysis show that:

- The functional limitation of men below elbow amputation that used myoelectric prosthesis lowers than mechanical prosthesis.
- The exercise limitations of mechanical prosthesis are more restrictive than myoelectric prosthesis.
- The performance constraints of mechanical prosthesis are more restrictive than myoelectric prosthesis and the limitation of mechanical prosthesis are more than other prosthesis.

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The comparison of psychological and social adaptation below elbow amputation men using a mechanical and myoelectric prosthesis by using of TAPES questionnaire

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Abstract: Design and manufacturing of the Myoelecterical prosthesis in compared to Mechanical prosthesis must also effectively, smart, light, strong and permanence. It is time consuming and expensive that ultimately leads to significant increases in the price of Myoelecterical prosthesis. Therefore, considering the high cost of these prostheses, hence, assessment of psychological and social adaptation between two groups must be clear and explicit. In this regards, present study was conducted on this topic. In this descriptive cross-sectional analytical study, two groups compared to each other from quality of life, participants was two groups of 20 below elbow amputation veterans that use from Mechanical or Myoelectrical prosthesis that refer to central technical orthopedic Kosar. For gathering the data we use TPEAS questionnaire. This questionnaire evaluates participants from 3 items: psychosocial adaptation, functional limitation and satisfaction of life .For data analysis use to t independent and ANOVA test. This research showed that there are significant differentiations in psychosocial adaptation between two groups. The findings identified that Myoelecterical group higher psychosocial and social adaptation in compare to Mechanical group. So that the hypothesis of this research in terms of higher psychological and social adaptation in the Myoelecterical group was accepted.
[Keyvani Hafshejani mA, Javanshir M, Kamali M., Ghasemi MS, Emami M, Esmaeeli SA, Langari A., Sattari Naeini M. **The comparison of psychological and social adaptation below elbow amputation men using a mechanical and myoelectric prosthesis by using of TAPES questionnaire**. *Life Sci J* 2012;9(4):5583-5587] (ISSN:1097-8135). http://www.lifesciencesite.com. 829

Keywords: TPEAS questionnaire, Myoelectrical prosthesis, Mechanical prosthesis, psychological and social adaptation

1. Introduction:

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Several factors such as trauma, infection, tumors, vascular disease, accidents, infectious diseases, and so create an amputation. Yet a high percentage of amputation statistics are in countries at war. so the 68/8% of statistics amputation is due to trauma in the above organ pipe (Jhon *et al.*, 1992; Gerzeli *et al.*, 2008; Atkins *et al.*, 1996). Although recent improvements of human science improve the quality prosthetics and prosthetic limbs but it is costly (Gerzeli *et al.*, 2008; Kahle *et al.*, 2008; Brodkorb *et al.*, 2008).

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A very important point that should be considered is that the rehabilitation of the upper limb amputation should be done as a team, in which the Constructive prosthesis is considered as one of the team members (Weaver *et al.*, 1988; Durance and shea, 1998). Despite significant improvement in the area of prosthetic parts with high performance and high aesthetic, patient satisfaction has not improved significantly. Specifically many of the above-limb amputees, straw or prefer not to use prosthesis or use the cosmetic prostheses. Identify factors affecting performance of the upper limb prostheses and evaluation of individual skills in the use of dental prosthesis is very important (Weaver *et al.*, 1988; Durance and shea, 1998).

Despite the importance of identifying factors that affect the performance of prostheses, few studies have been done in this area and researches have shown conflicting results. Roeschelin and Domholdt (1989) found that factors such as age, lack of a dominant hand, the lack of elbow and learning how to use a prosthetic implant have not a considerable effect on the performance of prosthetic (Roeschelin and Domholdt, 1989).

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The aim of this study is to compare quality of individual life of two group which used mechanical and Myoelectric and for this purpose we used TAPES questionnaire.

Seems to be largely a function of the quality of life in people with amputations easily, improving mental and emotional satisfaction in using the prosthesis, artificial performance seems directly related to the quality of life, so it was researchers to assess quality of life between the two groups amputation using simple mechanical joint myoelectric and amputee veterans with equal sample size for orthopedic services Technical Orthopedics Orthotics & Prosthetics Center will visit Tehran Kowsar, TAPES questionnaire to assess quality of life, and then compare the data of two groups.

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A descriptive cross-sectional study is to compare functional limitation for veterans with unilateral below elbow amputees using two mechanical prostheses and myoelectric unilateral below elbow amputee veterans of our study population center in Tehran Orthotics & Prosthetics Kosar Foundation, formed in 2011.

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That in each case was given a code number using four wood samples and 40 samples were selected randomly, then, 40 people were randomly divided into two equal groups of 20 which used their current prosthesis last six months.These people have no underlying problems, including heart disease - cardiovascular, diabetes, chemical injury, severe orthopedic conditions such as fractures and bone infections of the upper limb, blindness, lower limb amputation, and physiological illness. they were invited to Kosar center to provide for the orthotics and prosthetics was constructed.

The program participants were invited to the orthoses and prostheses Kosar center and after examination, interview and re-sample matching criteria TAPES questionnaire will be provided. Participants completed questionnaires and returned it. TAPES questionnaire is designed and introduced for the first time in 1999 by Gallagher and Maclachan and used in order to improve the knowledge of prosthesis about individual compliance and improving the services (Gallgher and Maclachan, 2004). The validity and reliability of questionnaire are examined in Iran in 2008 in the satisfactory condition (Fardipoor, 2008).

According to a study that has examined the reliability and validity of the questionnaire to assess quality of life of people with upper limb amputations addressed, the research team in order to examine the validity of the questionnaire, the questionnaire was given to 10 academic experts people, and to their views and corrective actions have been considered.

The reliability of the questionnaire was assessed using Cronbach's alpha coefficient for the overall reliability of the questions related to compliance, social compliance, compliance with limits, exercise limits, functional limitations, social limitations, aesthetic satisfaction, satisfaction, satisfaction with weight and yield Respectively 81%, 78%, 73%, 71%, 75%, 72%, 71%, 77%, 70%, respectively.

Desmond and Maclachan (2005) to assess the validity and reliability TAPES questionnaire, have used TAPES in a study to assess the scale factors for upper extremity amputees.

This study was conducted on 100 men with upper limb amputation, the findings suggest that there is good reliability and validity in 9 subscales of TAPES questionnaire to assess quality of life was amputation of the upper limb (Desmond and Maclachlan, 2005).

Its sections are:

The first part is personal information, the second part consists of three main questions, psychosocial adjustment, activity restriction and satisfaction with the prosthesis, the last sub-section

is satisfactory prosthesis The three categories of aesthetic satisfaction, satisfaction, satisfaction with weight and performance are the limitations of activity limitation exercise, functional limitations, and social limitations to bring a rubber The other part to questions about the amount of pain that a person is a member of cut, phantom pain, feeling healthy individuals to own and use average pay.

For data analysis software SPSS version 17 was used to mash Excel., In this study using techniques based on a comparison of independent variables (mechanical and Myoelectric)

Calculate the mean of the dependent variable (compliance, restrictions, satisfaction, performance, style, ...) will draw the necessary tables and then compare the averages and the difference paid to the analysis of data. Methods and

1- Descriptive statistics including: mean, standard deviation

2 - T-test and ANOVA test data used

Obtaining informed consent from all patients, respecting ethical considerations and the principle of secrecy and pledged that there was no risk of physical or mental

3. Results:

In the user of mechanical prosthetic group, age over 45 years class, with a 60% was the largest group. The maximum time for amputation was 15 to 25 years with 65%, which 60 percent of those 15 to 25 years used their prosthesis and 40% used the prosthesis for 5 to 10.

In the Myoelectric group 65 percent of people was 45 years old which 47.4 percent of them passed 15 to 25 years of their member. 55% of those 15 to 25 years are using the prosthetic that 60 percent of them between 5 and 10 years passed of prosthesis.

In overall concordance section was found that the mean score on this item is lower in myoelectric group, its mean the mechanical prosthesis users more than myoelectric prosthesis users are accustomed with their prosthesis and they were able to cope with their problem. In terms of statistics, the T test statistic was calculated equal to (2.075) and the significance test (0/05> p), showed statistically significant differences between the two groups was generally consistent.

In social correspondence section was found that the mean of this items in the mechanical group was significantly higher than myoelectric its mean the social correspondence in the mechanical prosthesis users more than myoelectric prosthesis, averagely. T-statistics of the test were estimated equal to (1.515) and tests significance (0.138) show research hypotheses (0/05> p), was rejected in significant level.

In Compliance with the restrictions section was found that the mean of this item in the mechanical group was significantly higher than myoelectric. T-statistics of the test were estimated equal to (0.952) and tests significance (0.347) show research hypotheses (0/05> p), was rejected in significant level.

4. Discussion:

Today, despite the rapid pace of progress in science and technology, to build good-quality artificial are a major concern of researchers and amputees people. Amputation is a continued permanent defect that leads to impaired psychological and social adaptation and individual activities (Hsu and Michael 2008).

We have received Myoelectric prostheses with such features, enhanced functionality and use neural signals having the same motion, the faster and more powerful than mechanical prostheses aimed at improving psychological And function imposing great cost to the people using it, however, mechanical prosthesis lighter, less costly and easier to maintain than dentures with Myoelectric (Hsu and Michael 2008).

Match the size of the causes of these differences can be noted that the suspension and fitting the appropriate prosthesis needs to be very careful Myoelectric, Wearing dentures, and more accurately, and endured to become accustomed to accepting electronic patient wearing dentures, But since the use of a mechanical prosthesis fitting bandage needs to be careful not prosthetics (condyle, especially in the area of high-epididymides), So we can conclude with mechanical prostheses in terms of overall fitness and to get used to wearing dentures more comfortable With regard to the mechanical prosthesis compared Myoelectric heavier, and a mechanical prosthesis due to bandages and having more socket trim lines over time, more sick overall compliance with the prosthesis implant takes Myoelectric, so the results the not unexpected (Hsu and Michael 2008).

The social adaptation, because it seems kind of prosthesis (mechanical or Myoelectric) to influence the behavior and attitudes towards disabled people Mental issue is not a member of his artificial, the result obtained in this section can also confirms this. (HSU and Michael 2008).

Desmond and Maclachan (2002) stated that individuals with amputation due to lack of compliance with the new conditions, psychological problems, social as depression, feelings of hopelessness, low self-esteem, fatigue, anxiety and suicide are sometimes also involved other problems, including rough treatment (Materials and alcohol addiction), and social functions are weak. It also states that these people back to life after amputation is associated with many problems (Desmond and Maclachlan 2008).

Section where it appears to be consistent with the restrictions affect the mechanical

prosthesis increasing compliance with restrictions The activity social and psychological aspects are more confident that is not the results were not unexpected. (Hsu and Michael 2008).

Weaver and colleagues (1988) in a study of amputees who used a mechanical prosthesis, the prosthesis was Myoelectric, all participants agreed that their grip strength with mechanical prosthetic implant is better than Myoelectric.In this study, the subjects were asked to perform 38 different activities, which in all cases was improved mechanical strength of the implant. The most important reason for the lack of efficiency in denture Myoelectric cable system was described (Weaver et al 1988).

This is expressed in the limitations section of sport, the entire prosthesis having Myoelectric not mean that the person is unable to do any physical activity But compared to mechanical limitations in many cases due to better grip, more subtle, is faster and more powerful than, for example, someone in the group to remove the objects Myoelectric semi- Not restricted to tennis rackets and baseball, then the condition is true, the results are quite reasonable and not unexpected. (Desmond and Maclachlan, 2008).

Sarah et al (2008) in a study examining the relationship between physical activity and quality of life in people with lower limb amputations began, the results showed that the effect of physical activity in improving the quality of life of many lower limb amputations are. (Sarah *et al.*, 2008).

Table 1. The table of variables

MYOELECTRIC			MECHANICAL						
Standard deviation	Average	PERCENT	NUMBER	Standard deviation	Average	PERCENT	NUMBER	YEAR	
7/414	45/42	15	3	9/593	45/89	15	3	Below 35	AGE
		20	4			25	5	36-44	
		65	13			60	12	Above 45	
6/393	23/26	15/8	3	6/889	18/75	25	5	Below 15	Time of amputation
		47/4	10			65	13	15-25	
		36/8	7			10	2	Above25	
6/504	21/75	20	4	6/778	17/05	40	8	Below 15	Duration of implant
		55	11			60	12	15-25	
		25	5			-	-	Above 25	
6/353	9/6	15	3	7/087	9/7	25	5	Below5	Duration of current prosthetic
		60	12			40	8	5-10	
		25	5			35	7	Above 10	

Table 2. Descriptive and analytical statistics parameters of mechanical and myoelectric prosthetics group.

T	P value	MYOELECTRIC		MECHANIC		Variable
		S.D	AVERAGE	S.D	AVERAGE	
2/090	0/043	0/716	4/25	2/13	5/3	Social limitation

5. Conclusions:

In this study the quality of individual life of two groups which used mechanical and Myoelectric prosthesis was compared. The results of TAPES questionnaire and statistically analysis show that:

- Physiological and Social adaptation in men below elbow amputation that used myoelectric prosthesis higher than mechanical prosthesis.
- the mechanical prosthesis users more than myoelectric prosthesis users are accustomed with their prosthesis and they were able to cope with their problem.
- Mean of compliance with the restrictions in the mechanical group was significantly higher than myoelectric group.

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The author would like to thank vice head of research affairs of rehabilitation school, and officials and employees of Kosar rehabilitation center as well as the veteran's which participants in the study.

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The comparison of satisfaction of prosthesis in below amputation men using a mechanical and Myoelectric prosthesis by using of TAPES questionnaire

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Abstract: Design and manufacturing of the Myoelecterical prosthesis (in compared to Mechanical prosthesis) is time consuming and expensive. Therefore, considering the high cost of these prostheses should be increase the satisfaction of prosthesis. This study was conducted on assessing the quality of life between two groups. The two groups compared from the aspect of quality of life. The participants were categorized in two groups of 20 below elbow amputation veterans that use from Mechanical or Myoelectrical prosthesis that refer to central technical orthopedic Kosar. For gathering the data we use TPEAS questionnaire. This questionnaire evaluates participants from 3 items: psychosocial adaptation, functional limitation and satisfaction of life .For data analysis use to t independent and ANOVA test. The obtained results revealed that there are significant differentiations in prosthesis satisfaction. This identified that the Myoelecterical groups have upper prosthesis satisfaction in compare to Mechanical group. Therefore the hypothesis of this research in terms of higher satisfaction in the Myoelecterical group was accepted.
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Keywords: TPEAS questionnaire, Myoelectrical prosthesis, Mechanical prosthesis, satisfaction of prosthesis.

1. Introduction:

Limb amputation is a term that separate means or part of body. Throughout the history, enduring failure is usually equal to amputation (Jhon *et al.*, 1992). There are 1700000 amputations people who live in the United States of America and 185,000 people yearly are discharged from the hospital with amputation (Edeer 2011).

Several factors such as trauma, infection, tumors, vascular disease, accidents, infectious diseases, and so create an amputation. Yet a high percentage of amputation statistics are in countries at war. so the 68/8% of statistics amputation is due to trauma in the above organ pipe (Jhon *et al.*, 1992; Gerzeli *et al.*, 2008; Atkins *et al.*, 1996). Although recent improvements of human science improve the quality prosthetics and prosthetic limbs but it is costly (Gerzeli *et al.*, 2008; Kahle *et al*., 2008; Brodkorb *et al*., 2008).

A person with an amputation is met with a sharp decline in the ability to fulfill his/her activities. In general, a variety of upper limb prostheses are designed and used. They can be split based on kinetic mechanisms of mechanical prostheses, Beauty (cosmetic) and myoelectric.

The researches which compare mechanical prostheses and myoelectric show that myoelectric Prosthetics are more acceptable because of the more power of grip, no need to the total bandage system and increasing the personal ability (Weaver *et al.*, 1988).

Unfortunately, despite the efforts that have been made in the field of prostheses performance, the ability of individuals to use them is not so well and some people do not prefer to use any type of prosthesis (Jhon *et al.*, 1992; Atkins *et al*., 1996; Biddiss *et al*., 1988; Mazet *et al*., 1956).

A very important point that should be considered is that the rehabilitation of the upper limb amputation should be done as a team, in which the Constructive prosthesis is considered as one of the team members (Weaver *et al*., 1988; Durance and shea, 1998). Despite significant improvement in the area of prosthetic parts with high performance and high aesthetic, patient satisfaction has not improved significantly. Specifically many of the above-limb amputees, straw or prefer not to use prosthesis or use the cosmetic prostheses. Identify factors affecting performance of the upper limb prostheses and evaluation of individual skills in the use of dental prosthesis is very important (Weaver *et al*., 1988; Durance and shea, 1998).

Despite the importance of identifying factors that affect the performance of prostheses, few studies have been done in this area and researches have shown conflicting results. Roeschelin and Domholdt (1989) found that factors such as age, lack of a dominant hand, the lack of elbow and learning how to use a prosthetic implant have not a considerable effect on the performance of prosthetic (Roeschelin and Domholdt, 1989).

However Bourough and Book (1991) in their study concluded that a personal training in the use of prosthetic have significant impact on the success and performance of the prosthesis. Studies

have shown that people with different levels of amputation of both physical and mental performance, social must be able to adapt to new conditions. In the past, the more physical aspects generally considered, but recently the psychological variables, is more social. Fewer studies have been done in relation to quality of life and there is little literature about quality of life and none have worked exclusively on this issue (Gallgher and Maclachan, 2004). Thus, to obtain valuable results reveal that the policy prescription, buy and the standard implant should be install, classical studies in higher education and research is done.

Seems to be largely a function of the quality of life in people with amputations easily, improving mental and emotional satisfaction in using the prosthesis, artificial performance seems directly related to the quality of life, so it was researchers to assess quality of life between the two groups amputation using simple mechanical joint myoelectric and amputee veterans with equal sample size for orthopedic services Technical Orthopedics Orthotics & Prosthetics Center will visit Tehran Kowsar, TAPES questionnaire to assess quality of life, and then compare the data to.

2. Method

A descriptive cross-sectional study is to compare functional limitation for veterans with unilateral below elbow amputees using two mechanical prostheses and myoelectric unilateral below elbow amputee veterans of our study population center in Tehran Orthotics & Prosthetics Kosar Foundation, formed in 2011.

The plan approved by the Research Council of Tehran University of Medical Sciences Faculty of Rehabilitation offers a referral center providing comments and cooperation Kosar Center officials. All files honored war veterans with amputations below the elbow will get away from the Archive Center. Following hospital records, using the criteria for inclusion and exclusion criteria were not sampled cases that were excluded.

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For data analysis software SPSS version 17 was used to mash Excel., In this study using techniques based on a comparison of independent variables (mechanical and Myoelectric)

Calculate the mean of the dependent variable (compliance, restrictions, satisfaction, performance, style, ...) will draw the necessary tables and then compare the averages and the difference paid to the analysis of data. Methods and

1- Descriptive statistics including: mean, standard deviation
2 - T-test and ANOVA test data used

Obtaining informed consent from all patients, respecting ethical considerations and the principle of secrecy and pledged that there was no risk of physical or mental

3. Results:

In the user of mechanical prosthetic group, age over 45 years class, with a 60% was the largest group. The maximum time for amputation was 15 to 25 years with 65%, which 60 percent of those 15 to 25 years used their prosthesis and 40% used the prosthesis for 5 to 10.

In the Myoelectric group 65 percent of people was 45 years old which 47.4 percent of them passed 15 to 25 years of their member. 55% of those 15 to 25 years are using the prosthetic that 60 percent of them between 5 and 10 years passed of prosthesis.

In the satisfaction of beauty questions it is fined that the mean of Myoelectric group is more than mechanical and satisfaction of in Myoelectric is higher in this section. T-statistics of the test were estimated equal to (-2.323) and tests significance (0.026) indicate that there was a significant difference between the two groups in satisfaction of beauty parameter (0/05> p).

In our study, no significant difference between the mean duration of the mechanical prostheses and the Myoelectric prosthesis was observed (0 /05> p). Duration of implant use was significantly higher in the group Myoelectric.

4. Discussion:

The questions seem to be satisfied with the cosmetic appearance of the better and more similar to normal hand, Bandages lack of a better performance Myoelectric various tasks, such a variety of hobbies, driving, exercise, eat less of certain electronic prosthesis was true and not unexpected result (Hsu and Michael, 2008).

Karimi (2010) suggests that the low acceptance rate among amputees of upper limb prosthesis, the prosthesis should be to enhance the beauty and increase the efficiency of the effort.

Consent from the weight of prosthesis the items were only assessed, Myoelectric prosthetic weight in fact, only about 300 to 400 grams heavier than mechanical prostheses that is corroborated these findings (Hsu and Michael, 2008). One of the most important causes of inability motor in the prosthesis is weight and high levels of expression (Karimi, 2010).

The question of the consent of the prosthesis with respect to the Mayo prosthesis fitting more and more accurate electrical needs, the need for performance (an open hand), but while the mechanical prosthesis does not require precise fitting bandages to help hold the implant body And individual performance, mental focus and does not require much physical activity is needed most, so the prosthetic mechanical performance, satisfaction is higher, but the results Showed no significant differences (Hsu and Michael, 2008).

The results of this research study, Karimi (2010), which examines the performance of upper limb prostheses in various activities in the upper limbs of amputees are in agreement, this difference was not significant in explaining Karimi (2010) says Most people are used to anchor dentures were just provides recommendations to use new techniques Materials and components to enhance prosthesis more suitable for this type of deposit is required.

In our study, no significant difference between the mean duration of mechanical prosthesis and Myoelectric prosthetic was found. The implant duration of Myoelectric group was significantly higher.

Study, Fox and Murray (2002) with the consent of the prosthesis in individuals with lower limb amputation TAPES questionnaire leg amputations were performed on 46 patients, results indicated a positive correlation between satisfaction with the term artificial time prosthesis was used (Fox and Murray 2002).

In general, the comparison between the two groups, the mean quality of life in Myoelectric is higher than mechanical.

The results showed that both ·h scores obtained from the questionnaires, Myoelectric group averages were higher than the mechanical group, This means that the quality of life of amputees using prosthetic Myoelectric were higher than those using a mechanical prosthesis. Similar to our results Millestin (1986) and colleagues studied 314 individuals with upper extremity amputation Myoelectric than mechanical prostheses showed a higher acceptance rate (Millstein SG and et al 1986).

The results perfection and Justice (2010) indicated that the quality of life for people with unilateral above knee amputee using the intelligent knee joint is mechanically simpler than (Kamali and adli 2010).

R sorby (1980) 40 patients with amputation below the elbow of the prosthesis Myoelectric used for a period of 1 to 3 years were tested, the results of this study showed that although the two men after a follow-up decision to use mechanical prostheses were but 60 to 90 percent acceptance rate Myoelectric prosthesis was reported (sorby 1980).

Kruger and Fishman (1993) 120 cases of amputation below the elbow for three years studied, the results of this study showed that 44 percent of those prosthetic Myoelectric as the best option they chose While 34 percent of people

choose to get me 22% of the mechanical prosthetic dentures abandoned, In addition to receiving the results was that 68 percent of people who actively used their prosthesis And 32 percent of those who took it as a fulcrum to be consistent with our results (Kruger and Fishman 1993).

In research Chaw and Biddes (2007) found that technology in order to enhance their satisfaction in using the prosthetic implant can affect (Chaw and Biddes 2007).

Table 1. The table of variables

MYOELECTRIC				MECHANICAL					
Standard deviation	Average	PERCENT	NUMBER	Standard deviation	Average	PERCENT	NUMBER	YEAR	
7/414	45/42	15	3	9/593	45/89	15	3	Below 35	AGE
		20	4			25	5	36-44	
		65	13			60	12	Above 45	
6/393	23/26	15/8	3	6/889	18/75	25	5	Below 15	Time of amputation
		47/4	10			65	13	15-25	
		36/8	7			10	2	Above25	
6/504	21/75	20	4	6/778	17/05	40	8	Below 15	Duration of implant
		55	11			60	12	15-25	
		25	5			-	-	Above 25	
6/353	9/6	15	3	7/087	9/7	25	5	Below5	Duration of current prosthetic
		60	12			40	8	5-10	
		25	5			35	7	Above 10	

Table 2. Descriptive and analytical statistics parameters of mechanical and myoelectric prosthetics group.

T	P value	MYOELECTRIC		MECHANIC		Variable
		S.D	AVERAGE	S.D	AVERAGE	
-2/323	0/025	3/447	15/25	4/020	12/5	Satisfaction of Beauty
1/981	0/055	1/281	2/8	1/273	3/6	Satisfaction with weight
0/738	0/465	5/316	17/05	5/401	18/3	Satisfaction with performance
2/075	0/045	2/292	19/1	2/28	20/60	Overall compliance

4. Conclusions:

In this study the satisfaction of weight and beauty and overall performance of two groups which used mechanical and Myoelectric prosthesis was compared. The results of TAPES questionnaire and statistically analysis show that:

- quality of life of amputees using prosthetic Myoelectric were higher than those using a mechanical prosthesis
- Due to the lack of bandages, more similar to a natural and normal hand function Myoelectric prosthesis satisfaction in men below amputation higher than mechanical prosthesis is used.
- no significant difference between the mean duration of the mechanical prostheses and the Myoelectric prosthesis was observed

Acknowledgements:

The author would like to thank vice head of research affairs of rehabilitation school and officials and employees of Kosar rehabilitation center as well as the veteran's which participants in the study.

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The Instability of Multi Walled Carbon Nanotube Probes near Graphite Sheets

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Abstract: In this paper the deflection and instability of a freestanding carbon nanotube (CNT) probe/sensor in the vicinity of the graphene layers are investigated. Modeling the buckling of multi walled carbon nanotube (MWCNT) probes/actuators in the vicinity of thin and thick graphite has been carried out using numerical finite difference method. A hybrid nano-scale continuum model based on Lennard-Jones potential is applied to simulate the intermolecular force-induced deflection of MWCNT. Minimum nanotube-graphite initial gap and stable length of freestanding CNT are determined as basic parameters for engineering applications and nano-devices design. The stable length of MWCNT is determined as a function of its geometrical and material characteristics, initial gap and number of graphene layers.

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Keywords: Nanomaterials; Buckling; CNT

1. Introduction

Carbon nanotubes (CNTs) have become the center of interest for many scientists due to their large application such as microscope probes/sensors and actuators/switches (Desquenes *et al.,* 2002; Hwang and Kang 2005; Ke *et al.,* 2005a). The extraordinary properties of MWCNTs have motivated engineers worldwide to explore their applications in different fields. With recent growth in nanotechnology, MWCNTs are increasingly used in developing atomic force microscope (AFM) probes (Li *et al.,* 2008; Akita 2001; Cao *et al.,* 2005) and nano-electromechanical system (NEMS) switches (Baughman *et al.,* 1999; Ke *et al.,* 2005a; Snow *et al.,* 2002). Consider a typical cantilever MWCNT probe/switch suspended near graphite surface with a small gap in between. As the gap decreases from micro to nano-scale, the van der Waals interaction deflects MWCNT to the surface. When the separation is small enough, nanotube buckles onto graphite. The prediction of the molecular force-induced instability of MWCNTs near the surface is a critical subject in design AFM probes and NEMS switches. With decrease in distance between the AFM probe and sample surfaces, the probe jumps into contact with the surfaces and renders its imaging performance (Snow *et al.,* 2002; Jalili *et al.,* 2004; Snow *et al.,* 2002). Similarly, a NEMS switch might adhere to its substrate even without an applied voltage as a result of molecular force, if the minimum gap between the switch and substrate is not considered (Abadyan *et al.,* 2010; Abdi *et al.,* 2011; Koochi *et al.,* ; 2010; 2011a; 2012; Soroush et al., 2010; Tadi Beni *et al.,* 2011a; 2011b).

In order to study nanomaterials, several approaches are employed. Molecular dynamics (MD) and molecular mechanics (MM) simulations could be used to study the mechanical behavior of carbon-based nanomaterials (Tsai and Tu 2010; Tserpes, 2007; Desquenes *et al.,* 2002; Batra *et al.,* 2007). However these methods are very time-consuming and might not be easily used in complex structures. An alternative reliable trend to simulate the instability behavior of MWCNT interacting with extremely large number of graphite atoms, is to apply nano-scale continuum models. A hybrid continuum model can be used to calculate the van der Waals energy, in lieu of the discrete Lennard-Jones potential, similarly (Desquenes *et al.,* 2002; Batra *et al.,* 2007; Gupta *et al.,* 2008). Although continuum models are more time-saving than MM and MD, their approach often leads to nonlinear equations that might not be worked out by analytical methods, accurately (Desquenes *et al.*; Lin and Zhao 2005; Koochi *et al.,* 2011b, 2011c).

In this paper, we utilize a hybrid continuum model to investigate the molecular force-induced deflection and buckling of the cantilever freestanding MWCNT probes/actuators suspended over graphite. The numerical finite difference method is implied to simulate the instability of MWCNT and the obtained results are compared with numerical data.

2. Theoretical Model

2.1. van der Waals interactions

Lennard-Jones potential is a suitable model to describe van der Waals interaction [23]. It defines the potential between atoms *i* and *j* by

$$\phi_{ij} = \frac{C_{12}}{r_{ij}^{12}} - \frac{C_6}{r_{ij}^{6}} \qquad (1)$$

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where r_{ij} is the distance between atoms i and j while C_6 and C_{12} are the attractive and repulsive constants, respectively. For distances higher than 3.4 Å, such as in this paper, the repulsive term decays extremely fast and can be neglected (Desquenes *et al.,* 2002). For the carbon-carbon interaction, C_6=15.2 eVÅ^6 (Girifalco *et al.,* 2000). A reliable continuum model has been established to compute the van der Waals energy by double-volume integral of Lennard-Jones potential(Ke and Espinosa, 2006) [25], that is

$$E_{vdW} = \int_{\upsilon_1}\int_{\upsilon_2} n_1 n_2 \left(-\frac{C_6}{r^6(\upsilon_1,\upsilon_2)}\right) d\upsilon_1 d\upsilon_2 \qquad (2)$$

where υ_1 and υ_2 represent the two domains of integration, and n_1 and n_2 are the densities of atoms in these domains, respectively. The distance between any two points on υ_1 and υ_2 is $r(\upsilon_1,\upsilon_2)$. Eq. (2) provides acceptable results for explaining the CNT-graphene attraction compared to that of direct pair wise summation through molecular dynamics in Eq. (1). In most applications it is practically assumed that the mean radius of MWCNT is much smaller than the distance between nanotube and the graphene surfaces. According to this assumption and using the mentioned continuum model, the intermolecular force per unit length of MWCNT, q_{vdW}, is simplified to (Desquenes *et al.,* 2002):

$$q_{vdW}(r) = 4C_6\sigma^2\pi^2 N_W R_W \sum_{r=D}^{D+(N-1)d} \frac{1}{r^5}. \qquad (1)$$

The prediction of the stable length and the minimum gap of freestanding MWCNT over a large number of graphene layers are essential in nano-devices (Desquenes *et al.,* 2002; Ke *et al.,* 2005a). Therefore, this study is focused on this case which is very important in engineering problems. For large number of layers, i.e. $D + (N\text{-}1)d >> D$, substitution of the summation with an integral results:

$$\sum_{r=D}^{D+(N-1)d} \frac{1}{r^5} \approx \frac{1}{d}\int_{D}^{D+(N-1)d} \frac{1}{r^5} dr \qquad .(2)$$

$$= \frac{1}{4d}\left[\frac{1}{D^4} - \frac{1}{(D+(N-1)d)^4}\right] \approx \frac{1}{4dD^4}$$

Lastly we have:

$$q_{vdW}(D) \approx C_6\sigma^2\pi^2 N_W R_W d^{-1} D^{-4}. \qquad (3)$$

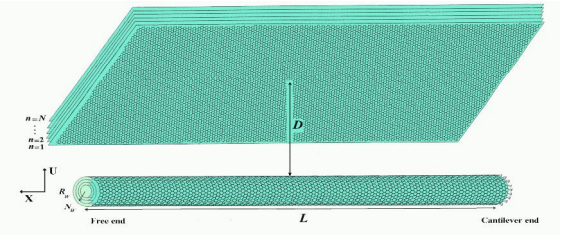

Figure 1. Equivalent continuum model: a MWCNT over a graphite ground plane

2.2. Elastostatic domain

Based on continuum mechanics, a MWCNT is modeled by concentric cylindrical tubes. Young's modulus of MWCNT, E_{eff}, is typically 0.9-1.2 TPa (Gupta *et al.,* 2008) and the cross-sectional moment of inertia I is equal to $\pi(R_o^4\text{-}R_i^4)/4$ (Girifalco *et al.,* 2000). We have applied Euler theory to investigate the static elastic behavior of MWCNT. For MWCNTs with $L/(2R_e) > 10$, Euler theory provides fine results compared to those by MM simulations (Batra *et al.,* 2007; Ke *et al.,* 2005b). The effect of large displacement (finite kinematics) is not considered to derive the governing equation of MWCNT. The governing equation of a cantilever MWCNT can be defined as a boundary value problem:

$$E_{eff} I \frac{d^4U}{dX^4} = q_{vdW}(D-U) = \frac{C_6\sigma^2\pi^2 N_W R_W}{d(D-U)^4} \qquad (4a)$$

$$U(0) = \frac{dU}{dX}(0) = 0,$$

(Geometrical B.C. at fixed end) (4b)

$$\frac{d^2U}{dX^2}(L) = \frac{d^3U}{dX^3}(L) = 0,$$

(Natural B.C. at free end) (4c)

where X is the position along MWCNT measured from the clamped end and U is the deflection of MWCNT. Equations (4a)-(4c) can be made dimensionless using the following substitutions:

$$x = X/L, \qquad (5a)$$

$$u = \frac{U}{D}, \qquad (5b)$$

$$f_n = \frac{C_6\sigma^2\pi^2 N_W R_W L^4}{dE_{eff} ID^5}. \qquad (5c)$$

These transformations yield,

$$\frac{d^4u}{dx^4} = \frac{f}{(1-u(x))^4}, \qquad (6a)$$

$$u(0) = u'(0) = 0, \text{ at } x = 0 \qquad (6b)$$

$$u''(1) = u'''(1) = 0, \text{ at } x = 1. \qquad (6c)$$

In all equations, prime denotes differentiation with respect to x.

3. Numerical Solution

In order to solve the boundary value problem of Eq. 6 a procedure based on finite difference method (FDM) is developed in this study for making meaningful comparisons. Following the standard FDM procedure, the beam is discretized into

n equal sections (elements) separated by (n+1) nodes. For each element, the governing equation (6) in the discretized form can be written as:

$$\frac{d^4u}{dx^4} = \frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} \qquad (7)$$

where h is the grid spacing, w_i is the deflection of i^{th} grid. By substituting equation 7 in equation 5 we can obtaine:

$$\frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} = F_i \qquad (8)$$

where

$$F_i = \frac{f}{(1-u_i)^4} \qquad (9)$$

Applying equation (8) to all of the elements and incorporating the boundary conditions (eq 6-b and 6-c), a matrix form equation is obtained as:

$$[A]\{u\} = \{F\} \qquad (10)$$

Where

$$\{u\} = [u_1, u_2, ..., u_n]^T, \qquad (11)$$

And

$$\{F\} = [F_1, F_2, ..., F_n]^T \qquad (12)$$

and A matrix can be defined as:

$$[A] = \begin{bmatrix} 7 & -4 & 1 & 0 & 0 & \dots & 0 & 0 & 0 & 0 \\ -4 & 6 & -4 & 1 & 0 & \dots & 0 & 0 & 0 & 0 \\ 1 & -4 & 6 & -4 & 1 & \dots & 0 & 0 & 0 & 0 \\ 0 & 1 & -4 & 6 & -4 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -4 & 6 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & -4 & \dots & 0 & 0 & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & 0 & 0 & \cdots & -4 & 6 & -4 & 1 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 1 & -4 & 5 & -2 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 0 & 1 & -2 & 1 \end{bmatrix} \qquad (13)$$

Matlab commercial software is employed to numerically solve equation (10) for the nodal deflections that govern the overall deflection of the beam.

4. Results and Discussion

For any given MWCNT-graphite attraction (f), one can solve equation (6a) numerically to obtain the deflection (u) of MWCNT. However, for f greater than critical value of intermolecular force, i.e. f^*, no numerical solution exists and the MWCNT collapses.

As a case study, a cantilever SWCNT probe/switch with Young's modulus of 1 TPa (Strus *et al.,* 2008) is considered. In this case, I is approximated to $\pi t R_W^3$, where t is the thickness of SWCNT, typically about 0.35 (Strus *et al.,* 2008). Figure 2 depicts the variation of SWCNT stable length as a function of the nanotube radius and minimum initial nanotube-graphite gap. As seen, the intermolecular attraction is more significant for SWCNT over thick graphite substrate compared to that of thin substrate. Figure 2 indicates that the effect of van der Waals attraction on MWCNT's buckling is very important at separations below 1μm.

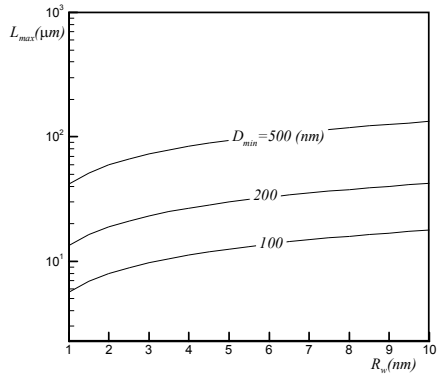

Figure 2. Detachment length of the SWCNT as a function of the nanotube radius for various minimum gaps

5. Conclusions

In summary, a nano-scale continuum model based on Lennard-Jones potential has been employed to investigate the buckling of cantilever MWCNT over graphene layers. Results indicate that van der Waals attraction can collapse the cantilever MWCNT at submicron separations especially in the case of large number of graphene layers. stable length of MWCNT has been determined as basic parameters for design and selecting components of nano-systems. It is found that the stable length of MWCNT highly depends on geometrical dimensions of MWCNT such as radius and number of walls, MWCNT-graphite distance and number of graphene layers. The developed approach avoids time-consuming MM simulations and makes parametric studies possible.

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The Instability and of Multi Walled Carbon Nanotube with Small Number of Layers Probes Near Graphite Sheets

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Abstract: In this paper the deflection and instability of a freestanding carbon nanotube (CNT) probe/sensor in the vicinity of the graphene layers are investigated. Modeling the buckling of multi walled carbon nanotube (MWCNT) probes/actuators in the vicinity of thin and thick graphite has been carried out using numerical finite difference method. A hybrid nano-scale continuum model based on Lennard-Jones potential is applied to simulate the intermolecular force-induced deflection of MWCNT. Minimum nanotube-graphite initial gap and stable length of freestanding CNT are determined as basic parameters for engineering applications and nano-devices design. The stable length of MWCNT is determined as a function of its geometrical and material characteristics, initial gap and number of graphene layers.

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In characterizing ultra-thin films/layers by AFM nano-probes, the investigation of MWCNT behavior near a small number of layers and theire stable length can be treated as an important dilemma (Nemes-Incze et al., 2008; Koszewski et al., 2008; Švorčík et al., 2009). Therefore, this study is focused on this case which is very important in engineering problems. In order to derive a simple formula for a small number of layers we substitute r with $D + Nd/2 + id$ and assume $D + Nd/2 \pm id \approx D + Nd/2$. Therefore we get:

$$\sum_{r=D}^{D+(N-1)d} \frac{1}{r^5} = \sum_{i=-N/2}^{N/2} \frac{1}{(D + Nd/2 + id)^5} \approx \frac{N}{(D + Nd/2)^5}. \qquad (2)$$

This leads to:

$$q_{vdW}(D) \approx 4C_6\sigma^2\pi^2 N N_W R_W (D + Nd/2)^{-5}. \qquad (3)$$

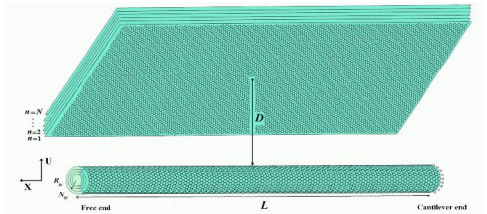

Figure 1. Equivalent continuum model: a MWCNT over a graphite ground plane

2.2. Elastostatic domain

Based on continuum mechanics, a MWCNT is modeled by concentric cylindrical tubes. Young's modulus of MWCNT, E_{eff}, is typically 0.9-1.2 TPa (Gupta *et al.,* 2008) and the cross-sectional moment of inertia I is equal to $\pi(R_o^4-R_i^4)/4$ (Girifalco *et al.,* 2000). We have applied Euler theory to investigate the static elastic behavior of MWCNT. For MWCNTs with $L/(2R_e) > 10$, Euler theory provides fine results compared to those by MM simulations (Batra *et al.,* 2007; Ke *et al.,* 2005b). The effect of large displacement (finite kinematics) is not considered to derive the governing equation of MWCNT. The governing equation of a cantilever MWCNT can be defined as a boundary value problem:

$$E_{eff} I \frac{d^4U}{dX^4} = q_{vdW}(D - U) = \frac{4C_6\sigma^2\pi^2 N N_W R_W}{(D - U + Nd/2)^5} \qquad (4a)$$

$$U(0) = \frac{dU}{dX}(0) = 0,$$

(Geometrical B.C. at fixed end) (4b)

$$\frac{d^2U}{dX^2}(L) = \frac{d^3U}{dX^3}(L) = 0,$$

(Natural B.C. at free end) (4c)

where X is the position along MWCNT measured from the clamped end and U is the deflection of MWCNT. Equations (4a)-(4c) can be made dimensionless using the following substitutions:

$$x = X/L, \qquad (5a)$$

$$u = \frac{U}{D + Nd/2}, \qquad (5b)$$

$$f_n = \frac{4C_6\sigma^2\pi^2 N N_W R_W L^4}{E_{eff} I (D + Nd/2)^6}. \qquad (5c)$$

These transformations yield,

$$\frac{d^4u}{dx^4} = \frac{f}{(1-u(x))^5}, \qquad (6a)$$

$$u(0) = u'(0) = 0, \text{ at } x = 0 \qquad (6b)$$

$$u''(1) = u'''(1) = 0, \text{ at } x = 1. \qquad (6c)$$

In all equations, prime denotes differentiation with respect to x.

3. Numerical Solution

In order to solve the boundary value problem of Eq. 6 a procedure based on finite difference method (FDM) is developed in this study for making meaningful comparisons. Following the standard FDM procedure, the beam is discretized into n equal sections (elements) separated by (n+1) nodes.

For each element, the governing equation (6) in the discretized form can be written as:

$$\frac{d^4u}{dx^4} = \frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} \qquad (7)$$

where h is the grid spacing, w_i is the deflection of i^{th} grid. By substituting equation 7 in equation 5 we can obtaine:

$$\frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} = F_i \qquad (8)$$

where

$$F_i = \frac{f}{(1-u_i)^5} \qquad (9)$$

Applying equation (8) to all of the elements and incorporating the boundary conditions (eq 6-b and 6-c), a matrix form equation is obtained as:

$$[A]\{u\} = \{F\} \qquad (10)$$

Where

$$\{u\} = [u_1, u_2, ..., u_n]^T, \qquad (11)$$

And

$$\{F\} = [F_1, F_2, ..., F_n]^T \qquad (12)$$

and A matrix can be defined as:

$$[A] = \begin{bmatrix} 7 & -4 & 1 & 0 & 0 & \dots & 0 & 0 & 0 & 0 \\ -4 & 6 & -4 & 1 & 0 & \dots & 0 & 0 & 0 & 0 \\ 1 & -4 & 6 & -4 & 1 & \dots & 0 & 0 & 0 & 0 \\ 0 & 1 & -4 & 6 & -4 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -4 & 6 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & -4 & \dots & 0 & 0 & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & 0 & 0 & \cdots & -4 & 6 & -4 & 1 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 1 & -4 & 5 & -2 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 0 & 1 & -2 & 1 \end{bmatrix} \qquad (13)$$

Matlab commercial software is employed to numerically solve equation (10) for the nodal deflections that govern the overall deflection of the beam.

4. Results and Discussion

For any given MWCNT-graphite attraction (f), one can solve equation (6a) numerically to obtain the deflection (u) of MWCNT. However, for f greater than critical value of intermolecular force, i.e. f^*, no numerical solution exists and the MWCNT collapses.

As a case study, a cantilever SWCNT probe/switch with Young's modulus of 1 TPa (Strus *et al.,* 2008) is considered. In this case, I is approximated to $\pi t R_W^3$, where t is the thickness of SWCNT, typically about 0.35 (Strus *et al.,* 2008). Figure 2 depicts the variation of SWCNT stable length as a function of the nanotube radius and minimum initial nanotube-graphite gap. As seen, the intermolecular attraction is more significant for SWCNT over thick graphite substrate compared to that of thin substrate. Figure 2 indicates that the effect of van der Waals attraction on MWCNT's buckling is very important at separations below 1μm.

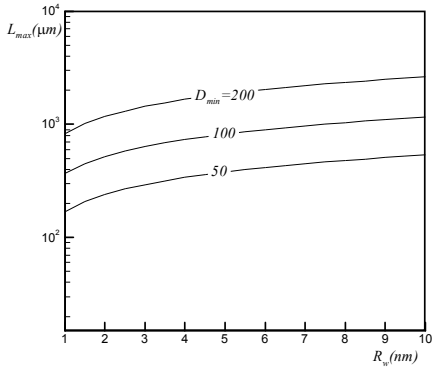

Figure 2. Detachment length of the SWCNT as a function of the nanotube radius for various minimum gaps

5. Conclusions

In summary, a nano-scale continuum model based on Lennard-Jones potential has been employed to investigate the buckling of cantilever MWCNT over graphene layers. Results indicate that van der Waals attraction can collapse the cantilever MWCNT at submicron separations especially in the case of large number of graphene layers. stable length of MWCNT has been determined as basic parameters for design and selecting components of nano-systems. It is found that the stable length of MWCNT highly depends on geometrical dimensions of MWCNT such as radius and number of walls, MWCNT-graphite distance and number of graphene layers. The developed approach avoids time-consuming MM simulations and makes parametric studies possible.

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Heparin effects on mobility problems of non-hemorrhagic stroke patients

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Abstract: Stroke is the second leading cause of death worldwide. Ischemia is the most common cause of it which is being treated by combined therapy. One important management of acute stroke candidate for recanalization (r-TPA) that can perform for some patient with special condition in 3 to 4/5hours of onset in a few centers in Iran. there are many studies with different results regard to anti-coagulant therapy in acute stroke. The aim of this study was determination of heparin effects on mobility problems among non-hemorrhagic stroke patients. In regard of absence of diagnostic tools & teams of acute ischemic stroke treatments with r-TPA.

In a double-blind randomized controlled clinical trial, 60 non-hemorrhagic stroke patients in Kashani Hospital in Shahrekord were randomly assigned in according to scale definition of NIHSS(part 5 & 6 : motor arms & legs) into two groups with same motor signs(0=no drift – 1=drift – 2 = cant's resist gravity-3 =no efforts against gravity- 4 = no movement UN=untestable): experiment and control groups. While experiment group were subcutaneous received 5000 to 10000 unit BID every day for 3 days +aspirin 100-325 mg, control group were received only 100-325 mg aspirin. Muscular power and dyspnea &pulses of peripheral veins for evaluation of lung emboli & DVT and radiological data in CT(the first and third days) were evaluated after 3 days in two groups.

There was no statistically significant difference between two groups in age, gender, power of all limbs, and duration of hospitalization. There was no significant difference between two groups in muscular power of upper and lower limbs in first day, but it was significant in the third day. In comparison of the muscular power of limbs of patients less than 55 years between two groups, there was no significant difference in the first day; however, it was significant in the third day. For patients more than 55, the significant difference was seen only in the third day in the power of left side limbs.

This study recommends using heparin in non-hemorrhagic stroke patients which is more efficient than using only aspirin.

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Keywords: Stroke, heparin, Mobility problems, non-hemorrhagic stroke patients.

1. Introduction

Cerebrovascular accident (CVA) or stroke is a syndrome which is identified by acute onset of neurologic disorders and is prolonged at least 24 hours, and it is a reflection of local involving of central nervous system (Giele et al., 2004; David et al., 2002). Stroke is the third leading cause of death among worldwide and one of the most important neurologic disabling disorders which increases with age, with higher mortality among elderly, and higher prevalence in men than women (Cecil et al., 2000).

Heparin and low molecular weight heparin (LMWH) are using for treatment of acute stroke (Giele et al., 2004). unfractionated heparin (UFH) with molecular weight of 3000-30000 dalton and mean of 15000 dalton used in the treatment of thrombosis with different results , but also has a probability of bleeding risk (Hirsh et al., 2001; White and Ginsberg, 2003).

Due to severe and irreversible complications of stroke, the patients have not only motion-verbal problems, but also various mental complications, as well as economic costs. The aim of this study was to evaluate treatment effects of heparin on muscular power disorders of acute non-ischemic stroke patients.

2. Material and Methods

In a clinical trial, 60 non-hemorrhagic stroke patients, with confirmed nonhemorrhagic stroke diagnosed by computed tomography scan (CT- scan) or magnetic resonance imaging (MRI), in Kashani Hospital in Shahrekord were randomly assigned into two groups: experiment and control groups in 2011. While experiment group were subcutaneus received

5000 -10000 BID units heparin every day for 3 days with aspirin, control group were received only 100-325 mg aspirin. Muscular power, deep veins thrombosis and lung emboli were evaluated after 3 days &CT-scan repeated in two groups. Prothrombin time (PT) and partial thromboplastin time (PTT) and INR of all patients were checked every day. Exclusion criteria were patients with hemorrhagic ischemic stroke, trauma, secondary neurologic complications, metabolic disorders (hypokalemia, hyponatremia …). Both groups have received one gram antacid aluminum hydroxide syrup. Both groups were re-CT scanned after 3 days and were compared on clinical issues. Muscular powers of patients were evaluated. In according to scale definition of NIHSS (part 5 & 6 : motor arms & legs) into two groups with same motor signs(0=no drift – 1=drift – 2 = cant;s resist gravity-3 =no efforts against gravity- 4 = no movement UN=untestable): experiment and control groups. Data were obtained by questionnaire and results of CT-scan. Chi-square and t-students test were used in SPSS (version 17) software.

3. Results

Table 1 compares muscular power of upper and lower limbs in two groups in first day of study. Demographic characteristics of both groups on age, gender and muscular power did not show any significant difference (P>0.05). Muscular power mean of both right and left upper and lower limbs were statistically significant between two groups (P<0.05).

As the results shows, among control group, CT-scan results in the third day were normal in 76.6% of the patients (see Table 2). Chronic small vessel and middle cerebral artery (MCA) have been observed in 16.6% and 6.6% of control group patients respectively. Among experiment group, CT-scan was normal in 40%, 30% had involvement of chronic small vessels, and MCA were observed in 20% of patients. Lacunar infarction and posterior cerebral artery (PCA) were also observed in 6.6% and 3.3% respectively.

Table 1- Comparison of muscular power of upper and lower limbs in the first day

Muscular power	Group	Mean ± S.D.*	P-value
Right upper limbs	Experiment	3.60 ± 1.56	0.16
	Control	3.03 ± 1.56	
Right lower limbs	Experiment	3.60 ± 1.58	0.21
	Control	3.07 ± 1.68	
Left upper limbs	Experiment	2.87 ± 1.69	0.55
	Control	2.60 ± 1.75	
Left lower limbs	Experiment	3.07 ± 1.72	0.67
	Control	2.87 ± 1.90	

*. S.D. = Standard Deviation

Table 2- Comparison of muscular power of upper and lower limbs in the third day between two groups

Muscular power	Group	Mean ± S.D.*	P-value
Right upper limbs	control	3.93 ± 1.28	0.003
	experimental	4.73 ± 0.64	
Right lower limbs	control	3.97 ± 1.29	0.01
	experimental	4.67 ± 0.71	
Left upper limbs	control	3.13 ± 1.61	0.001
	experimental	4.47 ± 1.10	
Left lower limbs	control	3.33 ± 1.66	0.01
	experimental	4.27 ± 1.28	

*. S.D. = Standard Deviation

At the end of third day, mean muscular power was increased compared to the first day in two groups (Tables 3 and 4). The difference among groups was statistically significant (P<0.05). At the end of study, the association between muscular power and age were evaluated in two groups. While patients with age less than 55 in experiment group showed increased muscular power of all limbs in the third day compared to control group (P<0.05), the muscular power in the third day in experiment group was increased only in upper left limb (P>0.05).

Table 3- Comparison of muscular power of limbs in the first and third days in control group

Muscular power	Control Group	Mean ± S.D.*	P-value
Right upper limbs	first day	3.60 ± 1.56	0.005
	Third day	3.93 ± 1.28	
Right lower limbs	first day	3.60 ± 1.58	0.003
	Third day	3.97 ± 1.29	
Left upper limbs	first day	2.87 ± 1.69	0.003
	Third day	3.13 ± 1.61	
Left lower limbs	first day	3.07 ± 1.72	0.003
	Third day	3.33 ± 1.66	

*. S.D. = Standard Deviation

Table 4- Comparison of muscular power of limbs in first and third days in experiment group

Muscular power	Group	Mean ± S.D.*	P-value
Right upper limbs	first day	3.03 ± 1.56	0.001
	Third day	4.73 ± 0.64	
Right lower limbs	first day	3.07 ± 1.68	0.001
	Third day	4.67 ± 0.71	
Left upper limbs	first day	2.60 ± 1.75	0.001
	Third day	4.47 ± 1.10	
Left lower limbs	first day	2.87 ± 1.90	0.001
	Third day	4.27 ± 1.28	

*. S.D. = Standard Deviation

4. Discussions

There was a statistically significant variation in muscular power of limbs in experiment and control groups in our study. We found that simultaneously consumption of heparin with other antithrombotic drugs such as aspirin is more efficient in improvement of motion complications of patients with non hemorrhagic ischemic stroke.

Lip et al reported the decreasing rates of mortality, recurrence, complications, and motion disability in patients with consumption of 5000 unit heparin twice a day (Lip et al., 2002). If heparin and aspirin prescribe at the same time, this effect will increase. Our study confirmed this finding; i.e., simultaneous consumption of aspirin and heparin compounds (LMWH) is more efficient than consumption aspirin alone on the motion complications of non hemorrhagic ischemic stroke. Berge et al in a clinical trial showed that there is no evidence for preferring LMWH than aspirin in the treatment of atrial fibrillation (AF) patients (Berge et al., 2000). Our results are not consistent with their results due to potential consumption of aspirin and heparin in experiment group and their related mechanism of revascularization. Coull et al reported that aspirin can improve disability and motion problems of ischemic stroke patients (Coull et al., 2002).

Our study showed that age is an important factor in the recovery after stroke, especially in patients less than 55. This finding is consistent with the findings of Moonis et al that confirmed the positive effect of younger age on better prognosis (Moonis and Fisher, 2002). The comparison of LMWH and unfractionated heparin in acute thromboembolism carried out by Chen et al in 2005 showed no difference between the effect of these two heparins (Chen et al., 2005).

No one in our study showed hemorrhagic complications or mortality which is consistent with the results of Schmulling study (Schmulling et al., 2003). Strand found that the dilution of blood can have positive effect on the decreasing of complications (Strand et al., 1984). The study of Haley showed that the effect of heparin in the treatment of stroke still needs more attention (Haley et al., 1988). In another study, it has been confirmed that heparin can decline the risk of thromboembolism in acute ischemic patients, but not in intracranial bleeding and declining of disability (Williamson and Street, 2003).

Conclusion:

It can be resulted from our findings that despite the effectiveness of aspirin in the improvement of muscular power among ischemic stroke patients, the effect of heparin is more than aspirin. The effect is more efficient in younger patients than the others. Further large studies are necessary to confirm the effects of heparin and bleeding complications.

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Buckling of Multi Walled Carbon Nanotube Probes with Small Number of Layers near Graphite Sheets

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Abstract: Herein, deflection and instability of a freestanding carbon nanotube (CNT) probe/sensor in the vicinity of the graphene layers are investigated. Modeling the buckling of multi walled carbon nanotube (MWCNT) probes/actuators with small number of layers in the vicinity of thin and thick graphite has been carried out using numerical finite difference method. A hybrid nano-scale continuum model based on Lennard-Jones potential is applied to simulate the intermolecular force-induced deflection of MWCNT. The deflection of freestanding MWCNT near graphen plate and critical values of MWCNT tip deflection and MWCNT-graphite attraction at the onset of the instability are computed.
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Keywords: Nanomaterials; Buckling; CNT

1. Introduction

Carbon nanotubes (CNTs) have become the center of interest for many scientists due to their large application such as microscope probes/sensors and actuators/switches (Desquenes *et al.,* 2002; Hwang and Kang 2005; Ke *et al.,* 2005a). The extraordinary properties of MWCNTs have motivated engineers worldwide to explore their applications in different fields. With recent growth in nanotechnology, MWCNTs are increasingly used in developing atomic force microscope (AFM) probes (Li *et al.,* 2008; Akita 2001; Cao *et al.,* 2005) and nano-electromechanical system (NEMS) switches (Baughman *et al.,* 1999; Ke *et al.,* 2005a; Snow *et al.,* 2002). Consider a typical cantilever MWCNT probe/switch a shown if figure 1. suspended near graphite surface with a small gap in between. As the gap decreases from micro to nano-scale, the van der Waals interaction deflects MWCNT to the surface. When the separation is small enough, nanotube buckles onto graphite. The prediction of the molecular force-induced instability of MWCNTs near the surface is a critical subject in design AFM probes and NEMS switches. With decrease in distance between the AFM probe and sample surfaces, the probe jumps into contact with the surfaces and renders its imaging performance (Snow *et al.,* 2002; Jalili *et al.,* 2004; Snow *et al.,* 2002). Similarly, a NEMS switch might adhere to its substrate even without an applied voltage as a result of molecular force, if the minimum gap between the switch and substrate is not considered (Abadyan *et al.,* 2010; Abdi *et al.,* 2011; Koochi *et al.,* ; 2010; 2011a; 2012; Soroush et al., 2010; Tadi Beni *et al.,* 2011a; 2011b).

In order to study nanomaterials, several approaches are employed. Molecular dynamics (MD) and molecular mechanics (MM) simulations could be used to study the mechanical behavior of carbon-based nanomaterials (Tsai and Tu 2010; Tserpes, 2007; Desquenes *et al.,* 2002; Batra *et al.,* 2007). However these methods are very time-consuming and might not be easily used in complex structures. An alternative reliable trend to simulate the instability behavior of MWCNT interacting with extremely small number of graphite atoms is to apply nano-scale continuum models. A hybrid continuum model can be used to calculate the van der Waals energy, in lieu of the discrete Lennard-Jones potential, similarly (Desquenes *et al.,* 2002; Batra *et al.,* 2007; Gupta *et al.,* 2008). Although continuum models are more time-saving than MM and MD, their approach often leads to nonlinear equations that might not be worked out by analytical methods, accurately (Desquenes *et al.,* ; Lin and Zhao 2005; Koochi *et al.,* 2011b, 2011c) .

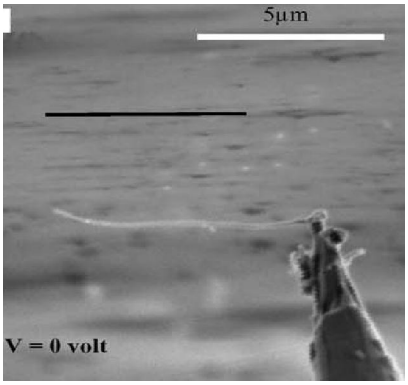

Fig. 1. SEM images of a freestanding CNT probe (Ke *et al.,* 2005a)

In this paper, we utilize a hybrid continuum model to investigate the molecular force-induced deflection and buckling of the cantilever freestanding MWCNT probes/actuators with small number of layers suspended over graphite. The numerical finite difference method is implied to simulate the instability of MWCNT and the obtained results are compared with numerical data.

2. Theoretical Model

2.1. van der Waals interactions

Consider a typical freestanding MWCNT near a surface consisted of N graphene layers, with interlayer distance d = 3.35 Å (figure 2). The length of MWCNT is L, the number of walls of nanotube is N_W, the mean value of their radii is R_W and the gap between MWCNT and the surface is D. A continuum model has been established to compute the van der Waals energy by double-volume integral of Lennard-Jones potential in Refs. (Desquenes *et al.,* 2002; Lennard-Jones, 1930; Girifalco *et al.,* 2000; Ke and Espinosa 2006). In most applications it is practically assumed that the mean radius of MWCNT is much smaller than the distance between nanotube and the graphene surfaces. According to this assumption and using the mentioned continuum model, the intermolecular force per unit length of MWCNT, q_{vdW}, is simplified to (Desquenes *et al.,* 2002):

$$q_{vdW}(r) = 4C_6\sigma^2\pi^2 N_W R_W \sum_{r=D}^{D+(N-1)d} \frac{1}{r^5}. \quad (1)$$

In the above equation, C_6 = 15.2 eVÅ^6 is the attractive constants for the carbon-carbon interaction, (Girifalco *et al.,* 2000) and $\sigma \cong 38\text{nm}^{-2}$ (Desquenes *et al.,* 2002) is the graphene surface density.

In characterizing ultra-thin films/layers by AFM nano-probes, the investigation of MWCNT behavior near a small number of layers can be treated as an important dilemma (Nemes-Incze et al., 2008; Koszewski et al., 2008; Švorčík et al., 2009). Therefore, this study is focused on this case which is very important in engineering problems. In order to derive a simple formula for a small number of layers we substitute r with $D + Nd/2 + id$ and assume $D + Nd/2 \pm id \approx D + Nd/2$. Therefore we get:

$$\sum_{r=D}^{D+(N-1)d} \frac{1}{r^5} = \sum_{i=-N/2}^{N/2} \frac{1}{(D+Nd/2+id)^5} \approx \frac{N}{(D+Nd/2)^5}. \quad (2)$$

This leads to:

$$q_{vdW}(D) \approx 4C_6\sigma^2\pi^2 NN_W R_W (D+Nd/2)^{-5}. \quad (3)$$

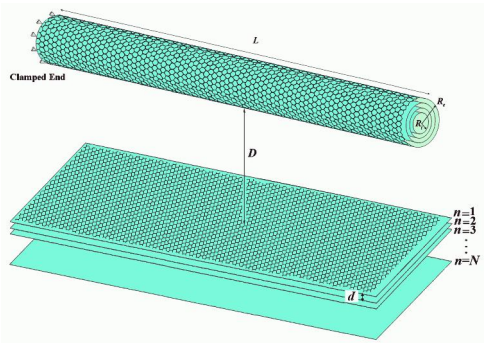

Figure 2. Equivalent continuum model: a MWCNT over a graphite ground plane

2.2. Elastostatic domain

Based on continuum mechanics, a MWCNT is modeled by concentric cylindrical tubes. Young's modulus of MWCNT, E_{eff}, is typically 0.9-1.2 TPa (Gupta *et al.,* 2008) and the cross-sectional moment of inertia I is equal to $\pi(R_o^4-R_i^4)/4$ (Girifalco *et al.,* 2000). We have applied Euler theory to investigate the static elastic behavior of MWCNT. For MWCNTs with $L/(2R_e) > 10$, Euler theory provides fine results compared to those by MM simulations (Batra *et al.,* 2007; Ke *et al.,* 2005b). The effect of large displacement (finite kinematics) is not considered to derive the governing equation of MWCNT. The governing equation of a cantilever MWCNT can be defined as a boundary value problem:

$$E_{eff} I \frac{d^4U}{dX^4} = q_{vdW}(D-U) = \frac{4C_6\sigma^2\pi^2 NN_W R_W}{(D-U+Nd/2)^5} \quad (4a)$$

$$U(0) = \frac{dU}{dX}(0) = 0,$$

(Geometrical B.C. at fixed end) (4b)

$$\frac{d^2U}{dX^2}(L) = \frac{d^3U}{dX^3}(L) = 0,$$

(Natural B.C. at free end) (4c)

where X is the position along MWCNT measured from the clamped end and U is the deflection of MWCNT. Equations (4a)-(4c) can be made dimensionless using the following substitutions:

$$x = X/L, \quad (5a)$$

$$u = \frac{U}{D+Nd/2}, \quad (5b)$$

$$f_n = \frac{4C_6\sigma^2\pi^2 NN_W R_W L^4}{E_{eff} I (D+Nd/2)^6}. \quad (5c)$$

These transformations yield,

$$\frac{d^4u}{dx^4} = \frac{f}{(1-u(x))^5}, \quad (6a)$$

$$u(0) = u'(0) = 0, \text{ at } x = 0 \quad (6b)$$

$$u''(1) = u'''(1) = 0, \text{ at } x = 1. \quad (6c)$$

In all equations, prime denotes differentiation with respect to x.

3. Numerical Solution

In order to solve the boundary value problem of Eq. 6 a procedure based on finite difference method (FDM) is developed in this study for making meaningful comparisons. Following the standard FDM procedure, the beam is discretized into n equal sections (elements) separated by (n+1) nodes. For each element, the governing equation (6) in the discretized form can be written as:

$$\frac{d^4u}{dx^4} = \frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} \quad (7)$$

where h is the grid spacing, w_i is the deflection of i^{th} grid. By substituting equation 7 in equation 5 we can obtaine:

$$\frac{u_{i-2} - 4u_{i-1} + 6u_i - 4u_{i+1} + u_{i+2}}{h^4} = F_i \quad (8)$$

where

$$F_i = \frac{f}{(1-u_i)^5} \quad (9)$$

Applying equation (8) to all of the elements and incorporating the boundary conditions (eq 6-b and 6-c), a matrix form equation is obtained as:

$$[A]\{u\} = \{F\} \quad (10)$$

Where

$$\{u\} = [u_1, u_2, ..., u_n]^T, \quad (11)$$

And

$$\{F\} = [F_1, F_2, ..., F_n]^T \quad (12)$$

and A matrix can be defined as:

$$[A] = \begin{bmatrix} 7 & -4 & 1 & 0 & 0 & \dots & 0 & 0 & 0 & 0 \\ -4 & 6 & -4 & 1 & 0 & \dots & 0 & 0 & 0 & 0 \\ 1 & -4 & 6 & -4 & 1 & \dots & 0 & 0 & 0 & 0 \\ 0 & 1 & -4 & 6 & -4 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -4 & 6 & \dots & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & -4 & \dots & 0 & 0 & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & 0 & 0 & \cdots & -4 & 6 & -4 & 1 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 1 & -4 & 5 & -2 \\ 0 & 0 & 0 & 0 & 0 & \cdots & 0 & 1 & -2 & 1 \end{bmatrix} \quad (13)$$

Matlab commercial software is employed to numerically solve equation (10) for the nodal deflections that govern the overall deflection of the beam.

5. Results and Discussion

For any given MWCNT-graphite attraction (f), one can solve equation (8a) numerically to obtain the deflection (u) of MWCNT. However, for f greater than critical value of intermolecular force, i.e. f^*, no numerical solution exists and the MWCNT collapses.

Figure 3 shows the centerline deflection of a typical MWCNT under intermolecular force obtained using FDM solution. As seen, u_{tip} increases from zero to u_{tip}^*, when f raises from zero to f^*.

The relations between f and u_{tip} are presented in figure 4. When intermolecular attraction exceeds the critical value f^*, no solution exists for u_{tip} and the instability occurs.

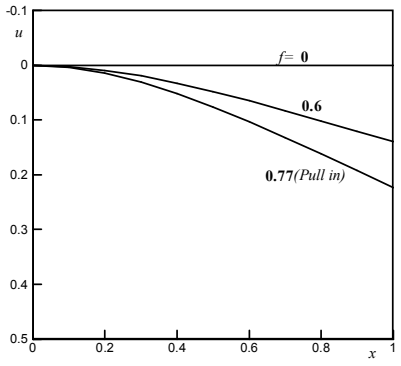

Figure 3. Deflections of the cantilever CNT for different values of intermolecular force (f_n). Collapse occurs when f_n reaches values greater than its critical one, i.e. f^*

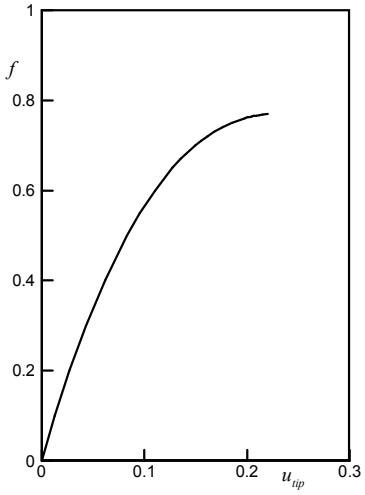

Figure 4. Relationship between f and the MWCNT tip deflection. Collapse occurs when $f$reaches values greater than f^*.

5. Conclusions

In summary, a nano-scale continuum model based on Lennard-Jones potential has been employed to investigate the buckling of cantilever MWCNT with small number of layers over graphene layers. Results indicate that van der Waals attraction can collapse the cantilever MWCNT at submicron separations especially in the case of small number of graphene layers. The proposed approach are capable of predicting the critical values of MWCNT-graphite attraction and MWCNT deflection at the onset of instability. The developed approach avoids time-consuming MM simulations and makes parametric

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Activity Concentrations of Natural Radionuclides in Sedimentary Rocks from North of Arabian Shield (Hail), Saudi Arabia

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Abstract: Sedimentary rock geological and radioactivity studies are important for their use as raw materials in the construction industry.Six samples were collected from south of Hail at the east and north of the Arabian Shield of Saudi Arabia. Their coordinates between Lat. N: $26^0 04' 09.1''$ to N:$28^0\ 59'\ 01.3''$ and long. E:$43^0\ 35' 16.1''$ to E:$45^0 19' 59.3''$. Samples were analyzed by XRD for the mineral constituents. X-RD results give the major, minor and trace minerals, the major mineral is calcite (CaCo3), Dolomite ($CaMg(CO_3)_2$), and Quartz(SiO_2), with minor and trace concentrations. Also, the dried samples were analyzed by atomic absorption spectrometer for the Al, Ca, K, Bi, Pb, andTh, concentrations in ppm and/or percent.**Results** give concentrations in percent and ppm ranging from 0.10 to 0.68, 3.16 to 33.53, and 0.13 to 0.31 in %, and <10, <7.5 to 1756.38, and <1 in ppm respectively. Using high-resolution gamma-ray spectroscopy, the activities concentrations Bq/.kg dry weight for the ^{238}U, ^{226}Ra, ^{232}Th, ^{235}U and ^{40}K, ranged from 176.10±0.07 to 222.86±0.21, 28.34±0.11 to 231.04±0.05, 08.66±0.17 to 137.84±0.04, 09.35±0.03 to 12.69±0.03, 78.27±0.23 to 202.21±0.04 with mean values 199.18±0.17, 109.01±0.07,37.96±0.10, 11.47±0.02, and 123.57±0.13 respectively.For theRa_{Eq} (Bq/kg) ranged from 59.193 to 438.615 with mean value 172.810 which is lowr than *370Bq/kg*, the permissible limit **(UNSCEAR, 2000).** The mean values of the annual effective dose (D_{eff}(mSv/y) was found to be less than one (0.096) which is within the worldwide mean values(≤1for D_{eff} (mSv/y) (UNSCEAR, 2000).

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Key words: Dolomite rock, Sand stone, high-resolution gamma-ray spectroscopy, Arabian Shield of Saudi Arabia

1. Introduction

The sedimentary rocks to the east and north of the Precambrian Proterozoic Arabian Shield cover almost two-third of the total area of Saudi Arabia. The younger rocks in Saudi Arabia belong to the Paleozoic (540-250 Ma), Mesozoic (250-65 Ma), and Cenozoic (65 Ma to Recent) (collectively referred to as Phanerozoic cover), and crop out as relatively flat lying beds of sedimentary rocks such as sandstone, siltstone, limestone, and evaporates (salt deposits). The youngest deposits in the region include coral limestone and unconsolidated sand, silt, gravel, and sabkha, which accumulated in the sand seas of Ar Rub al Khali and An Nafud, filled dried-up lake beds and wadis, and fringed the coastlines. Sedimentary geological and radioactivity studies are important for their use as raw materials in the construction industry (bricks, ceramics, cement, fillers, etc.), and for its a science used to examine rock formations. It helps to determine the types, classification, criteria, geologic age of rocks, their contents of Phanerozoic fossils **(Saudi Geological Survey (SGS), 2012).**

The concentrations and distributions of natural radionuclides occurring in sedimentary rock samples from Eastern Desert and Nile Valley in Egypt, were measured. The sediments have already been investigated in the geological and mineralogical aspects, this study is necessary to investigate the natural radioactivity in order to complete their classification **(ARABI et al, 2006).**

Higher radiation levels are associated with igneous rocks, such asgranite, and lower levels with sedimentary rocks. There are exceptions, however, as someshales and phosphate rocks have relatively high content of radionuclides (**Tzortzis et al,2003**).

In sedimentary rocks such as sandstone, limestone, and non-carbonaceous shale, most of the radionuclides are in the detrital particles **(Johnson, 1979).**

WadiNaseib area of Egypt is mainly covered by sedimentary rocks of Paleozoic age. Some of the Paleozoic sediments in the southwestern part of Sinai, including the study area, are of great importance especially from the mineralogical and radioactivity points of view. They host several types of mineral deposits, some transitional metals **Galy et al, 2008).** The radioactivity in soil are primary comes from U, Th and their progenies and also from the natural K, and represents the main external exposure to the environment **(Hamzah et al,2011).**

The aim of this study is to analyze the sedimentary rock samples at the east and north (south

of Hail) of the Arabian Shield of Saudi Arabia by XR-D spectrometer and atomic absorption spectrometer and to determine the activity concentrations of ^{238}U, ^{226}Ra, ^{232}Th, ^{235}U, and ^{40}K by using gamma rays spectrometer with HPGe detector. This study will also calculate the radium equivalent and then estimate the annual effective dose and the external hazard index of the study area.

Experimental techniques

Geological setting:

Sedimentary rocks formed when eroded particles of other rocks have been deposited (on the ocean floor, stream/lake beds, etc) and compacted, or by the precipitation of minerals mineraloids from water. Sedimentary rocks contain important information about the history of the Earth. They contain fossils, the preserved remains of ancient plants and animals. All buildings and public structures require sedimentary rock in their construction, so measuring the activity concentrations of radionuclides in these rocks are very important for the environment. Six samples were collected from south of Hail as shown in figure 1.

Sample 4 K.do contains Dolomite rock. Dolomite is very significant in the petroleum business because it forms underground by the alteration of calcite limestone. This chemical change is marked by a reduction in volume and by recrystallization, which combine to produce open space (porosity) in the rock strata.

Sample5 Tudo contains of limestone. Limestone is a sedimentary rock consisting of more than 50% calcium carbonate (calcite - $CaCO_3$). There are many different types of limestone formed through a variety of processes. Uses of limestone are: base for cement; as dimension stone for decoration of walls and floors; in the production of lime fertilizer, paper, petrochemicals, pesticide, glass etc.

Sample 6 F.ss includes Sand stone which is a sedimentary rock formed from cemented sand-sized clasts. The cement that binds the clasts can vary from clay minerals to calcite, silica or iron oxides. It is used as: if soft then generally of no use; if hard then can be used as aggregate, fill etc. in the construction and roading industries; dimension stone for buildings, paving, etc. (Saudi Geological Survey,2012).

Fig. 1 Map of the samples` locations

Sample preparation

Six samples were collected from south of Hail at the east and north of the Arabian Shield of Saudi Arabia. Samples were grounded, sieved by 1mm x 1mm, then dried to 95°C for 24 hours in order not to lose the volatile polonium or cesium. The dried fine grained samples were packed in polyethylene Marinelli beakers for gamma spectroscopy, and then stored for up to four months to reach secular equilibrium between ^{238}U and ^{232}Th and their progenies

Measurements

Ten grams of the dried samples were analyzed by XRD spectrometer model Burker XR-D D8 Advance for the mineral constituents, also 10 grams of the dried samples were analyzed by atomic absorption spectrometer model AAnalyst 700 for the Al, Ca, K, Bi,Pb, and Thconcentrations in ppm and/or percent. Samples were analyzed for concentrations of ^{238}U, ^{232}Th series, ^{235}U, and ^{40}K using the gamma spectrometer based on Canberra hyper pure germanium detector "HPGe" coaxial detector with relative efficiency of 20% and FWHM 4.2 keV at 1461 keV, the measurements were done for a time period of twenty four hours.

For sedimentary rocks,^{238}U was calculated from a gamma-ray line of energy 63.29keV, of ^{234}Th. Gamma-ray lines of energies 295.09, 351.87, 609.31, 1120.27, and 1764.49 keV resulting from the decay of daughters ^{214}Pb and ^{214}Bi radionuclides (which they are in secular radioactivity equilibrium) were used to determine the activity concentrations of ^{226}Ra. The gamma-ray lines at338.42, 911.07, 968.97, 583.10, and 2614.48 kev from the decay of short half life daughters ^{228}Ac and ^{208}Tl were used to determine the activity concentrations of ^{232}Th sespectively (since there is secular radioactivity equilibrium in ^{232}Th series); while the143.8and 1460.80 transitions were used to determine the activity concentrations of ^{235}U and ^{40}K respectively.

The specificactivity (A) in Bq/Kg for each detected nuclide was calculated using the following equation:(Amrani &Tahtat., 2001).

$$A = \frac{C}{M\,\beta\,\epsilon} \quad (1)$$

Where: c is the net counting rate of a specific gamma ray (count per second)

M is the mass of the samples (kg)

$\beta$is the transition probability of gamma-decay

$\epsilon$is the detector efficiency at the specific gamma-ray energy.

Radium equivalent activity, $Ra_{Eq}$is used to estimate thehazard posed by different concentrations of radionuclides in materials. Equation (2) was used to determine Ra_{eq}(Bq/.kg) (Tufail & NasimAkhtar, 2006):

$$Ra_{eq}(Bq/.kg) = C_{Ra} + (C_{Th} \times 1.43) + (C_K \times 0.077) \quad (2)$$

Where:C_{Ra}, $C_{Th}$and C_K are the concentrations Bq/kg for radium, thorium and potassiumrespectively.

The total air absorbed dose rate D(nGy/ h) in the outdoor air at 1 m above the ground due to the activity concentrations of ^{226}Ra, ^{232}Th and ^{40}K (Bq/ kg) dry weight was calculated using the equation (3) (UNSCEAR 2000; Veiga et al., 2006)

$$D(nGy/h) = 0.462C_{Ra} + 0.604C_{Th} + 0.0417C_K \quad (3)$$

Where:C_{Ra}, C_{Th}, and C_K are the specific activities (concentrations) of ^{226}Ra, ^{232}Th and ^{40}K in Bq /kg respectively.

By using a conversion factor of 0.7 SvG/y and outdoor occupancy factor of 0.2 (people spend about 20% of their life outdoor) the Annual Effective Dose (in mSv/y) received by population can be calculated using equation:

$$\mathbf{D_{eff}(mSv/y) = D(nGy/h) \times 8{,}766\ h \times 0.7(SvG/y) \times 0.2 \times 10^{-6}} \quad \mathbf{(4)}$$

Where:D(nGy/h) is the total air absorbed dose rate in the outdoor.

8,766 h is the number of hours in 1 year.

10^{-6} is conversion factor of nano and milli.

3. Results and discussions

As shown in table (1), the X-RD results give the major, minor and trace minerals. Results show that the major mineral is calcite (CaCo3), Dolomite ($CaMg(CO_3)_2$), and Quartz(SiO_2), with minor and trace concentrations.

Table (2) represents concentrations of Al, Ca, K, Bi, Pb, andTh, measured by Atomic AbsorptionAnalyzer. Results give concentrations in percent and ppm ranging from 0.10 to 0.68, 3.16 to 33.53, and 0.13 to 0.31 in %, and <10, <7.5 to 1756.38, and <1 in ppm respectively.

Table (3) represents the activities concentrations Bq/.kg dry weight of the ^{238}U, ^{226}Ra, ^{232}Th, ^{235}U and ^{40}K for the samples.

Of all the 6 samples measured in this study, 6 F.ss. appears to have the highest concentrations of ^{238}U, also, 6 F.ss has the highest concentrations of ^{232}Th. Whereas the concentrations of ^{40}K vary with the type of the rocks. Three values for ^{235}U detected.

For the ^{238}U, ^{226}Ra, ^{232}Th, ^{235}U and ^{40}K, the activities concentrations Bq/.kg dry weight ranged from 176.10$\pm$0.07 to 222.86$\pm$0.21, 28.34$\pm$0.11 to 231.04$\pm$0.05, 08.66$\pm$0.17 to 137.84$\pm$0.04, 09.35$\pm$0.03 to 12.69$\pm$0.03, 78.27$\pm$0.23 to 202.21$\pm$0.04 with mean values 199.18$\pm$0.17, 109.01$\pm$0.07,37.96$\pm$0.10, 11.47$\pm$0.02, and 123.57$\pm$0.13 respectively.

For theRa_{Eq} (Bq/kg) ranged from 59.193 to 438.615 with mean value 172.810 which is lowr than *370Bq/kg*, the permissible limit **(UNSCEAR, 2000).** The mean values of the annual effective dose (D_{eff}(mSv/y) was found to be less than one (0.096) which is within the worldwide mean values($<$1for D_{eff} (mSv/y) **(UNSCEAR, 2000).**

Table (1): The mineral constituents of six samples of sedimentary rocks analyzed by XRD spectrometer, (Leet*et al*., 1982, and Mineral Data, 2012

Samp No.	Major	Minor	Trace
1-Tu	CALCITE($CaCO_3$)	QUARTZ(SiO_2)	CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$, DOLOMITE($CaMg(CO_3)_2$), GYPSUMCa(SO_4)•2(H_2O), MONTMORILLONITE $Na_{0.2}Ca_{0.1}Al_2Si_4O_{10}(OH)_2(H_2O)_{10}$, OFFRETITEK$_{1.1}Ca_{1.1}Mg_{0.7}Al_{5.2}Si_{12.8}O_{36}$•15.2($H_2O$), PARGASITE $NaCa_2Mg_3Fe^{2+}Si_6Al_3O_{22}(OH)_2$
2-Li	DOLOMITE($CaMg(CO_3)_2$)	CALCITE($CaCO_3$)	ALBITE(NaCaAl Si $_3O_8$),BIOTITE(K($MgFe^{2+}$)$_3AlSi_3O_{10}$(OH F)$_2$),CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$, MONTMORILLONITE $Na_{0.2}Ca_{0.1}Al_2Si_4O_{10}(OH)_2(H_2O)_{10}$, PARGASITE $NaCa_2Mg_3Fe^{2+}Si_6Al_3O_{22}(OH)_2$, QUARTZ(SiO_2), ROGGIANITE $Ca_2Be(OH)_2Al_2(Si_4O_{13})$•2.4($H_2O$)
3-Ka	CALCITE($CaCO_3$), QUARTZ(SiO_2)	DOLOMITE($CaMg(CO_3)_2$)	ALBITE(NaCaAl Si $_3O_8$), CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$,GYPSUMCa(SO_4)•2(H_2O), MAGNETITE($Fe^{3+}{}_2Fe^{2+}O_4$), NONTRONITE $Na_{0.3}Fe^{3+}{}_2Si_3AlO_{10}(OH)_2$•4($H_2O$),PALYGORSKITE $Mg_{1.5}Al_{0.5}Si_4O_{10}(OH)$•4($H_2O$),PARGASITE $NaCa_2Mg_3Fe^{2+}Si_6Al_3O_{22}(OH)_2$
4- K.do	CALCITE($CaCO_3$), DOLOMITE($CaMg(CO_3)_2$)	QUARTZ(SiO_2)	ALBITE(NaCaAl Si $_3O_8$), BIOTITE(K($MgFe^{2+}$)$_3AlSi_3O_{10}$(OH F)$_2$), CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$, GYPSUMCa(SO_4)•2(H_2O), MAGNETITE($Fe^{3+}{}_2Fe^{2+}O_4$), MONTMORILLONITE $Na_{0.2}Ca_{0.1}Al_2Si_4O_{10}(OH)_2(H_2O)_{10}$, PALYGORSKITE $Mg_{1.5}Al_{0.5}Si_4O_{10}(OH)$•4($H_2O$)
5-Tudo	DOLOMITE($CaMg(CO_3)_2$)	ALBITE(NaCaAl Si $_3O_8$), CALCITE($CaCO_3$)	AUGITE(Ca,Na)(Mg,Fe,Al,Ti)(Si,Al)$_2O_6$, BIOTITE(K($MgFe^{2+}$)$_3AlSi_3O_{10}$(OH F)$_2$), CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$, GYPSUMCa(SO_4)•2(H_2O), MONTMORILLONITE $Na_{0.2}Ca_{0.1}Al_2Si_4O_{10}(OH)_2(H_2O)_{10}$, NONTRONITE $Na_{0.3}Fe^{3+}{}_2Si_3AlO_{10}(OH)_2$•4($H_2O$), PARGASITE $NaCa_2Mg_3Fe^{2+}Si_6Al_3O_{22}(OH)_2$, QUARTZ(SiO_2)
6-F.ss.	QUARTZ(SiO_2)	CALCITE($CaCO_3$)	AUGITE(Ca,Na)(Mg,Fe,Al,Ti)(Si,Al)$_2O_6$,ALBITE(NaCaAl Si $_3O_8$), BIOTITE(K($MgFe^{2+}$)$_3AlSi_3O_{10}$(OH F)$_2$), CLINOCHLORE($MgFe^{2+}$)$_5Si_3Al_2O_{10}(OH)_8$DOLOMITE($CaMg(CO_3)_2$), HALITE(NaCl),MAGNETITE($Fe^{3+}{}_2Fe^{2+}O_4$), MONTMORILLONITE $Na_{0.2}Ca_{0.1}Al_2Si_4O_{10}(OH)_2(H_2O)_{10}$, NONTRONITE $Na_{0.3}Fe^{3+}{}_2Si_3AlO_{10}(OH)_2$•4($H_2O$), PARGASITE $NaCa_2Mg_3Fe^{2+}Si_6Al_3O_{22}(OH)_2$, SCOLECITE $CaAl_2Si_3O_{10}$•3(H_2O)

Table (2): Concentrations of Al, ,Ca, K, Bi, Pb, andTh, for the samples measured byAtomic Absorption Analyzer.

Samp. No.	Elements	Al	Ca	K	Bi	Pb	Th	
	D L	0.05	0.05	0.05	10.00	7.50	1.00	4.10
	Units	%	%	%	ppm	ppm	ppm	Bq/kg
1-Tu		0.31	33.53	0.24	<10	16.77	<1	<4.10
2- Li		0.10	20.41	0.18	<10	1756.38	<1	<4.10
3-Ka		0.38	25.73	0.31	<10	<7.5	<1	<4.10
4 -K.do		0.33	23.67	0.25	<10	298.43	<1	<4.10
5-Tudo		0.12	20.36	0.19	<10	<7.5	<1	<4.10
6 -F.ss.		0.68	3.16	0.13	<10	89.69	<1	<4.10

Table (3): The activities concentrations Bq/.kg dry weight of the ^{238}U, ^{226}Ra, ^{232}Th, ^{235}U and ^{40}K for the samples.

Samp. No.	Lat. and Long.	^{238}U	^{226}Ra	^{232}Th	^{235}U	^{40}K
1-Tu	N:28^{0}41$'$20.6$''$ E:44^{0}40$'$58.5$''$	176.10±0.07	28.34±0.11	14.61±0.18	ND	129.36±0.35
2- Li	N:28^0 59$'$ 01.3$''$ E:43^0 35$'$16.1$''$	189.62±0.18	75.66±0.03	15.27±0.06	ND	78.27±0.23
3-Ka	N:28^{0}42$'$08.4$''$ E:43^0 52$'$22.7$''$	240.10±0.16	66.85±0.06	33.65±0.04	12.36±0.03	202.21±0.04
4- K.do	N:28^{0}47$'$51.1$''$ E:43^{0}45$'$41.0$''$	189.10±0.18	135.04±0.12	17.71±0.11	09.35±0.03	110.89±0.03
5 -Tudo	N:28^{0}54$'$03.4$''$ E:43^0 42$'$06.5$''$	177.31±0.19	117.14±0.08	08.66±0.17	ND	84.80±0.08
6-F.ss.	N:26^{0}04$'$09.1$''$ E:45^{0}19$'$59.3$''$	222.86±0.21	231.04±0.05	137.84±0.04	12.69±0.03	135.89±0.03
Min.		176.10±0.07	28.34±0.11	08.66±0.17	09.35±0.03	78.27±0.23
Max.		222.86±0.21	231.04±0.05	137.84±0.04	12.69±0.03	202.21±0.04
Mean		199.18±0.17	109.01±0.07	37.96±0.10	11.47±0.02	123.57±0.13

Table (4):TheRa$_{Eq}$ (Bq/kg), D(nGy/h), and D$_{eff}$(mSv/y) For sedimentary rocks.

Samp. No.	Ra$_{Eq}$Bq/kg)	D(nGy/h)	D$_{eff}$(mSv/y)
1-Tu	59.193	27.221	0.033
2- Li	103.523	47.387	0.058
3-Ka	130.540	59.500	0.073
4- K.do	168.904	77.632	0.095
5-Tudo	136.053	62.826	0.077
6 -F.ss.	438.615	195.567	0.240
Min.	59.193	27.221	0.033
Max.	438.615	195.567	0.240
Mean	172.810	78.33	0.096

Conclusion

Three techniques, the analysis by X-RD, AtomicAbsorption Analyzer. and High-resolution γ-ray spectroscopy were applied to study sedimentary rock samples, The obtained results show that the major mineral is calcite (CaCo3), Dolomite (Ca $Mg(CO_3)_2$), and Quartz(SiO_2), the concentrations in percent for Ca are higher than Al and K, while the concentrations in ppm for Pb appear high. The activities concentrations Bq/.kg dry weight of the ^{238}U are higher than ^{226}Ra, ^{232}Th, and ^{40}K. The mean value of Ra$_{Eq}$ (Bq/kg) and The mean values of the annual effective dose (D$_{eff}$(mSv/y) were found to be within the worldwide mean values(370 Bq/kg and ≤1for D$_{eff}$ (mSv/y) (UNSCEAR, 2000).

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Measuring chlorophyll content in corn leaves at soil salinity conditions by using spectrophotometer and its correlation with plant yield.

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Abstract: Salinity is one of the environmental limiting factors in agricultural product producing. So the investigation of the plants and finding some method to resist the plants against salinity stress is very important. Considering Iran and Azerbaijan as origin countries in Astara region, and in order to study the effects of salt stress (NACL) on, leaf relative water content (LRWC), Chlorophyll a, Chlorophyll b Content and yield of 8 maize cultivars were experimented in three replications on the basis of randomized complete block design in three years (2007-2009). Results from the experiment showed that, between locations (normal and saline) in all traits, significant differences were seen. Between varieties in all traits, significant differences were seen. The interaction between years and varieties, years and varieties and locations for all traits was not significant. Comparison traits in different salinities showed that in most traits, there are significant differences between genotypes. The highest amount of chlorophyll a, in normal condition was observed in S.C704 with 1.873 mg/g fresh weight of leaves, which was no significant difference with B73. Maximum LRWC in B73 was measured in normal conditions which were no significant difference with K3653.2, S.C704 and Waxy at 5% level. Between chlorophyll a and chlorophyll b, total chlorophyll and Ratio of Chlorophyll a/b significant positive correlations were observed in non-stress condition.

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Key words: Salinity, Maize, spectrophotometer

INTRODUCTION

Salinity is one of the major environmental threats for agriculture and affects approximately 7% of the world's total land area (Ben-Salah et al, 2011) nearly 40% of the world land surface can be categorized as suffering from potential salinity problem(Payakapong et al,2006). After wheat and rice, maize (Zea mays L.) is the third most important cereal crop grown all over the world in a wide range of climatic condition. Maize, being highly cross pollinated, has become highly polymorphic through the course of natural and domesticated evolution and thus contains enormous variability (Paternian, 1990) in which salinity tolerance may exist. Maize is considered as moderately salt sensitive (Mass and Hofffman, 1977; Katerji et al., 1994; Ouda et al., 2008; Carpici et al., 2009).

Maize (Zea mays L.) is considered as one of the most important cereal crops used in human consumption, animal feeding and starch industry and oil production (Amin et al, 2007). According to Mass and Hoffman (Mass and Hoffman, 1977), maize is generally regarded as a highly salt sensitive species. The world population is expanding rapidly and is expected to be around 8 billion by the year 2025 (Andersen et al., 1999). This represents an addition of nearly 80 million people to the present population every year. It is forecast that the increase in world population will occur almost exclusively in developing countries, where serious nutritional problems exist at present, and population pressure on agricultural soils is already very high. Many arid and semi-arid regions in the world contain soils and water resources that are too saline for most of the common economic crops, which affect plants through osmotic effects, ion specific effects and oxidative stress (Munns, 2002; Pitman and Lauchli, 2002).

MATERIALS AND METHODS

Considering Iran and Azerbaijan as origin countries in Astara region, and in order to study the effects of salt stress (NACL) on, leaf relative water content (LRWC), Chlorophyll a, Chlorophyll b Content and yield of 8 maize cultivars were experimented in three replications on the basis of randomized complete block design in three years (2007-2009). Cultivars included K3615/1, S.C704, B73, S.C302, Waxy, K3546/6, K3653/2, and Zaqatala and they were cultivated in two pieces of land in Astara: one with normal soil and the other with salty soil. During the experiment, before dealing amount of leaf relative water content (LRWC), chlorophyll a and Chlorophyll b Content were measured in the laboratory. Photosynthetic pigments (chlorophyll a and b) were measured in fresh leaf samples, a week before the

harvest. One plant per replicate was used for chlorophyll determination. Prior to extraction, fresh leaf samples were cleaned with deionized water to remove any surface contamination. Leaf samples (0.5 g) were homogenized with acetone (80% v/v), filtered and make up to a final volume of 5 mL. Then the solution for 10 minutes away in 3000 (rpm) centrifuged. Pigment concentrations were calculated from the absorbance of extract at 663 and 645 nm using the formula given below :

Chlorophyll a (mg/g FW)=[12.7× (A663) _ 2.69× (A645)]×0.5

Chlorophyll b (mg/g FW)=[22.9× (A645) _ 4.69× (A663)]×0.5

Chlorophyll a+b (mg/g FW)= [20.2× (A645) _ 8.02× (A663)]×0.5

leaf relative water content (LRWC) was calculated on the basis of Yamasaki & Dillenburg method (1999). Two leafs were randomly chosen from middle parts of the plants in each repetition. At first, leafs were separated from the stems and their fresh masses (FM) were calculated. In order to measure the saturation mass (TM), they were placed into the distilled water in closed containers for 24 hours under the air condition of 22° C, for the purpose of being reached to their greatest amount of saturation mass and then, they were weighed. Then leafs were placed inside the electrical oven for 48 hours under the air condition of 80° C and the dry mass of the leafs (DM) were obtained (DM). All of the measurements were done by scales with 0.001g accuracy and were placed into the following formula and into the following formula:

LRWC (%)= [(FM-DM)(TM –DM)] ×100

Statistical analysis of the data was done on the basis of randomized complete block design. The average of attendances was calculated on the basis of Duncan method at 5% probability level.

RESULT AND DISCUSSION

Analysis of Variance

Results from the experiment showed that, regarding the most of the characteristics, there were significant differences among cultivars and that, compared to normal conditions; saltiness had caused reduction in their values. Results from the analysis of variance showed that there were no significant differences between different years (Table 1 and 2). Between locations (normal and saline) in all traits, significant differences were seen. Between varieties in all traits, significant differences were seen. The interaction between years and varieties, years and varieties and locations for all traits was not significant. The interaction between varieties and locations for all traits showed significant differences at 1% level.

Comparison of mean

Comparison traits in different salinities showed that in most traits, there are significant differences between genotypes. The highest amount of chlorophyll a, in normal condition was observed in S.C704 with 1.873 mg/g fresh weight of leaves, which was no significant difference with B73. Lowest chlorophyll a, in condition of salt, was measured in Waxy. Maximum chlorophyll b in B73 was measured in normal conditions which was significant difference with all varieties at 5% level. Lowest chlorophyll b, in condition of salt, was measured in Waxy. Similar results were also reported by Iqbal *et al.,* (2006), Ashraf *et al.,* (2005), Khan *et al.,* (2009), Oncel and Keles (2002) and Almodares *et al.,* (2008). The highest amount of ratio of chlorophyll, in normal condition was observed in K3545/6, which was no significant difference with Zaqatala, S.C302, S.C704 and Waxy. Lowest chlorophyll b, in condition of salt, was measured in Waxy. Tuna et al (2008) in The study of gibberellic acid and salinity on plant growth parameters and antioxidants of maize showed that With increasing salt concentration, significant reduction in dry weight, chlorophyll content and leaf relative water content was observed. Maximum LRWC in B73 was measured in normal condition which was no significant difference with K3653.2, S.C704 and Waxy at 5% level. Lowest LRWC, in condition of salt, was measured in S.C302. The highest yield per plant, in S.C704 obtained in normal conditions, that with all the varieties in normal and saline conditions was significant differences.

Simple correlation for normal condition was calculated (Tables 3). Between chlorophyll a and chlorophyll b, total chlorophyll and Ratio of Chlorophyll a/b significant positive correlations were observed in non-stress condition. Between chlorophyll b and total chlorophyll were positively correlated. But Between chlorophyll b and Ratio of Chlorophyll a/b A Negative correlation was observed in 1% level.

Table 1 - Analysis of variance for maize varieties

Source	DF	Mean Square						
		Chlorophyll a	Chlorophyll b	Total Chlorophyll	Ratio of Chlorophyll a/b	LRWC	Yield Per plant	Grain yield
Year	2	0.0001ns	0.0001ns	0.008ns	0.001ns	0.001ns	0.0001ns	0.0001ns
Location	1	1.025**	1.449**	26.643**	0.024ns	17.851ns	6.76**	16889.972**
YL	2	0.001ns	0.001ns	0.018ns	0.001ns	0.0001ns	0.0001ns	0.0002ns
R(LY)	12	0.061	0.148	1.589	0.093	280.255	0.043	108.598
Variety	7	0.101**	0.222**	3.295**	0.087**	76.171**	0.161**	403.136**
YA	14	0.000ns	0.0001ns	0.003ns	0.001ns	0.0001ns	0.0002ns	0.0001ns
LA	7	0.074 **	0.136**	2.005**	0.083**	41.653**	0.104**	259.220**
YLA	14	0.000ns	0.000ns	0.002ns	0.001ns	0.0002ns	0.0001ns	0.0003ns
Error	84	0.023	0.031	0.396	0.024	24.681	0.029	72.088
	CV %	14.53%	15.49%	25.58%	17.74%	8.10%	16.03%	16.03%

ns. Non-significant, * significant at 5% **, significant at 1%

Table 2- Comparing the average of understudy characteristics in eight cultivars of the maize in combined analysis

condition	cultivars	Chlorophyll a mg/g FW	Chlorophyll b mg/g FW	Total Chlorophyll mg/g FW	Ratio of Chlorophyll a/b	LRWC (%)	Yield Per plant (kg/ (plot	Grain yield (Kg/ha)
Normal	1-Zaqatala	1.107 d	1.091 def	2.196 ef	1.003 ab	61.02 bc	1.796 bc	4489.167 bc
	2-S.C302	1.474 bc	1.519 cd	2.996 cd	0.9644 abc	57.88 c	1.479 bcde	3698.333 bcde
	3-K3653.2	1.192 cd	1.996 b	3.188 bc	0.6767 e	63.78 ab	1.372 de	3429.167 de
	4-B73	1.616 ab	2.492 a	4.108 a	0.7667 de	67.15 a	1.433 cde	3583.333 cde
	5-S.C704	1.837 a	1.840 bc	3.677 ab	1.003 ab	62.57 abc	2.347 a	5866.667 a
	6-Waxy	1.114 cd	1.279 def	2.393 de	0.9089 abcd	61.89 abc	1.228 ef	3069.167 ef
	7-K3615.1	1.024 de	1.494 cde	2.519 de	0.7667 de	61.07 bc	1.908 ab	4770.833 ab
	8-K3545.6	1.038 de	1.016 ef	2.056 ef	1.032 a	58.43 bc	1.736 bcd	4339.167 bcd
salty	1-Zaqatala	0.9267 de	1.098 def	2.024 ef	0.8678 abcd	61.47 bc	0.8650 gh	2162.500 gh
	2-S.C302	0.8956 de	1.036 def	1.931 ef	0.8611 abcd	57.27 c	0.9583 fg	2395.833 fg
	3-K3653.2	1.030 de	1.193 def	2.226 ef	0.8822 abcd	61.70 bc	0.6133 hi	1533.333 hi
	4-B73	0.9778 de	1.142 def	2.118 ef	0.8778 abcd	61.68 bc	0.6950 ghi	1737.500 ghi
	5-S.C704	0.9989 de	1.174 def	2.171 ef	0.8567 bcd	62.36 abc	1.042 fg	2604.167 fg
	6-Waxy	0.7378 e	0.8556 f	1.588 f	0.8856 abcd	61.60 bc	0.7367 ghi	1841.667 ghi
	7-K3615.1	1.016 de	1.278 def	2.293 e	0.8122 cde	58.44 bc	0.4967 i	1241.667 i
	8-K3545.6	0.8867 de	1.012 ef	1.898 ef	0.8711 abcd	63.62 ab	0.5250 i	1312.500 i

Table 3 – Simple Correlation between traits in normal conditions

traits	Chlorophyll b	Total Chlorophyll	Ratio of Chlorophyll a/b	LRWC	Yield Per plant	Grain yield
Chlorophyll a	.344**	.712**	.325**	.171	.146	.146
Chlorophyll b	1	.904**	-.732**	.231	-.215	-.215
Total Chlorophyll		1	-.40**	.250*	-.094	-.094
Ratio of Chlorophyll a/b			1	-.045	.252*	.252*
LRWC				1	-.115	-.115
Yield Per plant					1	1.000**

**. Correlation is significant at the 0.01 level.

*. Correlation is significant at the 0.05 level.

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Branding, Solution for Iranian Pistachio's Globalization

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Abstract: Iran pistachio's share maintenance in the markets encounters some challenges considering new competitors presence. One of the collating procedures with incoming challenges is creating a brand (commercial name) for the product to be present in global markets. Good brands have consumer concession. Consumer concession means that the customers are loyal to the brands. A remarkable number of customers will want these brands even if other substitute goods with lower prices are supplied in the markets, and they will not accept the substitute items. The approach of the research in this article is descriptive-analytical method, and to collect the required information, the existent registered statistics in the country have been used. Creating a brand for Iran's pistachio is one of the most important things that has been concluded from analyzing the materials and cases of this article. Also using a proper naming strategy is one other result of this research.

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Introduction

One of the most important decisions in the products' marketing is determining a trade mark or a brand name (1). Trade mark is an important part of the goods from the consumers' point of view (2). Determining a trade mark increases the profit and value of the goods. Choosing and designing a brand name is one of the most important stages in making product image or goods and new services images. Since before explaining the product and stating its advantages and usages, brand name shows off. On the other hand brand name can be in control of the company. Since it is one of the rare cases that cannot be copied or be controlled by the competitors (3). Most of the producers finally become aware that power lever is in control of the companies that have the control of the brand names. For example the companies which possess some clothes brands, appliances and electronic sets and computer brands are easily able to substitute and cheaper sources of Malaysia or every other country for Taiwanese producers. And it seems improbable that Taiwanese producers can do an action. Because the consumers are loyal to the brand names not the goods (2). Good brand names have the concession of the consumer. Consumer concession means that the customers show loyalty to the brands. A remarkable numbers of the customers will apply the same brand names even if there are other substitute goods with fewer prices and they will not accept the substitute goods. On the other hand, the companies which own some signs and brand names and have an ideal consumer concession, have been practically insured vis-à-vis improving policies of the competitors(2).

Research literature

Pistachio has a special dignity among agricultural products, and it is a strategic product. It forms a major part of nonpetroleum exports so that in recent years it has reached to an unprecedented number with an income more than one billion dollars and it is the first nonpetroleum export. At present, Iran pistachio cultivated fields are more than 440000 hectares. Kerman province has more than 300000 hectares (70 percent of fertile and infertile pistachio gardens in the country) and it is considered as the most important pistachio producing area in Iran and the world. The pistachio cultivated gardens in 2009-2010 equal to 460000 hectares that nearly 385000 hectares (83%) of them are fertile and about 75000 hectares of them are infertile. Also fertile pistachio cultivated area in 2008-2009 is about 359000 hectares and infertile area is about 95000 hectares. Iran has the first degree in the world. Because it has the most cultivated area and the most production amount and it has 70% of the areas and more than 40% of the global production. (Table1).

Table1. Universal production state

Major producers	Weight (one thousand tone)	Year
Iran, America, Syria, Turkey, China	531	2001
Iran, America, Syria, Turkey, China	517	2002
Iran, Turkey, America, Syria, China	542	2003
Iran, America, Syria, China, Turkey	443	2004
Iran, America, Turkey, Syria, China	493	2005
Iran, America, Turkey, China, Syria	524	2006
Iran, America, Syria, China, Turkey	522	2007

The source: Iran trade development organization.

Table2. Export value comparison in major countries (million dollar)

Export in 2008	Export in 2007	Export in 2006	Export in 2005	Exporters
673	680	1018	724	Iran
482	289	247	257	America
117	140	115	108	Germany
99.5	44.5	23	20	Belgium
87	81	68	66	Holland
81	84	67	38	Hong Kong
45	46	0	30	A.U.E
42	50	57	62	Luxembourg
26	12	10	7	Turkey
14	5	5	1	Syria
13	6	5	6	China

The source: Iran trade development organization

As it is observed in table2, however the major share of pistachio global market belongs to Iran and pistachio global market's leadership is for Iran, as it is seen in the following table as pistachio market share of Iran decreases, the share of other competitors such as America is increasing. In spite of the presence of powerful competitors in the market, our country has not been able to persist against this competition wave for supplying Iranian pistachio by creating a global brand.

The importance of brand creation

The value of mark creation means that a certain mark enjoys customer loyalty, quality and awareness of the mark. The moral value of the mark has a competitive advantage for a company. Because it gives a power to the mark to get greater share of the market and sell the products with more profit. What makes a mark successful? Given color (4), the marketing professor in Dart Mouth college has mentioned a list including ten characteristics of pure global marks:

1. Mark has priority in benefits delivery that the customers really want it.
2. Mark stays suitable.
3. Pricing strategies are valuable on the base of consumers imagination.
4. Mark has been positioned properly.
5. Mark is stable and continuous.
6. Mark is hierarchical and it gives and importance and parity.
7. Mark managers know that what marks mean for the consumers.
8. Mark enjoys a proper support and it is a long term support.
9. The company investigates valuation sources of the mark (5).

Brand name and trade mark

Brand is derived from the term Brander which means burning (to burn). Since a long time ago, to distinguish the goods, brand name was used. Brand was a tool that the owner of the cattle's used to name their animals and properties. As time passed, the people used the brands to name their other personal properties more over their cattle's and properties. For example the potters marked their hand made pitchers and vases by putting their finger prints, a star, across or a circle on them. These signs indicated that the product was original and transformed important information about its producer. Although branding existed since long years ago, but its major progress has happened in the recent century. Industrial revolution appearance and transportation systems' expansion and services and goods exchange in international arena was the major motive for brand creation development (6). Rapid development of brand creation and ownership right development in brand name caused a deep development in the rules which were related to trade mark. Since a long time ago, the people were aware of the

importance of protecting their trademarks and the danger of being forged. During the centuries, the legal systems of the society appeared to protect trade mark forgery. At present trade mark rules exist nearly in most of the countries in the world (6). After stating a brief history about brand name and the rules related to trade mark, we consider the definition and importance of brand name and trade mark. Trade mark of the product includes every word, design, sound, shape, color or a combination of them which are used to distinguish the products and services of a producer or seller from the products and services of their competitors like the trade marks "Barf" and "Parsi Cola" which have consisted of the words or the marks like "two lions" for Bella shoes and elephant for Melli shoes which are a kind of design (1). Brand name includes legal and commercial name that the company works under its name (1). on the other hand, brand name is a part of a trade mark which can be mentioned, it means that you can say it, names such as Sheverlet, Taid, Disney land and American Express (2). The value of brand name in marketing depends mostly on getting a license or permission. License or permission is a contract that according to it the company permits an other person to use its brand name. Providing the products are made according to the determined characteristics. Iran Khodro Company had gotten its license and permission for producing Peykan car from England Talbot Company. Pars Khodro Company's permission is from Japan. By means of this method, every company can enter the new markets without conflict with new product's development process (1).

Creating value for the customers through increasement.	Creating value for the company through increasement
1) Comment data processing	1) Effectiveness and efficiency of marketing programs.
2) Assurance of purchase decision	2) Loyalty to the mark
3) Satisfaction with using the product	3) Price/ profit list.
	4) Mark development.

Source: Paul Stobar, Brand Power, Macmillan Press Ltd, London, 1994, P1.

Effective brand name

Before choosing a brand name we can test its effectiveness by means of asking five essential questions and present some procedures for designing and choosing a better brand name as much as possible. The first question: If that name breaks a rule or a stereotype or a custom? If the answer is negative, choose a new name. if you want not to be a loser you need a different attitude, a different shape and a different message presentation for your brand name which is unexpected but related to your customers. The second question: If those competitors' names make you sad? Since a recorded brand name is from rare cases that your competitors cannot make them far from you, the name must be a name that they withdraw whenever see it. If you think they act apathetically against your brand name or make a better name, bring that name out of your list. The third question: If that name gives promise or it has a story inside? If it is not right, do not ratify it. Big names are like small and short poems. Each letter, every word and sound can be used accompanied with each other and must have concordance with each other to present strategic messages. Most of the names are selected due to presenting a meaning at once, however, they present a different message. Which one do you prefer to have? Antiglare or Ray Bans? The simple solution is tempting. If you think about it we remind you that a correct and suitable brand name selection can be your most difficult marketing challenge that cannot be solved easily. But what can be more important? A correct brand name can be the relation key between the customer and the product. That is the most powerful tool for your marketing and that is a thing that your competitors are really eager to steal it. The fourth question: If that name presents or describes a benefit or a special characteristic? If that is right, make sure that the brand name presents the most emergency benefit which is unique and the consumers will deal with it during more than 10 years in the future. This problem can make a brand name or destroy it. The fifth question: If you are relaxed with the name? if you are relaxed, you may have a good name, but you do not benefit a great name. Scar wild says "An idea which is not dangerous, rarely has the value to be called an idea." It is true about the name. A great name stimulates and makes angry and it has luck. This attitude and consideration absorbs the customers and the market towards your brand name. let the others to conform themselves with it(3).

Brand name creation strategies

Naming strategies try to influence the conception of people about the brand name in such a way that cause they behave in a special manner, that is, buy an article that is presented with that name. Moreover, most of naming strategies try to state that the people are comparing our goods with the others to prefer the goods. There are four naming strategies that can be used.

1) Brand name area:

The experts of brand name area have specialty in one or several aspects of brand name area (products, services, media, distribution and solutions). An expert of brand name area tries to create a personal area for himself and expand the brand name. it requires having knowledge in creating brand name area technology and also a knowledge about behavior and the needs of the customer. The motive power of these experts is creativity and innovation in using the sources. The expert of brand name area is like a cheetah which is hunting gazelle in … deserts. Cheetah is a skillful hunter which has a high speed and also sharp claws and teeth for hunting the animals. Moreover cheetah has complete familiarity with the behavior of its hunt and it helps the cheetah to find a way to get closer to its hunt, trap it and hunt it. Cheetah is one of the most complete hunters among the wild cats.

2) Brand name popularity:

The experts of brand name popularity try to benefit more validity or trust capability compared to their competitors by means of using or expanding some outstanding characteristics of their own brand name. Brand name popularity expert requires a kind of history, inheritance or myth. He or she must be able to state it in a persuasive way and connect it with the created popularity. These experts must have a good perception about the history in order to be able to persuade their consumers that their brand name is better than their competitors' in some aspects. The expert of brand names is like a full-blooded horse. The horse may be a full-blooded one and have some characteristics like beauty, dignity and high speed which refers to its genuineness. Like a full-blooded horse, the expert of brand names can have progress with due attention to the history and inheritance of the company.

3) Brand name dependence:

The experts of brand name dependence have their relationship with the customer through two or some aspects of dependence. These experts try to show a better performance by making a relationship in competition, that is, brand name expert needs to have a distinguishing attraction for the consumers, have an effective relation with them and make an experience for them to reinforce dependence process. Brand name dependence expert is like a pet dog. Generally a dog is known as the best friend of human due to its love, obedience, loyalty and protection. The dogs show their love in different ways.

4) Brand name recognition:

The experts of brand name recognition introduce themselves among their consumers and distinguish

themselves from their competitors. These experts try to persuade their consumers that distinction creation is somehow different from competition, or take the lead among their competitors in competition arena with getting fame among their consumers (not through competition). When brand name has qualitative distinct features, using this method is very important. Brand name recognition expert is like a male peacock. Although we all have little information about the birds, we can easily recognize a peacock from a far distance. However, we may not have exact information about the features of a peacock, if we want to choose one bird among the birds, we will have more inclination to choose a peacock due to its beauty and attractive appearance. If we want to consider the comparison of the animals which have unique features, we will encounter special problems. Special skills and unique features of these animals cannot be taken into account as an advantage for them for a long time, and they possible require presenting new features and skills and improving them. A cheetah may survive and live better and more comfortable in other parts of the world which have wide meadows. But if a cheetah is moved from the meadow to the jungle, it will need to change the way it hunts (for example it must climb a tree to hunt), it must change the kind of its hunt (for example it must hunt monkey and compete with new hunters (like snakes). Although most people look at horse as a noble animal, the people in society have different attitudes towards that. In some societies, horse is considered as a transportation tool that competes with cars and truck. In other societies, horse is as a tool for gambling that competes with gambling houses and dog racing matches. But horse is still a sign of independence and gentleness in some societies. Horse requires having different features in order to do each of these functions. Similarly, dog is not a lovely animal in many societies. In different countries dog is used due the thing that it does (sledge dog), as a pet dog or tool for entertainment (hunting dog). Therefore, a dog must make completely different relationship depending on its new owner, Peacock is a quite familiar animal in the world, but it is a symbol of different things in different cultures. In Bengal it is a symbol of happiness, in … it is a symbol of knowledge and in china it is a sign of beauty and dignity. In brand name designing in the company, like the king of the jungle, there has been a person to compare and combine different strategies according to their advantages and finally obtain a comprehensive strategy (8).

Marking methods

The companies can use different strategies for marking: these strategies include producer's marking, wholesaler and retailers marking, mixed marking methods and generic marking (1).

1- Producer's marking: In this method, the producer can use two marking methods. The first method is unit marking for several products. This method is usually called family marking strategy like producing Mahram, Yek & Yek and Vitana.

The other method is choosing marks and different names for different products. In this method for each product, a distinct name is chosen. This strategy can be useful that every mark of the product is supplied in a part of market like Behshahr industrial group that has chosen marks like Nasim and Pooneh for tooth brush and different names for washing powders, Shampoos and other items (1).

The advantages of unit marking strategy:

Creating a unit for a set of products of a company is a nearly new approach in today business world.

It is like an umbrella that it rains glue on all the products of the company and unifies all of them. Of course there are big companies that are famous with the names of their products more than the names of their company. But every day more companies understand the value of unit marking strategy.

1) Unit marking decreases the costs.
2) Unit marking gives a correlation feeling to the consumers.
3) Unit marking acts as a confirmation seal for the products.
4) Unit marking, creates a global comprehensive concept (9).

2- Private marking: In this method, the companies supply the produced products with the marks that are requested by wholesalers or retailers. As an example in Go' ads markets, city and village cooperative societies and Sepah markets most of the items are provided and supplied which are considered by them. These items are shoes, clothes and even watches. The producers use this method of marking when retailers have many branches and are popular. The advantage of using this method for production is transformation of sale explanation costs to retailing or wholesaling.

3- Mixed marking: Mixed marking strategy is a method between the two already mentioned methods. Some producers, mark their products with the mark of their own company or retailing or wholesaling, because the buyers who are satisfied with the producer company are different from the buyers who buy their products from retailers or wholesalers. Genotic marking (without mark): In this method, the products are supplied to the market without a special mark and just with stating the features like mushroom, pea and beans. That is, the content description is written on the package of the products and the product is without a mark or sign. The

major advantage of this method is supplying the prices with a remarkable discount. In previous years in Iran this method of marking has been used for supplying the drugs. Some companies use this kind of marking for selling their stored or undesirable products (1).

Conclusion

We should notice that determining a mark or a brand name for the product is one of the most important decisions in the products marketing. Trade mark is an important part of the goods from the customer's point of view. Determining a trade mark increases the benefit and value of the goods. Brand name selection and design is one of the most important stages of making product image of the new goods or services. Because brand name shows off before an explanation is given about the product and its advantages and … are mentioned. On the other hand, a brand name can be in the company's control as a powerful tool because it is one of the rare cases that the others and the competitors cannot take its possession or make a copy. With due attention to the competition increase and new competitors presence in pistachio market it seems that creating a brand to improve and stabilize Iran pistachio dignity in global markets is a necessity. However adopting proper procedures in different areas related to the product is necessary too. Using correct naming strategy for Iranian pistachio supply in global markets, its advantages can be used in the best way.

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The Relationship between Intellectual Capital and Organizational Creativity among Faculty Members of Islamic Azad University, Khorasgan Branch in 2011-2012

Salimeh Tahooneh and Badri Shatalebi

Abstract: This study aimed to determine the relationship between intellectual capital and organizational creativity among faculty members of Islamic Azad University. It was a descriptive correlation study. Statistic population in the study was all faculty members of the university and it was 305 people, from the target population 172 people were chosen randomly. The sample size of the study was calculated through Cochran`s sampling equitation and it was a randomly stratified sampling. Data collection instruments were two standard questionnaires on intellectual capital by Bantis (2010) with 30 items and on creativity by Rensip (1979) with 50 items which were arranged by 5 point Likert scale. The reliability of the questionnaires was calculated by assistance of supervisor and adviser and expert of Education. reliability coefficients were calculated by Cronbach`s alpha coefficient and they were 0.87 and 0.81 for intellectual capital and organizational creativity questionnaires, respectively. To analyses the data, descriptive statistic like frequency percentage, mean, and standard deviation and inferential statistic such as Pearson correlation coefficient and t- test with two independent groups and regression multiple analyses were applied. The results revealed that there is a meaningful relationship between human capital (r=0.099, p< 0.05), structural capital (r=0.176, p, 0.05), relational capital (r=0.180, p, 0.05) and organizational creativity (r=0.180, p, 0.05). Findings from regression analysis proved that among intellectual capital dimensions, relational capital has the most potency to predict organizational creativity. For other variables this relationship was not meaningful. Results also showed that among responses on intellectual capital, and organizational support there is no meaningful relationship according to demographic factors (age, sex, university, place of service, teaching experience, educational degree, scientific ranking).

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Keywords: Intellectual Capital, Human Capital, Structural Capital, Relational Capital, Organizational Creativity, University.

Introduction

Results from many researches on organization development and society improvement have centered on the point that no society is developed unless it tries to develop organizations, managements and human resources. Today, researchers on organization and management find out that having a forward looking and empowered management and qualified and skillful human resources will be a valuable factor and an endless capital for improvement and development of organizations and countries and is the most important capital and the main improvement factor.

If labor, investment, and land were recognized as the main factors in productions, today technology changes, human resources, and increase in productivity are considered as development and improvement factors.(Sardari2002; Mir Karimi, 2004; Mohammadi, 2006, Rezae et al.,2007; Bakhtiari Nasr Abadi et al.,2009; YarmohammadZadeh, 2010).

Higher education is the main issue for human development all over the world. Universities are the key part of educational system. Great and diversified system of state and private institutions of higher education in every country include faculties, vocational training institutions, research laboratory, distance learning and many other institutions which provide enough empowerment ground for development (Ramphel, 2008; Ashwin, 2006). Lick (2002) believes that universities must continually and effectively re-create according to circumstances conditions to grantee their survival and effectiveness (p 27).

In this educational institution, the re-creativity can be made through existence of different capital dimensions including intellectual capital and performance. In this respect, concerning the contributory role of intellectual capital and creativity in universities is essential. Stewart (1991, 1994.1997.2001) called intellectual capital a useful and applicable package and regarded knowledge properties as talent, skill, whys, qualities and relations which can turn to value (p.67). This concept consists of 3 main non- financial components as:

Human capital: different components of human resources are attitudes, qualifications, experiences, skills, innovations and explicit- implicit knowledge in human`s mind. Human capital as innovation resource and strategic re-creativity is important for organizations. Higher levels of human capital are realized by more productivity, higher salary and benefits.

Therefore, it is in favor of managers to utilize the best and the most efficient employees as an instrument to fulfill competition attraction and development benefits.

Structural capital: constant learning and knowledge in every activity is structural capital, the knowledge which remains at the end, after departure of employees which is the nuclear of structural capital. Structural capital is supportive substructure for human capital and includes all non- human resources of knowledge in organizations like data base, processes guide books, strategies, approaches, organization and increase financial capital.

Relational capital: Determining the formal and informal relationship in an organization with external interests and their perception on organization and information exchange among organization, as well. Relational capital is important for organizations, since relating human capital and structural capital with other external interest is an increasing component for giving value to the organizations. University students, parents, employers, government, organizations, culture and economy, etc. are university`s clients. These three components of intellectual capital have mutual dependency. Intellectual capital presents the highest form of value to organizations through combination, application, unifying, and interaction among the three components and knowledge management as well. (Bontis, 2000, Pike et al., 2002). Today, creativity and innovations are the only survival ways for those organizations by which a company with variable and diversified and situational changes.

This process is modern and new to adopt with changes and to make instrumental changes (ZohreDasht et al.,2010). In fact in today`s political, economical, and social world in which transformation speed is unimaginable, those organizations can survive that have intellectual capital, pioneer, knowledgeable, creative, innovative human sources, as their non financial capital for competition (Aghaee and ZarrandiKhaledi, 2011). In this way creativity and innovation is the corner stone and a key for productivity, development, development and improvement in organizations and they are regarded as creative and innovative organizations which move toward their intellectual capital and utilize trained, creative, innovative, and flexible human resources to increase added value in structural capital. Creativity is an attempt to set a directed goal in social or economical potency; it is the application of mind capabilities to create a new thought or concept. (BabaeeArbosara, et al., 2011). GolestanHashemi(2001), defined organizational creativity as a process of producing modern organizational ideas and finding new solution for organizational problem solving. Haghayegh (2001) and Ezhaghi (2008) recognized organizational creativity as thought presentation and a new pattern for the increase and improvement of quality and quantity of organizational activities. Organizational support is a process which is conducted by people, in a complicated organizational community to gain value, useful and new products, service and ideas (Andriopolose and Dovson, 2001 p.27).

Therefore, organizational creativity can be recognized as all processes and conditions dominating the organizations which provide conditions for creating new ideas in individuals and encourage organizations to confirm and accept suggested changes and reformatting from individuals. In other words, organizational creativity is all current processes which encourage individuals to create new ideas and organizations to accept them (Yazdani,2007).

Main resources for creating new ideas divided into two groups:

a) resources from outside of organization including: goods or services in market business or technological activities in market, industrial research centers(R&D), exhibitions, congress, scientific, industrial meetings, communications and universities activities.

b) Resources from inside of the organization: creative and inventive man power, strategic schedule of organization or organization outlook, utilizing creating techniques and research projects. To find the relationship between intellectual capital and creativity, some research has been conducted. Niknami et al., (2009) in a study on *design and investigation of manager`s creativity and innovations causal model* found out that organizational etiquette and organizational atmosphere and knowledge management have respectively the most and the least effects on manager`s creativity and innovation. Variables like organizational etiquette organizational atmosphere, organizational learning and knowledge management have direct and positive relation and effect on creativity and they are meaningful statistically.

Moreover, creativity, organizational etiquette, organizational atmosphere, organizational learning, knowledge management variables have direct and positive effect and have statistically meaningful relationship with innovations variable. Rashidi et al., (2009) showed that there is a direct and meaningful statistical relationship between 3 dimensions of intellectual capital and learning ability.

Subramaniam and youndt (2005) in a study by the title of *effect of intellectual capital oncapabilities* showed that intellectual, organizational, and social capital and their inter-relationships have an effect on innovative capabilities.

Other findings from that study indicate that organizational support has more effect on developing innovation capabilities. While the relationship between human and social capital was more on fundamental innovative strategies. Zerenler and Hasiloglu(2008), in their study, *relationship betweenintellectual capital and innovative performance*, showed that all three dimensions of intellectual capital have positive and strong relationship with innovative performance. Other findings in this study indicate that those organizations which have higher improvement have strong relationship between intellectual capital and innovative performance and among three dimensions of intellectual capital relational capital has the most relationship with innovative performance. Long vist et al., (2009), in a study on intellectual capital management and organizational changes found out that intellectual capital dimension influence on organizational change increase.

Assi Ahmad (2012), in a study on "*The effect of intellectual capital on organizational innovations*",

investigated the effect of intellectual capital dimensions (human capital, structural capital, relational capital) on organizational innovation in 60 companies. The results revealed that among intellectual capital dimensions, structural and relational dimensions have some effects on organizational dimensions. Talebi and Bahamir (2012), in a study on *the effect of " intellectual capital on organizationalentrepreneurship increase"* investigated the effect of intellectual dimensions (human, structural, Relational capital) on organizational entrepreneurship increase. They found out that there is a positive and effective relationship between intellectual capital and organizational entrepreneurship. Among intellectual capital dimension, human capital had the most effect on organizational entrepreneurship. Hang and Wu (2012), in a study on *intellectual capital and knowledge generation* investigated the simple and multidimensional relationship between intellectual capital and knowledge generation in some Taiwanese companies. Their results indicated that all intellectual capital dimensions have positive and high effect on knowledge generation. Furthermore there were a multi-relationship between intellectual capital and knowledge generation.

Research objectives

General objective

1- Determination of intellectual capital and organizational creativity relationship among faculty members of Islamic Azad university of Khorasgan 1390-91.

1-2. determination of human capital and organizational relationship

1-3. Determination of structural capital and organizational relationship

1-4. Determination of relational capital and organizational creativity,

Methodology, population, sample, sample population size method, research instruments

This study is a descriptive-correlation research. Research population in presentstudy include faculty members of Islamic Azad University in 2011-2012 and were 127 people estimated by Cochran formula. Participants were chosen randomly through stratified random sampling according to appropriate size. Based on mentioned objectives, the present study applied two standard questionnaires Feribontis capital questionnaire and Rensip creativity questionnaires.

a) Intellectual capital questionnaire were written by some adaption from Bantis questionnaire (2012). The original questioner had 90 questions and was based on Likert scales and components like qualification benefit increase, marketing value, etc. were investigated. Having appropriated the instrument, a 30-item questionnaire with 5 point Likrert scale (completely agree, agree, not agree not disagree, disagree, completely disagee) were conducted. Reliability coefficient for the intellectual capital questionnaire were calculated as (0.87) according to Cronbach's alpha.

b) organizational creativity questionnaire which were designed by Rensip had 50 questions based on 5- point Likert scale and its format was strongly agree, agree, neither agree nor disagree ,disagree, strongly disagree.

Reliability coefficient for organizational creativity question was calculated by Cronbach's alpha as (0.81)

Findings

1. Is there any relationship between intellectual capital and organizational creativity among faculty members of Azad University?

Table 1.Correlation coefficient between intellectual capital and organizational creativity

Variable	organizational creativity		
Statistical index / Predictive variable	Correlation coefficient	Correlation coefficient square	Meaning level
Intellectual capital	0.172*	0.029	0.027

P<0.05

Results in Table 1 indicate that correlation coefficient for intellectual capital and organizational creativity is meaningful. Based on determination coefficient (r^2) intellectual capital and organizational creativity variances were 2.9 percent.

1-2 Is there any relationship between human capital and organizational creativity?

Table 2.Correlation coefficient between human capital and organizational creativity

Variable	organizational creativity		
Statistical index / Predictive variable	Correlation coefficient	Correlation coefficient square	Meaning level
Human capital	0.099	0.009	0.205

P<0.05

Findingsin table 2.show that correlation coefficient between human capital and organizational creativity is not meaningful. That is, there is no meaningful relationship between human capital and organizational creativity.

1-3 Is there any relationship between structural capital and organizational and creativity?

Table (3) correlation coefficient between structural capital and organizational creativity

Variable	organizational creativity		
Statistical index / Predictive variable	Correlation coefficient	Correlation coefficient square	Meaning level
Structural capital	0.176*	0.031	0.023

P<0.05

Results in table 3.indicate that correlation coefficient between structural capital and organizational creativity is meaningful. Based on coefficient (r^2) variance,determination for structural capital and organizational creativity is the same as 3.1.

1-4 Is there any relationship between relational capital and organizational creativity?

Table (4) Correlation coefficient between relational capital and organizational creativity

Variable	organizational creativity		
Statistical index / Predictive variable	Correlation coefficient	Correlation coefficient square	Meaning level
Relational capital	0.180*	0.032	0.020

P<0.05

Findings in Table 4. indicate that correlation coefficient between relational capital and organizational creativity is meaningful. Based coefficient determination for relational capital and organizational creativity variance were the same as 3.2 percent.

Discussion and conclusion

Findings, according to Table 1, indicate that there is a meaningful relationship between intellectual capital and organizational creativity (P, 0.05). Intellectual capital is a set of knowledge- based properties belonging to an organization and being regarded as its characteristics. These properties can improve competition level among organizations through increasing the value to the organizations key beneficiaries. It can be emphasized that concerning the issues on intellectual capital, the key terms are the existence of sufficient knowledge and accurate information, providing grounds for transferring and exchanging information, recombination of concepts and new knowledge generation, exchange of experiences and concentration on creativity and innovation of new knowledge. This kind of capital based on its component, human capital, structural capital and relational capital is relational. On the other hand, the most important source for organizational idea-creating are inside organizational sources or creative and innovative manpower. In order to move toward intangible and unknown properties of the organizations and intellectual properties, it is necessary to apply skills, experiences information and organizational creativity and innovation from all organizational capital. Organizational creativity is a cycling process of constant finding and solving problems which bring about significant changes for achievements. To apply all these capabilities, however, it is necessary to change organization structure, software and hardware systems, principles and management method proportionate to the needs.

In this vein, all 3 dimensions of capital must be taken into account. Relational capital is one of these dimensions. The central point which must be taken is considering the needs and demands of clients, society industries and organizations and all beneficence, as well as participating them in decision making can contribute to organization improvement. A scrutinized investigation in human capital show the systematic and interwoven nature of capital dimensions.

As far as the needed specialist manpower concordant with clients` needs and demands were not taken in to account, growth and improvement in organizations would not meet. And that is relational capital. On the other hand, these two dimensions can be realized in responsible and flexible structures. Consequently, potency for creating superior ideas will demand all three dimensions of intellectual capital. Universities are the best place to create needed creativities in a developed country. In university different components of creativity like specialist or ground skills (natural skills), creative processes (learnable abilities) and internal motivation for work (work attitude) are of the highest importance. Organizational creativity would be impossible unless organizations have variable, encouraging, powerful, creative, active atmosphere, creative manpower, creative groups, leader and a contributory communicative system.

In this respect, relationship between intellectual capital and organizational capital would be explainable. Concerning the investigation of research bases and lack of tentative research with similar research results are in the same direction. For instance, the results are in line with Nicknami et al., (2009) findings. Since there was a relationship between knowledge management and creativity and close relationship between components of intellectual capital in value creation and knowledge generation with knowledge management. As well as findings by Rashidi et al., (2010) who showed the relationship between intellectual capital and organizational learning capability, and study of Zerneler and Hess lego (2008) on intellectual capital and innovative performance relationship, Sober Emanim and Yandit (2005) on the effect of intellectual capital on innovative capabilities, Long Wist et al., (2009) on intellectual capital and organizational change increase and creativity as a change, Chang Woo (2012) on relation ship between intellectual capital and knowledge generation, Assi Ahmad (2012) on intellectual capital and organizational innovation relationship, Talebi and Behonar(2012) on the effect of intellectual capital on entrepreneurship and creativity in entrepreneurship creation are relativity in line.

Furthermore, based on Table 2 results show that correlation coefficient between human capitals and organizational creativity is not meaningful. That is, there is no meaningful relationship between human capital and organizational creativity. These days, organizations pay careful attention to human capital, because human resources are source of creativity, and improving organizational strategies. The base of human capital is the individual`s intelligent and talent in organizations. The extent of human capital is restricted to the knowledge they possess. The essence of human capital is pure intelligence in organization members; human capital is fundamental to intellectual capital, in other words human capital is the main part for intellectual capital performances. Human capital in organization structure includes all involved people in organizational activities. In this concept human capital encompasses qualified, empowers, performative, new idea performers, organization`s values and objectives, responsiblities, motivated to empower one another, enthusiastic, interested in organization activities and interaction with Clients, and able to state creative management processes. Human as the main element of organization development in group and organization activity framework has the main role. As we recognize human as the most complicated element in organization and individuals get various results. Without concerning human capital, organization resources and energies cannot be directed toward organization objectives. It seems that paying attention to human resources will result in loyalty,

attachment and commitment in employees and as a result active cooperation, innovation and creativity will appear in organizations.

According to the concept of creativity as application of mental capabilities to make or create a new concept, we can explain the ability to combine ideas in a unique way to relate uncommon relations between different ideas, ability to see new and unusual things, presenting new effective and unusual solutions and creating new combination to settle negotiations in to a relative idea between human capital and career creativity. In the present study human capital (one dimension of intellectual capital) did not prove any relationship with job creativity. According to items on human capital it seems that lack of a real place for human capital in university, disinterest in knowledge and information share, lack of strategies for encouraging faculty members, lack of confidence, lack of stability in organization structure, lack of research group and inter – organization- network to communicate information on desired career, etc are among the reasons for lack of relationship variables.

Results of this part are in line with that of Assi Ahmad (2012) because on that study, too, structural and relational capital had meaningful relationship with innovation. But human capital and innovation relationship was not meaningful. In addition, findings from this part on relationship between intellectual capital and creativity were not in line with that of Talebi and Bahamir (2012) because in their study human capital had the highest effect on organizational entrepreneurship.

Furthermore, findings on Table 3 indicate that correlation coefficient between structural capital and organizational creativity is meaningful. That`s there is a meaningful relationship between structural capital and organizational creativity. Determination coefficient (r^2) was the same for structural capital and organizational creativity as 3.1 percent variance. Structural capital can be referred to whatever is in organizations and support employee. Structural capital is a property of organizations, even when employees leave there. If an organization is not equipped with modern systems and approaches, intellectual capital cannot reach its outmost potential capability. While organizations with powerful structural capital, a kind of attitude will be formed by which people initiate, face failure and learn a lesson. Structural capital is subordinated to human capital since human capital is a determining factor for organizations. But structural capital gets influenced by human capital very soon. Therefore, human capital and structural capital in interaction assist organization coordinately toward forming and developing relational capital. Furthermore, flexible, changeable, ready organizational structures bring creativity and innovation.

Through structural capital, elements like bureaucracy decrease and research center and organization development equipped with modern techniques, enough budget for research, from one hand, and organizational creativity as development or accepting an idea or behavior in organization activities with external motivation on the other hand, as a key factor in developing creativity as an informative and enabling, it can explain the relationship between these two variables. Therefore, in university structures, existence of organizational potential like research and development centers, accepting and encouraging creative ideas and so forth provide grounds for career behaviors manifestation and their relationship will be explainable. Results from this part is in line with that of Assi Ahmad (2012) on *relationship between structural capital and innovation* as well as Subramaniam and Youndt (2005) on *relationship between organizational capital and innovation*. Furthermore results from Table 4 indicated that correlation coefficient between relational capital and organizational creativity is meaningful. That is the relationship between relational capital and organizational creativity is meaningful. Based on (r^2) determination coefficient variance was 3.2 percent for relational capital and organizational creativity. Part of organizational capital in organizations is relational capital. Relational capital determines formal and informal relationship between an organization with external interests and its conception about organization as well as interaction between information and organizations. Relational capital is important to organizations because it connects human capital and structural capital with foreign interests.

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Analysis of the natural elements in Ardebil city topology and physical development

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Abstract: Studying of the cities geographical conditions especially the environment features in which they are placed based on them is one of the most important discussion that the present position recognition of the city problems and The future changes prediction are based on the recognition of natural elements or factors.The present research has been conducted for recognition analysis of the natural elements and its effect in progress and development of Ardabil city and also its potential possibilities in order to optimum development. In this research with use of Ardebil province urban general design (2007) and kinds of topography and geology plans as main tools in 1:50000, 1:250000 and 1:100000 1:250000 scales respectively we studied the development process of the city history natural and topography features and the patterns of Ardebil city development.These studies have shown that Ardebil city present development pattern has some limitations due to the existence of the elements such as industrial townships, unsuitable excretion of the waters, irrigation network to north-west wards and etc and it is not compatible with natural conditions and elements .While southern part of the city has the best directions and positions for development and progress from the structural patterns point of view.

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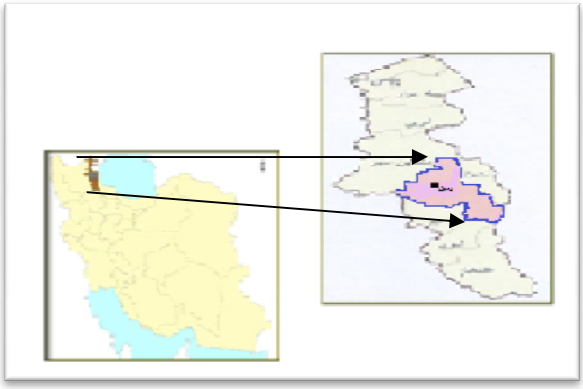
Keywords: natural elements , topology, physical development , Ardebil

Introduction:

The city isn't created automatically and in this manner its spatial dimensions aren't developed.The city constitutive elements such as man spatial imagining of ideals and mans though are shaped in the geographical environment and the ground area. In principle, settlement and appearance of one city more than everything are dependent to its environmental conditions and geographical situation. Because, natural events phenomena have more important effect in topology field spreading physical development urban morphology and like these. sometimes they function as a positive factor and in other times as a negative and inhibitory factor (khalili, 2010). During history man has always been in struggle and relation with natural environment .So there was a mutual relation between man and environment in survival of the cities from the early times and the environment has been as a determinative phenomenon (Nazarian, 2009). Often, the fundamental studies have been conducted about natural factors effect on resisting of urban lands, decreasing of natural dangerous or events such as flowings and slope movements or submergible of the urban lands and also communicative ways.The most important urban studies have been done by ministry of housing and urban planning of Iran. Ardabil city like the most cities is the result of natural geographical humanity physical elements.This mountainous nature of city has been caused the urban development pattern be compressed. But the main subject of this research is that with existence of the historical record from earthquake occurring in Ardabil region, The present urban development pattern has not yet been suitable with natural condition and in other words the excretion of surface waters and flood have been caused to some urban problems in different parts, The unfavorable climatic condition (mountainous, slope unstabilities and loss of the necessary data for research) account from major limitions. Also there are potential abilities beside them which is always mode this city as the most important urban center in Azerbaijan region. It is hoped that we can take a positive step with providing urban suitable pattern in improvement of the present situation of this city as one of the poor zones of the country.



Map No. 1: Geographical position plain Ardabil in northwestern Iran and eastern side of the plateau Azerbaijan.

Research objective:

The present research has been preformed for recognizing or analyzing of the natural condition of Ardabil city limits and also potential possibilities in order to optimum development.

Situation and the regions limits

Ardabil city has been situated in the middle part of Ardabil tectonic pit as the greatest population focus and Ardabil province centre in 46° and 45 minutes to 1° and 43′ eastern length, 37°, 46′ to 38° and 37° of north latitude. Its medium height reaches to 1350 meters from sea level. This plain is limited from north to the frontier of Azerbaijan republic, from east to Taleashs mountain range, Taleash-Astara cities(Hashtbar) from south to khalkhal city and from west to Sabalan mountain and Nir and Sarein cities. Ardabil city has been placed in the middle of a plain to 900km^2 width and it has 2000 to 4000m heights from sea level in different regions of its lands.

Materials and method:

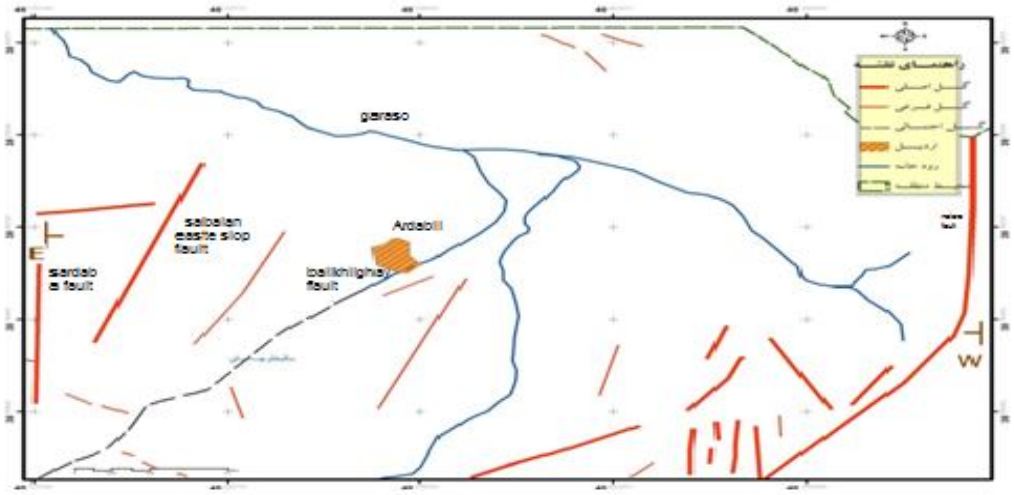
The current research is from applied scientific type and based on historical descriptive and analytical method and nature. Although, we used from library and internet for information collecting based on the common research objectives .The used physical instruments in the research are Ardabil geology plans 1:250000 and topography plans 1:50000 meteorology data and the other related information with research subject. Several field visits have been performed for comparison of subjective and theoretical understanding with the real facts in nature and also for more exact identifying of the environment .

The effective natural factors on Ardabil city topology and physical development.

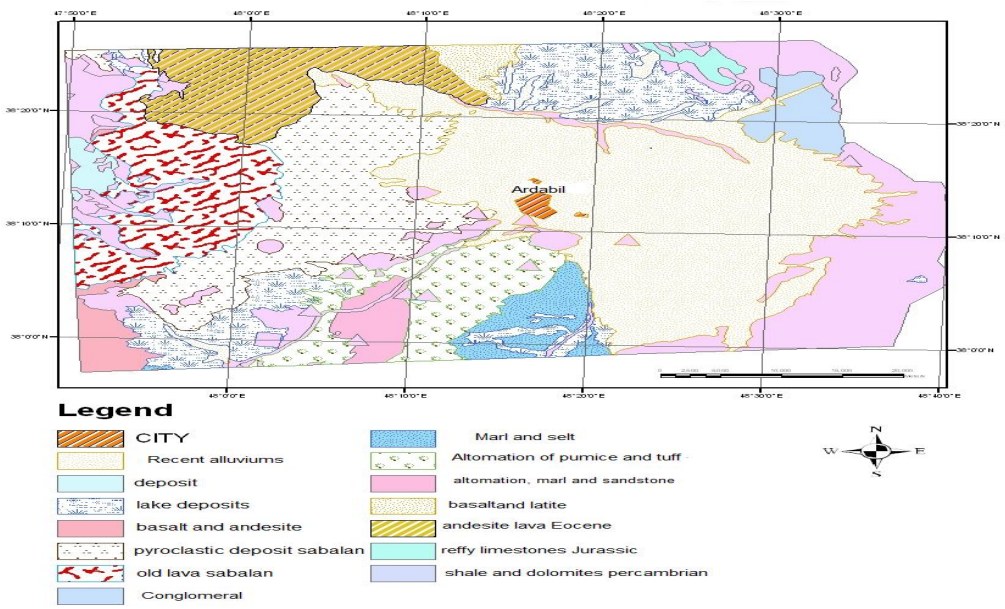
Geological and tectonic

A flat and high tectonic well or as Ardabil plain has been located in the farthest end of Azerbaijan plateau eastern side and Talesh, Sabalan, Bzghvsh mountainous mass. This plain is relatively flat that its concave slope is less than (0/5) with simple topography toward northern and north–western general direction. Surface flows are in the plain level with low speed and finally they pour to Garahsoe but the plains relative harmony and flatness is ruined by some low height topographic events .as an example we can see single and several protrusion in Ardabil plain southern part. Ardabil plain has been surrounded by faults in the south–western side which their present process is with. 0/50 frequency along northwestern and southeastern and especially the most historical and destroyed earthquakes of the region have also been occurred in this limits and along the mentioned faults (sobhani,1999). Near the end of quaternary with discharge of the lake water through garahsoe, its residues have remained as terraces on a slope which form Eocene and esite as the major part of the city underlying level rock that with passing of time analyzed and as a result have produced the present clays in this limits (samadzade, 2007). Thus these clays were from other place clay type that gradually the following of this condition establishment have created Fans in an interface of the mountain with plain which show little profile evolution of the soil or non-evolution on the small Fans but in the large fans are shaped the development pattern of very small materials. For this reason, the best and most fertile agriculture lands are seen in their level which a good sample of it is Balyglvchay fans(sobhani 1999). Generally, this city and its around limits (north, west, east) have been spreaded on plains sediments young or new Fan terraces on slope and fans. Often the north of Ardabil city is located over the central volcanic plateau with more thickness from palaeogene volcanic rocks and the city southern limits have also scattered over Neogene units (Ardabil city general design 2007). Also geophysics studies and discovered excavations indicate the deepest part of Ardabil plain alluviums in its east and south–eastern parts. So the same zones are suitable places for using of the ground waters .While western and north - western parts of the plain aren't desirable for digging of deep wells. The external volcanism formation cover all eastern part of the plain and good quality of the ground waters in eastern and south-eastern parts are for their

proximity and supply from the same heights or volcanism formation. As a result kind of the formations has effect on the ground waters quality of that region. Therefore alluviums of these parts are including ground waters with good quality from drinking and agriculture point (Ardabil water resources studies limits 2007).



Map number 2: Fault map of linear structures in Ardabil Plain and its surrounding areas (shape incision is marked as number (1))



Map number 3 : Geological map of the study area and its surrounding areas.

Climatic features and their roles in relation with urban development:

From the regional viewpoint, the effective factors on the city climate are divided to two groups as outside and local factors. Outside factors have influence on three atmospheric systems in cold and heat periods of year which Mediterranean climate flow is entered with temperate and marine nature respectively from west side and is caused to decreasing of temperature and climate humidity degree in Ardabil province. Siberia climate flow comes from north and north-east of Ardabil. In winter season many value of its humidity is discharged and it is accompanied by cold and increasing of the climate humidity and it due to decreasing of heat degree and climate colding and with entering of the northern Atlantic climate flow is created intense cold and snow

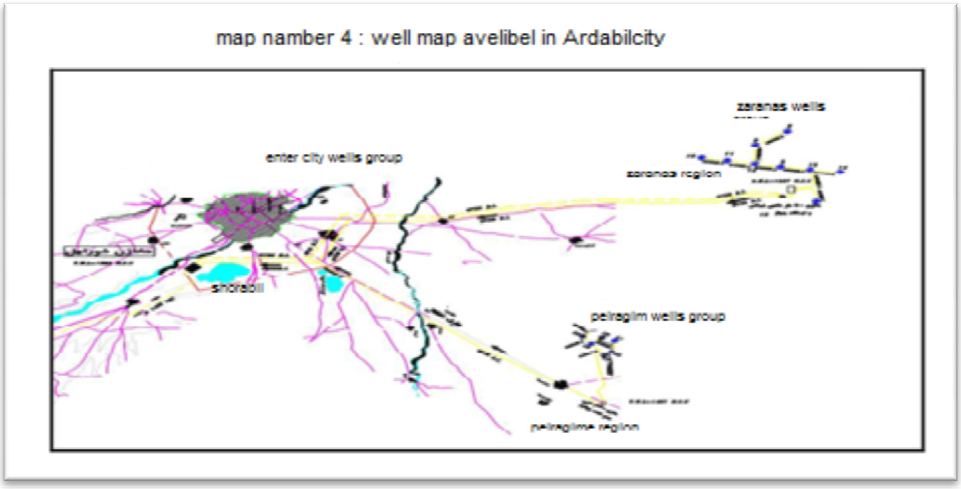
(Rahnamai 1999).The effective local factors on the region climate are numerous. According to mountains chain direction height difference and 38 geographical latitude it uses from the northernmost situation which these factors put more effects on rain and humidity features of this city (parivand19999, p.20) using different methods such as Ambrejeh and Demarten climaitic method we obtained Ardabil city climate semi-arid and very cold and semi-arid respectively. According to the recorded statics in Ardabil city synoptic station, during 29 year statistical period rainfalls average has been about 205/1mm . In this periods April with 50/5 mm and july with 5/6mm were identified as rainy and more humid and low rain and most dry months of year respectively. There wasn't any month without rainfall. Study of rainfall value of this station during above statistical period indicates that spring season with 114/6 mm or 36/56 yearly rainfall average is known as the most rainy season. Also winter season is appointed as the most dry time with 7/74 yearly rainfall. Absolute average of high temperature during the mentioned statistical period is 29/45 and absolute average of low temperature is also-15/09 based on the same climate temperature statistics in Ardabil from July to January month it has decreasing state and after this time increases again. High absolute temperature is about 39/8 related to July month and low absolute temperature in Juanary month has been recorded near to -33/8 (Ardabil city general design 2006).

The city water resources :

Ardabil city is located among large and high mountains.The existence of the large and small mountains has important role in the storage of its water and it causes to relative humidity and rain as good state for being permanent river basin of Sabalan mountain and its slopes is seen snow in Sabalan heights all times of year .These snows are melted in heat seasons gradually and cause to supply of the most important rivers which flow from Ardabil city level their typical is Baliglochay which passes from the center of city (shakori 1999 p6), in addition to them the other surface or level waters are flowing in the city limits .among them we can point to Golmogan, kalkhoran, Niar and zaranas rivers but from the other present surface water resources in Ardabil city which have ecological and tourism importance is Shorabils forbidden hunting marsh which is a sedimentary close domain with width about 170 hectare in an asymmetric syncline with the low depth at the cities of south mountainside.The main part of the city water is provided through ground waters resources which are often scattered in the regions from zaranas to piragom and within city but it has considered use of the surface waters in Baliglochays river for non-covering all of the urban needs (Ardabil city general plan 2006). Since Ardabil province from water resources point has relatively suitable conditions, but for unfavorable use of the water resources, the factors such as population increase, industries development and increasingly usage of water especially rainfall decrease in the recent years have confronted Ardabil province with water crisis problem.

table 1: Specifications of the operation of water supply wells in Ardabil

The total average discharge (liters a second)	Number of wells out of service	The number of active wells	All existing wells	Name of operation	row
260	--	10	10	Zaranas plain	1
60	4	3	7	Piragom plain	2
520	2	16	18	City inner	3



Map number 4: well map avelibel in Ardabil city

Control geomorphologic factors of the city development :

Fault

From precambrian (Era) to persent, Ardabil city limits has been involved numerous tectonic events. Sabalan's volcanic activities have been accompained with exiting of laval and the ruined pyroclastic with creating of split and the deepest faults in the region. The formation of Neors basin has also done by faults which have surrounded this plain. These faults are along the Northeastern and southwestern. Almost, all known faults are in the townships North and east part which their most important are one Astaras fault in the eastern slope and the other Neors fault in the western slope of Bagrodags heights There are several fault structures that can point to Baliglochays probable fault along baliglochays river (Sobhani,1999). The per formed case studies by Barbaryan in 1998 show that southwestern regions and the main half- eastern part of township for prone to having earthquakes are appointed as dangerous zones with high intensity(to 8 degree in rishter scale) and the rest area of township has been located in the regions with different risks (Rahnamai, 1976).According to the present development condition of Ardabil's city that is toward south western and south areas, i.e it is in the resting way of Balikhlochay's fault The development of buildings to fault was for space limitation and it always caused these regions for preparing of the earthquake risks. Therefore, urban managers should take a step to resisting of the regions through engineering methods and in this case should be even done non- residential project with geo-morphological studies. As it is conducted with building of the residential regions with less floors, use of the resistant materials and methods in the countries which are prone to having earthquakes such as Japan in order to decrease the risks intensity.

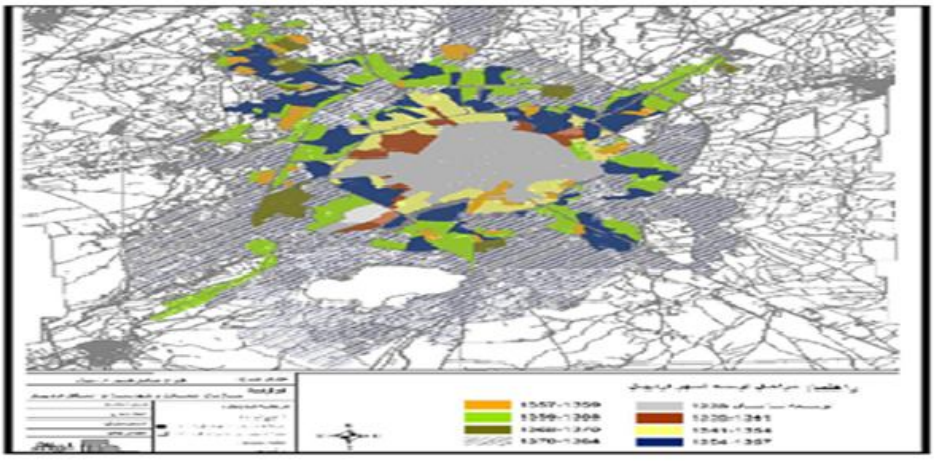
Earthquake risk in Ardabil's city

From the viewpoint of seismologists of Ardabil's township earthquakes, they belong to geology unit of western Alborz and Azarbaijan which are prone to having earthquakes for the earth structure. It is accounted as a north part of the mountainous region of Alpe- Hymaliya in Asia west. There are many faults in Ardabil's city limits which can point to Ardabil east fault, Talesh western slope fault and Baliglochay fault among them. the recorded earthquakes statics in Ardabil city indicate that most earthquakes had low focal depth and high destruction ability or power. From prone to having earthquakes ability, the regions located in southwest and half-east are considered as dangerous spreads with high intensity of earthquake in the township. High relative height and occurring of many rainfalls in the weak layers with high sliding in the large spread and providing of the relative condition in the earth situation have been caused to sliding in the majority of regions which leave more damages throughout year of their sliding motions and the earth subsidence. For example , the destroyed earthquake occurred with 6/4 reshter intensity in Ardabil, Nir, Saraien that these earthquakes not only caused to destroying of the villages, but also it brought up more loss of life. We can evaluate the ground sliding phenomenon in the city level such as central limits, north section of Hir and Nir and parts of kalkhoran and Baliglochay (Ardabil city general plan, 2006).

Map number 5: Earthquake hazardin Ardabil Provincein (1375)

Ardabil's city physical development:
Slope unstability effect of Shorabil lake

Ardabil's city present development is toward south and southwest areas. That is in placing way a lake as shorabil's lake which is located in 2 km of Ardabil's city south- west part. It has transformed to a lake spread during pleistocene (period). As a result, all of the rivers are discharged after passing from the short path in the mountainus slopes level i.e to 1900m in Sabalan eastern slopes, 1500m in western slope and Bagrodag to this lake. The end of this period volcanic ashes motions combined with water according to ices melting in the times of volcanic eruption, ice periods have been compeleted all pits of Sabalan volcanic mass foothill and decreased slopes to plain As a result of these flows and being young and non-stickiness, its component articles are weak and unstable and numerous shapes of mass motions especially ground sliding were observed in their level. In other words, there are actinogenous materials within them according to youth of the volcanic materials and for being sedimentary of lake is expected the occurrence of ground slidind (khayam,1993). Therefore, urban managers through expert methods should attempt to stability and control of these movements. Also, the performance of non-residential projects must be with geomorphology considerations.



Map number 6: Elements of the overall fabric of the city and its environment (Ardabil Master Plan 1386).

surface waters excretion problems:

The main and most important method for gathering & conductance of the surface waters flows in Ardabil city is gutter network. But, these gutters from technical view aren't responsible for urban needs without enough slope. The washed garbages and sediments from streets level are accumulated with entrance to gutters in it. Because, low slope has decreased the water flow transfer and

movement ability to more value.In other side, discharge of the produced garbages by offics residential center and commercial regions and markets near to the gutters have changed them to the propagation of contaminations and diseases center such as parasitic and infectious diseases. Surface waters is stagnant for loss of suitable slope. This matter is a serious danger for the traffic of pedestrain s and ridings with freezing of water in the gutters and public passages in winter. The dimensions of the gutters and the provided canals were n't enough in the city passages and have n't acceptance capacity of maximum water surface flows. As a result, when rainfall is to more amount. In this time, these gutters don't supply the water volume and water flows as flood in the city level and causes to financial loss to the city people (Ardabil city general plan, 2006) .

Communicative networks :

Ardabil city oldness is estimated about 2000 - 5000 year. The mountainous nature of Ardabil city is caused to be expressive urban development pattern. Recently, this city has uniform frame which is including spaces such as Sheiykh- safi's tomb, Bazar and jomeh Mosque. But, with entrance of the early streets destroyed coherence of bazar and context of the residential quarters. According to non- balance between old and new context or ignoring of the correct place, the main spaces such as squares, markets, mosques and histroical passages have been caused to destroying of the structural system of quarters which have more effect on helding and forming of the social relations (rezazadeh , 2009). In other side, worn out main highways , central quarters of the city , regeneration cost and non-resistence of the old context materials were caused to more consideration of the residents toward urban marign parts. Ardabil city is as center of province and air and ground relation with other regions of the country and township s different areas. At present, communicative network of the city consists of two circular axis and a central circle which can create relation of the city s center with ariund through radius streets. passing axis are related four road of Tabriz, Meshginshahr, Astara and khalkhal to each other and they possible mid- urban transportation. for this reason, they have suitable network in the township and region s level but their function were n t desireable and it is for the problems such as urban traffic, city relation with other cities , loss of parking especially in the central parts of the city and etc. for solving of the mentioned problems, we are required to urban planning with new urban patterns,compatible with environmental ecology and ecological culture, climate condition and the persent needs altogether. these cases are conducted with the detailed and physical plan (Ardabil's city general plan, 2007).

Map No. 7 : natural and geological factors of Ardabil city.

conclusion :

In many of our country's cities for being away from urban planning scientific principles and physical development, cities are formed in unsuitable places and have been caused to many problems in the urban quarters. In Ardabil' s township level are also considered numerous problems which are prevented from urban development and growth. The most important factors that influence physical development are natural elements. According to special geographical situation of Ardabil plain, climate and topologic condition, this city are surrounded by mountains from around and as a result take an expressive shape of the urban development to itself. So, urban topology is with unsuitable distribution and out of planning principles loss of scientific and reasonable view in balance distribution of applications in the past has been

produced disharmony in the distribution of urban serrices. North, west and some parts of north-west regions of the city have also suitable slope, fertile soils with ability for agriculture according to enough water. The city' s eastern and north west regions not only aren't suitable for the growth of the residential regions by the considered reasons, but also they are for ignoring of the natural elements role in these regions with construction of industrial places and airport. As a result, with Ardabil plain features and the performed studies, we can say that the best directions for future development of this city are south, south- west regions and among them with consideration of geology condition, it is cleared that the city's south lands are suitable for the city development.

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A case Study of the relationship between social capital and organizational identity in Medical Sciences University, Shahid Bahonar University, and Islamic Azad University of Kerman, Iran

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Abstract: This study aims to examine the relationship between social capital and organizational identity in Universities of Medical Sciences, Shahid Bahonar and Islamic Azad University of Kerman with a descriptive correlation method. The research population was all faculty members of the University of Medical Sciences, Shahid Bahonar University and Islamic Azad University of Kerman comprising 850 people. Then by using the Cochran's formula (1994) and stratifies random sampling proportional to size, 256 individuals were selected to participate in the study. Data collection tools were the Nahapit and Ghoshal (1998) social capital standard questionnaire and the Annette (2006) organizational identity questionnaire. To study the formal validity of both questionnaires, supervisor and faculty advisors' ideas and many subject specialists' comments were used. The reliability of the questionnaire using Cronbach's alpha coefficient for the social capital questionnaire was 0/82 and for organizational Identity Questionnaire was 0/85. For the analysis, descriptive statistics including frequency, mean and standard deviation and inferential statistics including Pearson correlation coefficient, univariate t, ANOVA test and post hoc test were used. Results showed that there is a significant difference between social capital dimensions including structural, communicational and cognitive dimensions and organizational identity. Results of step by step regression showed that at the first step, structural dimension was the best estimator of organizational identity and at the second step were structural and relational dimension. Accordingly at the first step the relational dimension coefficient was 57/6% of the organizational identity variance and at the second step the communicational and structural dimension were 64/7% of the organizational identity variance. The amounts of social capital and organizational identity in all three universities were lower than the average level. Between the obtained scores of social capital and organizational identity in terms of gender, age, educational level, years of service and employment status of the respondents, there were no significant differences.

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Keywords: identity, social capital, cognitive capital, structural capital, relational capital, organizational identity, university.

Introduction

Nowadays, there is a consensus that the physical and human capitals are not the only production factors, influencing the growth of economy and facilitating the process of progress and development. Social capital, i.e. the interconnections and cooperation of community members and groups, is also considered as one of the most effective and determining factors in the process of development which increases the efficiency of individuals and societies. Some theorists step far beyond this and suggest that in the absence of social capitals or their weak presence, all the investments based on human and physical capitals would be inefficient or non-optimal (Danaie, 2011 [1390]). Social capital is an important component in strengthening communities. In the past, social capital was integrated into the foundation of organizations and functioned not only as the only social security network, but also as the social support. This is evidently observable in the communities with economic sufficiency (Amornsiriohonga and Piemyatb, 2012). It is more probable that those with a great social capital tend to approach their trustworthy colleagues who possess a proper capital of this kind and not those without. It is more probable for the first group to ask their contacts for educational help and tips rather than the second group and consequently reduce the costs of acquiring the required skills. Thus, they would succeed at improving their professional competence in a shorter period of time. This influences the behavioral patterns and psychological commitments of individuals towards the organization (e.g. organizational commitment, trust) (Penlin, 2011).

Managers and those who win more social capital in an organization, facilitate their own process of achieving organizational and career success. On the other hand, social capital makes the personal lives of individuals easier, more meaningful and enjoyable. In fact, social capital is defined as common visions, social unity and solidarity, trust, honesty and mutual respect among the members, observing the values, norms and moral principles and avoiding any kind of pretence. Since

complex organizations are pertinent to more opportunism, neglecting work and fraud on behalf of their workers in the workplace, a level of social capital is necessary to avoid these kinds of behavior (Nasr Isfahani et.al, 2011 [1390]). Social capital is considered to have three dimensions: structural, relational and cognitive (Faghihi and feyzi, 2006 [1385]).

Optimal work system, formations of working groups and individual's appropriate choice in different situations are referred to as structural factors of social capital. Relational factors such as empathy, secrecy, honesty and modesty are the examples of high tolerance of individuals and their honor towards charity in an organization. Some examples of Cognitive factors of social capital are favoring aims of the organization, existent of a strong organizational culture and transference of work experiences between individuals (Nasr Esfahani et.al, 2011 [1390]).

The importance of social capital in an organization is that it can cause the unison of individuals (to groups, teams, organizations and etc) in a way that they can successfully finish their projects. Trust and corporation in a social capital of an organization will make individuals to feel coherent. Some of the outcomes of social capital are trust, mutual understanding, commitment and stable relationships and these factors will maintain the organization on the transitive and unsteady market (Kavoosi and Kiasi, 2009 [1388]).

The efficiency and performance of society depends on the interaction of different social strata. On the other hand, with regard to specific features of society and fulfilling of certain social roles, individuals would voluntarily or involuntary register in different groups, which would give them different identities. Identity is a process in which individuals feel as if they belong to a group or a unit. In other words, it is a process in which a feeling of attachment and dependency is created (Feizi, 2010-2011 [1390]). The theory of organizational identity has developed identity from individuals to groups. Some scholars, such as James (1918) and Eroccson (1964), have acknowledged social identity in organizations (Casey and Olson, 2003). Individuals can identify themselves and acquire multiple collective identities through membership in different groups. Some examples of these collective identities are age, gender, work, role and national identities. Social capital of collective identities, such as work identity that is associated with the career of individuals, is one of the most influential and effective factors in interpersonal and intergroup relations (Hezar Jaribi and Lohrasbi, 2011 [1390]). This study intends to investigate the relationship between the two variable of social capital and work identity.

Organizational identity includes some characteristics of the organization that are understood to be core, unique and continuous for the members of that organization. Increasingly, organizations not only seek for members who accept their organization as a good and appropriate work place and intend to stay there but also, they seek those who would go beyond this to mix their personal identity with the identity of the organization and tie their fate with their organization fate (Khorshid, 2010 [1390]).

Members and employees of an organization help to create the identity of their organization and the organization will also help them to shape their own identity. Members develop and express their personal beliefs and ideas in the organization. These ideas and beliefs will also cause the organization to develop further and be displayed. Thus, organizational identity is beyond the answer to 'who we are?'. Potentially, organizational identity partially indicates the answer to "who am I?".

To understand organizational identity, members should reach a point to believe that organization has specific and obvious characteristics that in time will make that organization apart from other organizations and that those specific characteristics make the organization identifiable in different situations and matters such as decision makings, procedures and politics (Alvesson and Empson. 2006).

Over time, scientists became interested in the systematic aspect of identity. They raised their researches about identity and its image up to the level of group. Therefore, for example in the conducted research by Erickson (1964), it was concluded that not only identity biases our self-understanding and our part in relationships with others, but also it will simultaneously create group work spirit in relationships and close interaction between individuals (Puusa and Tolernen, 2006). Nowadays, organizational identity is one of the most popular themes and topics in management and organizational studies. To cause motivation and commitment for the members and develop the process of sharing knowledge it is necessary to have a vast understanding of some issues such as conformation ad mergers, the image of the corporation and strategic changes (Alvesson and Empson, 2006).

Nowadays in most government organizations we can observe a kind of desire to increase the rate of displacement and absence from work, decrease job satisfaction, expansion of alienation toward work, lack of employee accountability and, generally, absence of member's identity with the organization. Since the existence of member's identities with the organization decreases the rate of employee's absence from work, increases aligned and complaint behaviors toward organizational goal and eventually, enables the organization to achieve its goals, so the realization of organization's identity and then developing and strengthening of that identity is very important for managers (Gholi Poor et.al, 2009 [1388]).

The point of notions outbreak is the infusion of inner-values to individuals by identity sources or understanding of inner-values through cognitive sources by members of a society. This will be conceivable through individuals' reactions and its existence will be guaranteed by accrete reactions. Social capital resources are indeed the source of individuals' beliefs toward inner-values such as identity and cognitive sources. Although these sources potentially cause the creation of social identity in a society,

but, in the first place they would need other means such as notions, relationships based on trust and eventually creation of social networks to exist (Ranani et.al, 2009 [1388]).

Ashja'e (2008 [1387]) in his study about "the relationship between incorporative decision makings and organizational trust with urban organizational behaviors, organizational identity and organizational justice" showed that there is significant and meaningful relationship between incorporative decision makings and organizational identity. Andishmand's study (2009 [1388]) about "the identification of social identity factors in universities in order to present a model to upgrade and improve their system" showed that trust and correlation factors have the highest obtained mean and incorporative management factors have the lowest mean. He also showed that there is not a significant difference between participants' opinions about variables such as gender, education and work status. Khodai and Mobaraki (2010 [1389]) in their study about "the relationship between social capital and identity", show that there is general y a positive, mutual and meaningful relationship between social capital and identity. In other words, the growth of one's social capital will possibly improve his feelings toward his social (organizational) identity and the more this feeling improves, the possibility of his attendance in different social groups and his trust toward different people and organizations will also become stronger.

Gholi Poor et.al in their study bout "the specification of effective internal and external organizational factors on the construction of organizational identity", which was carried out in 2010 [1390] governmental organizations, showed that there is a significant relationship between organizational identity and the attention of media toward the organization, external image of the organization, external relations, top management team, management of human resources, internal organizational relationships and organizational procedures.

In 2010 [1390], a research about "the relationship between social capital and the level of group identity" was carried out by Hezarjaribi and Lohrasbi among the students of social sciences institute. This study showed that, in general, social capital has a direct and significant effect on group identity.

Navai (2010 [1390]) in a study about "the relationship between sociability and organizational identity", in one of Esfahan's social services organizations, reached this conclusion that there is a positive and significant relationship between sociability (group, formal, permanent, sequential, continuous and confirmatory) and organizational identity.

The results of Sullivan's study (2002) about "the bond and relationship between social restriction, identity and social capital" showed that there is a direct relationship between social capital and identity. This study also showed that there is an inverse relationship between social capital and social restriction. In other words, when social capital increases it will result in the growth and increasing of identity and reduction of social restrictions.

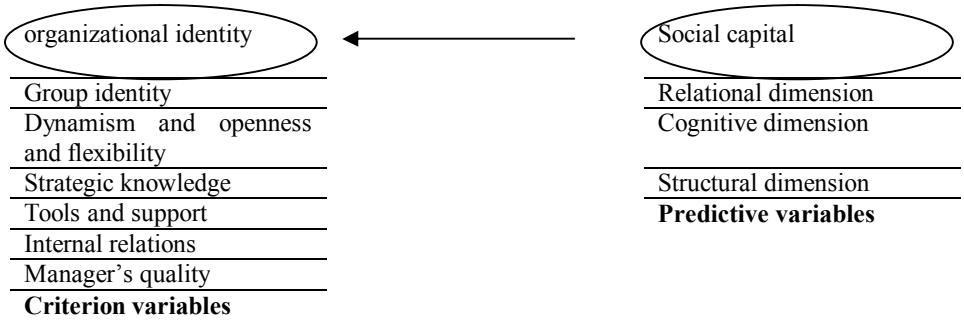
In 2006, Tolvanen carried out a research about "organizational identity and trust". The results of this study indicated the significant relationship between trust and organizational identity. It also showed that this relationship is completely bilateral; that is, the effect of trust on organizational identity is equal to the effect it receives from it.

Joep et.al in a study about "social capital, organizational identity and participation" came to the conclusion that there is a relationship between social capital, organizational identity and participation.

In a study about "the relationship between social capital, citizenship behavior and identity" by Chow and Irene et.al it is indicated that social capital increases trust within an organization and this trust will result in job satisfaction, creativity, citizenship behavior and identity in an organization.

Jinaha (2010) in his study about "the relationship between sociability of the organization, organizational identity and citizenship behavior" assessed china's industrial technology institutes. The concluded results showed that there is a significant relationship between the sociability of the organization, organizational identity and citizenship behavior.

Based on the mentioned theoretical foundations, the theoretical model of this study will be as follows:



Objectives of this study

1-4-1 main objective: Determine the relationship between social capital and organizational identity in the universities of Medical Sciences, Shahid Bahonar and Islamic Azad University of Kerman.

2-4-1 secondary objectives:

1. Determine the relationship between structural dimension of social capital and organizational identity.
2. Determine the relationship between cognitive dimension of social capital and organizational identity.
3. Determine the relationship between relational dimension of social capital and organizational identity.
4. Determine the expected organizational identity through the dimensions of social capital.
5. Determine the level of social capital among faculty members of Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman.
6. Determine the level of organizational identity among faculty members of Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman.
7. Determine the difference among participants responds about the social capital variable based on demographic factors.
8. Determine the difference among participants responds about the organizational identity variable based on demographic factors.

Research method

This study was carried out by correlation descriptive method. The population of this study consisted of 850 faculty members of Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman in 2010 [1391]. According to Cochran formula with the validity of 1/96, 256 individuals were chosen to participate in the study. Based on the objectives of the study two standard questioners were used: standard questioner of social capital and organizational identity.

Social capital questioner: this questioner was presented by Nahapiet and Goshtal (1998) and includes 17 questions about structural, relational and cognitive dimensions to measure the level of social capital. This questioner was adjusted to the objectives of the study and with regard to simplicity, absence of duality and comprehension of the participants, it was divided into 7 scales similar to Likert scale (I Strongly agree, I agree, I somewhat agree, no comment, I somewhat disagree, I disagree and I strongly disagree) in which I strongly disagree was 1 and I strongly agree was considered to be a 7. The validity of this questioner, which was obtained by Cranach's alpha coefficient, was 0/82. According to the measured level of each dimension (structural (0/81), relational (0/82) and cognitive (0/79)), the final coefficient of social capital was obtained.

Organizational identity questioner: this questioner contains 37 questions and was presented by Annette (2006). Based on the Likert scale, this questioner was divided into 5 scales (I totally agree, I agree, I neither agree nor disagree, I disagree or I strongly disagree), in which I strongly disagree was 1 and I totally agree was a 7. This questioner covers 5 dimensions of group identity, strategic knowledge, tools and support, manager's quality, dynamism and openness and flexibility and internal relations. According to Cronbach's alpha coefficient the obtained and final coefficient of this questioner was 0/85. These coefficients for each dimension are as follows: group identity (0/83), strategic knowledge (0/81) tools and support (0/80), manager's quality (0/79), internal relations (0/85) and dynamism and openness (0/81).

Descriptive statistics including frequency, standard deviation and mean; and inferential statistics including Pearson correlation, stepwise regression, t-test with two independent groups, ANOVA and post hoc test were used to analyze the gathered information. And the mentioned statistics were analyzed with SPSS-17 statistical software.

Research findings

Main question: Is there a relationship between social capital and organizational identity in Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman?

Table (1): The correlation between social capital and organizational identity

Criterion variable	organizational identity		
			Statistical indicators
Significance level	Correlation square	Correlation	Predictive variable
0/001	0/299	0/547**	Social capital

<0/ 01 p

The results in table 1 indicate that the correlation between social capital and organizational identity is significant. In other words, there is a significant relationship between organizational identity and social capital. According to the Coefficient of determination 29/9 percent of social capital and organizational identity variances are shared. Therefore, the main question about the relationship between social capital and organizational identity is confirmed.

9. First question: is there a relationship between structural dimension of social capital and organizational identity?

Table (2): The correlation between organizational identity and structural dimension of social capital

Criterion variable	organizational identity		
Significance level	Correlation square	Correlation	Statistical indicators / Predictive variable
0/001	0/188	0/434**	Structural dimension

<0/ 01 p

The results of table (2) show that the correlation between structural dimension of social capital and organizational identity is significant. In other words, there is a significant relationship between structural dimension of social capital and organizational identity. According to the Coefficient of determination (r^2), 18/8 percent of organizational identity and structural dimension of social capital variances are shared. Therefore, based on the results of this table the relationship between structural dimension of social capital and organizational identity is confirmed.

Second question: is there a relationship between cognitive dimension of social capital and organizational identity?

Table (3): the correlation between organizational identity and the cognitive dimension of social capital

Criterion variable	organizational identity		
Significance level	Correlation square	Correlation	Statistical indicators / Predictive variable
0/001	0/123	0/351**	Cognitive dimension

<0/ 01 p

The results in table (3) show that the correlation between organizational identity and the cognitive dimension of social capital is significant. In other words, there is a significant relationship between organizational identity and the cognitive dimension of social capital. According to the Coefficient of determination (r^2), 12/3 percent of organizational identity and the cognitive dimension of social capital variances are shared. Therefore, the relationship between organizational identity and the cognitive dimension of social capital is confirmed.

Third question: is there a relationship between organizational identity and relational dimension of social capital?

Table (4): the correlation between organizational identity and relational dimension of social capital

Criterion variable	organizational identity		
Significance level	Correlation square	Correlation	Statistical indicators / Predictive variable
0/001	0/218	0/467**	Relational dimension

<0/ 01 p

The results of table (4) indicate the significant correlation between organizational identity and relational dimension of social capital. In other words, there is a significant relationship between organizational identity and relational dimension of social capital. According to the Coefficient of determination (r^2), 21/8 percent of organizational identity and relational dimension of social capital variances are shared. Therefore, the relationship between organizational identity and relational dimension of social capital is confirmed.

Forth question: Could the employees organizational identity be predicted through the dimensions of social capital?

Table (5): multiple correlation of social capital dimensions and organizational identity

Significance level	F-coefficient	Adjusted multiple correlation square	Multiple correlation square	Multiple correlation	Predictive variable	Statistical indicators / Predictive variable	
0/001	82/221	0/327	0/331	0/576	relational	First step	Organizational identity
0/001	59/501	0/412	0/419	0/647	Relational-Structural	Second step	
<0/01					p		

As showed in table (5), the relational dimension of social capital in the first step and the relational-structural dimensions of social capital in the second step are the best predictive variables of social capital among other mentioned variables. Based on the analysis of step by step regression, the relationship between structural- relational dimensions and the structural dimension of social capital with organizational identity is significant. According to this, obtained coefficient of relational dimension in the first step (57/6%) and structural-relational dimensions in the second step (64/7%) show the variance percentage of organizational identity. Since the obtained F in p<0/01 was significant, the regression can be generalized to the target population.

Table (6): Beta coefficient in predicting organizational identity

Significant level	t-coefficient	standardized beta coefficients	Non-standardized beta coefficients		Predictive variable	Statistical indicators / Predictive variable	
			Standard error	Beta			
0/000	9/068	0/576	0/196	1/774	relational	First step	Organizational identity
0/000	6/556	0/432	0/203	1/332	Relational-structural	Second step	
0/000	4/993	0/329	0/211	1/054			
<0/01					p		

The results of table (6) show that increasing of Beta coefficient for every unit in relational dimension of social capital will increase organizational identity to 0/432 unit and the increasing of structural dimension of social capital for every unit will increase organizational identity to 0/329.

The predictive equation of the forth question is presented as:

Organizational identity = constant coefficient of (7/793) + social capital relational dimension (1/332) + social capital structural dimension (1/054)

Table (7): exogenous equation variables of regression for the prediction of organizational identity

Significant level	t-value	Beta		
0/000	4/993	0/329	structural dimension	First Step
0/142	1/474	0/093	cognitive dimension	
0/308	1/022	0/061	Cognitive dimension	Second Step
<0/05		p		

As showed in table (7) the relationship between cognitive dimension of social capital and organizational identity is not significant and meaningful.

Fifth question: what is the level of social capital among faculty members of Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman?

Table (8): the comparison of organizational identity mean with hypothetical mean of 3

Significance level	Degrees of freedom	T	Deviation of the mean	Standard deviation	mean	Component
0/001	226	-6/438	0/046	0/69	3/70	Social capital

According to table (8), the obtained mean of social capital is 3/70. The calculated absolute value of t is larger than the mentioned t in the table. Therefore, the rate of social capital is below average.

Sixth question: what is the level of organizational identity among faculty members of Medical Sciences University, Shahid Bahonar University and Islamic Azad University of Kerman?

Table (9): the comparison of organizational identity mean with hypothetical mean of 3

Significance level	Degrees of freedom	T	Deviation of the mean	Standard deviation	mean	Component
0/001	207	-19/167	0/043	0/62	2/16	Organizational identity

According to the results of table (9) the obtained mean of organizational identity is 2/16. The calculated absolute value of t is larger than the mentioned t in the table. Therefore, the rate of organizational identity is below average.

Seventh question: According to demographic characteristics, is there a significant difference between the social capitals of faculty members?

Table (10): Multivariate analysis of the variance of social capital scores based on gender, age, educational level, duration of service and employment status

Statistical power	The Eta	Significance level	F	Mean square	Degrees of freedom	Total square	source
0/079	0/002	0/617	0/251	30/014	1	30/014	gender
0/591	0/057	0/070	2/418	289/262	3	867/785	age
0/261	0/02	0/300	1/216	145/437	2	290/873	Educational level
0/680	0/081	0/070	2/104	251/668	5	1258/341	Duration of service
0/054	0/001	0/846	0/038	4/558	1	4/558	Employment statues

The results of table (10) indicate that there is not a significant difference between social capital scores in gender, age, education, duration of service, employment statues and university.

Eighth question: According to demographic characteristics, is there a significant difference between the organizational identities of faculty members?

Table (11): Multivariate analysis of variance corporate identity scores based on gender, age, educational level, duration of service and employment status

Statistical power	The Eta	Significance level	F	Mean square	Degrees of freedom	Total square	source
0/054	0/001	0/848	0/037	16/806	1	16/806	gender
0/255	0/025	0/418	0/953	432/301	3	1296/902	age
0/531	0/047	0/069	2/739	1242/571	2	2485/141	Educational level
0/469	0/059	0/241	1/371	621/935	5	3109/677	Duration of service
0/051	0/001	0/934	0/007	3/117	1	3/117	Employment statues

The results of table (11) shows that there is not a significant difference between organizational identity scores in gender, age, education, duration of service, employment statues and university.

Conclusions

This study aimed to assess the relationship between social capital and organizational identity. The results showed that there is a relationship between organizational identity and social capital. According to the results of table (1), social capital is a set of norms in social systems that improves members cooperation in that society and will also decrease the costs of communications and interactions. Social capital consists of different levels such as individual, group, organization, national (social) and international (transnational). These different levels are all connected and could reinforce or diminish one another. Individual level includes cognitive and identity sources. Knowledge and cognitive sources refer to information references, procedures or solutions in system; and identity sources refer to norms and values. In other words, identity concentrates on the level of shared values, ideas of individuals and the ability to cooperate with one another. These sources – cognitive and identity – will combine and create a source of social capital in society and organization. According to the mention theoretical assumptions, the organizational level has many profits such as better knowledge sharing, developing relationships based on trust, creating a cooperating spirit, decreasing displacement costs (in the organization, between organizations, costumers and stakeholders), decreasing employment costs, training, maintaining the organizational knowledge, decreasing human resources changes, increasing actions related to consistency of organization, shared understanding, increasing creativity and the development of organization's economical and social growth. It could be said that social capital impartially improves the effectiveness of the employees, so it is necessary to pay extra attention to behavior norms that develop social capital in the work place.

Identity is a process of feeling united with other groups or individuals. In other words, identity is a process that creates a kind of solidarity and belonging sensation in people.

This process also develops a different set of feelings such as unison, compatibility, belonging, usefulness, independence and organized trust based on individuals will. In addition, individuals have access to infinite identity sources. After other identities such as alleged identity, cultural identity, political and territorial identity, economical references - that is, job profession, career, working parties, economical units, teams and colleagues - are some of the most important sources of creating and developing identity. The important point is that bonding with a group and recognizing it from other groups is one of the most crucial functions of identity. In addition to functioning as a cohesive factor, identity also has a regulator nature. On the other hand, we could name regulating of relationships between individuals and groups in the society as the most important function of social capital and developing coordination, trust, sympathy, job connections, self-sacrifice and behavior norms based on cooperation as the outputs of this process. Therefore, it is possible that organizations with a strong social capital will also have a strong and high-leveled organizational identity – that is, collective ownership and shared emotions in cognitive dimension (feeling as a member the organization and internalizing organizational values) and emotional dimension (feeling proud to be a member of that organization). According to this, the relationship between social capital and organizational identity can be specified. Since the results of this study confirmed the relationship between social capital and organizational identity, it is in the line with other research results such as Gholipoor et.al (2010 [1390]), Ashja'e (2007 [1387]), Jahangiri and Moini (2009 [1389]), Hezar Jaribi and Lohrasbi (2010 [1390]), Navabi (2010 [1390]), Sollivan (2002), Jeop et.al (2007) and Chow & Irene et.al (2009).

The results of table (2) showed the significant correlation between structural dimension of social capital and organizational identity. It means that the relationship between structural dimension of social capital and organization identity is significant and meaningful. Structural dimension refers to the impersonal configurations among individuals or social units. The most important phases of this dimension are network connections, network management and network consistency. Network connections refer to the specific and special ways through which the members of a social unit

are connected and cooperate with each other. This dimension also refers to the width and intensity of connections within the network. Network management indicates the connecting patterns between individuals of a social unit and it includes network hierarchy and the level of communicability and intensity of the network.

Organizations with a favorable level of structural dimension also have a complex and intelligent organization structure that consider the capacity of the members. In such situations, horizontal and vertical structures and smithereens work unison; and in spite of complexity they have a close interaction with one another. These organizations have strong substructure to simplify activities; and the organization works not only through leadership chains but also through the exchange of ideas, skills, information and connections.

In such situations, network managements and network connections will be used to coordinate and control activities. Managers and employees of such structures believe that their place in organization hierarchy is not as important as individual's cooperation and connections. They believe that the width and intensity of network connections are crucial and important. Therefore, individuals will line up around connections. Also, in this point of view, the maintaining of working parties is necessary and important to fulfill the interaction process. In this dimension decisions are made in groups and their responsibility is upon the leaders. Upon the interaction of this dimension of social capital and organizational identity, organizational identity will be developed based on the ideas and emotions of members toward the organization. In this semantic, organizational identity considers to be the political basis of the organization not the label of its products. Since in such structures individual behaviors are in line with beneficial behaviors and interests of the organization, it is evident that in a situation which politics and organizational structures are based on social capital, shared emotions and values will be developed in a healthy structure and this healthy and strong structure will have the capacity of increasing and developing identity of the organization. Therefore, since emotions and ideas of the individuals are coherent, the reinforcing of structural dimension will result in an improved organizational identity. The results of this part are in line with Ashja'e results in his study about "the relationship between co-operational structures and organizational identity".

According to the results of table (3), there is a significant correlation between organizational identity and cognitive dimension of social capital. In other words, the relationship between cognitive dimension of social capital and organizational identity is significant and meaningful. Cognitive dimension emphasizes on phases that assemble shared representations, interpretations and conceptual systems among group member. It also reflects the width of member's participations in group projects and the deployment of a shared cognitive process among employees. This dimension refers to sources that would assemble symbols, interpretations, annotations and shared systems among groups. The most important phase of this dimension is the shared language. Language is a tool through which individuals communicate with each other and exchange information. Shared language will also increase the sufficiency and capacity of mixing information. Shared reports and stories is another dimension of cognitive capital. This dimension includes stories and metaphors that would maintain the conceptual sets of a society. Shared goals and culture are other interpretation of this dimension of social capital. Shared goals is defined as Shared understandings and point of views among members of a social unit toward goals and results of group works; and shared culture refers to the level of shared behavior norms amongst individuals and members.

With regard to the definition of organizational identity – that is, making sense of organization employees based on cultural characteristics and with a collective set of values, beliefs and shared goals- the relationship between organizational identity and cognitive dimension of social capital can be specified. One of the main highlights of organizational identity is that identity is the result of understandings and misunderstandings. Since identity basically develops through mutual interactions, so, in high levels of organizational identity individuals intend to cautiously follow their goals whilst respecting the organization's regulations. Therefore, work identity – that is making sense of shared goals- will be increased in organizations that have clear, obvious and exact goals and objectives, have a shared language among members to express their ideas, emotions and doings and have shared interpretations and annotations. Based on the mentioned items, the relationship between our two variables can be specified. Since Gholi Poor et.al (2010[1390]) indicated the positive relationship between organizational identity and co-operational and internal organizational connections as parts of social capital, then, the results of this study is in line with them. For, this study has also verified this relationship.

According to table (4), there is a significant correlation between organizational identity and relational dimension of social capital. In other words, the relationship between organizational identity and relational dimension of social capital is significant and meaningful. Relational dimension refers to the internal organization relationships among individuals. This dimension has important phases such as trust, norms, necessities and identity. Trust is to accept someone as trustworthy and reliable. Norms refer to behavior expectations with a shared meaning. Necessities show the commitment of individuals toward fulfilling activities or tasks and Identity is a process in which individuals feel united with other groups or people. In addition to this, relational dimension is also consisted of phases such as sympathy, honesty, secrecy, organizational modesty, high tolerance and honoring charity. Like any other identity, work identity has three elements: cognitive, value and emotional. Cognitive element refers to the knowledge of individuals toward their attachment in a group. Value includes positive and negative effects of being a member of a group and emotional element is the

feeling of individual toward people or groups which he has a special bond with them. A high leveled social capital in relational dimension shows that the trust between employees, their commitment and behavior expectations with shared meanings will also have a high level.

In such situations, it could be expected that organizational identity –shared understanding of organizational specific values, fixation, employee's attachment and member's beliefs toward trust and distrust - will also be showed in high levels. According to this, the relationship between relational dimension of social capital and organizational identity can be specified. These results are in line with Gholi Poor's study about "specifying the relationship between internal and external organization connections with organizational identity".

As showed in table (5), the relational dimension of social capital in the first step and the relational-structural dimensions of social capital in the second step are the best predictive variables of social capital among other mentioned variables. Based on the analysis of step by step regression, the relationship between structural-relational dimensions and the structural dimension of social capital with organizational identity is significant. According to this, obtained coefficient of relational dimension in the first step (57/6%) and structural-relational dimensions in the second step (64/7%) show the variance percentage of organizational identity. Since the obtained F in $p<0/01$ was significant, the regression can be generalized to the target population.

The results of table (6) show that increasing of Beta coefficient for every unit in relational dimension of social capital will increase organizational identity to 0/432 and the increasing of structural dimension of social capital for every unit will increase organizational identity to 0/329.

The predictive equation of the forth question is presented as:

Organizational identity = constant coefficient of (7/793) + social capital relational dimension (1/332) + social capital structural dimension (1/054).

As showed in table (7), the relationship between organizational identity and cognitive dimension of social capital is not significant and meaningful.

Relational dimension describes personal relationships of individuals in organization or among themselves. This dimension consists of trust, norms, necessities and identity. One of the most important phases of this dimension is trust which develops among members of a group. Relational factors are sympathy, secrecy, honesty, high tolerance and honoring charity. On the other hand, structural dimension refers to the configuration of connections and bonds between individuals or social units. The most important phases of this dimension are network connections (width and intensity of network connections), network management (network hierarchy, network density and communicability level) and network consistency (the level of closeness and similarity between individuals in a social unit). Therefore, these dimensions were chosen as the predictive variables of organizational identity.

According to table (8), the obtained mean of social capital is 3/70. The calculated absolute value of t is larger than the mentioned t in the table. Therefore, the rate of social capital is below average.

Since social capital develops democracy and economical growth, increases creativity, peace and welfare in people's lives and widens cooperation, trust and financial exchanges; and its absence would cause social isolation, alienation, subjectivism and identity crisis that are manifested as egoism, greed, exclusivity bond games, irresponsible political systems and corruption; Therefore, the low level of social capital, especially in organizations such as university, shows that trust, cooperation, sympathy and positive work connections are at the minimum. According to the definition of social capital, the absence of this concept will cause disorder, loss of norms and combination of values with anti-values in a way that the members of that organization will feel confusion, confliction, tension, indifference, and depression and so on. It seems that, based on the organizational cultures in some organizations, for example instability of procedures, ambiguous politics, lack of shared vision and personal idealism instead of sociality and so on, that the level of social capital is not sufficient and appropriate. Hence, according to the opinions of faculty members in these universities, the level of social capital is below average. Since the level of social capital in the study of Esfahani et.al (2010 [1390]) was above average the results of this parts is in contrast with the obtained results of their study. Different research areas, organizational cultures and organizational type (service) could be the cause of these differences.

According to the results of table (9) the obtained mean of organizational identity is 2/16. The calculated absolute value of t is larger than the mentioned t in the table. Therefore, the rate of organizational identity is below average. Nowadays, for different causes such as lack of attention toward the charter of employees shared values, lack of trust and lack of knowledge about occupations, individuals lack a strong organizational identity; Also according to the definition of organizational identity - as collective ownership, shared feelings, willingness toward organizational objectives instead of personal goals, feeling proud to have a part in organization and the patterns of beliefs, values and emotions that are the results of interactions between individuals and their surroundings - we could assign a below average score to this concept. In addition to this, it could be said that the reason of faculty members to assess organizational identity below average could be the low level of work identity dimensions such as dynamics and openness, strategic knowledge, internal connections, tools and support and management qualities.

The results of table (10) indicate that there is not a significant difference between social capital scores based on gender, age, education, duration of service, employment statues and university.

These results are coordinated with the obtained results by Andishmand (2008 [1388]).

The results of table (11) shows that there is not a significant difference between organizational identity scores based on gender, age, education, duration of service, employment statues and university.

These results are also coordinated with the obtained results by Andishmand (2008 [1388]).

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Green marketing, an attitude toward future for improving life quality

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Abstract: The aim of marketing system is not to maximize consumption, givingmore choices to consumers, or satisfying the customers, but is to improve life quality as high as possible. The life quality not only involves the quantity and quality of goods and services but also it involves the quality of environment too.This issue is entered to all organizational dimensions and effects marketing, and leads to emergence of the concept of green integration.The necessity to produce ecological products and the need for green commercial activities, have led the companies to integrate environmental issues with marketing activities and strategies.

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Introduction

Perhaps nobody imagined that marketing, along with profitability and sale, concerns about the safety of consumer too.But dynamicity and the increase of concern about environment and also governmental regulations and the growth of consumers' knowledge have impelled companies to think about the psychological and corporal safety, and cleanness of environment around consumers (Doaee et al, 2006). Responsibility against social environment is a vital managerial function and is of importance for the success of every business (Gholipour Soleimani; 2006). Environment has increasingly turned into a critical matter for all people. During the last decade the crucial changes in the preferences of consumers toward green products along with the emergence of green consumers, have excited market mechanisms for new ecofriendly organizations and products. Studies show that the high level of the concerns accounted by consumers have not generally led towidespread behavioral changes. Despite 3 decades from the beginning of concentrated researches on the challenges of natural environment, now the quality of affaires is universally more critical than the time when green marketing began. Scientific publication and mass media are continuously accounted about the destruction of ecosystem.

Weather change, cutting trees, and facilitating the destruction of natural habitats are facts accepted by most scientists and public (Taleghani & Rahmati, 2010). It seems that nowadays every product has an especial social reason for its production, and marketing on the basis of social and environmental considerations has become one of the important activities of the companies; marketing on the basis of social and environmental considerations has become very famous since 1980s (Katler and Armstrong, 1999). One of the commercial domains which are discussed more in environmental matter is green marketing (Rex and Bowman, P 568; 2007). Energy crisis in the middle of 1970s followed by the primary waves of researches about environmental issues in the first part of 1980s; but it was from 1990s that scientists with general consensus inform us from the critical consequences of economical activities of human being on earth's ecological balance and future life. 1990s is known as the decade of environment: environmental and social concerns have become more important in the decisions of watchful consumers and suppliersfor selecting a product. Katler has predicted that more companies will shift their orientations toward the concept of social marketing, which not only tries to meet the needs of goal market effectively but also tries to reinforce the idea of being a good citizen and consumer (Katler, 2003). Most of companies try to contain sustainability as one of their commercial strategy. It seems that some factors such as the necessity to adjust with the increasing volume of social and environmental regulations, concerns about costs and scarcity of natural resources, increasing the knowledge of people and shareholders about social responsibility and the general changes in the values and attitudes of modern capitalistic societies are effective in the description of this new trend (Hillieret al, 2008).

In a study performed by Ottman (1992) in 16 countries of the world, more than 50 percent of the consumers in each country expressed their interest to and concern about environment. Moreover, the results of other study in Australia (1994) showed that 84 percent of people believed that they are responsible against environment,

these consumers state that they reform their purchasing behavior (Polonsky, 2001). In another study it is showed that for 93 percent of people the environmental effect of a product is important during its purchase.In 1994 researchers conclude that 42 percent of European consumers select products on the basis of their environmental functions, and 25 percent of people in England purchase products with above 25 percent sustainability (Rex &Baumann; P 568, 2007).

In 1989 the results of a study in America indicated that 49 percent of subjects had changed their purchasing behavior due to environmental issues (Bovee and Thill, 1992). Studies performed by Australian Statistics Office showed that 75 percent of people concern about environmental issues (Baker, 1996). Kateb and Helson indicated that green marketing reinforces governmental plans (Kateb and Helson, 2004). Bovee and Thill believe that like other elements of marketing environment, social values are also changed during time. Hence, for securing success, marketers and their products must also change in conformity with the society (Bovee and Thill, 1992). In 2006 green products industry had been estimated an industry with the value more than 200 billion (Gupta and Ogden, 2009). In his research Camino studied the effects of benefit owners on green marketing strategy. Previous researches show that profits play an important role in markets and organizations. But a comprehensive consideration of this study shows that there is no relationship between the management of profit owners and green marketing strategy. The findings of this research indicate the connection of profit owners with green marketing strategies and its effects on strategies in companies (Comino, 2007).In another research a model is introduced for interrelationships among green strategic trend, product development, homogeneity of supply chain, green revenues, and commercial units function. The aim of this research is to introduce innovative subjects by strategic trend, interior commercial operations, homogenizing the supply and measuring the function (Hong and Jungbae; 2009, P 512). In his research, Lee has studied the effects of gender differences on the environmental treatment, environmental importance, and perceiving environmental responsibility in Hong Kong young consumers green purchasing behavior. The findings indicate that the above mentioned characteristics are more remarkable in young women (Lee, 2009, P 87).

In another study Lee tries to identify the effective factors on young consumers green purchasing behavior. The findings indicate that the main factors are as followings: society impact, environmental importance, environmental preservation, and environmental responsibility (Lee, 2007, P 573).

Other researchers studied the degree of mutual trust or effective factors on intra organizational knowledge sharing in green supply chain; this research included 13 hypotheses, which was performed in Taiwan. Its findings showed that trust is an impacting factor in intra organizational knowledge sharing (Chung et al, 2008).

The abovementioned statistics and researches indicate that environmental issues and preserving environment is one of the most important criteria, which consumers consider it during their purchase. As a result these issues have caused the entrance of environmental issues to marketing concepts and this leads to the emergence of an approach known as green sustainable marketing. Then before discussing the concept of green marketing and its related issues and because of the fact that green marketing is the subset of social responsibility, first we discuss about foresight, then about social responsibility and finally we explain the concept of green marketing. (Moniri, 2011)

The concept of foresight

It is closest in meaning to policy. Policy means to study the consequences of works. The lexical meaning of foresight is to measure and acting accordingly.

Knowing how to deal with the future, with regard to changes' rapidity in the world, have increasingly become necessary. Undoubtedly, for making wise decisions about our life and business we must know that how our world in change and how future will be; the goal is not to predict future, but for making it better. We have a lot of opportunities for making our future better, and if we pay attention to the future, we will be able to prevent the occurrence of many difficulties (Richard, 1996).

Social responsibility

Some times in the past, regardless of the products' secondary effects and footprints, it was imagined that organizations and producers are only responsible against their employees and shareholders or they imagined thatthey must provide the best products with low price and high quality for the consumers. Intensive competitions, increasing of population, scarcity of resources, and environment pollution have caused the emergence of new approach in organization and management, which result in commitment and social responsibility. In fact, introducing this responsibility was an answer to environmental needs and challenges. (Moniri, 2011)

Granham and Cateora believe that supporting exterior environment is not an arbitrary choice but it is a major part of business process (Granham and Cateora, 2002). In taking social responsibility, company considers all aspects of consumers and even takes their environmental problems and long term welfare in to account. Stuart and Solomon define social responsibility as following: Methods of management according which organizations perform their activities in a way that have a positive effect on society and upgrading of public goods (Stuart and Solomon, 1997).

In fact, Stuart and Solomon's view was on the basis that requires elimination of the negative effects of organization on society. They tried to change consumers' attitude and behavior. Some scholars like Serto and Greif go beyond that and obligate organizations to improve society's welfare. Count Hutten and Mary Hutten believe that institution's inattention to its exterior beneficiaries causes some problems for its consumers (Amini, 2000).

Meanwhile, business moralitydetermines that companies must know the manner in which their benefits affect the others (Zikmund and Damico, 2001). Since social responsibility has an eminent effect on marketing mixes and reform them, considering it as merely environmental issues is simple-mindedness. Bovee and Thill consider classification, advertising, private sale, and services as the required usable tools in social responsibility, which marketer must identify the profit and welfare of the society with regard to potential element (Bovee and Thill, 1992).

Green marketing history

Management theory had primarily its origin in that part of economy and technical system, which concentrated on exchange, product, production and profit. Gradually, this field by taking impression from behavioral science, human resource, business morality and social marketing reach to more comprehensiveness, in a way that now we can say it is of human function. But sometimes we forget that businesses are faced with non-renewable environmental resources. Green marketing history is dated back to 1970 (Rex and Bowman, 2007).

Regardless of some supports in 1970s, an idea known as green marketing was emerged in 1980s. At that time consumers' focus of attention was on green products, then green marketing concept is introduced and many related researches especially in developing countries are performed(Peattie and Crane, 2005).

At the end of 1980s and beginning of 1990s the main focus of green marketing was on the size of green market and consumers' characteristics (Rex and Bauman, 2007).

Green marketing attributes

Some scholars try to include green marketing concept in the framework of social marketing definition. But green marketing has some attributes which clearly differentiate it from social marketing:

Emphasis on physical sustainability of marketing process and accepting its social responsibility;

Presenting a more comprehensive view and seeing the relationships among economy, society, and environment more interdependent;

Having a constant view instead of long term one;

Considering environment as a phenomenon, which is more valuable than its usefulness to the society;

Paying attention to global concerns instead of one especial society (Mulhern, 1992).

Green marketing

Unfortunately most people believe that green marketing is merely referred to promotion or propagation of products with environmental attributes. Most of consumers relate some words such as non-phosphate, recoverable, consistent with ozone layer to green marketing;while, these are some signs of green marketing. The beginning of green marketing activities must be accompanied with universal and group movement (Mater; 2000, P 199).

In recent years green movement or environmentalism have grown as an important process in United States. Green movement as an obvious social movement expands to different areas of life such as politics, consumption, technology, purchasing of product, market, production and resources (Mater; 2000, P 193). Most companies ask themselves, whether they can be green, clean, and profitable for ever (Polonsky and Rosenberg, 2001).

Nowadays the determinant environmental factors are public interest, great impressibility, and social welfare. Castenow (1993) in his book "New Marketing" describes the universal self-inclination as followings:

1. Having interest to cleanness of weather, soil and its resources;
2. Preserving and keeping environment from destruction;
3. Having a reasonable function in using natural resources with the emphasis on marketing (retrieve);
4. Economizing the use of non-renewable materials;
5. Having a progress in the use of wastages for producing new products;
6. Generalizing the familiarity with environment and having a healthy life (Castenow, 1993).

Definitions of green marketing

1. American marketing society (1976):

To study of positive and negative effects of marketing on pollution andreduction of energy and other resources; but this definition is not comprehensive and we must find more comprehensive definition.

2. Pried and Firel (1995)

Green marketing is referred to the improving of pricing, and promotion and distribution of products, which do not damage environment.

3. Petty ken (1995)

It is a consistent management process, which is responsible for identifying, predicting and satisfying of

society and consumers' needs in a profitable and sustainable manner(Petty, 1995).

4. Steffen Groove (1996)

Green marketing describes the environmental activities such as designing, promotion, pricing, and distribution of eco-friendly products (Groove, 1996).

5. Solomon and Stewart (1997)

It is a marketing strategy, which supports environment through the creation of recognizable benefits and based on what consumers expect (Solomon, 1997).

6. Polonsky and Charter (1999)

All in all green marketing is a very broad concept, which is applicable to consuming and industrial products and even to services (Polonsky and Charter, 1999).

7. Polonsky and Rosenberger (2001)

Green or environmental marketing involve all activities, which are designed for creating and facilitating exchanges to meet theneeds and wants of humans in a way that have minimum destructive effects on environment. Green marketing is a complicated tool and for attaining to a success or a long term benefit, engages the entire organization and its activities (Polonsky and Rosenberger, 2001).

8. Calin and Ranchhod (2005)

Green marketing is considered as an important trend in a developed trading. The demand for ecological products and sustainable business activities has different reasons such as increasing the level of consumers' knowledge about environmental issues and the intense national regulations, especially in industrial and developed countries (Calin and Ranchhod, 2005).

9. Rex and Bauman (2007)

Green marketing is a social process in which individuals and groups satisfy their needs and wants through the exchange of products and their values. This is done through anethical method, which minimizes the negative effects on environment (Rex and Bauman, 2007).

9. Lee (2008)

It is defined as marketing or product promotion on the basis of an environmental function or an improvement in it (Lee, 2008).

11. Paco and Raposo (2009)

Green marketing is managerial process, which has the responsibility to identify, predict and satisfy the needs of consumers and society by a profitable and sustainable method (Paco and Raposo, 2009).

Environmental activities are occasionally considered in all evaluative standards of a company. Most of companies employ traditional measuring tools (such as profit, ROI, market share etc.) for evaluating the success of green innovations. Although some companies go green for humanitarian reasons, some others perceive it as a strategic opportunity (Polonsky and Rosenberg; 2001, P22).

Although demand is unstable and market's standards and conditions differ from one company to another, green marketing has reached to its universal importance (Calin and Ranchhod; 2005, P 548).

Western studies show that environmental awareness of American and Western Europe consumers has been increasing during the last decade, and recently green consuming has also begun in Asian countries (Lee; 2009, P 87).

Barnet and Minery indicate that women are more inclined to environment than men, in a way that they purchase more green products and contribute more to separating retrievable packages; but they did not find a remarkable distinction between the two genders (Paco and Raposo; 2009, P 367).

Conclusion

With regard tothe expansion of environmental pollution, reduction of natural resources and ever-increasing threats to life quality of people,the necessity to consider environmental issues has notreachto its importance. At the present research we study the importance of paying attention to the future with green marketing approach and analyze the importance considering life quality in the future. The results of this research indicate that markets are function within the ecosystem. Although paying attention to the future with green marketing approach seems to be certain, but due to the conducted researches this concept is ignored in most of managerial decision-making. Markets (i.e. those who involved in selling, purchasing and consumption) must regard the environment as a stable entity for long successive years. Since we face with the ever-increasing scarcity of resources in the future, therefore we must consider the environmental priorities and the consequences of marketing activities. Beside consumers and governments, different companies must also understand green marketing. Companies need to understand green marketing for preserving themselves and their brands. Companies with sever dependency on rare human capital and those with dependency on natural resources, for assuring the safe use of their property, follow subjects related to future especially to green marketing. Hence, marketers and productive companies must consider some factors like energy consumption; the quality of water, earth, and air; biodiversity; andthe manner in which consumption effects the production of greenhouse gases.

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Studying the Importance of Green Industry Formation for Decreasing Environmental Pollution

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Abstract: Nowadays, it is believed that we must establish our industrial plans based on our evaluation of their environmental impacts, in a way that we can predict the environmental consequences and the manner in which these schemes can damage the environment. In developing countries, the environmental impacts of the industry have less been regarded, because it is assumed that these industries are of less footprints due to their small scales; but it is noteworthy that although the small-scaled industries are not of meaningful impacts on environment at national or international levels, but their local and regional consequences are high. At the present paper, we try to present some solutions for exiting from the environmental crisis of the industry.

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Key words: industry, environment, environmental pollution, green marketing

Introduction

Last decades of the 20th century can be regarded as the emerging periods of many environmental issues; nowadays, the great risk which is felt due to environmental problems not only disturbs the safety and calmness of human life but also endangers his existence.Therefore, alongside other problems which human face with, the danger of environmental balance turbulence is one of main issues of human beingsif it is not the most important one.

Environmental pollution of the modern world is a universal issue, which covers different issues such as air pollution, global warming, rising sea levels, endangering plant and animal diversity, attenuation of ozone layer, destruction of jungles, acid rains, sound pollution, nuclear experiments and etc., all of which are the results of human actions. Although human impacts on environment dates back to life on earth, but following industrial revolution and rapid growth of population, the destruction of environment has severely increased; and the development in science and technology have made human beings to subdue environment and gradually but continuously lead it to destruction. Scientific researches indicate that different parts of environment including seas, rivers, air, soil, animals, plants and etc. are related to each other and due to this relationship any pollution can disturb the balance between the aforesaid elements, which causes the emergence of severe crises in the environment (Firouzi, 2005, P 10). For upgrading life quality and welfare of its nation every country depends on its industrial development. On the other hand the healthiness of mankind is in direct relationship with the cleanliness of their environment (from the air they breathe and water they drink to the soil from which they take their crops) (Karbasi et al, 1997).

Industries are among the main producers of environmental problems and there is a direct relationship between the energy consumed in the industry and environmental issues; that is, non-optimal consumption of fossil fuels and unsuitable use of raw material will lead to the increase in energy loss (Shafizade, 2010). Developing countries are in the process of industrialization, which means that environmental consequences will be increased. Environmental pollution has become a serious problem in all over the world, especially in developing countries, which are faced with an environmental crisis. Environmental crisis have affected billionsof people across the world and shorten the duration of their lives and have a detrimental effect on children's growth. World Health Organization estimates that 25 percent of total mortalities in the developing countries are in direct relationship with the problems caused by air pollution and its consequences; environmental crisis is due to the increase in regional and industrial activities, and growth of urban population. Among developing countries India is a country with critical air pollution challenges (central institute for Controlling Environmental Pollution in India, 2009-2010). The main reason for this problem is the regional concentration of industries, especially industrial clusters; in a research by central institute for Controlling Environmental Pollution in India (2009), after determining the main regions, which

generate the aforesaid problems, they were classified according to the degree of their pollution; the results show that industrial clusters are of bad effects on environment, in a way that in the comprehensive list of CEPI for air pollution they obtain the average scores of 7/0 and higher than 7/0, which is considered as a serious threat for the environment in the said list (central institute for Controlling Environmental Pollution in India, 2010).

Definition of environment

Environment include air, water, soil, plant,forest, pasture, sea, lake, river, spring, aquatics, animals, mountain, plain, desert, village or city (including alley, street, building, factory, …) and etc. (Gholamali Banan P 5).

Environment pollution

Definition of pollution

Article 9 of environment conservation and reformation approved in 1974 present the following definition for the environment pollution:

"By environment pollution we mean diffusion or mixing of external substances to water, air, soil or earth to an extent that changes their physical, chemical or biological qualities, which is harmful for mankind, animals, and plants."

The evolution of environmental strategiesinthe industry

The development of environment conservation strategies in the industry indicate that environmental approaches are improving and this is related to the expansion of the concept of development. In this developing direction, there are different industrial strategies, which include:

1. Ignoring the problem:

Before 1960s, environmental issues were ignored in industrial approaches; and it can be said that this is because of the lack of any especial approach at that time. Therefore, different wastages (such as wastewater, pollutant gases, and solid wastes) were entered directly to the environment.

2. Dilution:

From 1960s, the tendency toward environmental issues has started in the industry as a movement.But it is clear that environmental considerations are something new in these strategies. The 1060s strategyis known as dilution. In this approach the ratio of raw materials (inputs) is meaningfully higher than the ratio of products (outputs). The said difference was entered to the environment in the form of pollutants. This strategy is implemented according to the supposition, which indicate that dilution of wastes and pollutants will decrease environmental problems. At this stage, employing environmental technology was started with building long smokestacks and adding high amount of water to decease the relative density of Poisonous substances. Although these measures require less costs, but ecologically they are harmful.

3. Controlling pollution in the final line

In 1970s, with the increase of people's knowledge and awareness about environmental processes and their destruction and also with the expansion in the concept of development, the control technology strategy in the finishing line of the production is emerged. Still, the ratio of raw material (input) was remarkably higher than the products (outputs).In this strategy we use controlling techniques to prevent harmful substances from entering to the environment. The use of catalyzing transformers and store tanks are among the techniques used in the finishing line. The techniques used at the end of product line, always require extra money and resources. Moreover, it is they are susceptible to destruction. Generally, the techniques used at the end of product line, instead of making ecological improvement in technical productivity of the resources, make it worse. For example, the detrimental and dangerous substances are trapped in the filters, which must be removed. That is, the pollution is not removed but it is turned to other forms. For example it turns into pollutions with low volume but high density (sludge). But with regard to preventing the emission of pollutant gases to environment, some of the techniques used at the end of the product line are very effective; hence in the areas with high population the use of such methods are inevitable.

4. Recycling:

In 1980s, there was another development in environmental approach, which is called recycling. The main idea in this approach is that the thing that is not entered into environment will not damage it. Also it is believed that by utilizing secondary substances instead of utilizing first hand natural resources, we will reduce the economical inputs too. This approach has reached to great success in some fields like glass, paper, and aluminum. But few percent of the resources has recycled in the production cycle. In addition, for construction and utilization of the required equipment, we need more energy and resources.

5. Pollution Prevention

From 1989 there emerged some approaches, which are called pollution prevention. The strategiesof this approach is to prevent production of pollution (Mardan, 2007).

Environmental activities of Iran's department of mine and industry

Directive and supportive structures

With codifying strategies needed to achieve sustainable development in this area and for optimal using of relative advantages, the department for mine and industry provide the section of comprehensive planstudies for economical development of the country

in the framework of sustainable development. The main environmental purposes of these plans, is to identify new methods ofemploying raw material and mineral reservesaccording to environmental considerations; this is in line with identifying technological basis and continuation of the rapid growth of industrial and mineral activities in conjunction with preserving environmental capitals; moreover it is due to promoting technical knowledge, proficiency and innovation in the field of environmental management and engineering for upgrading technology level; it is also in line with modern technologies for developing self-reliance in designing and manufacturing of the foresaid engineering services and equipment and finally for achieving to a suitable environmental position simultaneously with mineral and industrial expansion.

Engineering activities with reliance on controlling pollution

For observing rules and meeting the defined standards, the industry owners and managers have used to refine pollutants at the final point before discharging it to the environment.If every company is supposed to be capable of refining its pollutants economically and technologically, in this case the only things that these companies will do is to change pollutants from one form to another and to transfer it from one receiving tank to another one; it is not useful economically and not considered a finishing task environmentally. Due to some factors like the diversity of industries in Iran (such as food, chemical, metal and textile industries) and the remarkable differences in the quality of their produced pollutants;and the lack of suitable environmental studies for establishing refinery units, installing equipment for controlling air pollution, and establishing a system for managing solid industrial wastes, require some comprehensive measures, which are in planning and execution stages; among these measures we can name the environmental measures of industrial towns and the establishment of environment bureau in Iranian Industrial townsin 1998. From the said time on, this office have conducted the required studies for collecting and refining wastewater from the industries located in these towns;the result is the establishment and exploitation of more than 38 networks for collecting industrial wastewater, planning and starting the operation for establishing a network to collect wastewater from other 27 industrial towns, starting the operation to design and constructrefineries for industrial wastewater treatment in 32 industrial towns, and also creating a system for managing green spaces in 15 industrial towns. On the other hand due to the importance of climate change and its related damages, it is necessary to consider this issue seriously in national, regional and universal levels.At national level we taken the primary steps with the general orientation toward decreasing the emission of greenhouse gases through improving the structure of fuel, and consuming clean and renewable fuels;and increasing energy efficiency in industrial units through supporting the implementationprojects related to the optimization of fuel and energy consumption and the necessity to employ label of energy consumption.

Managerial activities with reliance on pollution prevention

Following unsuitable response to the environmental issues, there introduce mere technical solutions and techno-managerial methods in Iran and across the world, among which we can name the following:

Environment management system (ISO 14001)

This system, through applying suitable management, helps organizations to identify the environmental consequences of their activities and continuously improve the environmental aspect of their tasks. This system deals with subjects such as resource allocation, liability sharing, implementation of environmental plans, and finally regular evaluation of processes and methods. Activities like identifying pollution-generating spots in the process and presenting some solutions for removing them according to some definite schedules, implementing the plan, evaluating the implemented measures, reviewing and making a correction in the direction of this standard's requirements are related to the environmental issues. This system is applicable to the organizations, which tend to:

a) Implement, maintain, and improve an environment management system

b) Make sure from the its conformity with environmental policy

c) Prove this conformity to others

d) Ask for license and register its environment management by an external organization

e) Make conformity with this standard and its statement by the organizationitself

Although observing these standards can be according to self-statement, but due to different reasons such as customers' tendency or commitment, remaining in the competitive markets, increasing their extent of function, or for assuring local organizations in charge of environment, most of industries try to acquire license from reliable companies (Green Identity Card, 2003, PP 130-135).

Green productivity and cleaner production

These two universal and strategic methods are for creating the required changes in the existing technology and industry for building a society on the basis of sustainable development. These methods focus on the optimal efficiency in energy consumption, water and raw material in the processes, methods and production of the required products; on the other hand the emphasis

is oncomprehensive management of decreasing wastes and their auditing from the beginning of the production to its end and also on employing methods of production, which impose less pollution to the environment.
Cleaner production approach, as the first tool for accessing to sustainable development is predicted in 21st program; its emphasis is mainly on implementing this scheme in the existing productive units to identify environmental problems in the production line and try to reduce them and reach to a cleaner production line. More than 13 centers for promotion of cleaner production culture have been established hitherto throughout the world. Iranian Mine and Industry section has also focused on these two approaches and covers different projects in this area (Green Identity Card, 2003, PP 130- 135).

Activities with reliance on producing environmentally friend products

In achieving to environmentally friend products, some measures have taken by legislative sections, which leads to the following activities:
Different approaches for preventing industries from environmental Pollutions (Mardan, 2005)
Prevention approaches have different names among which we can name the followings:

Green productivity
Pollution prevention
Minimizing wastes
Environmental planning
Clean production and cleaner production

There are no meaningful differences between these names, but their difference is mainly due to the degree of their emphasis on environment and industry.

Conclusion

There 4 basic tools, which can identify the opportunities in the industries for saving energy consumption and reducing environmental pollution; they are:

Auditing waste decrease
Auditing the destructive effects of industry on environment:

With this auditing the destructive and heterogeneous effects are identified by means of environmental codes, and this paves the way for future standards.

Identifying the useful life time of the product:

With this tool we can identify the environmental effects of production from extracting raw material to final wastage and introduce economical strategies for minimizing the wastage.

Identifying the environmental impacts:

It identifies the executive effects of industrial projects on environment and suggests some suitable solutions for preventing them.
The time and benefits of utilizing these tools (when we must use them and what benefits they will have)

Auditing waste decrease

It is when the industry tries to decrease the use of raw material, input energy and production wastes; and the benefit is in its financial saving.

Auditing the destructive effects of industry on environment:

It is when the industry has to define environmental measures on the basis of the current rules and standards. This increases the overall level of awareness in the employees in different areas.

Identifying the useful life time of the product:

It is when a new factory is built or where old technologies or products replaced by new ones;this leads to defining economically effective methods, which prevents pollution or decrease it.

Identifying the environmental impacts:

It is when a new factory is built or the existing factory changes permanently; in this case instead of spending heavy costs for controlling pollution, low-cost preventive methods is presented.
Executive measures for removing limitations:
For removing the aforementioned limitations, it is necessary to predict some preventive measures in each section; these measures can be defined for three different sections of industry, government, and international organizations.
Industry:

The required measurement for preventing pollution
Persuadingand informing employees in all levels about environment and energy.
Codifying and executing a suitable method in production line in line with the aforementioned goals
Expanding the utilization of environmentally friend technologies

Government:

Revising policies and rules related to environment and energy
Using more effective methods for controlling rules and disciplines
Persuading government to use these technologies through research and training

International organizations:

Activating financial resources for supporting the said projects

Persuading the transmission of cleaner production technologies

Encouraging organizations to environmentally friend trading, marketing, and processes.

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Comparison of soft contact lens and rigid gas permeable lens fitting after laser in situ keratomileusis (LASIK)

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Abstract: Despite the accuracy of laser in situ keratomileusis (LASIK), a portion of patients will remain partially under-corrected or over-corrected following the surgery. For these patients, contact lenses maybe the best conservative option for visual rehabilitation and sustainability of minimum level of the binocular vision post operation. Due to the fact that cornea contour has been changed after Lasik surgery, fitting lenses on these corneas can be one of the most difficult challenges in the art of contact lens fitting. In general, patients with minor regular astigmatism may be fitted successfully with spherical or toric soft contact lenses. Patients with corneal irregularities should be fitted with rigid gas permeable lenses of traditional 3 or 4 curves or special designs such as keratoconus lens or reverse geometry lens. [John Ching-Jen Hsiao, An-Chi Hung. **Comparison of soft contact lens and rigid gas permeable lens fitting after laser in situ keratomileusis (LASIK).** *Life Sci J*. 2012, 9(4):5662-5665] (ISSN:1097-8135). http://www.lifesciencesite.com.843

Keywords: Keratoconus, Irregular astigmatism, Contact lens care

1. Introduction

Residual ametropia and irregular astigmatism are the 2 major complications associated with photorefractive surgery such as laser in situ keratomileusis (Lasik). Contact lens in these cases can provide a good chance to improve the patients' visual acuity and binocular vision. The prevailing notion has been that soft contact lenses conform to corneal surface irregularities and have a limited role for managing LASIK-induced irregular astigmatism.[1] For that reason, in the case of low residual spherical refractive error following Lasik, conventional soft contact lens including disposable lens can be fitted and likely to give a good level of acuity. Where there is a moderate amount of astigmatism of greater than 1.00 D, toric soft contact lens would be the choice of treatment. In the case of high astigmatism or the presence of irregular astigmatism such as post Lasik ectasia, rigid gas permeable lens may be the only option since it is able to create a spherical anterior refractive surface over the ectatic cornea by allowing the tear to fill the gap between the irregular corneal surfaces, hereby reduces the majority of the irregular astigmatism. To fit rigid gas permeable lenses post Lasik surgery, there are a number of different designs to choose from, and they include traditional 3 or 4 curves, keratoconus lens, scleral lens, reverse geometry lens…etc. All these depend on the architecture and contour of post Lasik cornea, amount of uncorrected refractive errorincluding astigmatism and the vision demand of the patients. In this paper, we will concentrate mainly on contact lens fitting post-Lasik.

2. Material and Methods

The following examinations were performed: Visual acuity with and without correction, manifest refraction, keratometry, corneal topography, complete slitlamp biomicroscopy examination and many trail rigid lens fittings with fluorescein dye.

Visual acuity was assessed for each eye with Snellen vision test chart viewed at 3 meter with mirror reflection set up. Corneal topography was performed using Dicon topographer (Paradigm Medical, USA) and keatometry reading using Topcon keartometer. Contact lenses used were traditional 4 curves rigid gas permeable lenses (Boston EO material) and toric soft contact lens of medium water content of 42%.

3. Results and Discussion

In patient post Lasik surgery, fitting contact lens on the altered corneal architecture can be very complex and challenging. In comparing to fitting contact lens on normal cornea, fitting lens on post Lasik patient, clinician would require special diagnostic trial lenses, extensive knowledge and experience in contact lens fitting and a lot more chair time. Here we list and discuss some of the clinical facts and contact lens fitting tips for cornea of post Lasik patients.

Soft spherical contact lens: In the case of residual spherical uncorrected refractive error, either myopic or hyperopic, with relatively flat central corneal surface, can be fitted with conventional soft contact lens in the normal way. This usually will give fairly good level of acuity especially in the case of low refractive power. However, the result can be affected by the design of the lens itself. For example, the center thickness and stiffness of the lens will decide if the lens will conform on the patient's altered shaped cornea. If the lens is very thick or stiff, then the lens might resist to deform and to conform tightly to the cornea, hence inducing positive tear meniscus created under the lens. In addition, the edge design of the lens is important in achieving the proper fit and adequate movement of lens on the cornea. Since the edge design of the soft lens varies one company form another, one should trial fit different brands of the soft lenses until the most suitable one is found. To choose the starting trial lens, we usually would pick a BOZR of approximately 0.3 mm flatter than the flattest keratometry reading or topographic power values if available.

Soft toric contact lens: Just like fitting normal cornea, where there is astigmatism greater than 0.75 or 1.00 D, soft toric contact lens may be required. With the different contour of corneal surface following Lasik surgery, the toric lens' axis stability or rotation would most likely to be quite unpredictable especially in case of higher degrees of astigmatism. Empirical fitting is however not recommended because of the atypical rotation on oblate corneas post-refractive surgery compared with normal, prolate corneas.[1] Therefore, the trial fitting may be the only way in determining the final cylinder axis.

Rigid gas permeable lens: Where there is presence of irregular astigmatism or significant amount of regular astigmatism, rigid lenses may be preferable. However, the fitting of rigid lens on post Lasik cornea can be quite challenging. In a myopic patient following Lasik surgery, the central area of cornea will become flatter and the peripheral area will become steeper, and the difference of the curvatures of 2 areas will increase as the amount of ablation increases. This result in unstable optics, unacceptable central pooling and trapped bubbles when the rigid lens is fitted in alignment with the peripheral cornea.[2] Nevertheless, rigid lenses are fitted in the normal way. The goal is to achieve good lens centration, complete coverage of pupil with the optical zone, proper lens movement post blinking, adequate edge lift and acceptable minor central pooling. The keratometry readings can be used as the guide for choosing initial trial lens base curve, but the final parameter and lens modification of lens design must be based on trial lens fitting with fluorescein dye.

Reverse geometry lenses: Reverse geometry lenses (RGLs) are indicated where there is a significant difference between the flat central ablated zone and the relatively steeper peripheral cornea.[3, 4,5] This would likely to happen when the preoperative refractive error was in the range of high myopic.

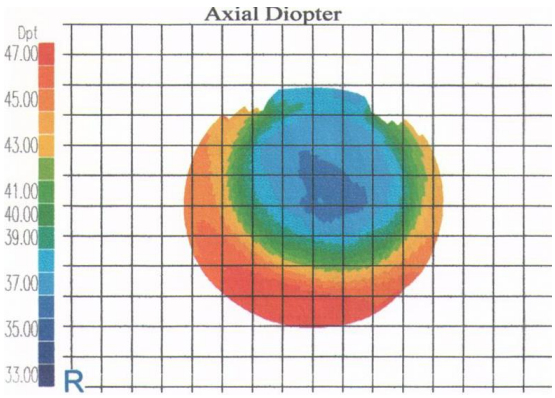

Fig. 1. Topography of OD, 1 year post Lasik.

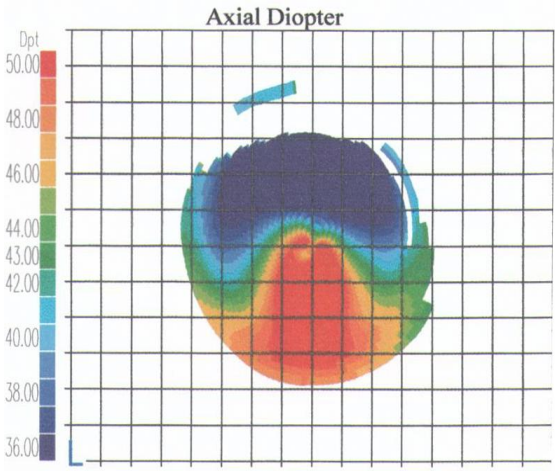

Fig. 2. Topography of OS, 1 year post Lasik, showing ectasia at inferior area.

Keratoconus lens: Where is presence of moderate or severe post Lasik ectasia. Keratoectasia is a rare but well-known complication after laser-assisted in situkeratomileusis (LASIK). By definition, ectasia is defined as inferior topographic steepening of 5 diopters (D) or more compared with the immediate postoperative appearance, loss of 2 or more Snellen lines of uncorrected visual acuity, and a change in manifest refraction of 2 or more diopters in either sphere or cylinder.[6]Although rare, patients with

this condition can have high and irregular astigmatism. The classic clinical sign of the condition is a progressive steepening and thinning of the cornea after excimer laser refractive surgery that reduces both uncorrected visual acuity and corrected visual acuity with spectacle. Management of postoperative ectasia with specialized contact lens such as keratoconus lens remains the main course of treatment for patients who do not wish to go through other surgical options or corneal transplantation. Clinically, the fit of the contact lens was assessed on a slit lamp with the use of a fluorescein dye, and the contact lens fit was judged to be good if there was apicalclearance or mild apical touch, good centration, and adequate edge lift (3 point touch method).

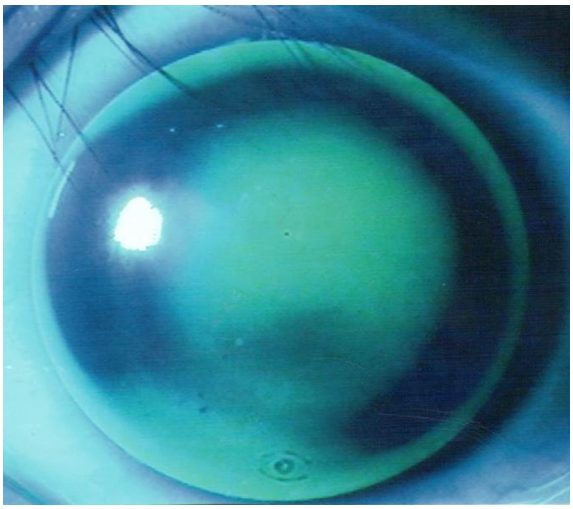

Fig. 3. Traditional 4 curves design of rigid lens fitted on a cornea with post Lasik ectasia.

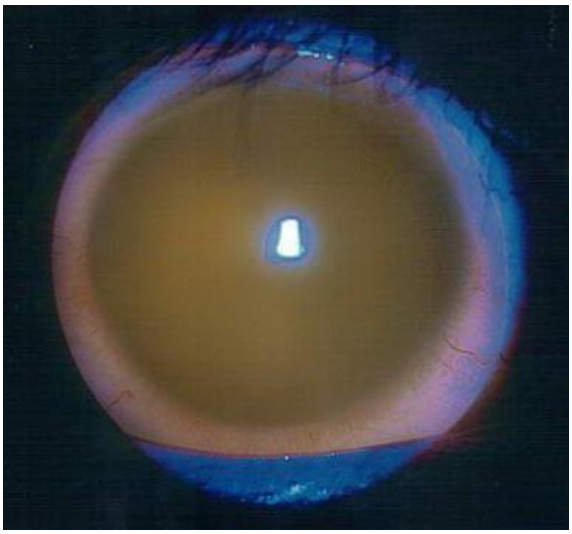

Fig. 4. Soft toric contact lens fitted on a post Lasik cornea, using large molecule fluorescein dye.

We report the course and the management of a patient with typical post Lasik ectasia developed in her left eye. A 42 year old Asian female with unremarkable health condition had a Lasik refractive surgery done to her both eyes 1 year ago. The test result showed the unaided acuities were 20/40 OD and 20/200 OS; keratometric values were37.00@161/ 38.25@071 in the right eye and 43.00@005/ 45.75@095 in the left eye; the manifest refraction were +1.75-1.25 x055 20/25+ in the right eye, and +1.25-2.25 x 138 20/60- in the left eye. Corneal topographies were taken (Fig. 1 and 2) and confirmed corneal ectasia for her left eye. Due to difficulty in getting used to rigid lens wear in the patient's both eyes, we fitted OD with a traditional soft toric contact lens of water content of 42% and OS with a traditional 4 curves rigid gas permeable lens with minor adjustment at the edge lift. The designs of the lenses were as follows:

OD: +0.50-0.75*070/8.6/14.2 Soft toric contact lens (water content 42%).

OS: 7.70-/-4.75/9.8 pc-0.1mm in radius rigid gas permeable lens (Fig. 3).

These lenses gave the patient the visual acuities of OD 20/25+ and OS 20/25-. The reason why the prescription of OD soft contact lens given to the patient is a lot more myopic in comparing to that of the manifest refraction error is because the positive tear meniscus created under the lens. This can be easily seen with accumulation of fluorescein at the center below the lens in our photography (Fig. 4). Despite one eye was fitted with soft and another eye with rigid lens, patient was pleased with corrected visual acuity and comfort achieved by these contact lenses.

4. Conclusion

Contact lens fitting following Lasik surgery can be very challenging and require lots of professional chair time and trail lenses of different designs. One can use topography map and keratometry readings as the initial guide to decide what kind of lens designs to be used. In addition, there are several parameters of lens design one can play with when fitting difficult cornea like post Lasik, and these include lens diameter, lens thickness, edge lift and curvatures of center and peripheral curves. In most cases, if the visual acuity with the spectacle prescription is good, then soft contact lenses should always be tried first because of its easier fitting and superior comfort.

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The effect of the water level decline on the ground waters quality in Ardabil plain

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Abstract: Today, the most part water consumptions of Ardabil plain and the remote villages (which haven't tap water) are supplied from sections of agriculture, drinking and industry. This research objective is the study of water level declines effect on the ground waters quality in Ardabil plain. According to the conducted studies, It has about 11 meters decline which has been encountered with tank loss in about cubic meters seriously. Therefore, Ardabil plain ground waters quality studied with use of 44 wells chemical analysis results . In this research, the most emphasis was on the parameters such as electrical conductivity ability, sodium (Na) absorption ratio, Total solid solutions, hardness and also ca^{+2}, Mg^{+2}, Na^{+}, Hco_3^{-}, CL, $SO4^{2-}$, ions.With considering of the decline level effect in the ground waters that Ardabil plains ground waters quality from drinking uses is medium to good level and from irrigation point of view is in desirable level according to wilcox classification .

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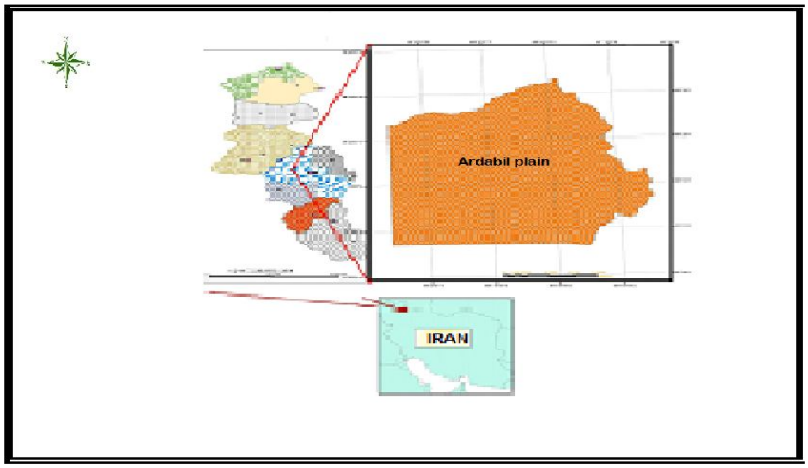
key words: Ground waters, Decline, Ardabil plain, Quality

Introduction

According to the geographical position of Iron and its placing in arid and semi-arid zone of the world, studies of the water resources have importance and priority not only for availability to full qualitative and quantitative information of the resources for desirable uses but also, for other factors such as the role of ground water resources in adjustment of floods and base flow, the excretion of urban and industrial drainage to the ground water resources in the most parts of country, the decrease of good quality of drinking water in cities and villages and the aquifers role in lands drain, case studies of the surface and ground waters are inevitable. There is a flat and fertile mid-mountain plain with 990 km width at the end of eastern side of Azerbaijan's volcanic plateau and the distance between heights of Baghrvdagh at the east, Anbaran at the north , Sabalan of Bozgoosh at the west and south between 38° 5′ to 38° 28′ north latitude and 48° 10′ to 48° 47′ eastern longitude which is placed the third city with most population in the name of Azerbaijan and capital or centre of Ardabil province at its western side. It is Ardabil province that for superior position from long times was as population centre and had determinative role in a short time of the country history and it, in turn, has created unique capabilities for this region. The mentioned heights collection, their connection and tension give special geographical independence to this plain and also has shaped it as a close pit that only it is opened toward western north i.e Meshginshahr and Mogan plain. The approximate length, width and medium height of this plain are 40, 25, 1350 km respectively in Ardabil city. The area of this plain with oval shape is about 900 km^2. It is found right relation from east with Gilan province through Gardaneh Heran and from west with Azarbaijanshargi through Balikhlochai valley and Gardaneh Saien. It has been in consideration for having ground aquifer. During recent half century, it has been the most important resource for supplying of the urban and rural agriculture, industrial and drinking water. Before two recent decades, the number of deep and semi-deep wells were limited in this plain and for this reason, ingathering or utilizing from ground aquifer of Ardabil plain and population growth in the mentioned regions has been increased the obtained water of aquifer for different uses (the half detailed studies of Ardabil water office, 2009). The great decrease in ground water resources due to use of indesirable method during past years and considerable well numbers in Ardabil plain take us toward attempt. The objective of the persent research is the study of decline and decrease effect of ground water level on the ground waters quality, salinity and alkalinity of wells water in this region .



Map No. 1: Geographical position Ardabil plain's in northwestern Iran and eastern side of the plateau Azerbaijan.

The evolution of tectonic and geology of Ardabil plain's

According to geology plans information of Ardabil plains region and its surrounding areas , it was as a part of Iran palaeozoic platform during the first Era out of water. This condition in the second Era continued till triassic (period). In jurassic (period), the present limits of Anbarans anticline goes to under water which its result has been detrital and seashore depositions shemshak formation (calcareous sandstons and sandy limeston). They are placed on old sediments as discordant. Probably, this discordance is as a result of equivalent event of the former kimmerian (khodabandeh and Amini-Fazl,1997). Following of the equal pressure phase performance with posterior kimmerian, this sedimentary basin comes to up level at the end of Jurassic (period). During the upper Cretaceous (period), two different sedimentary basins are shaped or formed in the region one of them is Astara west basin which is indicative of detrital sediments in a row along with volcanic activity and the other is Namins west basin which is including the sediments often carbonate type and along with less volcanic activity.(Babakhani and Rahimzadeh,1988). During the third Era, the most part of this region is placed under the seas of the Era. But, sea depth is decreased from east o west with time. The oldest depositions of this Era are detrital type as pyroclastic depositions of Eocene about 2000 metres. After shaping of the edge heights of plain due to internal force performance, deep faults are created which formed the eastern slope of Baghrodaghs heights. Also, there are several linear structures in the west direction of plains that we can point to probable fault of Balikhlochai along Balikhlo river. With the appearance of Neogens sedimentary basin in the western south corner of the region, the detrition materials obtained from erosion of the surrounding heights were deposited in it(Babakhani & Rahimzadeh,1988) which increased folding of Miocene depositions and are formed the folds with south -north direction in it. Also, in some cases with the effect of faults performance are formed wells in them that Shorabil lake is its specific sample in the studied limits. So, following of these motions, the present physical figure of Ardabil plain and its near regions are shaped. A close basin has been created with ending of the volcanic activities from palaeogene (period) which is made due to tectonic activities in the pitted regions which its sediments often are mareni-sandstone along with volcanic regions, layers and mid - layers of chalk .Quaternary sediments are including basin alluviums, Ardabil plain deposition , alluvial terraces (on a slope) and porous calcareous rocks which are made in fresh water of the lake. Also, there are some of the volcanic stones of Sabalan at the west part of Ardabil plain which are including Conglomeral, lahar and volcanic ashes.

Ground water resources of Ardabil plain

Often, Ardabil plains ground water resources are hidden waters between alluvial sediments such as Qt_2 , Qt_1 which form the productive or rich aquifer of the region. Placing of heights such as a circle around the studies range from one side and the existence at alluvial plain as the lowest topography surface at the centre from other side are caused that general placing process of flood ways, ground water canals and rivers be from the heights to centre and north and then to the external side. Of course, increase in the number and amount of the resources discharge show irretrievable stress and tank loss applying during the recent years. Since, the most parts of the ground water in the studied region are supplied through wells, canals and springs. The most use of water resources has caused to ground water level decline and the consequences such as subsidence of ground level and qualitative decline in the region(table1). Also, the unite of geology with different and various lithology are in contact with each other due to the main

faults performance placed at heights and their resulting branch and it is not able to saving of water in the permeable unite with additional potential .

Total yearly discharge	Number all **Resource** water	canals		spring		well		water Resource
		discharge	number	discharge	number	discharge	number	year
284/42	4106	4/20	106	45/2	536	235/02	3464	1380
364/66	2712	1/89	32	3/75	49	341/02	2631	1387

Table (1) : Statistics of the ground waters during (2001- 2008), in Ardebil plain basin.

Hydrography of the plain's unit

In order to studying of the changes in ground water level of Ardabil plain was analyzed the height of water level in about 44 observable wells which monthly changes of ground water level in 44 wells have been drawned during October (1972) to September (2006) in the aquatic 30 years period. It is mentioned that according to the greatest amount of discharge component to supply, seasonal changes aren't observable in the ground waters level within studied wells (figure1).Using hydrography of Ardabil plain with downward movement during 30 years period (from October,1972 to September 2006), the average of yearly decline in the ground water movement level is equal with 1/7 metres. the downward movement or decreasing process of Ardabil plain hydrography wasn't as straight line and has the seasonal changes in ground water level. Almost, according to the downward movement of single hydrography under ground water level of the plain in October month (1972) was equal with 1336/51 meters which is with 9/76 meters decrease, so, it has reached to 1326/75 meters in September month (2006). Therefore, with considering of 5% coefficient and tysn area about 900 Km^2, tank volume changes measured about 540 Mm^2 (half detailed studies of Ardabil water office, 2009).

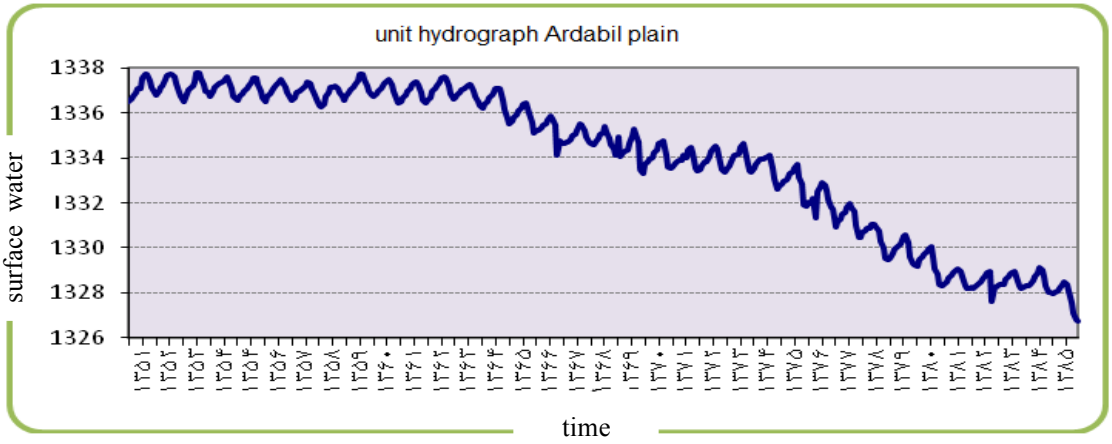


Figure 1 : unit thirty years hydrograph water table Ardabil plain **.**

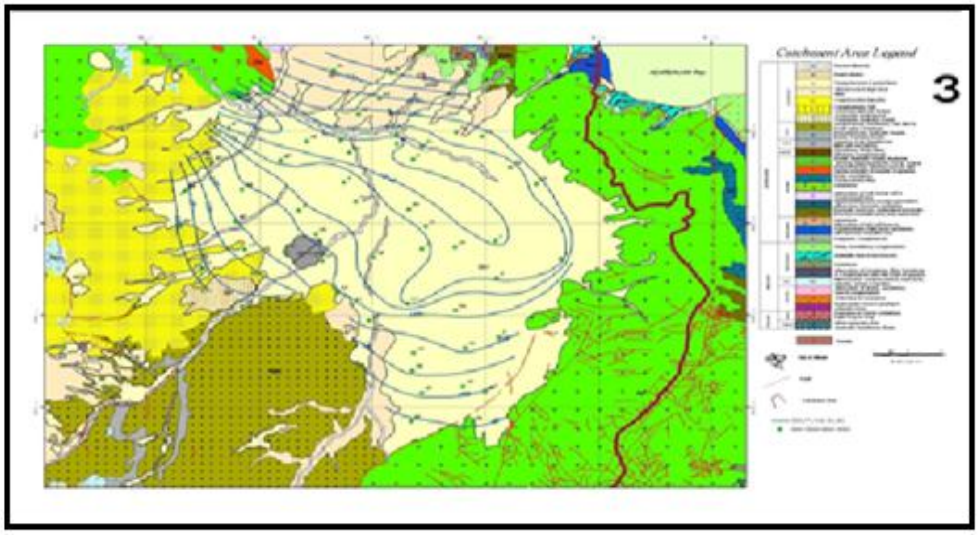
Ground waters qualitative studies

In order to the qualitative studies of Ardabil plains ground water, first of all, from about 44 wells with suitable intervals which are shown in figure (2) conducted sampling method. In table (2), analyzing results as sample from wells water have been shown which performed in June (2008) the parameters such as T, EC, PH were measured in place and after transfering of the samples to Lab, the ions $HCO3^-$, CL^-, Ca^{2+}, Mg^{2+}, to titration method, Na^+, K^+ ions with flame photometer and $SO4^{2-}$ with Turbid meter were determined. With statistical studying which performed over the chemical variables with the mentioned results in table (3). PH average of water is about 7/4 and it is

in the limits of the neutral waters. From acidity point, PH in the drinking water should not be less than 6/5 or more than 9/2. PH range or limit in 7 to 8/5 is desirable for drinking water (Alizadeh, 1999). Bicarbonate ion among anions has the greatest value about 5/1 M EQ /L^{-1} sodium (Na) and potassium (k) among cations show the greatest value about 6/9 M EQ /L^{-1}. Also, the salinity amount is introducer of the ground waters with 1200 MS/cm according to electric conduction .Which shows the remained day amount about 616 mg/l. Studying of the ground waters chemical compounds have near relation with dissolution of materials in the ground water. there are chloride sodium in 100 samples and calcium bicarbonate in 30% of samples. Also, total stiffness of the ground waters between 105 - 1175 mg/L in terms of calcium carbonate is changeable. According to total stiffness allowed limit is 500 mg/L.In practical, the waters with stiffness more than 200 arent desirable (Alizadeh,1999 & Todd David keith, 2005). There are all types and facies in the ground waters region with considering of the performed studies, but, bicarbonate type with sodic facies are included the greatest number about 60% the rest of type and fascies are sodic sulfate, manzic bicarbonate, calsic bicarbonate and choloro sodic, respectively.

Average	min	max	Variable
7.4	5.32	8.28	PH
5.1	2.1	11.3	Hco_3^- (me/l)
4.1	0.1	22	$SO4^{2-}$ (me/l)
3.5	0.3	15.5	CL^- (me/l)
3	0.6	10.4	Ca++ (me/l)
2.3	0.6	13.1	Mg^{++} (me/l)
6.9	0.6	20.2	$Na^+ + k^+$
1200	256	4390	EC
616	129	2 200	TDS (me/l)

Table 3 : Average and range of chemical variables



Map No. 2: Location of sampling points for chemical analysis (Babazade,1387)

Study of the ground waters quality from agriculture and drinking point of view

The existence of sodium and ground waters salinity risk (sodium absorption ratio and electric conduction ability) studied for evaluating of the waters from agriculture point of view which has the main role in the agriculture soils context changing, early fading and interruption in the plants growth (sedagat,1352). Their typical chemical analysis results were divided based on wilcoxs diagram from irrigation ability(figure2). According to the diagram about 29/1 % , 37/5 % , 25 % , 4/2 % of samples belong to S1C2, S1C3, S2C3, S2C4 and s3c3 classes respectively(Babazadeh, 2007). Generally, Ardabil ground waters haven't any limitation from agriculture point in a small area of the north - east part of this plain. But, it is medium in the half - east part and a small area of the western slopes and it is undesirable in the southern slopes which to middle - wards of the plain becomes good and in medium level. In order to studying of the waters from drinking uses, the typical chemical analysis results of the waters transfered on sholer Berkalf diagram (figure 3). In this diagram, the ground waters were distinguished to six classes or groups including good, acceptable, medium, unsuitable, full undesirable and not drinking which the ground waters of the half- east and half west of the plain are in the good level from the drinking capability and also their wrest situation were seen in the southern slopes. The rest points except for a limit region in the central part of the plain have desirable waters .

Conclusion and suggestions:

According to statistical researches of the water resources (2008), discharge volume through 2631 used wells (about 1579 deep well and 1052 half deep) is about 221/02 million meter cubic . In the following of the resulting volume from the water resources, there is constant decline in the ground water level instead of the seasonal supplied due to precipitations, flood flow and also returning of the agriculture water. It has been calculated based on 30 years period evalution (plain hydrography) and found that the decline amount is about 1/75 meters yearly. So, the tank loss is measured about 540 MMCUBIC. Also, with decline of the ground waters level is decreased from bicarbonate type and is increased to T- cholore amount . Therefore, the waters salt value in the direction of the ground waters flow toward to natural discharge and drainage places is increased, But, the salinity value is low and medium . For this reason, almost the ground water quality throughout of Ardabil plain even in the external regions is good relatively. In general, with considering of the plain lithology and supply or drainage and discharge of the water table, the best points for utilizing from water are eastern regions of Ardabil plain. In order to maintaining of the water table and avoiding of the bad and un stuitable quantitative and qualitative situation should be substituted utilizing management with the present management. In this case, are suggested suitable cultivation patterns with low need ecological conditions and also conducting of the irrigation methods with.

Table 2: Results of analysis of water samples from deep wells Bkhanh Ardabil 44 June 1387

Ca	Mg	Na	K	HCO3	SO 4	CL	TDS mg/l	EC	PH	%SAR	Number place	UTM y	UTM x	number
1.4	1	2.77	0.04	3.3	1.2	0.9	267	532	7.12	2.5287	pirami	4231640	272947	1
1.3	0.9	1.8		3	0.7	0.6	208	415	7.3	1.7162	Aghblagh mustafakhan	4238492	283397	2
1.3	0.9	2.16	0.04	3.2	1	0.5	228	455	7.38	2.0595	mrny	4236266	284677	3
1.3	1	2.1		3.7	0.1	0.8	225	449	7.48	1.9583	tpraqlv	4231220	276532	4
1.3	1.1	3.4		3.3	2.1	0.9	306	608	7.12	2.9583	yvnjalv	4234783	286004	5
2.8	1.5	7.29	0.11	3.9	4.2	3.9	594	1185	7.23	4.9717	ButcherTph	4236094	269965	6
3.3	1.6	14.02	0.08	5.3	7.6	6.4	960	1915	7.23	8.957	Sakhslv	4249662	272480	7
1.4	1	1.6		3.4		0.9	208	414	7.56	1.46.6	arkhazlv	4238317	278720	8
4	2.3	5.64	0.06	6.1	3.7	2.4	605	1211	7.29	3.1778	Aqchhknd	4249387	264080	9
5.3	3.6	14.02	0.08	5.4	10. 1	7.7	1160	2310	7.44	6.6461	anzabbala	4249387	266655	10
3	3.3	16.29	0.11	5.7	9.6	7.6	1128	2280	7.42	9.1784	yznBad	4253994	268276	11
3.8	2.6	10.12	0.08	5.1	5	6.7	840	1670	7.43	5.6573	dvltAbad	4251088	265711	12
3.8	1.4	8.7	0.1	5.6	5.1	3.5	706	1408	7.03	5.3955	anzabBala	4244719	264568	13
3.6	1.6	6.5	0.25	5.8	3.1	2.8	584	1165	7.5	4.0311	Shykhklkhvran	4221474	262662	14
1	0.7	2.1		3.7		0.4	200	397	7.83	2.2778	Chabrlvh	4220817	281236	15
3.9	2.1	5.3	0.1	6	3	2.6	577	1151	6.89	3.06	Samyan	4250287	259399	16
1.3	0.9	3.26	0.04	3.8	1.5	1	285	568	7.77	3.1083	qrhHsnlv	4236917	277219	17
2.11	0.9	8.04	0.06	5.8	0.6	5	565	1125	6.6	6.5537	Myrzarhmylv	4239518	277025	18
1	1.1		2.6	0.5	0.5	0.5	177	352	7.66	1.0258	qrhchnaq	4244214	283417	19
1.2	0.6	2.96	0.04	3.7	0.4	1	250	497	7.7	3.1201	Mhmvdbad	4237200	287401	20
2.1	1.3	3.84	0.06	4.4	2	1.2	375	748	7.65	2.9451	pthkhvr	4244214	280316	21
3.1	2.4	4.06	0.04	5.5	2.7	1.7	489	975	7.26	2.4483	Svla	4251400	279650	22
2.4	3.1	2.06		3.4	2.6	1.9	390	777	7.69	1.2422	Khankennedy	4251160	277225	23
1.3	0.6	2.7		3.6	0.9	0.3	239	477	7.61	2.7701	Krgan	4220470	279156	24
8.5	6.2	15.76	0.51	5.2	15. 2	11. 3	1560	3140	7.53	5.8242	gvrdal	4225118	268505	25
1.2	1.4	1.3		3.4		0.6	202	401	7.15	1.1402	Khlylbad	4226300	278342	26
1.5	1.7	4.62	0.08	4.9	1.5	1.8	404	801	7.72	3.6524	Nvshher	4219272	274058	27
2.5	1.7	3.96	0.04	4.8	1.7	1.9	417	831	7.23	2.7327	Nvjhdh	4248653	275131	28
1.4	1.4	3.1		3.9		2.3	306	609	7.84	2.62	gly	4245420	282570	29
2.8	2	10.12	0.08	8.7	0.6	6	759	1512	6.03	6.5324	Vyladrh	4226721	243887	30
3.2	4.1	11.39	0.11	5.8	7.7	5.6	952	898	7.87	5.9618	Sltanbad	4241776	268830	31
5.1	2.4	6.29	0.11	11.3	0.8	2.1	702	1400	6.65	3.2481	Nvran	4235446	254667	32

0.8	1.8	4.96	0.04	4.2	2.1	1.5	386	770	8.28	4.3502	Grhlar	4240808	272403	33
1.5	1.6	10.8		4		0.5	204	406	8.17	6.23	Shhryvr	4246242	254320	34
4	3.8	12.78	0.12	5.7	9.8	6.4	1110	2180	7.47	6.4714	kvzhtbzrg	4222397	269132	35
0.6	1.2	0.6		2.1		0.4	129	256	7.75	0.6325	doyael	4222875	281846	36
3.3	2.4	8.4	0.1	10	3	1.5	717	1432	6.77	4.9757	AaraloYBige	4224735	274360	37
10.4	13.1	17.7	2.5	5.3	22	15.5	2200	4390	7.16	5.1636	kmyabad	4229660	269065	38
1.2	1.6	1.4		3.3	0.2	1	221	440	7.86	1.1832	Shyk khalifalu	4237770	280824	39
1.6	1.8	5.44	0.06	5.4	0.9	2.9	452	901	8.14	4.1723	Lands East south Ardabil	4234800	275294	40
1.3	1.5	0.8		2.9	0.2	0.7	186	371	8.08	0.6761	AbyBigelow	4241134	286420	41
4.1	3.1	10.89	0.11	5.5	6.3	6.7	922	1838	7.12	5.7395	Nyar	4236150	266600	42
2.8	1.1	3.36	0.04	5	0.9	1.7	374	745	7.8	2.4061	Grijan	4245591	257143	43
1.5	0.6	2.1		3.5	0.1	0.7	211	421	8.04	2.0494	Grh Hill	4236723	279250	44

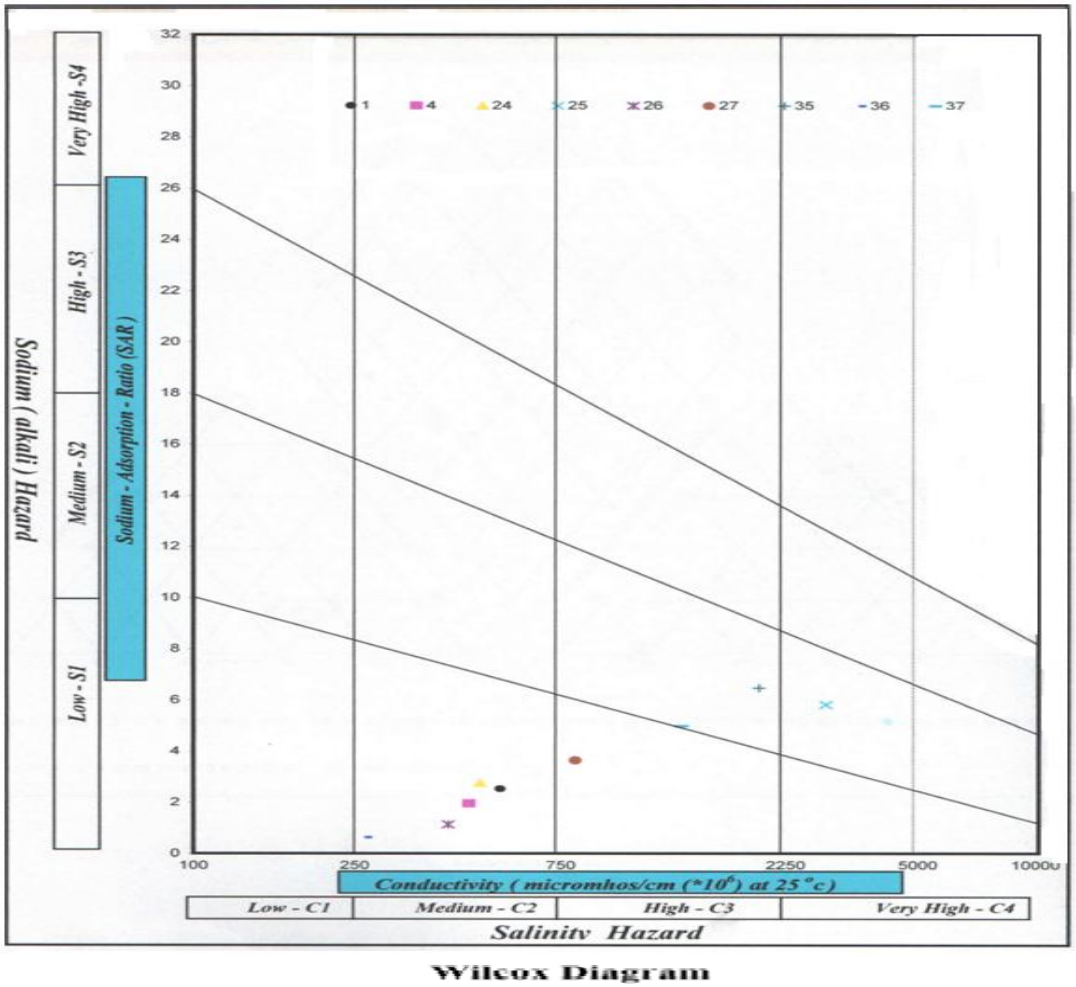


Figure 2 : Diagram of Ardabil plain categories of drinking water and agriculture (Figure WILCOX)

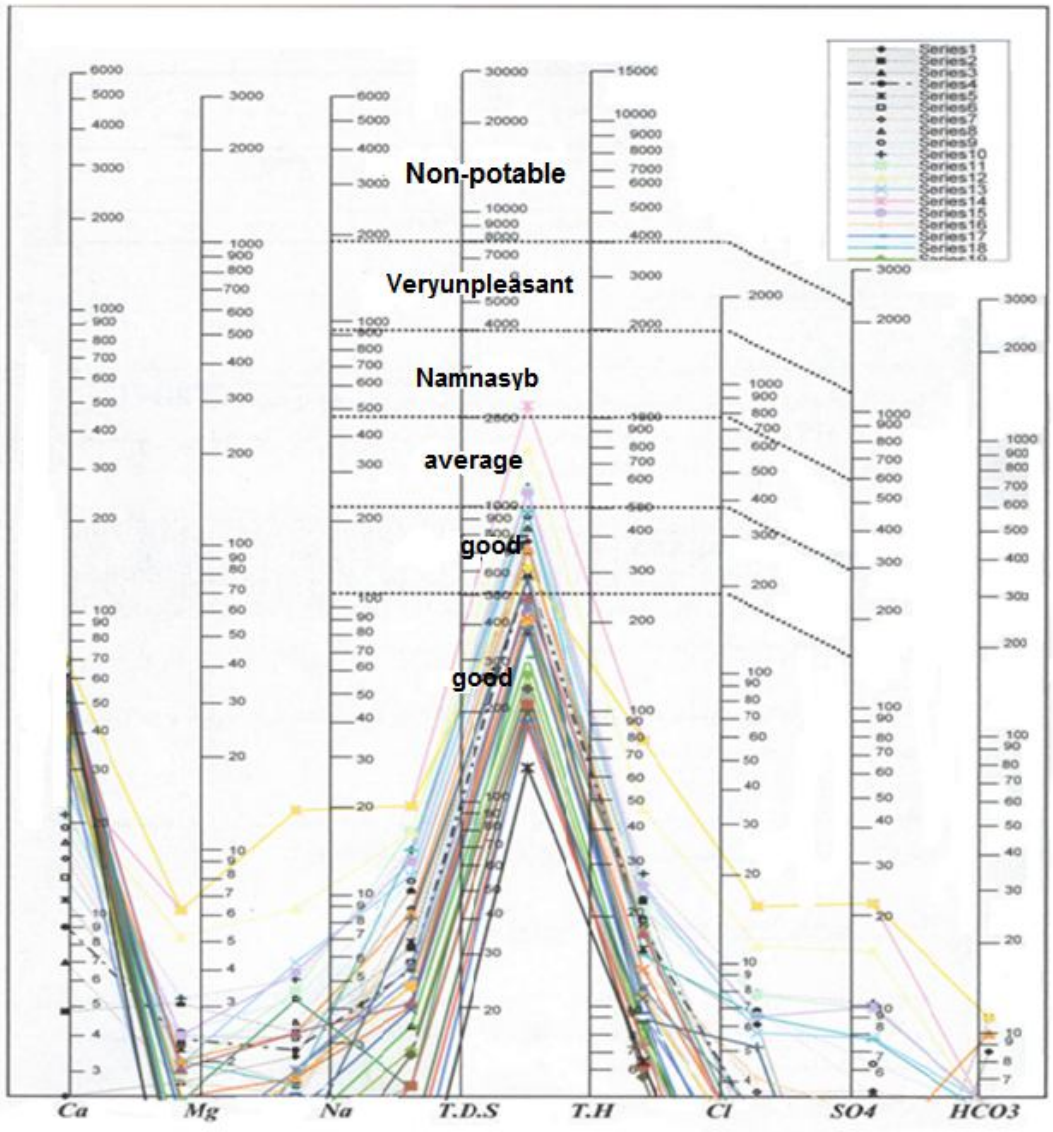


Figure 3: Graph logarithmic division of Ardebil plain drinking water (Figure Schuler)

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The Effect of Interpersonal Therapy on Reducing Negative Feelings, the Degree of Forgiveness and Restoring Confidence among Women Afflicted with Marital Infidelity

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Abstract: Infidelity discussed as one of the important problems in marital relationship and the most important reason for divorce and also is a complex treatment for family counselor. The purpose of this study is the effect of interpersonal therapy on reducing negative feelings, the degree of forgiveness and restoring confidence among women afflicted with marital infidelity. Method of research was semi-experimental (pre-Test, Post-Test) with control group. Participants were all betrayed women who have recourse to Tehran family counseling clinics in 2010-2011. Sampling was purposeful in which 16 women who have higher score in forgiving the infidelity of the spouse questionnaire were selected and randomly divided into two groups (8 subjects each). Experimental group received 8 sessions of interpersonal therapy once a week. A tool of research was forgiving the infidelity of the spouse questionnaires with 25 questions. Its three subscales consist of Negative Feelings, the Degree of Forgiveness and Restoring Confidence. Covariance & Mancova analysis were used for data analysis. The results of this study showed the significant effect of interpersonal therapy on Reducing Negative Feelings, increasing Degree of Forgiveness and Restoring Confidence among Women Afflicted with Marital Infidelity. ($p<0.05$)

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Keywords: marital infidelity, interpersonal therapy, reducing negative feelings, degree of forgiveness, restoring confidence

Introduction:

Infidelity is crossing over the border of marital relationship and establishing intimate physical or emotional bonds with another person out of wedlock(Drigotas&Barta,2001).Occurrence of infidelity has an important role in creating stress in martial relationship (Snyder,2005) and bringing numerous psychological-social problems to the surface. In such circumstances, people reveal strong emotions such as denial, anger, fury and depression (Brand& etal,2007).

Considering the fact that illegitimate relations lead to various negative reactions, the process of consulting these people is not predictable as they do not follow a regular pattern of treatment (Stefano&Oala,2008). Interpersonal Psychotherapy (IPT) is a method of treatment which enjoys wide empirical support. This technique for treatment is believed to be the most prominent one among all clinical treatment methods(Markowitz&etal.2009). The focus of the treatment are "here and now" and also the specific problems the patient experiences. The objective of IPT treatment is to promote and improve the individual's social function and to reduce symptoms of extreme grief, sadness, isolation, seclusion and self-destructive behaviors(Markowitz,2010). The other variable of the study is forgiveness which is introduced as a measure and strategy for healing from infidelity. There is a difference of opinion on defining and conceptualizing "forgiveness", therefore different definitions have been presented. "The process of being relived from the past judgments and understandings", "being relieved from acquired and normal responses" and "an endeavor to heal the past wounds" are among these definitions(Brush&etal.2001). Forgiveness should not be mistaken for reconciliation, legal pardon, condoning, and forgetting. Forgiveness is a process within an individual during which the cognitive, emotive, and behavioral aspects of the individual towards the wrong act and also the wrong-doer change(Macaskill,2005). The most important features of forgiveness are a decrease in negative feelings and an increase in positive feeling. These aspects are widely agreed upon (Rye &etal,2001). Gordon, Baucom and Snyder (2004) have expanded a three-stage model for forgiveness for spouses who are afflicted with infidelity: 1) contact 2) exploring the reasons 3) recovery. Studies have shown that there is a relationship between forgiveness and satisfaction with life (Teresa&etal,2003). Most researchers consider forgiveness as an adaptive behavior and believe lack of forgiveness is linked to psychological stress and traumaand on the other hand forgiveness is linked to health(Thompson &etal,2005; Diblasio& Benda,2008;). A trauma like infidelity and spousal unfaithfulness can be different to some extent from one society to the other; hence it is necessary that the treatment measures and strategies for such a trauma be

presented according to the society's cultural, humanitarian and social specifications. In the Iranian society, due to cultural issues, infidelity is not the first and foremost reason for lodging a divorce either by the spouse who has been infidel or the spouse who has been subjected to infidelity. In most cases, what the spouses want is to flee the pain and suffering inflicted by the mistake and return to the status quo ante and the normal situation. Taking into consideration that so far no research has been carried out on the therapeutic interventions for forgiveness after the marital infidelity, it is necessary that a research be carried out to help couples get free from the infidelity disaster, heal from the trauma, and revive the marital life. It is also essential that couples jointly enter into the process of treatment, but because of some societal factors, men in the Iranian society avoid accepting the issue and taking up any possible changes towards improvement, hence therapists inevitably have to start their job with one of the spouses and look for the results in the marital life. The objective of the current research is to study the efficacy of therapy with interpersonal approach on reducing negative feelings, the degree of forgiveness and restoring confidence among women afflicted with marital infidelity.

According to the objective and the background it is hypothesized that:

1-Treatment with interpersonal approach has a positive effect on reducing women's negative feelings, increasing forgiveness and restoring confidence among women Afflicted with Marital Infidelity.
1-1-Treatment with interpersonal approach has a positive effect on reducing women's negative feelings
1-2-Treatment with interpersonal approach has a positive effect on increasing forgiveness.
1-3-Treatment with interpersonal approach has a positive effect on restoring confidence among women.

2. Methodology

Method of research was semi-experimental (pre-Test, Post-Test) with control group. Participants were all betrayed women who have recourse to Tehran family counseling clinics in 2010-2011. Sampling was purposeful in which 16 women who have higher score in forgiving the infidelity of the spouse questionnaire were selected and randomly divided into two groups (8 subjects each). Experimental group received 8 sessions of interpersonal therapy once a week. Therapy sessions should be held in the framework of eight 120-minute sessions.

A brief description of the sessions is as follows:

First Session: Performing pre-test; describing how the task should be carried out; introducing members to each other; introducing the group's rules
Second Session: Discussing the importance of infidelity and betrayal as an issue and its effects on the marital status; raising hope and encouraging the members, their acceptance and understanding to provide for an effective treatment.
Third Session: Providing a brief description of the researches carried out on the reasons behind men's infidelity in the marital relationship and women's role in men's commitment. How to talk about the incident that has happened?
Fourth Session: Learning how to forgive; definition of forgiveness; reviewing cases which are not considered examples of forgiveness
Fifth Session: Reviewing presumptions which block forgiveness; reviewing the pattern of procedures for forgiveness and pardon; reviewing the mental obstructions for forgiveness
Sixth Session: Why forgiveness is necessary? Teaching the 8 stages of forgiveness
Seventh Session: Teaching how to improve marital life based on the Honesty rule (showing feelings, whether positive or negative, informing the spouse of the daily routines and occurrences, honesty about the future)
Eighth Session: Teaching the principles of damage control, teaching how to regain confidence.

2.1. Tools

Questionnaire of the research on forgiving the infidelity of the spouse is designed based on Gutman's questionnaire. The questionnaire contains 25 questions and includes subscales such as measurement of negative feelings, the degree of forgiveness, and restoring confidence. To assess the reliability of the questionnaire in terms of form and content, we have asked some experts and professional advisors of family centers to express their views on the issue. The reliability of the questionnaire implemented in the study is estimate to be 71 percent based on Cronbach's Alpha. Due the sequential options, the model for grading the questionnaire is done based on Likert psychometric scale. It means each of the questions in the test had a 5-grade scale: totally agree, agree, no idea, disagree, totally disagree.

2.2. Statistical analysis

Table1: the results of percentage and frequency according to educational degree

Variable / Educational degree	Experimental group		Control group	
	Percentage	frequency	percentage	frequency
Under Diploma	25	2	12.5	1
Diploma	50	4	50	4
Diploma&higher	12.5	1	25	2
M.A.	12.5	1	12.5	1
Total	100	8	100	8

Table2: descriptive indicator of research variable in two groups (pre-post test)

Variable		Experimental group				Control group			
		Min	Max	M	SD	Min	Max	M	SD
reducing negative feeling	Pretest	8	16	11.62	3.37	7	25	14.62	5.50
	post test	8	23	15.75	4.74	7	19	12.25	3.61
degree of forgiveness	pre test	22	35	28.37	4.40	14	45	28.62	8.68
	post test	30	36	33.12	2.1	13	36	24.62	7.68
restoring confidence	pre test	14	23	17.75	2.81	8	33	19.12	7.97
	post test	19	26	22.12	2.47	8	29	17.25	6.71

Table3: The results of Multivariate test for 3 variables (reducing negative feelings, the degree of forgiveness and restoring confidence)

Variable	test name	value	F	hypothesis df	Error df	sig
Reducing Negative feeling	Pillai 's trace	.505	1.35	3	4	.375
	Wilks's Lambda	.495	1.35	3	4	.375
	Hotllings'trace	1.01	1.35	3	4	.375
	Roys's largest root	1.01	1.35	3	4	.375
degree of forgiveness	Pillai 's trace	.625	2.21	3	4	.228
	Wilks's Lambda	.375	2.21	3	4	.228
	Hotllings'trace	1.66	2.21	3	4	.228
	Roys's largest root	1.66	2.21	3	4	.228
restoring confidence	Pillai 's trace	.410	.925	3	4	.506
	Wilks's Lambda	.590	.925	3	4	.506
	Hotllings'trace	.694	.925	3	4	.506
	Roy's Largest root	.694	.925	3	4	.506
-Reducing Negative feeling -degree of forgiveness -restoring confidence	Pillai 's trace	.938	1.47	6	10	.281
	Wilks's Lambda	.272	1.22	6	8	.385
	Hotllings'trace	1.90	.945	6	6	.522
	Roy's Largest root	1.32	2.20	3	5	.205

Table4: homogeneity of separate regression lines for each dependent variables

Dependent variable	SS	df	MS	F	sig
Reducing negative feeling	37.54	2	18.77	1.84	.237
Degree of forgiveness	25.76	2	12.88	.59	.580
Restoring confidence	34.25	2	17.12	.97	.431

Table 5: Results of MANCOVA on dependent variables in experimental and control group

Dependant	test name	value	F	hypothesis df	Error df	sig
Reducing negative feeling	Pillai 's trace	.614	4.76	3	9	.03
.03	9	3	Degree of forgiveness	Wilks's Lambda	.386	4.76
.03	9	Restoring confidence	Hotllings'trace	1.58	4.76	3
Roys's largest root	1.58	4.76	3	9		

Table6: Results of ANCOVA on dependent variables in experimental and control groups

SS	df	MS	F	sig	Eta square	observed power	Dependent variable
Reducing negative feeling	116.69	1	116.69	10.14	.009	.480	1
Degree of forgiveness	290.92	1	290.92	15 .36	.002	.583	1
Restoring confidence	143.45	1	143.45	9.15	.012	.454	1

2.3. Results

Descriptive statistics indices such as: Frequency, Percentage, Mean, Standard Deviation, Minimum and the Maximum were taken into concern.

Findings related to the research hypotheses testing**:** Multivariate Analysis of Covariance (MANOCVA) and Analysis of covariance (ANCOVA). The results were reported significant at the P value less than to equal to 0.05 ($p \leq 0.05$). As shown in table 1, the max of educational degree in experimental group is diploma and the minimum of that is for advanced diploma and MA& advanced. And also the max of educational degree in control group is diploma and the minimum of that is for under diploma and MA& advanced. As indicated in table 2, the comparison of mean in experimental group (pre- post test) shows the effect of interval treatment. As shown in table 3 there is no difference between regression slopes of pre- post test of 3 dependent variables in experimental and control group. As it shown in Table 4 ($F = 1/84$ and $p \leq 0/237$) there exist significant differences between experimental and control group in Women Afflicted with Marital Infidelity with regard to their obtained scores in reducing negative feeling on pre-test and post test. As it is also indicated in Table 4 ($F = 0/59$ and $p \leq 0/580$); the experimental and control group significantly differed in Women Afflicted with Marital Infidelity with regard to their degree of forgiveness scores on pre test and post test. As it shown in Table 4 ($F = 0/97$and $p \leq 431$) there exist significant differences between experimental and control group in Women Afflicted with Marital Infidelity with regard to their obtained scores in restoring confidence on pre-test and post test. As it shown in Table5, it can be concluded that interval treatment can be effective at least on one of the dependent variables. The results of a covariance analysis on table 6 show, there is a meaningful difference between the two groups in reducing negative feelings ($p < 0/009$). Eta square shows that 0/48 of the changes are the result of the Interpersonal Therapy effects on experimental group. As it is also indicated in Table 6, there is a meaningful difference between the two groups in reducing Degree of forgiveness ($p<0.002$). Eta square shows that 0/583 of the changes are the result of the Interpersonal Therapy effects on experimental group. As it is also indicated in Table 6, there is a meaningful difference between the two groups in reducing negative feelings ($p<0.012$). Eta square shows that 0/454 of the changes are the result of the Interpersonal Therapy effects on experimental group.

3. Discussion

The current study is aimed at assessing the effects of treatment with an interpersonal approach on reducing negative feelings, increasing the degree of forgiveness, and restoring confidence to women afflicted with marital infidelity in the city of Tehran. According to the results of the multivariate analysis of covariance test p< ./..9it could be concluded that treatment with interpersonal approach has a positive effect in reducing negative feelings among women afflicted with marital infidelity (hypothesis 1-1). These findings are consistent with the results of Rye&etal,2001 and Gordon, 2002. Reducing negative feelings requires a fresh vision towards the problem. In this regard women managed to take advantage of the therapy session's safe atmosphere to review the issue and discover their own share in the illegitimate relationship marital problems before the incident ever took place and avoid other patterns such as slander, hatred, emotional dismissal of the spouse, which are the main factors to ruin the relationship.

Testing hypothesis 1-2 shows that according to results of the multivariate analysis of covariance test p< ./..9there is meaningful difference, These findings are consistent with the results of Stefano& etal,2008; Teresa&etal,2003; Ripley&etal,2002. hence it could be concluded that treatment with interpersonal approach can affect the degree of forgiveness. Based on studies by Gordon, it could be concluded that the process of forgiveness takes shape in a very slow and continuous process during the marital relationship. During the therapy sessions, members of the group learned that psychological trauma do not fade away or heal thoroughly from human life, nor positive feelings replace them miraculously. As a result of forgiveness, positive feelings do not replace negative ones, but they opt for coexistence. Women, by taking inspirations from the group, came to the point that they pay a high price because of their rage and since the objective is to avoid such a high price, they chose to forgive and by gifting their kindness and compassion to their husbands, they were healed.

Based on testing hypotheses1-3 and according to results of the multivariate analysis of covariance test p< ./..9there is a meaningful difference, hence it could be concluded that treatment with interpersonal approach can affect restoring confidence to women. These findings are consistent with the results of Burchard&etal,2004; Davis&etal,2011; Gordon, 2002. To elaborate on this point, it could be pointed out that infidelity can take a toll on the most rudimental component for marital relationship, namely confidence.

During this process efforts were made to highlight the point for the group that living a life of infidelity and constant involvement with infidelity would make treatment more difficult and would make patient mentally ill and psychologically weak. During the group process, women learned that time (about two years) would take the edge off the memories which instigate their bad emotions. Therefore the afflicted woman should encourage her husband to take steps in restoring confidence and the unfaithful husband should also show commitment and loyalty through obvious changes in his behavior and should do his utmost to rebuild confidence. Therefore, the role of unfaithful husband and passage of time are two very important factors in the process of confidence restoration.

There are some restrictions in this study which prevents the results from being generalized.

Restrictions:

1-Absence of group members from some sessions, due to personal problem such as taking care of a young child or the husband's opposition, hinders generalization of the results to the given society.

2-Not implementing follow-up; the follow-up session could further prove the results of this study.

4-Absence of men (partners of damaged families)

Suggestions:

1-In this study, since men were not inclined to cooperate, the researcher was forced to hold the sessions for women afflicted with infidelity. In view of this point it is suggested that a new study be carried out to review the effects of treatment of couples on forgiving the spouse.

2-As children of families affected by infidelity witness many cases of conflicts and unrest and are victims of problematic side-effects of infidelity, some sessions to educate these families' children should be prioritized and the results be discussed.

3-Teaching treatment measure and strategies to families afflicted with marital infidelity aimed at improving personal health of the couples to prevent families from being torn apart.

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Condition Monitoring using Wavelet Transform and Fuzzy Logic by Vibration Signals

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Abstract: Gearboxes are widely applied in power transmission lines, so their health monitoring has a great impact in industrial applications. In the present study, vibration signals of Pride gearbox in different conditions, namely, healthy, broken first gear, broken second gear and bearing fault are collected by a vibration sensor. Discrete wavelet transform (DWT) is applied to process the signals. In order to identify the various conditions of the gearbox, fuzzy logic technique is used in decision-making stage. The results indicate that this method allow identification at a 96.25% level of efficiency. Therefore, the proposed approach can be reliably applied to gearbox fault detection.
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Keywords: Intelligent fault diagnosis, J48 algorithm, Fuzzy inference system, Gearbox

1. Introduction

Gearboxes are widely used in industrial applications. An unexpected failure of the gearbox may cause significant economic losses. Tooth breakage is the most serious failure for a gearbox. Fault diagnosis of gearboxes is of crucial importance and has been studied for several decades. In modern industry, fault diagnosis plays an important role in accident prevention, human safety, maintenance, decision-making, and cost minimization. It is, therefore, very important to find early fault symptoms from gearboxes [1]. Usually, vibration signals are acquired from accelerometers mounted on the outer surface of a bearing housing. The signals consist of vibrations from the meshing gears, shafts, bearings, and other components. The useful information is corrupted and it is difficult to diagnose a gearbox from such vibration signals [2]. Processing the vibration signals usually was doing in tree domain that called: Time domain, Frequency domain and Time-Scale domain. A common technique in Time-Scale domain is wavelet analysis. Wavelet analysis is the best way for processing the non-stationary signals such as vibration signals of gearboxes. Discrete wavelet analysis is faster in calculations than continues wavelet analysis [3]. During the last few years, wavelet transform has been used for gearbox diagnosis [4,5]. The publications in the field of condition monitoring via vibrations are quite versatile. Selecting a few and focusing on advanced signal processing techniques the works of Wang and Mcfadden [10,11] must be mentioned, that utilized time-frequency analysis techniques and showed that the spectrogram has advantages over Wigner–Ville distribution for the analysis of vibration signals for the early detection of damage in gears. The same authors have also employed the wavelet transform [12,13] to analyze the local features of vibration signals and showed that unlike the time-frequency distribution, which incorporates a constant time and frequency resolution, the wavelet transform can accommodate simultaneously both the large and small scales in a signal, enabling the detection of both distributed and local faults. Baydar and Ball [14,15] have proposed the instantaneous power spectrum and have shown that it is capable in detecting local tooth faults in standard industrial helical gearboxes. The propagation of local faults was identified by monitoring variations in the features of the power spectrum distribution. The same authors have also applied the Wigner–Ville distribution [16] as well as the wavelet transform [17] on vibration and acoustic signals for the same purpose. Samanta [18] investigated three types of artificial neural networks: a multi-layer perceptron (MLP), radial basis function network (RBF) and probabilistic neural network (PNN), and applied genetic algorithm (GA) for the fault detection of a two-stage gear reduction unit. However, it was pointed out that the retraining of the ANN-based approaches may be required for a changed machine condition with different load. Other contribution to this area include the papers by Chen and Wang [19], Staszewski et al. [20], Paya et al. [21], Yang et al. [22], Mechefske [23], and Yen and Lin [24], among others.

2. Material and methods

2.1 Experimental works and data acquisition

For this work, at first a test bed was built to mount the gearbox and electromotor on it. The 2KW electromotor was used to drive power to the gearbox using a coupling power transmission. The input shaft of gearbox was drove by the electromotor and its speed was controlled by an inverter. The experiment setup is shown in figure 1.

Four classes were classified in this work, namely, healthy gearbox 'H', broken first gear 'B-F-G', broken second gear 'B-S-G' and bearing fault 'B-F' that each class considers a type of fault as a most common fault of gearbox. The vibration signals were collected by a vibration sensor (figure 1).

The vibration sensor is connected to the amplifier and signal acquisition unit (figure 1). The vibration signal in digital form is fed to the computer through a USB port. The software 'SpectraPro-4' that accompanies the signal conditioning unit is used for recording the signals directly in the computer's secondary memory. The frequency of the data acquisition was 40966 Hz, with 16386 sample data and giving a measured time of 0.4 s. The data were acquired from gearbox in four mentioned states. The working level of gearbox speed was 3500 rpm.

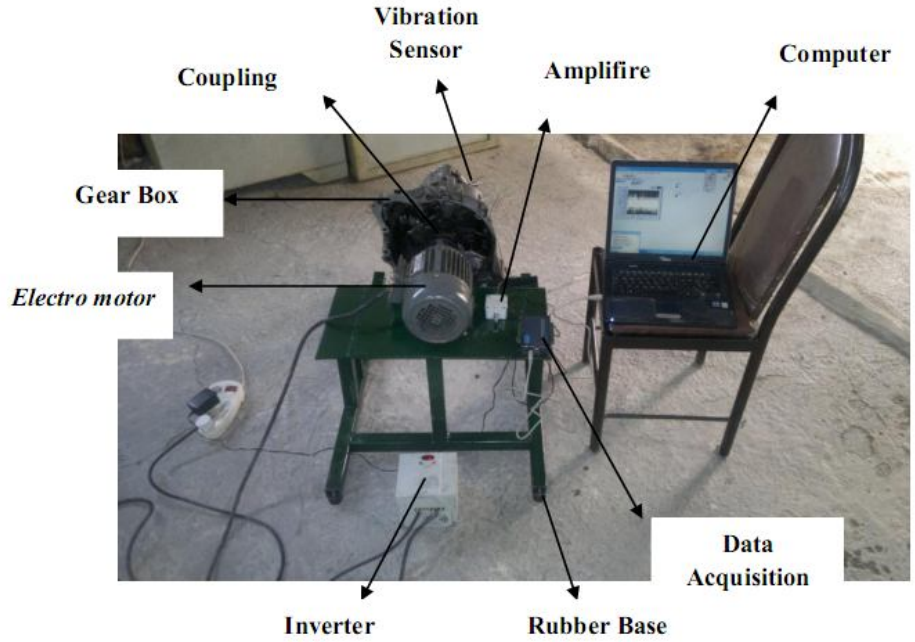


Figure 1, Experimental set up

2.2 Signal Processing and Feature extraction

In recent articles, advanced non-parametric approaches have been considered for signal processing such as wavelets, Fast Fourier Transform (FFT), short time Fourier transform (STFT) [25, 26]. In this study wavelet transform signal processing technique was employed to transfer the vibration signals from time domain to time-frequency domain. After transferring data the measured data were used to obtain the most significant features by feature extraction. The accuracy of feature extraction is of great importance since it directly affects the final diagnosis results. In this paper, the feature extraction using descriptive statistics on the time-frequency domain data were used. Research works have reported the use of this method [27]. For more information about used features, see [27, 28]

2.3 Feature selection and classification model extraction

A 'divide-and-conquer' approach to the problem of learning from a set of independent instances leads naturally to a style of representation called a decision tree. A decision tree is a tree based knowledge representation methodology used to represent classification rules. A standard tree induced with c5.0 (or possibly ID3 or c4.5) consists of a number of branches, one root, a number of nodes and a number of leaves. One branch is a chain of nodes from root to a leaf, and each node involves one attribute. The occurrence of an attribute in a tree provides the information about the importance of the associated attribute. In a decision tree, the top node is the best node for classification. The other features in the nodes of a decision tree appear in descending order of importance.

It is to be stressed here that only features that contribute to the classification appear in the decision tree and others do not. Features that have less discriminating capability can be consciously discarded by deciding on the threshold. This concept is made use of for selecting good features.

In this research, the J48 algorithm (A WEKA implementation of c4.5 Algorithm) was used to construct decision trees [27]. Input to the algorithm was the set of statistical features extracted from vibration signatures. The data sets of the features for each condition have 70 samples. In each operating condition, two-thirds of samples are employed for the training process and the remaining samples for testing purposes. The detailed descriptions of those data sets are given in Table 2. Based on the output of the J48 algorithm, various statistical parameters are selected for the various conditions of the gearbox. Selected statistical features are used as membership functions and the values appearing between various nodes in the decision tree are used for generating the fuzzy rules to classify the various conditions of the gearbox under study.

Table 2 Descriptions of data sets in each condition

Label of classification	Number of training samples	Number of testing samples
Healthy Gearbox 'H'	50	20
Broken First Gear 'B-F-G'	50	20
Broken Second Gear 'B-S-G'	50	20
Bearing Fault 'B-F'	50	20

2.4 Fault diagnosis using fuzzy inference system

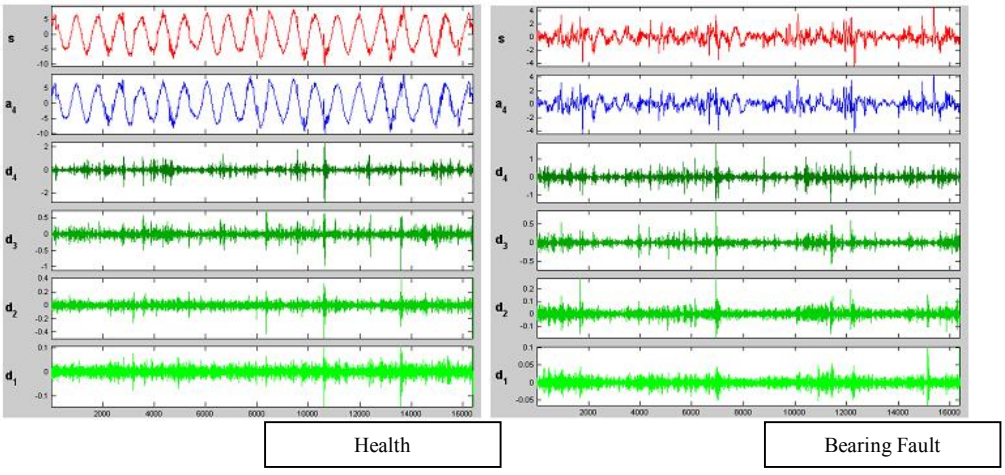
Fuzzy logic makes use of the knowledge of experts through its transformation into linguistic terms. Fuzzy logic is a rule-based system that successfully combines fuzzy set theory with the inference capability of human beings. As rules, linguistic terms are used and are modelled through membership functions that represent simulation of the comprehension of an expert. Membership functions give the scaled value of definite number values that are defined by linguistic labels. Rules are defined such as IF (condition) THEN (result). The conditions and results are linguistic terms that represent the input and output variables, respectively. The rule base of the fuzzy logic classifier consists of many rules. A rule base is used to obtain a definite output value according to the input value [27].

After defining membership functions and generating the 'if-then' rules by J48 algorithm, the next step is to build the fuzzy inference engine. The fuzzy toolbox available in MATLAB (version: 2011a) was used for building the fuzzy inference engine. Each rule was taken at a time and using membership functions and fuzzy operators the rules were entered [27].

3. Results and discussion

3.1 vibration signals

Figure 2 shows graphs of vibration signal in time-frequency domain for 3500 rpm rotational speed. Results show that graphs of various conditions of gearbox are different but fault diagnosis of gearbox is difficult using a spectrum of vibration signals alone. Therefore it is necessary to utilize an automatic signal classification system in order to increase accuracy and reduce errors caused by subjective human judgement.



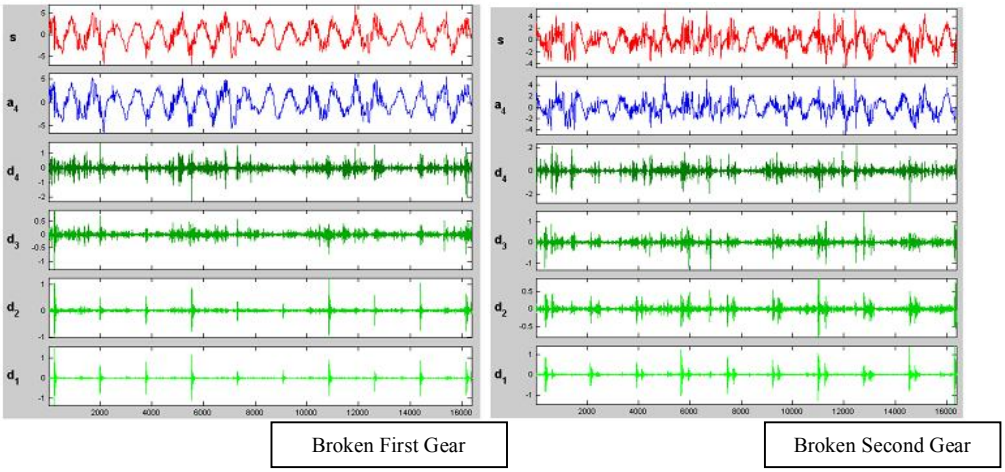


Figure 2, Graphs of vibration signal in time-frequency domain for 3500 rpm rotational speed

3.2 Decision trees

The outcomes of the J48 algorithm are shown in Figure 3. Decision trees show the relation between features and the condition of the gearbox. Tracing a branch from the root node leads to a condition of the gearbox and decoding the information available in a branch in the form of the 'if-then' statement gives the rules for classification using fuzzy for various conditions of gearbox. Hence, the usefulness of the decision tree in forming the rules for fuzzy classification is established. The top node of the decision tree is the best node for classification. The other features appear in the nodes of the decision tree in descending order of importance. It is to be stressed here that only features that contribute to the classification appear in the decision tree and others do not. The level of contribution is not the same and all statistical features are not equally important. The level of contribution by an individual feature is given by a statistical measure within the parenthesis in the decision tree. The first number in the parenthesis indicates the number of data points that can be classified using that feature set. The second number indicates the number of samples against this action. If the first number is very small compared to the total number of samples, then the corresponding features can be considered as outliers and hence ignored. Features that have less discriminating capability can be consciously discarded by deciding on the threshold. This concept is used in selecting good features. The algorithm identifies the good features for the purpose of classification from the given training data set and thus reduces the domain knowledge required to select good features for the pattern classification problem.

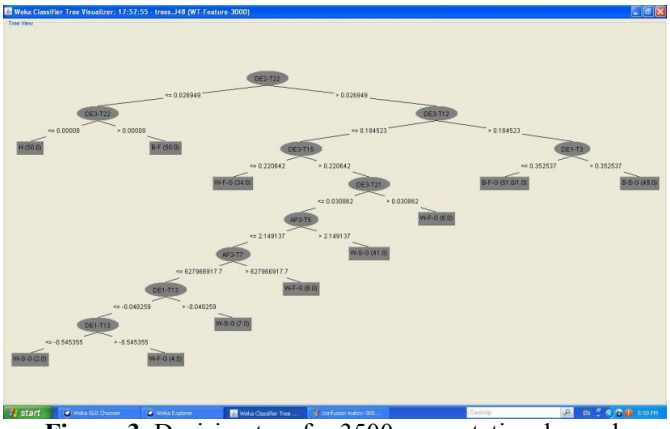


Figure 3, Decision tree for 3500 rpm rotational speed

3.3 Fuzzy rules

Rules designed for 3500 r/min condition

1. If (DE2-T22 is not MF-DE2-T22) and (DE3-T22 is MF-DE3-T22) then (output1 is B-F) (1)
2. If (DE2-T22 is not MF-DE2-T22) and (DE3-T22 is not MF-DE3-T22) then (output1 is H) (1)

3. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is MF-DE3-T12) and (DE1-T3 is MF-DE1-T3) then (output1 is B-S-G) (1)
4. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is MF-DE3-T12) and (DE1-T3 is not MF-DE1-T3) then (output1 is B-F-G) (1)
5. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is not MF-DE3-T15) then (output1 is B-F-G) (1)
6. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is DE3-T21) then (output1 is B-F-G) (1)
7. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is not DE3-T21) and (AP3-T5 is MF-AP3-T5) then (output1 is B-S-G) (1)
8. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is not DE3-T21) and (AP3-T5 is not MF-AP3-T5) and (AP3-T7 is MF-AP3-T7) then (output1 is B-F-G) (1)
9. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is not DE3-T21) and (AP3-T5 is not MF-AP3-T5) and (AP3-T7 is not MF-AP3-T7) and (DE1-T13-1 is MF1-FE1-T13) then (output1 is B-S-G) (1)
10. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is not DE3-T21) and (AP3-T5 is not MF-AP3-T5) and (AP3-T7 is not MF-AP3-T7) and (DE1-T13-1 is not MF1-FE1-T13) and (DE1-T13-2 is MF2-FE1-T13) then (output1 is B-F-G) (1)
11. If (DE2-T22 is MF-DE2-T22) and (DE3-T12 is not MF-DE3-T12) and (DE3-T15 is MF-DE3-T15) and (DE3-T21 is not DE3-T21) and (AP3-T5 is not MF-AP3-T5) and (AP3-T7 is not MF-AP3-T7) and (DE1-T13-1 is not MF1-FE1-T13) and (DE1-T13-2 is not MF2-FE1-T13) then (output1 is B-S-G) (1)

3.4 System accuracy

In each condition of gearbox, 20 samples were used for testing the final model. The confusion matrix for each condition is given in Table 3. The performance of the classifier can be checked by computing the statistical parameters such as sensitivity, specificity and total classification accuracy defined by:

Sensitivity: number of true positive decisions/number of actually positive cases.

Specificity: number of true negative decisions/number of actually negative cases.

Total classification accuracy: number of correct decisions/total number of cases.

The values of statistical parameters are given in Table 4. Results show that the total classification accuracy for 3500 rpm conditions are 96.25%.

Table 3. Confusion matrices for tow working speeds of gearbox

Condition	B-F	B-C	B-P	H
B-F	19	0	1	0
B-C	0	19	1	0
B-P	0	0	20	0
H	0	1	0	19

Table 4. The value of statistical parameters

Data sets label	Sensitivity (%)	Specificity (%)	Total classification accuracy (%)
B-F	95	98.33	96.25
B-C	95	98.33	
B-P	100	100	
H	95	98.33	

4. Conclusions

A combined classification tree (J48 algorithm) and fuzzy inference system (FIS) have been presented to perform fault diagnosis of a gearbox. The implementation of J48-FIS based classifier requires two consecutive steps. Firstly, the J48 algorithm is utilized to select the relevant features in the data set obtained from feature extraction part. The output of the J48 algorithm is a decision tree that is employed to produce the crisp if-then rule and membership function sets. Secondly, the structure of the FIS classifier is defined based on the obtained rules, which were fuzzified in order to avoid classification surface discontinuity. The classification results and statistical measures are then used for evaluating the J48-FIS model. The total classification accuracy for 3500 rpm conditions was 96.25%. The results indicate that the proposed J48-FIS model can be used in diagnosing gearbox faults. Finally In order to simplify condition monitoring, produced

fuzzy inference engines were transmitted to the SIMULINK of MATLAB that the operator can easily detect the condition of gearbox with mentioned accuracy.

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Relationship between Work holism and Organizational Citizenship Behavior among Schools Employees in Sirjan-Iran

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Abstract: Nowadays, work has been crucial component of human life. Every day people spend a lot of their time in organizations. Unlimited organizational pressures and desires force people to work continually and consequently increase possibility of work holisms formation in people. Work holism phenomenon in particular is experienced in jobs that require high mental energy from employees. The aim of study was to examine the relationship between work holism and organization citizenship behavior among teachers in Sirjan-Iran. The respondents were 200 teachers (100 female and 100 male) in the age range of 30 to 50 years old from selected school in Sirjan. The instruments used for data collection include Spence and Robbinse's work holism questionnaire, and Konovsky and Organ's organization citizenship behavior questionnaire. The findings of the study indicated that work holism was significantly related to organization citizenship behavior. Also result of the t-test showed that males' respondents had significantly higher work holism.

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Keywords: work holism, work involvement, feeling driven to work, work enjoyment, organization citizenship behavior.

1. Introduction

Nowadays, many employees work long hours (Drago, 2000). Employees tend to have a secure and long-term job. Employees begin her/his career with hope and expectations to achieve the highest levels of the organization. Most of employees emphasize to achievement, power, rewards and responsibilities. Among different jobs in the community, teachers are involved in their work due to extrinsic rewards and internal motivations. Work holism may be enjoyable, but it is boring and difficult. Some researchers consider it a disorder. They do not necessarily love their work but they spend their time with work. They think that they are the only ones that can do particular job. They are known as workaholics due to excessive work. However, in most cases, addiction to work in a job is associated with high income (Gholi Pour et al., 2008). On the other hand, the work holism has positive results and it causes that employees do behaviors out of their official duties. Although work holism personality leads to breakdown in long term job, therefore this study determine relationship between work holism and organization citizenship behavior among teachers in Sirjan-Iran.

1.1. Work holism

The term of workaholic was coined in 1971 by Oates. According to Oates (1971), work holism is defined the pressure or the uncontrollable need to work incessantly. For workaholics, the need to work is overstated that it is dangers for their health, deducts their pleasure, and deteriorates their interpersonal and social relationship. Some views consider that work holism is bad due to it is an addiction similar to alcoholism (McMillan & O'Driscoll, 2004). In contrast, others views call work holism good. Therefore, they describe workaholics as hyper-performers. Workaholic personality is positive because its characteristic is the joy of creativity and workaholics try to find engagement and satisfaction through work (McMillan & O'Driscoll, 2004). Work holism can certainly be known as a syndrome (Aziz & Zickar, 2006; Piotrowski & Vodanovich, 2006).

Spence and Robbins (1992) defined workaholic as a person to exhibit factors of high engagement in work, high levels of work drive, and low levels of work enjoyment. These three factors are independent of one another (Spence & Robbins, 1992). Work engagement refers to beneficial use of time, drive refers to feeling forced to work because of an internal pressure to succeed, and enjoyment refers to the amount of pleasure gained from work (Spence & Robbins, 1992). These worker types are consist of work enthusiasts (high on work engagement and pleasure, low on drive), workaholics (high on work engagement and drive, low

on pleasure), relaxed workers (low on work engagement and drive, high on pleasure), unengaged workers (low on all three components), enthusiastic workaholics (high on all three components), and disappointed workers (low on work engagement and pleasure, high on drive) (Spence & Robbins, 1992).

There are three approaches for work holism: positive approach of work holism: based on this approach, Pearson has an inherent tendency to hard work. This approach leads to positive behaviors such as organizational commitment and organizational citizenship behavior (Cantrarow, 1979; Machlowits, 1980). Negative approach of work holism: based on this approach, person has an irrational commitment to work (Oates.1971). This means work holism. And finally, typology approach that is consists of different types of work holism. In regard to the above mentioned contents, the researcher concluded that work holism has positive consequences such as organizational citizenship behavior. Also, work holism has negative consequences such as breakdown in job. Therefore, managers of organizations need to manage and control this phenomenon for positive behavior outcomes.

1.2. Organizational citizenship behavior

Organizational citizenship behavior is an important concept in the field of management; therefore, it has received a great attention in the literature (Bateman & Organ, 1983; Podsakoff, MacKenzie, Paine, & Bachrach, 2000). According to Organ (1988), organizational citizenship behavior is an important issue that contributes in the survival of an organization. Therefore, it is essential to know the factors that significantly and positively help in creating this good behavior within the organization. In addition, higher levels of organizational citizenship behavior (OCB) lead to increased productivity and, consequently, higher success.

Organizational citizenship behavior (OCB) defined as person's behavior that improves the plan of the organization by contributing in social environment (Organ, 1997; Rotundo & Sackett, 2002). It has been considered in a diversity of domains and disciplines such as human resources management, marketing, economics and health care. Organizational citizenship behavior (OCB) is consisting of five different factors: Altruism (helping behaviors directed at specific individuals), Conscientiousness (going beyond minimally required levels of attendance), Sportsmanship (tolerating the predictable inconveniences of work without complaining), Courtesy (informing others to prevent the occurrence of work-related problems), and Civic Virtue (participating in and being concerned about the life of the company). Workers that are engaged in organizational citizenship behavior can promote managers' efficiency to allow them to apply a greater amount of time for long-range planning matters. Consequently, managers advantage from positive organizational citizenship behavior (OCB) as well as employees (Turnipseed & Rassuli, 2005).

Many researchers studied effect factors on organizational citizenship behavior such as personal factors, duty characteristics, organizational and management behaviors. One of the most important personal factors is work holism that leads to hard working for employees. Workaholic person achieve great success and his/her work is most important matter in life (Podsakoff et al., 2000). Therefore, based on dimensions of work holism, this study fills the literature gap in this area and provides valuable empirical evidence on the role work holism in organizational citizenship behavior among teachers in Sirjan-Iran.

2. Objectives

1. To describe the work holism and organizational citizenship behavior.
2. To determine the relationship between work holism and organizational citizenship behavior.
3. To examine difference in organizational citizenship behavior between male and female.
4. To determine unique predictors of organizational citizenship behavior

3. Hypothesis

H01: There is a relationship between work engagement and organizational citizenship behavior among respondents.
H02: There is a relationship between feeling driven to work and organizational citizenship behavior among respondents.
H03: There is a relationship between joy in work and organizational citizenship behavior among respondents.
H04: There is difference in organizational citizenship behavior between male and female among respondents.
H05:

4. Method

4.1. Research Design

This study used a descriptive and correlational research design to examine the relationships between work holism and organizational citizenship behaviourt. The present study, it is a cross-sectional study which involves collecting data over a short period of time in order to search for the answer for the outlined research questions.

4.2. Population and Sample

As shown Table 1 participants included 200 Iranian teachers (100 male, 100 female) that attended a south eastern in Sirjan. The ages of the participants ranged from 30 to 50 years, with the average age being 40 years (SD = 3.23). Data collected during the 2012 fall from schools. Research packets that included an informed consent form and questionnaires were

distributed to teachers. After given instructions, teachers read the informed consent form, completed the questionnaires, and returned them to the proctor.

4.2. Instruments

4.2.1. Work holism

Work holism was measured using Work holism Scale (WS) by Spence and Robbins (1992) that was designed to measure addictive work behaviors. The WS has 22 items with three subscales. The subscales are work engagement (eight items), feeling driven to work (seven items), and work enjoyment (seven items). A five-point Likert scale from 1= never, 2= seldom, 3= sometimes, 4= often and 5= always was used to rate the items. The score for WS was obtained by summing up the scores for the 22 items. The total scale score ranged from 22 to 88, with high score indicating high work holism among respondents. The WS has demonstrated respectable psychometric properties (alpha =.84). In the current study, alpha reliability for the scale was .91. Examples of items included in the Work holism Questionnaire are as follows:

1. I get bored and restless on vacations when I haven't anything productive to do *(Work involvement).*
2. I often feel that there's something inside me that drives me to work hard *(Feeling driven to work)*
3. My job is more like fun than work *(Work enjoyment)*

4.2.2. Organizational citizenship behavior

In the present study, researcher used a Persian translation of the organizational citizenship behavior (OCB) by Konovsky and Organ (1996). This questionnaire consists of 32 items designed to measure five components of OCB: Altruism, Conscientiousness, Sportsmanship, Courtesy and Civic Virtue. The rating scale was a 7-point Likert type scale, varying from 1=*does not apply at all to the person I am rating* to 7=*applies very well to the person I am rating*. The score for this questionnaire was obtained by summing up the scores for the 32 items. The total scale score ranged from 32 to 234, with high score indicating high OCB among respondents

5. Data Analysis

5.1. Pilot study

The measures were pre-tested using 30 teachers who fulfilled the study criteria. The criterion for the study was that respondents must be teachers aged between 30 and 50 years old. Pilot study is important as they provide guidance and feedback on the adequacy of the questionnaire, difficulty in understanding, ambiguity or inadequacies in the interview schedule, the non-response rate to be expected, and the efficiency of instructions and general briefing of interviewers (Portney & Watkins, 2000). Before collecting the actual data, both scales were tested in a pilot study to examine its reliability. Based on the results of the pilot study, modification of the measures was not needed.

Data from the present study were processed and analyzed using Statistical Package for Social Science (SPSS) version 16. Descriptive statistics such as mean score, standard deviation, percentage and frequency distribution were used to describe the age and gender of the respondents and level of variables. Inferential statistics that was used in the data analysis were Pearson Correlation Analysis, independent sample t-test.

6. Results

6.1. Descriptive finding

As shown in Table 1 there were equal number of male (50%) and female (50%) employees who work as teacher in Sirjanian schools. The mean age of the respondents was 40 years (SD= 3.23). Also, more than half of the respondents reported low work holism (77%) and high organizational citizenship behavior (64%).

Table 1: Personal Characteristics in teachers and Levels of Variables

Variables	**n**	**%**	**Variable**	**Mean**	**SD**	**n**	**%**
Gender			**Work holism**	42.4	9.67		
Female	100	50	Low			161	77%
Male	100	50	High			39	23%
Age							
30-40	100	50	**Organizational citizenship behavior**				
41-50	100	50	Low			83	36%
Mean	40		High			117	64%
Sd	3.23						
Minimum	30						
Maximum	50						

6.2. Bivariate findings

6.2.1. Analysis of the relationship between work holism and organizational citizenship behaviour

The Pearson correlation analysis was conducted to examine the relationships work holism and organizational citizenship behaviour. The results will be discussed according to objectives and hypothesis. As shown in Table 2, there was a high positive significant relationship between work engagement and organizational citizenship behavior (r=.64, p<.01). The positive correlation coefficient indicates that an increase in the score for work engagement is followed by an increase in the teachers' organizational citizenship behavior. Teachers with higher work engagement were more likely to show better organizational citizenship behavior. Also, there was a medium positive significant relationship between feeling driven to work and organizational citizenship behavior (r=.47, p<.01). Finally, there is a positive relationship between work enjoyment and organizational citizenship behavior (r=.35, p<.01). This means that correlation coefficient reveals that an increase in the score for feeling driven to work and work engagement is followed by an increase in the teachers' organizational citizenship behavior.

Table 2: Relationship between Variables

	Variables	X1	X2	X3	Y
X1	Work engagement	1			
X2	Feeling driven to work	.78**	1		
X3	Work enjoyment	.65**	.45**	1	
Y	Organizational citizenship behavior	.64**	.47**	.35**	1

6.2.2. Analysis of the different in organizational citizenship behavior in male and female

T-test was used to test the significant difference in organizational citizenship behavior between male and female respondents. The results are displayed in Table 3 findings of the study indicated that there was a significant difference (t= 6.186, p<.05) in organizational citizenship behavior between male (mean= 132.5, SD= 6.760) and female (mean=99.8, SD=4.417) adolescents. Female adolescents had higher academic achievement scores than male adolescents.

Table 3: Result of t-test for organizational citizenship behavior by gender

	n	Mean	SD	t	p
Organizational citizenship behavior	200			6.186	.001
Gender					
Female	100	99.8	4.417		
Male	100	132.5	6.76		

Analysis of unique predictor variable of organizational citizenship behavior

Regression analysis is conducted to explore predictors of organizational citizenship behavior (Chen, 2002). Multiple regression analyses were conducted to test work holism (work engagement, feeling driven to work, and work enjoyment) in predicting organizational citizenship behavior among employees. In addition, the model consists of three predicting variables, X_1, work engagement, X_2, feeling driven to work, and X_3, work enjoyment. The contribution of these variables separately as well as in total contribution is presented in the following regression equation:

$$\hat{Y}=b_0+b_1 X_1+ b_2 X_2+ b_3 X_3 + b_4X_4$$

(Organizational citizenship behavior) $\hat{Y}$ =12.187+ (.051) + (-.018) + (-.076) + .070

Based on Table 4 there is a significant relationship between explanatory factors (work engagement, feeling driven to work and work enjoyment) and outcome (organizational citizenship behavior) [F (4,377) = 30.854, p=.000].

Further to this, Table 5 with the observed t=2.748, p=.006, the standard coefficient Beta=-.141 and the relatively small value of the standard error=.018, can be clearly stated that work engagement has a relationship organizational citizenship behavior. Also, the second variable (feeling driven to work) has significant

relationship with organizational citizenship behavior, where t=-4.384, p= .000, Beta= -.207, standard error=.017. Finally, the third variable (work enjoyment) where, t= 8.070, p= .000, Beta= .393, standard error=.009, has a significant relationship with organizational citizenship behavior. Also, R^2 showed that about 24 % of the variance in organizational citizenship behavior is explained by work engagement, feeling driven to work and work enjoyment. In other words, 76 % of organizational citizenship behavior is related to the other factors. According to Table 5 work enjoyment is the strongest predictor of organizational citizenship behavior.

Table 4: ANOVA Table of regression model

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	505.836	4	126.459	30.854	0
	Residual	1545.193	377	4.099		
	Total	2051.029	381			

Table 5: Multiple regression analysis on academic achievement

Model	B	Std.Error	Beta	t	Sig
1 (Constant)	12.187	1.098		11.095	.000
Work engagement	0.051	0.018	0.141	2.748	.000
Feeling driven to work	-0.076	0.017	-0.207	-4.384	.000
Work enjoyment	0.07	0.009	0.393	8.07	.000

Discussion and conclusion

This study illustrates relationship between work holism and organizational citizenship behavior among schools' employees. The first objective of the present study indicated that majority of the respondents reported low work holism and high organizational citizenship behavior. The second objective of the present study showed that there is positive significant relationship between work holism and organizational citizenship behavior. This means that work holism can effect on voluntary and altruistic behaviors. Teachers have a sensitive and important duty in society. Also, they deal daily with many students and since teachers play a important role for rearing students, so teachers must allow students to be relaxed during education. Findings of the present study indicated that there is a significant relationship between work engagement and organizational citizenship behavior in teachers. This means that employees who are more involve in their work show more responsibility in work. Many researches have been done in the field of work addiction or work holism. The results of these studies showed that hard working of employees is necessary for organizations. Employees who are workaholic devote voluntarily long hours in organizational activities (Snir & Harpz, 2004). Work holism is consisting of emotional and intellectual investment in job and these investments are continuous and stable. Also, feeling driven to work has a significant positive relationship with organizational citizenship behavior. This means that workaholic employees are more result-oriented rather than task-oriented. In the other words, workaholic employees consider more work processes rather than work outcome. One of the proposed suggestions is that employees have to choice positive work holism. These employees do their duty quickly and they work hard. They devote their time for organization's goals. According to MacKenzi et al. (2005), the positive approach of work holism lead to work for long hours. Finally, there was a significant relationship between work enjoyment and organizational citizenship behavior. This means that workaholic employees love their job and they work with happiness. Therefore, they try double and are loyal against organization. According to Podsakoff et al. (1995), tasks that are intrinsically satisfying lead to happiness and enjoyment in employees' work that finally increase organizational citizenship behavior. Experts recommend that for supporting of behaviors related to work addiction in organizational environment must employees receive rewards for their behaviors (McMillan, O'Driscol, Marsh & Brady, 2001). Managers and experts who work long hours in organizations reported high levels of commitment and happiness (Burke, 2001). Employees who are workaholic, they work instead of extra people in organization (Armitage, 2001). Also, there is a significant relationship between work holism and the time that employees devote on their job. Workaholic

employees spend more hours than who are not work holisms (Mudrack & Naughton, 2001). According to research findings, there are strategies to reduce negative impacts of work holism and increase organizational citizenship behaviors among employees.

1- Organizations have to consider rewards for positive work addiction behavior for employees.

2- Jobs should be designed based on employees' intrinsic attraction that leads to organizational citizenship behavior finally.

3- In the field of organizational missions and duties, organizations have to consider employees' internal desire that lead to organizational citizenship behavior.

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The effect of logo therapy on improving the quality of life in girl students with PTSD

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Abstract: Natural disasters are an inevitable part of human life. The 6.6 Richter earthquake in Bam killed 26,000 and injured 30,000 people, and destroyed 85% of houses according to the literature. It is obvious that one of the main reasons for decreasing the quality of life in survived individuals is losing the meaning of life and becoming irresponsible toward it. The purpose of the study was to examine the effect of logo therapy on improving the quality of life in girl students with PTSD. Method of research was semi-experimental with control group. Procedure of sampling was purposeful in which 24 students with PTSD were selected and randomly divided into two groups. Experimental group received 8 sessions of logo therapy once a week. Tools of research were two questionnaires; A. PTSD Inventory, That is based on the DSMIV-TR criteria for PTSD. B. quality of life questionnaire. Its four subscales consist of physical health, psychological health and social relation, and environment life. The results indicate significant difference between two groups in physical health, psychological health and life environment dimensions, while there was not any significant difference between two groups in social relationship after psychological intervention t=1/70, (p<0/05).

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Introduction

Mood and depression fluctuation may be witnessed among adolescents in this transitory period for growth of the secondary sex character. Sudden changes in their physical and psychological conditions may easily trigger loss of adaptability to their societal environment (Korea Youth Research Association, 2003). By seeking the meaning and purpose of life, teens develop their own self-identity in society during puberty. In case they find answers to issues pertaining to life, they seek to gain independence, pursue goals and finally they achieve self-esteem and self-identity (Kang, 1998). However, any possible failure in exploring the purpose of life would automatically lead to a loss of confidence and would bring about depression and meaninglessness for them. The feelings may land them into a situation where they might lose optimism and could easily turn to delinquency (Cho, 2000; Choi, 2000).

A major global public health problem arises from earthquakes and their aftermath. Tremors jolt everything and everybody quickly, without any pre-warning. They are not controllable and can leave a large number of people dead or wounded in addition to torn-down buildings and other structures. In fact it is the case with any other natural disasters. After a trauma over loss of close people and loved ones, survivors are exposed to an elevated risk of experiencing psychological distress, including posttraumatic stress disorder (PTSD) (Sharan et al., 1996; Goenjian et al., 2000; Wang et al., 2000), dissociative reactions (Cardena et al., 1993), (Nolen-Hoeksema et al., 1991) and nightmares (Wood et al., 1992). Among victims of earthquake trauma, the prevalence of exposure to PTSD ranges from 13 to 95% (McMillen et al., 2000; Armenian et al., 2000). For this reason a large number of affected people are feared to develop PTSD consequences, among them impairment in relationships, work, and leisure activities (Kessler, 2000; Amaya- Jackson et al., 1999). McMillen (McMillen et al., 2000) has previously discussed Subsyndromal PTSD in earthquake survivors. He has reported intrusive symptoms and hyper arousal in 48% of survivors of the Northridge, California earthquake. There is an outstanding feature in this study, i.e. symptoms did not require to be present in each of the PTSD symptoms in his definition of a traumatic stress reaction.

On Friday 26 December 2003, the southeastern Iranian city of Bam was jolted with a strong earthquake measuring 6.6 magnitude on the open-ended Richter scale. The official fatalities figure was 26,000-plus dead and in excess of 30,000 injured. Some 75,000 people were also rendered

homeless in the trembler, which ruined most of Bam and nearby villages. Some survivors were struck with posttraumatic stress disorder (PTSD) as they lost family members and friends. The affected people mainly show symptoms such as re-experiencing, avoidance and hyper arousal. It is widely prevalent among people who have undergone one or more traumatic events, though not everyone with the experience develops the disorder (Monroe et al., 1991; Costello et al., 2002). About 8% of the population in the society are affected by PTSD (Kessler et al., 2005). The mental disorder usually stems from a chronic course and leads to significant work and social impairment. The person affected by the condition finally relies heavily on healthcare (e.g., Hidalgo and Davidson, 2000; Jaycox and Foa, 1999; Stein et al., 2000). The focus of studies in recent years has been the reasons behind the fact that the female population are at greater risk than their male counterparts for the PTSD following a traumatic event (e.g., Breslau & Davis, 1992; Brewin, Andrews, & Valentine, 2000; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Moreover, several studies have shown that the likelihood for women to maintain PTSD symptoms is four times higher than males (Breslau & Davis, 1992; Breslau, Davis, Andreski, & Peterson, 1991). Implementation of exposure-based therapy, such as Prolonged Exposure, for treatment has been widely suggested in the past three decades in various studies (PE; Foa and Rothbaum, 1998; Ponniah and Hollon; Powers et al., 2010.) Eye Movement Desensitization Reprocessing Therapy also has empirical support (EMDR; Shapiro 1999), though this method has put forth some questions on methodological grounds (e.g., Taylor et al., 2003; Rothbaum et al., 2005), a number of recent reviews (e.g., Spates et al., 2009; Nathan and Gorman, 2007; Ponniah and Hollon, 2009) and meta-analyses (e.g., Bisson et al., 2007; Seidler and Wagner, 2006) conclude that EMDR is an effective treatment for PTSD. In some other studies it is suggested that cognitive therapies, including Cognitive Processing Therapy (CPT; Resick and Schnicke, 1992), also reduce PTSD symptoms (e.g., Chard, 2005; Ehlers et al., 2003; Monson et al., 2006; Resick et al., 2008, 2002). Institutes of Medicin has reviewed the body of evidence for PTSD treatments to date. In a 2008 report, it has concluded that the only efficacious approaches are those that have an exposure component with sufficient evidence. As no single intervention is universally effective, acceptable or feasible, a need for additional PTSD treatment approaches is felt in addition to the existing ones. (Bradley et al., 2005; Schottenbauer et al., 2008). Furthermore, studies on clinician attitudes toward exposure therapy hint that many therapists feel uncomfortable using these treatments (e.g., Becker et al., 2004). For this reason, the necessity for developing intervention approaches aimed at effectively treating PTSD in those who are unresponsive to the available empirically supported approaches or who prefer an alternative intervention is felt more than before. In this process, understanding predictors of treatment response and effectiveness of a certain treatment for specific individuals is of utmost importance.

Logo therapy is a therapeutic theory that focuses on humans' urge to find answers on the reasons and nature of living and promote mental health (Kim, 2007; Park, 2005). It guides the afflicted people to find the purpose and meaning of their lives which enables them to have a Responsibility to live and a liberty to enjoy (Frankl, 1988). Simply put, this intervention is a psychological, therapeutic treatment with a spiritual approach to the root causes of the disorder. Through the term "Tragic Optimism," Frankl has touched on the rudiments of logo therapy. This term defines the human ability to make success out of suffering and make meaningful action out of guilt. Frankl's school of psychotherapy directly deals with the issues of fate and freedom. Fate in Franklian psychotherapy is defined as human beings' inability to control the circumstances of lives, and in defining freedom it is said human beings can control attitudes and responses to those circumstances (Lukas 2000). For the process of treatment 3 stages have been defined by Lokus & Zwang Hirsch (2002): 1- Diagnosis 2- Treatment 3- Follow up. In the "Diagnosis" stage some data are gathered from pharmacologist's history, interview, questionnaire & mental tests. Frankl has floated the idea that there is no pure symptom in any of these cases, so we must pay attention to physical, psycho & spiritual disturbances during the process of diagnosis,. 2- In the "Treatment" stage the client sees a ray of hope that she would find an outlet to the problem. In this stage empathy and sympathy are key words for direct or indirect contact with patient. Treatment which is used for clients must be suitable for all their personal problems not only for few symptoms without considering other intervening items. Moreover, psychotherapy, meaningtherapy, and pharmacotherapy must be used simultaneously as complementary treatment lines. Aim of meaningtherapy is to complete psychotherapy not displacing it. 3-In the "Follow up" stage the issues pertaining to stressful life are dealt with after treatment is complete. We should make sure that the client learns how to tackle the pain inflicted from loss, though it is by no means sufficient. Some unexpected situations might come up in life. After the treatment stage the client should be enabled to evaluate the system and discover potential for meaning of life. They should have some options and explore a new purpose for life.

The World Health Organization defines Quality of Life as 'an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns' (WHOQOL,1994). However, in terms of healthcare QOL is usually viewed from the negative effect(s) of a debilitating, life-threatening or terminal illness, natural decline in the health of an elderly person, an unforeseen mental/physical loss of a loved one, chronic, end-stage disease processes. In another research the quality of life is defined as "The degree to which a person enjoys the important possibilities of his or her life" (The University of Toronto's Quality of Life Research Unit). This research is based on the concepts of "being" – i.e. who the person is – "belonging" – i.e. how the person is connected to their

environment – and "becoming" – i.e. whether the person reaches the goals, hopes, and aspirations.

Southwick et al (2006) have examined the logotherapy as an essential psychotherapy method for soldiers who were suffering from war-related PTSD. In their studies, many soldiers with PTSD live with significant uncertainty about the meaning of their personal lives caused by suffering, self-accusation and death. Through their studies, they observed that many soldiers were willingly taking part in finding their own life's meanings after treatment.

The impact of a logo therapy education program on children with cancer has been assessed in another research (Kang, et al 2009). This study shows Logo therapy succeeded in minimizing the trauma and maximizing the meaning of life. To prevent existential distress and improve quality of life for adolescents with terminal cancer, this type of treatment has proved helpful.

Asagba 2004 discussed the application of logo therapy and effectiveness of meaning as the focal point in developing countries, where economic crises apply extra unavoidable pressure on people.

Hutchinson & Chapman (2005) also draw some parallels between Albert Ellis' Rational Emotive Behavior Therapy (REBT) and Viktor Frankl's Logo therapy and claim the two therapeutic processes are integral and the compatibility between the two models can help a client find out a reason-driven meaning. In this integrated approach "construal processes", "mechanisms of change", and "the role of courage and responsibility" have been highlighted as three main points of integration.

(Kyo 8 Suhhoo 2004) investigated the effects of Logo therapy with Exercise on the meaning of life, ego integrity and IADL's in the Elderly. The results showed it as an effective nursing intervention for the elderly.

According to numerous studies, logotherapy can be applied for addressing loss of meaning, We chose logotherapy since it directly deals with a host of symptoms and/or worldviews commonly seen in this patient population such as a sense of foreshortened future, feeling of guiltiness, survivor guilt, an external domain of control, and existential loss of meaning. Hence, it is essential to assist girl students with PTSD continue their search for the meaning of their lives.

Statistical analysis

METHOD

Participants and procedure

Research society was 24 girl students with PTSD aging 15-18 in city of Bam who have been survived the Bam earthquake. Procedure of sampling was purposeful. Individuals were randomly placed in two groups (experimental and control groups). Method of research was semi-experimental with control group. We had 8 sessions for experimental group. Each session was 1 hour. Treatment Sessions plan refers to Blair work on logotherapy (2004). this therapeutic process seeks to fill an "existential vacuum" and help survived adolescents. Some steps are involved in this process which would pave the way for identity development and amelioration of PTSD symptoms. These steps include forging ties with the client for treatment purposes; aiming to give the client a better glimpse of life; reconstructing the client's condition and introducing it as a helpful indicator that something is missing rather than an enemy; achieving meaning and perceiving it as a source of learning; and ultimately seeking to attain goals and values through the perceived meaning.

Measures

PTSD Inventory

Severity of PTSD which has been assessed by PTSD Inventory. This is a 17-item self-report scale based on the DSMIV-TR criteria for PTSD which evaluates post-traumatic symptomatology. PTSD severity was calculated according to the number of symptoms (Solomon, et al, 1993). This inventory approach was used in previous studies. It is a highly reliable measure, and has good convergent validity when compared to structured clinical interviews. The internal consistency was calculated for the current sample was high ($a = 0.91$).

Quality of life questionnaire

We had quality of life questionnaire with 20 questions. Its four subscales consist of physical
health, psychological and social relation, and environment life. Reliability was 0/78.

TABLE 1: Mean and standard deviation of two groups in Quality of life (pre-Test).

variable	Groups	N	M	SD
Physical heath	Experimental	12	8/8	3/73
	Control	12	10	4/87
Psycho logical heath	Experimental	12	10	3/29
	Control	12	8/5	4/11
Social relationship				
	Experimental	12	7/9	2/84
	Control	12	8/6	2/22
Environment of life				
	Experimental	12	9/4	4/27
	Control	12	5/6	3/56

TABLE 2: Mean and Standard deviation in Quality of life (post-Test)

variable	Groups	N	M	SD
Physical heath	Experimental	12	6/8	3/35
	Control	12	9/6	5/12
Psycho logical heath	Experimental	12	5/5	2/83
	Control	12	8/1	3/47
Social relationship				
	Experimental	12	6/2	2/2
	Control	12	8/4	2/2
Environment of life				
	Experimental	12	4/8	3/67
	Control	12	5/7	3/62

TABLE 3: T –Test to independent group (experimental and control) in physical heath

Variable	N	Differential score	Standard deviation	Error	Differential mean	T
Experimental	12	-2	2/26	0/71	-1/6	
Control	12	-0/4	0/69	0/22	2/13	

For all variables, Df= 22 and P<0/05

TABLE 4: T – Test for independent groups in psychological health

Variable	N	Different score	Standard deviation	Error	Different mean	T
Experimental	12	-4/5	1/84	0/58	-4/6	2/13
Control	12	-0/4	0/69	0/22		

For all variables, Df= 22 and P<0/00

TABLE 5:T – Test for independent groups in social relation

Variable	N	Different score	Standard deviation	Error	Different mean	T
Experimental	12	-1/7	2/66	0/84	-1/5	1/70
Control	12	-0/2	0/42	0/13		

For all variables, Df=22 and P<0/05

TABLE 6:T – Test for independent groups in environment life

Variable	N	Different score	Standard deviation	Error	Different mean	T
Experimental	12	-4/6	2/91	0/92	-4/7	5/07
Control	12	0/1	0/31	0/1		

For all variables, Df=22 and P<0/001

Results

Means and standard deviations of two groups in Quality of life scale (Physical heath, Psycho logical heath, Social relationship and Environment of life) are presented in Table 1(pre test) and Table 2(post test). As indicated there was significant difference in quality of life scale after therapeutic intervention. Table 3 presented t–test to independent groups (experimental and control) in physical heath variable. As indicated, there was significant difference between pre – post test in two groups t= 2/13, p< %5. Table 4 presented t–test to independent groups in Psychological heath variable. As indicated, there was significant difference between pre – post test in two groups t= 6/58 P<0/001. Table 5 presented t-test for independent groups in social relation variable. As indicated, there was no significant difference between two groups in social relation in pre-post test t = 1/70, P< 0/05. Table 6 presented t–test to independent groups in environment life variable. As indicated, there was significant difference between pre – post test in two groups t=5/07, p<0/001.

Discussion

Logotherapy is a kind of psychotherapy that mainly focuses on the freedom of human in life. This approach believes that humans can endure Meta pain and attain meaning of life. Hence, human are able to choose meaning because they are free and can select different option. In this light, the study's hypothesis is: One of reasons for reduced Quality of Life in earthquake-affected girls is losing the meaning of life and becoming irresponsible toward it. In direct contrast to the triangle (death, guilt, and trouble), logotherapy empowered this people and changed they attitude for their feature life. Our results show that experimental group have been recovered in 3 dimensions (physical, psychological, and environmental life), and logotherapy increased their quality of life. As a result, these girls could perceive that although they cannot differ what have happened to them, they can have a better attitude toward the accident which has affected them as well as their life. The clients managed to bring depression and anxiety under their own control and become more adaptable to their living environment. In additiona, they released victim and weakness personalities (based on Gestalt approach), and could more communicate internally. Data do not show change in social relations, and this is mostly because they were suffered from depression which causes isolation and withdrawal. Generally, it is common that healthy people when engaged in critical situations show PTSD and panic attack symptoms which could lead to isolation or even autism. Due to the result, we can claim that subjects' psycho-somatic symptoms ameliorated after training sessions. Catharsis is one of the best techniques for recovery block and denial behaviors such as defense mechanisms. In a word, the outcome states that "life has many problems, but if meaning is found we can use some positive energy to find and view the positive symptoms and dimensions of it."

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Performing Biginelli Reaction using Catalytic System of Melamine Sulfonic Acid and ZnO Nanotube

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Abstract: In the current investigation, the catalytic effect of ZnO nanotube in presence of solid melamine sulfonic acid in Biginelli compression reaction is studied. Melamine sulfonic acid, as the solid acid resulted from the reaction between chlorine sulfonic acid and melamine synthesis in presence of ZnO nanotubes, was used as catalyst of Biginelli compression reaction. The compression reaction between ethyl acetoacetate, urea, and different aromatic aldehydes in this catalytic system was studied without solvent and at the temperature of 110° C. the results of reactions' progress with TLC shows successful compression reaction. Consequently, urea was changed to thiourea and the experiment was repeated. In all cases, products were separated with favorable efficiency and in proper time.

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Key words: Melamine Sulfonic Acid, ZnO Nanotube, Urea, Thiourea, Ethyl Acetoacetate

1-Introduction

1-1-Reactions in Absence of Solvent

Performing reactions when there is no solvent has several advantages.Tanka and Toda (2000) presented pollution reduction, cost reduction, and simplicity in process, which are of great importance in the industry.

In recent years, researchers have tried to find environmental friendly reactions, due to increment of concerns about environmental and economic issues. Toda (1987) invented a method, known as rubbing method, in which solid materials are grinded by a mortar to generate products. This method is able to form products with high efficiency and perform without solvent, which helps to achieve green chemistry objectives.

1-2-Multicomponent Reactions

Multicomponent reactions are a set of equilibrium reactions, which end in an irreversible stage. They have been developed as an interesting synthesis method for simple production and quick approach to a wide range of organic compositions. Multicomponent reactions are single capacity reactions, which take place easier than multistage reactions.

Based on their mechanism, multicomponent reactions are divided into three categories:

Multicomponent reactions, first group: In these kinds of reactions, ingredients, intermediate products and final products are in equilibrium. In these reactions, final products are a mixture of intermediate products and ingredients. Stearic reaction is an example of this group.

Multicomponent reactions, second group: These equations consist of a chain of reversible reactions that end with a stage of irreversible reactions, which helps in progress of reactions. Often, this final stage consists of a pyrogenic reaction, such as becoming aromatic and closing the loop. The Biginelli Reaction is included in this category.

Multicomponent reactions, third group: These reactions, which are common in cells that produce biochemistry materials consist of chains of irreversible reactions. However, the number of these reactions is very small in chemistry.

Many known reactions have acids as their catalysts. One popular acid is sulfuric acid, which is corrosive, and working with it has some risks. To overcome these shortcomings, it is preferred not to use it or utilize a substitute material.

Many solid acids are used as catalysts, including Melamine Sulfonic Acid, Silica Sulfuric Acid, Aluminum Hydrogen Sulfate on a Silica gel base, Heteropoly Acids, and Cellulose Sulfonic Acid etc.

1-3-Zinc Oxide Nanotubes

Zinc oxide is an n-type semi-conductive compound with large energy gap (3.37 eV). This property makes it suitable for application in electronics, photo electronics, and sensors. In recent years, great advances have taken place in ZnO nanostructures, such as Nanowire (Elias et al., 2008), Nano rod (Biswas et al., 2008) and Nano sheet (Qi et al., 2008).

Since introduction of carbon nanotubes by Lijima (1991), many investigations have been conducted in this field. Many nanotubes have been produced by different methods; ZnO nanotubes can be mentioned in this regard. Oxide nanotubes have drawn attention in efficient performance of sensors, photo voltage cells, and hydrogen utensils, due to their high permeability and large area. Different methods, such as solution-thermal synthesis (Kar and Santra, 2008), chemical vapor precipitation (CVD) (Yuan et al., 2007), hydrothermal synthesis (Chunlei et al., 2007), and cell-gel (Xiaohong, 2006) can be employed to produce zinc oxide nanotubes. This oxide has different structures, including nanowires, tower-like structures, Nano rods, Nano belts, Nano heckles,

and Nano loops. For example, Nanowires can be produced using chemical vapor precipitation, in which the vapor is exposed to a catalyst like Au particles.

1-4-Biological and Pharmaceutical Effects of Dihydropyrimidones (DHPMs)

In the past decade, a wide range of biological properties, including anti-bacterial, anti-fungal, anti-virus, anti-inflammatory, and anti-oxidant effects for dihydropyrimidone derivatives have been reported and studied. It has been pointed out that some derivatives of dihydropyrimidone act as edible anti-blood pressure and anti-stress drugs (Kolosov et al., 2009).

2-Experimental Studies

All used materials in laboratory are products of Merck, ALDRICH, and FLUKA companies. Employed solvents have been drought, using common methods. Silica gel has been drought under microwaves with output power of 1000 W for duration of four minutes. Products are known compounds and are validated by comparison of their physical and spectral properties with references. Progress and required time for reactions have been defined using thin film chromatography. In order to identify and detect products, TLC-Cards Silicagel-G/uv 254nm, St-Jean Baptiste Ave (4000-400 cm-1), Bomem 450, and SEM (LEO 1455 VP model) have been employed.

2-1 Zinc Oxide Nano tube Production

In this study, moist chemical method has been employed to produce ZnO nanotubes, which is the most popular method in nanomaterial forming, due to simplicity in procedure and low cost of ingredients. In addition, controlling is easy in this method due to low temperature (70° C) and environmental atmospheric pressure.

To produce ZnO nanotubes, Zinc Nitrate Salt, Polyethylene Glycol with molecular weight of 2000, and Ammonia solution (1M) are used. In the first stage, zinc nitrate and Polyethylene Glycol were solved in 250 mL of deionized water. Then the ammonia solution was added until the pH of solution reached 11. In the second stage, the solution was stirred in 70 °C for duration of 24 hours. ZnO nanotubes that are white sediments were filtered and washed four times with ethanol and deionized water, and then were drought in oven (60 °C) for duration of 12 hours. Figure 1-3 illustrates the general method of ZnO nanotubes.

2-2 Melamine Sulfonic Acid Production

Melamine Sulfonic Acid catalyst is produced from the reaction of melamine and Chlorine Sulfonic Acid. To this end, 7 grams of melamine is added to a vacuum flask. Then 25 mL of dry Chloroform is added to Melamine and a magnet is placed in the flask. 15 mL of Chlorine Sulfonic acid is poured in a separating hopper and 15 mL of dry chloroform solvent is added to it.

Chloroform is drought by addition of calcium chloride, which should be rested to dehydrate. The flask is heated and stirred with magnet, a cap containing a hole is placed on top it, and the materials in separating hopper are added to gradually. The whole system is connected to vacuum pump or the flask containing soda for neutralizing HCL. In this stage, separating hopper is opened to start the reaction. Released gas vapors are observable on the flask wall, which indicates progress of the reaction. When the separating hopper was emptied, we stir the solution for duration of 30 minutes. As a result, a brown colored solid is obtained, which is Melamine Sulfonic Acid and should remain in the oven at 45-50 °C for 12 hours. Afterward, we cover it with foil to protect it from moisture and light.

2-3 Specification of Acid Capacity of Obtained Acid

To define acidity of solid acid, 0.2 gram of the acid was mixed with 0.1 molar soda, in presence of phenolphthalein and in marine environment. Results showed that to reach 34 mL of soda should be employed, and for each gram of solid acid, the volume of consumed soda is 170 mL. Since the volume of acid is equal to volume of soda, the acid capacity of resulting compound is 17 mL of H^+ for each gram of solid acid.

2-4 General Method of performing Biginelli reaction between different aldehydes, Ethyl Acetoacetate, and Urea; in Presence of Catalytic System of Melamine Sulfonic Acid/ZnO Nanotube

In a large tube, 1 mmol Aromatic Aldehyde, 1 mmol Ethyl Acetoacetate, 3 mmol Urea, 0.05 gram ZnO Nanotube, and 0.2 gram Melamine Sulfonic Acid were mixed using a glass mixer. Then the mixture was placed in an oil bath at 110 °C for about 30-45 minutes. After formation of sediments, the mixture's temperature was allowed to reach ambient temperature and the mixture was washed with cold distilled water. After being drought, it was crystalized in hot Ethanol. Therefore, dihydropyrimidone with efficiency of about 30-65% was resulted.

2-5 General Method of Biginelli compression reaction between aldehyde, Ethyl Acetoacetate, and Thiourea; in Presence of Catalytic System of Melamine Sulfonic Acid/ZnO Nanotube

In a large tube, 1 mmol Aromatic Aldehyde, 1 mmol Ethyl Acetoacetate, 3 mmol Thiourea, 0.05 gram ZnO Nanotube, and 0.2 gram Melamine Sulfonic Acid were mixed using a glass mixer. Then the mixture was placed in an oil bath at 110 °C for about 30-45 minutes. After formation of sediments, the mixture's temperature was allowed to reach ambient temperature, and was then washed with cold distilled water. After being drought, it was crystalized in hot Ethanol. Therefore, dihydropyrimidone with efficiency of about 30-45% was resulted.

3. Results and Discussion

Considering the great importance of dihydropyrimidones and their application in pharmaceutical industries, and increasing attention of organic chemists toward this reaction, several trends have been put forward to optimize this reaction by employing different catalysts. In most of these methods, the catalyst is expensive or its production is difficult. In some cases, prolix reaction and high temperature is reported. Hence, developing cheap catalysts, simple and

effective synthesis methods, which lead to products with high efficiency and mild conditions, are important.
Furthermore, due to the importance of reducing environmental pollution and preventing the formation of subsidiary products in chemical reactions, it is important to develop environmental friendly synthesis methods. In most chemical reactions, the solvent plays an important role and is used in large amounts. Most organic solvents are environmentally harmful; thus, their use should be minimized or eliminated. However, in industry, solvents are often recycled; however, recycling

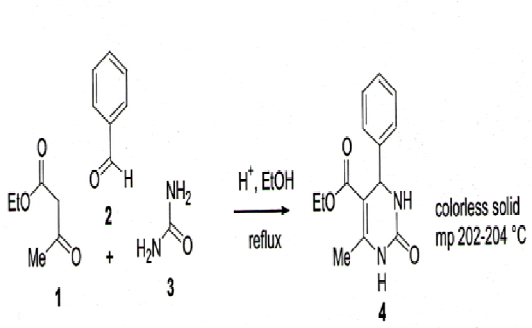
efficiency is low and causes environmental pollution (Toda 1995). Therefore, to solve this issue, solvents like water (Li and Chan; 1997) or super critical gas fluids, such as carbon dioxide, are used .
It goes without saying that the best solution is to do reactions without solvents, which is cost-effective as well as being environmental friendly. Besides, organic reactions are performed with higher efficiency and more selectivity without solvents (Clark 1994). All the mentioned approaches are known as green chemistry. One of its main principles is to maximize usage of ingredients by adding them according to their stoichiometric value and to employ appropriate catalyst, which is separable after reaction and can be used several times (Tire 1995).
In this regard, to achieve less reaction time and high efficiency in formation of derivatives of dihydropyrimidones, solid melamine sulfonic acid and ZnO nanotube are used as catalysts without solvent. These catalysts are cheap, available, and separable.
In recent decades, multicomponent and single capacity reactions have drawn researchers' attention. The obvious advantages of these reactions compared to existing classic systems can be summarized as follows:

1) Reduction of reaction stages;

2) Obtaining products with higher purity in less time, and

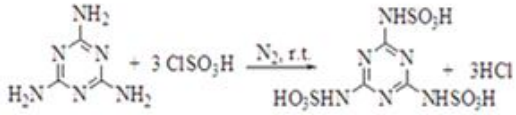
3) Using an appropriate solvent system in all stages of reactions.

Perhaps the most popular multicomponent reaction is Biginelli compression reaction, which was introduced about 120 years ago by Professor Biginelli. This reaction is a compression reaction among Aldehyde, Ethyl Acetoacetate, and Urea (reaction 1).



Reaction 1

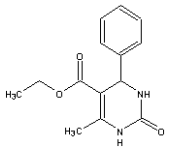
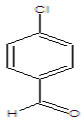
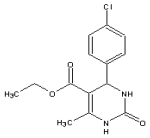
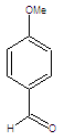
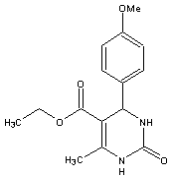
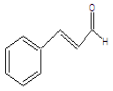
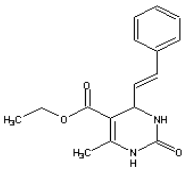
Products of this reaction become different with variation in aldehyde structure and present pharmaceutical properties; dihydropyrimidones are important in pharmaceutical industries.
In this work, capability of nanotubes in setting an appropriate environment for reactions was considered. In this regard, ZnO nanotube and nitrate zinc were selected. $6H_2O$ with Ammonia solution in presence of Ethylene Glycol stabilizer was produced using the method described in section 2-2. Consequently, Melamine Sulfonic Acid was resulted from the reaction of Melamine Chlorine Sulfonic Acid in the absence of solvent (reaction 2).



Reaction 2

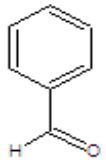
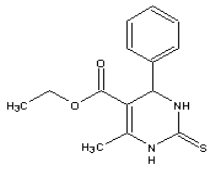
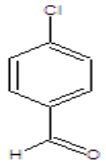
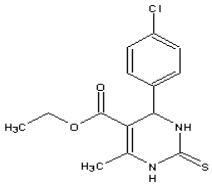
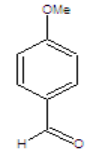
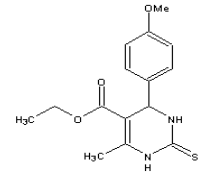
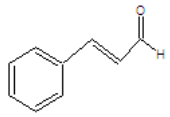
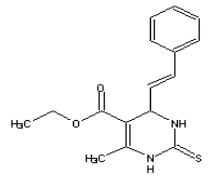
The subsidiary product of this reaction is HCl gas that can exit the container of reaction. To form a powder of Melamine Sulfonic Acid and usage of microcell environment in nanotubes, Melamine Sulfonic Acid and ZnO nanotubes were mixed in mass ratio of 4:1. This catalytic system was employed in Biginelli compression reaction. At first, Benzaldehyde, as the simplest aromatic aldehyde, was selected and mixed with ethyl acetoacetate and urea in molar ratio of 1:1:3; in presence of 0.25 gram of Melamine Sulfonic Acid mixture and ZnO nanotube as the catalytic system were added. Then the reaction was performed at temperature of 105-110 °C. After 45 minutes, sediments formed in the container, showing completion of the reaction. Results are depicted in Table (1).
Obtained products were crystalized in hot Ethanol after being washed with distilled water and the pure product was separated with efficiency of 65%. The IR spectrum of product has two groups of Carbonyl as well as NH elements. In addition to IR spectrometry, which confirms the structure of the product, the melting point of the product was specified and as a physical parameter of material, approves the structure of compound (melting point: 183° C).

Table 1- Compression of aldehyde, ethyl acetoacetate, and urea; in presence of melamine sulfonic acid/ ZnO nanotube without solvent

	Initial aldehyde	Product	Time (minute)	Efficiency (%)
1			30	65
2			45	46
3			45	31
4			45	35

To vary the products, we used Thiourea instead of Urea, and the reaction was repeated under similar conditions. The results are depicted in Table (2).

Table 2- Compression of aldehyde, ethyl acetoacetate, and thiourea; in presence of melamine sulfonic acid/ ZnO nanotube without solvent

	Initial aldehyde	Product	Time (minute)	Efficiency (%)
5			30	42
6			45	40
7			45	30
8			45	30

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