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Research Communications

Perceptions of freestyle and Greco-Roman wrestlers toward coaching effectiveness and competency skills

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ABSTRACT

The aim of this study was to compare the attitude of Iranian elite freestyle and Greco- Roman wrestlers toward the skills of their coaches. A total of 240 freestyle and Greco- Roman wrestlers (120 each) which randomly selected from the population consisted the samples of the study. Kavussanu et al (2008) and Myers et al (2010) questionnaires were used to measure effectiveness of self-efficacy and competency skills, respectively. The results showed no differences between perceptions of free-style and Greco-Roman wrestlers toward the self-efficacy. There was significant differences between wrestlers in competency skills. The mean of competency in Greco- Roman was higher than the free style wrestlers. On the basis results of this study, it is recommended that the coaches must be pay more attention to the perceptions of free style wrestlers in order to increase positive attitude of athletes toward them.

KEY WORDS: SELF-EFFICACY, COMPETENCY, EFFECTIVENESS, PERCEPTION

INTRODUCTION

The question of efficacy or effective coaching leadership has been a subject of discussion among coaches, players, and sports fans alike. Among coaches, players and sports fan, the coach in the team leadership assumes as a strong organizer and infrastructure for any progress. Research has shown that a coach's effectiveness is influenced by self-efficacy beliefs for coaching (Vargas-Tonsing, Myers, Felts, 2004; Kavussanu, Boardley, Jutkiewicz, Vincent, Ring, 2008; Feltz, Hepler, Roman, Paiement, 2009; Myers, Chase, Beachamp, Jackson, 2010). Although there has been much efficacy research in various other fields (non-coaches) that assess efficacy expectations toward competencies perceived to underpin performance, for example, the employee teachers (Erdem and Demired, 2007) and college students, all of them concluded that self-efficacy was positively correlated with an organizational performance and effectiveness, (Park and Jung, 2015 and Bao and Luo, 2015).

Coaching efficacy represents coaches' beliefs in their ability to affect the learning and performance of their athletes (Feltz et al., 1999). Based on Bandura's (1997) self-efficacy theory and Denham and Michael's model of

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teacher efficacy (1981), Feltz et al. developed a conceptual model of coaching efficacy. This model comprises four dimensions: motivation, game strategy, technique, and character building. Motivation efficacy (ME) represents the belief that coaches have in their ability to affect the mood and psychological states of their athletes. Game strategy

Efficacy (GSE) is the confidence that coaches have to coach during competition and lead their team to a successful outcome. Technique efficacy (TE) refers to coaches' confidence in their ability to effectively demonstrate skills, recognize talent, and diagnose skill errors. Finally, character building efficacy (CBE) is defined as the confidence that coaches have in their ability to promote the personal development of their athletes, as well as a sense of fair play and responsibility toward sport and other participants.

Athletes' perceptions of a coach's behavior play an important role in several theoretical models of sport coaching. For example, within Horn's (2002) working model of coaching effectiveness, athletes' perceptions and evaluations of a coach's behavior mediate the influence that a coach's behaviour has on athletes' self-perceptions (e.g.self-efficacy) and attitudes (e.g. satisfaction with a coach), which in turn directly affects athletes' motivation and performance. Myers, Feltz, Maier, Wolfe, & Reckase (2006) have conceptualized athletes' perceptions of their head coach's coaching competency as multidimensional (motivation, game strategy, technique, and character building) and multilevel (athletes nested within teams). Myers et al. (2006) defined coaching competency as athletes' perceptions of their head coach's ability to affect athletes' learning and performance.

Effective coaches exert their positive influence on their athletes through their behaviors (Horn, 2002; Smith, Smoll, & Curtis, 1979; Smoll & Smith, 1989) and athletes' satisfaction (Bosselut, Heuze, Eys, Fantayne, Sarrazin, 2012). Thus the effectiveness of the coach covers different roles and styles. The studies in the recent decade on the effectiveness of the coaches was mainly devoted to understanding the characteristics of coaching, Leadership styles and behavior patterns of the coaches. Since the coaching has an educational nature, the characteristics of a good teacher such as organizing, communication and motivational skills should take into account as the characteristics of effective coaches. Coaches must be able to organize trainings in order to provide more available opportunities for the players to learn. Coaches should instill a sense of confidence to the people and have to motivate players to achieve their goals, (Boardley, Kavussanu, Ring, 2008).

Athletes' perception of the behavior of the coach, plays an important role in various theoretical models of sports coaching, for example, the model of leadership by Smoll and Smitt (1992) found that athletes' perceptions of coaching behavior predicts the assessment reactions of the athletes. To make the human resources more mature and to provide effective investment in human resources as well as knowledge of the capacities, capabilities, competencies, strengths and weaknesses, requires an assessment system to evaluate the performance of the human resources. Coaches can function can be evaluated on the basis of information of the athletes, assistant coaches, managers and external factors like the media and other. The effectiveness is concerned to the results or consequences, while there is competence is related to the skills that one has. A coach who is perceived as an effective coach, may also be understood as a good coach (Kavasvna et al., 2008).

During past years one of the most important advances in management technology has been recognized as performance identifications by organizations. The competences of the all members "core competencies" are the factors such as attitudes, skills, characteristics, functional elements and expertise that each member organization are expected to have them. These factors, however, are limited in number, are vital to the success of the organization. McClelland showed aptitude tests that are traditionally used by psychologists to predict the performance does not actually predict job performance, But also because they are often based on cultural factors they are prone to terrible decisions. He also showed other traditional measures such as reviewing results and resources used in the hiring process, equally, were weak in predicting career success. Mac Cleland found a comprehensive alternative to traditional tests of intelligence and talent, called "competency" called. Competence is defined as a fundamental characteristic of a person that enables him to superior performance on the job, role and various situations. Meyers et al (2006) suggested coaching competence for athletes assessment of the ability of their coach in a) affecting the state of their mental skills (including competency of the motivation), b) a positive impact on their personality development in sport (competency of character making), c) leadership during the competition (competency of the game strategy), d) establish diagnosis during exercise (competency of techniques).

Recently, Meyers et al. (2010) have defined the fifth dimension to the athlete's perception of the ability of the coach which relates to the preparation of the athletes physically for competitions (competency of physical condition). Competencies provide a suitable tool for evaluation of all the individuals or at least members of a large group. Competency-based management support and facilitate the strategic objectives of organizations. Today, with the development of sports, clubs managers are faced with complex issues and problems to evaluate

the performance of the coaches which has attracted a lot of attention. While coaches constantly evaluate their athletes, the athletes also provide assessment of personality of the coaches. This perception of coaching competence altered the performance of athletes and provided important perspectives in this regard.

Multidimensional model of leadership of Chelladurai (1990) and the working model of coaching effectiveness of Horn (2002) stated that athletes' perceptions and assessments of the behavior of the players, adjust the effect of coach behavior on self-perception (e.g., self-efficacy) and attitudes (such as the consent of the instructor), which in turn, directly affects the motivation and performance of athletes. Kavovsana et al (2008) also aimed to evaluate and compare the efficacy of coaches and showed their experience of coaching, are a good predictors of the effectiveness of the technique. Bosselut et al (2012) in a multilevel analysis of athletes' perceptions of role ambiguity and competence of coaching in sports teams showed that there is a significant correlation between these two variables. Williams et al. (2003) claimed that coaches are the most important players in determining the quality and success of the athlete's experience. Their research also showed that student athletes should play a central role in the assessment of their coaches, athletes' perceptions and evaluations of the coach, plays an important role in effectiveness of the coaches.

Athletes are able to assess the character and behavior of coaches as their coaching role. Athletes are able to recognize appraised value of coaching as well as understanding and identifying the abilities that are important for the coach. This perception, in general, have a direct impact on the style of coaching and coaching leadership, motivational techniques and the overall level of effectiveness of the coaches. Evaluation of the coaches and perception of the athletes from them is a prerequisite to evaluate the maximum effectiveness of coaching and success. If the coach understand the view of the athletes they will be able to adapt their coaching methods for improving teamwork and unity and more understanding of their athletes with a competitive spirit. Using data from the perception of athletes, coaches, behavior, personality and its relationship with the athletes will better understand.

Stavropoulos et al (2012) identified Five Core Competencies such as sport management techniques, sports science, biology, risk management and skills training for track and field coach and found these competencies necessary for proper implementation and success in their coaching role. Considering the aforementioned points and the important role of coach behavior on mental processes, performance effectiveness and competence of coaches and athletes need a key role in training skilled athletes and team objectives, and that the greater the efficiency of coaches, athletes could affect efficiency, it is more and more precisely to this issue. According to abovementioned and the importance of the coaches' behavior in the psychological process, athletes performance and the importance of effectiveness and competency of the coaches and its important role in training professional athletes considering team goals. The more the effectiveness of the coach the more their effectiveness on the athletes, it is required to pay more detailed attention to this subject.

Therefore, in this study the perception of the effectiveness and competency of coaches from the perspective of Iranian freestyle and Greco-Roman wrestlers are investigated in order to identify their differences to provide scientific and practical guidelines for coaches and those involved in professional sports of the country.

METHODS

This research is a descriptive type and involved 240 Iranian free style and Greco- Roman wrestlers (120 each) which randomly selected from the population consisted the samples of the study. The coaching efficacy (effectiveness) was measured by Kavasuna et al. (2008). This questionnaire is a 24-item self-report inventory and consists of four subscales; motivation, game strategy, technique, character building. Each item was rated on a 5-point scale (1 = not at all effective to 5 = extremely effective).

Kavasouna has constructed this questionnaire according to the coach's efficacy questionnaire of the Feltz et al. (1999). Reliability of the questionnaires by using the chronbach alpha method for coaching efficacy and the dimensions of motivation, game strategy, technique and character building were obtained, 0. 84, 0.73, 0.74, 0.67 and 0.53 respectively. Validity of this variable is obtained 0.30 which was significant. For measuring perception of the coach's competency the Meyers et al. (2010) questionnaire was used, which includes 32 question each with 5 Likert score and with 5-points Likert scale with anchors of 1 (no competence), and 5(completely competence).

This questionnaire includes five component, competency of motivation, competency game strategy, technique competency, character building competency, and physical condition competency. Reliability of this questionnaire by using the chronbach alpha method, for coach's competency 0.94 and for the dimension of motivation, game strategy, technique, character building and physical conditions obtained 0.62, 0.80, 0.77, 0.80 and 0.80 respectively. The validity of this variable is obtained 0.42 which is significant.

RESULTS

According to the table 1 the mean age of the Greco-Roman and free-style wrestlers are 23.9 and 23.9 respectively.

According to the table 2 mean perceptions of Greco-Roman wrestlers toward coaches in effectiveness and competency is more than free style wrestlers.

TESTING THE RESEARCH HYPOTHESIS

There is difference between the competency perception of the coaches and its dimensions among the free-style and Greco-Roman wrestlers, consisted the first questionnaire.

In this section the perception of the coach's competency and its dimension is investigated and the multivariable variance analysis (MONOVA) is used to test the hypothesis. The results of the multivariable analysis is shown in the table 3. This table shows the significance level of the four multivariable test for the sport field factor. based on the results of this table the first hypothesis is not passed (Wilk's Lambda= 0.91, F(5,128)=2.5, P=0.3), which shows that the viewpoint of the free-style and Greco-Roman wrestlers are different with each other at least in one of the variables of the competency perception of the coaches and its dimensions.

Table 4, shows the results of the one way variance analysis (ANOVA) of the competency perception of the coaches and its dimensions. According to the table 5-44 the significance level of the sport field for the coach's competency perception variable is less than 0.05 and is significant in the level of $p<0.05$. Thus, there is difference between the coach's competency perception between the free-style and Greco-Roman wrestlers. According to this table the mean of the coaches' competency perception of the Greco-Roman wrestlers is more than that of free-style wrestlers. The significance level of the sport field

Table 1: Age distribution of the wrestlers with respect to the sport field

	Mean		SD		Min		Max	
	Free	Greco	Free	Greco	Free	Greco	Free	Greco
variables	Style	roman	Style	roman	Style	roman	Style	roman
Age	23.9	23.9	3.5	5.9	18	18	37	32

Table 2: Descriptive statistics of the research variables according to the sport field

	Mean		SD		Min		Max	
	Free	Greco	Free	Greco	Free	Greco	Free	Greco
variables	Style	roman	Style	roman	Style	roman	Style	roman
Effectiveness	3.86	3.88	0.63	0.49	2.83	2.71	5.00	4.75
Motivation	3.82	3.98	0.55	0.69	2.43	1.86	4.71	5.00
Game strategy	3.51	3.77	0.78	0.62	2.00	1.86	4.76	4.71
Technique	3.8	3.3	0.68	0.59	2.33	2.50	5.00	4.83
Character building	4.1	3.99	0.54	0.69	2.75	2.25	5.00	5.00
Competency(C)	3.26	3.54	0.7	0.72	1.84	1.91	4.84	4.88
Motivation C	3.25	3.25	0.81	0.79	1.50	1.50	5.00	5.00
Game strategy C	3.18	3.56	0.76	0.80	1.75	1.63	4.88	4.88
Technique C	3.28	3.62	0.73	0.78	2.00	1.67	5.00	5.00
Character building C	3.36	3.42	0.74	0.81	2.29	2.00	5.00	5.00
Physical Condition C	3.22	3.51	0.87	0.81	1.29	1.86	4.71	4.71

Table 3: Results of the multivariable variance analysis for coaching competency

Factor	Source	Value	F	df	df error	Sig
Sport Field	Pilla's Trace	0.09	2.5	5	128	0.03
	Wilks' Lambda	0.91	2.5	5	128	0.03
	Hotelling's Trace	0.09	2.5	5	128	0.03
	Roy's Largest Root	0.91	2.5	5	128	0.03

Table 4: Results of one-way variance for the competency of the coaches and its dimensions.

Sources	SS	df	MS	F	Sig	Mean	
						Free style	Greco-Roman
Competency(C)	2.62	1	2.62	5.17	0.02	3.26	3.54
Motivation C	2.4	1	2.4	3.72	0.06	3.25	3.52
Game Strategy C	4.6	1	4.6	7.5	0.007	3.18	3.56
Technique C	3.8	1	3.8	6.75	0.01	3.28	3.62
Character building C	0.53	1	0.53	0.9	0.3	3.36	3.42
Physical condition C	2.73	1	2.73	3.8	0.05	3.22	3.51

Table 5: Results of multivariable variance analysis for coaching effectiveness

Factor	Source	Value	F	df	df error	Sig
Sport Field	Pilla's Trace	0.01	0.31	5	129	0.9
	Wilks' Lambda	0.98	0.31	5	129	0.9
	Hotelling's Trace	0.01	0.31	5	129	0.9
	Roy's Largest Root	0.01	0.31	5	129	0.9

for the competency of strategy making is less than 0.05 and is significance in the level of $p<0.05$. According to the table the mean of the strategy making competency of the Greco-Roman wrestlers is more than that of free-style wrestles. The level of significance of the sport field for the skill teaching competency variable is less than 0.05 and is significance in the level of $p<0.05$. Thus the three is difference between the skill teaching competency of the free-style and Greco-Roman wrestlers. The mean of the skill teaching competency of the Greco-Roman wrestlers is more than that of free-style wrestlers. The significance level of other dimensions of the competency perception of the coaches is more than 0.05 thus there is difference between the other dimensions of the coach's competency among the free-style and Greco-Roman wrestlers.

There is difference between the perception of the coaches' effectiveness and its dimensions among the free-style and Greco-Roman wrestlers, consisted second hypothesis.

In this section the perception of the effectiveness of the freestyle and Greco-Roman wrestlers are compared and multivariable variance analysis of the (MANOVA) is used to test the hypothesis.

The results of the multivariable variance analysis is shown in the table. 5. This table shows the significance level of four multivariable test for the sport field factor. According to the results of the table the zero hypothesis is not passed, (Wilk's Lambda= 0.98, $F(5,129)=0.31$, $P=0.9$), which shows that the viewpoint of the free-style and Greco-Roman wrestlers is the same with each other at least in one of the of the effectiveness perception of the coaches and its dimensions.

DISCUSSION

Coaches' effectiveness is one of the main variables that has an important role in to progress the technical goals and success of the federation and clubs. Effectiveness relates to results while competency relates to individuals. An effective coach is also considered as a competence coach (Kavasano et al). The perception of the athletes from the behavior of the coach plays an important role in the theoretical models of sport coaching. As the relationship of the coach and the athletes in the wrestling is inevitable, the behavior of the coach has its own effect in the upcoming reactions as well as improving the performance and success of the athletes. The objective of the present study was to compare the perception of the effectiveness and perception of the competency of the coaches from perspective of Iranian's free-style and Greco-Roman wrestlers.

The results of the study showed that there is difference between the competency perception and the subscale of goal strategy, technique and physical condition among free style and Greco-Roman wrestlers. The mean of these variable in free style wrestlers more than Greco Roman wrestlers. There is no significance difference between the other dimension of the coach's competency among the free-style and Greco-Roman wrestlers. The results of this study is consistent with that of Phil-

lips and Jubenville (2009) and inconsistent from that of Chuil, Mahat, Phoy and Radzuwan. (2013). Boardley, Kavussanu, and Ring (2008) showed that the evaluation of the athletes from the ability of their coach in motivation, providing instruction and induction of fair play, have important implication for the use of the variable of this research. Chen and Silverthorne (2007) showed that there is a significant relationship between the effective leadership of the coaches and team integration, as well as motivation of promotion.

Bosselut et al. (2012) in a multilevel analysis of athletes' perceptions of the role of ambiguity and competence in coaching of sports teams showed that there is a significant correlation between these two variables. Thus, based on the previous researches and the result of the present study with the well understanding of the coach of the opinion of the athletes about them, they can be able to adopt their method in order to improve team integrity and bring up competitive athletes and with using information from athletes, coach's behaviors, personality and its relationship with the athletes will better understanding about athletes. Differences of opinion suggests that, contrary to what common sense dictates man does not understand the world around directly. Coaches should know these athletes reaction is based on their perception. Thus the perception of the athletes form the coach behavior is more important whether the coach judges the athletes through personal opinion. Coaches should pay close attention to the perception of the athletes, both in terms of work and job is and the kind of thought about the coach's behavior.

Therefore, according to the study and the results of this research in discussing the perception of the coaches strategy making it is expected from the coach to make use of competitive strategies, including designing strategies to increase the weaknesses and decrease the strengths of the opponent, employing a successful strategy in the changing conditions of the game, Effective decisions in difficult situations and giving an effective replacement during the competition. In the case of goal strategy competencies it is expected from the coach to teach suitable errors and advanced techniques to the athletes.

The results showed from perspective of free-style and Greco-Roman wrestlers on the perception of the effectiveness of coaches and its dimensions are different. The results of the study is not consistent with the results of Leo et al. (2009); Kavussanu, et al. (2008). Various researches have emphasized the role of athlete's perception of the effectiveness of coaching, and stated that athletes understanding of the behavior of the coach is effective in maintaining and withdrawing their activity. Kavussanu, et al. (2008) stated that the behavior of the coaches has the greatest impact on behavioral results of the athletes. Williams et al. (2003) claimed that coaches are the most important person in determining the quality and success of the athlete's experience. Their research also showed that student athletes should play a central role in the assessment of their coaches, athletes' perceptions and evaluations of a coach, plays an important role in coaching effectiveness. Moen and Federici (2013) features an efficient coach characteristics as: listening, leadership, being a teacher, guidance, being counselor distinguished.

Chelladurai, multidimensional leadership model (1984) and the effectiveness of coaching of Horn (2002) stated that athletes' perceptions and assessments of the behavior of the coach, balances the effect of coach behavior on efficacy (e.g., self-efficacy) and the attitudes (such as the consent of the instructor) of the athletes which in the turn, directly affects the motivation and performance of athletes. Kavussanu, et al. (2008) also evaluated and compared the efficacy predictors of coaches and showed their history and experience of coaching, are significant predictors of the effectiveness of the technique. Chase et al (2005) in their study reported that efficacy of coaching includes coaching experience, leadership skills and development, earlier successes, previous skills, growth and progress of players and social support. Model of leadership by Smoll and Smith (1992) also found that athletes' perceptions of coaching behaviors predict the assessment reactions athletes. Cote et al. (1999) argue the competency of coaching occurs when competency is gained through coaching experience. Meyers et al (2006) evaluated the competency of coaching from the athlete's assessment of their coach to influence learning and performance of the athletes. The results of the study shows that the relationship between the coach and the athletes is inevitable and any behavior of the coach has its own reactions and it is also effective to improve the quality of the athlete's performance and success in competitions.

CONCLUSION

Beside the importance of the coaching in the field of sports and physical education, no sufficient attention is paid to the valuable role of coaches in the improvement of the team condition, because the coaches who train elite athletes have central role in the formation of the national team and club to participate in national competitions, Asian, World and Olympic games. Efficient trainers by providing motivation, sense of fairness, consistency, reliability, confidence, et Citra in the athletes as well as identifying their wrong skills and correcting them skills and identify strategies for dealing with opponents most plays the most important role in achieving honor for national and club teams. In order to prove the importance of the perception of the effectiveness

and competence of coaches some researchers has shown that the players of successful teams have achieved to a high levels of self-confidence, motivation, self-esteem and sense of empowerment. Myers et al. (2005), reported that the coaching efficacy have significant effects on the coaching behaviors, team satisfaction and the percentage of success.

Chen (2007) reported that the there is a significant relationship between effective leadership of the coaches and integrity of the team as well as players progress and their motivation. Kavussanu. et al (2008) also aimed to evaluate and compare the efficacy predictions and showed that coaching background and experience of coaching, is a suitable to predict the effect of technique. The study of the perception of the effectiveness and competence of coaches at the same time revealing the current situation, shows the positive effects of utilizing desirable behaviors of the coaches, as the instructor might want to reach their goals through intimidation, threats, criticism or blame athletes to regardless of the effects of their actions. Undoubtedly, these methods may be short-term and based on a study by researchers it may lead to fatigue and withdrawal of the athletes from sports. Based on the results of this study, it can be conclude that wrestlers coaches that are more effective and competence with coaching are more able to improve their athletic motivation, game strategy, technique and physical conditions.

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Comparison of spiritual intelligence and total quality management in employees of sport and non-sport organizations

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ABSTRACT

This study aims to compare spiritual intelligence and total quality management in sport and Non-sport organizations. Method of this study is causal-comparative. The statistical population includes all employees of sport and Non-sport organizations. 200 employees were selected randomly as the samples of this study. Two questionnaires of spiritual intelligence by Abdullah Zadeh (2009) and total quality management (TQM) by Saadat Jooye Asr (2012) were used to measure the research variables. The results showed that there is a difference between spiritual intelligence of men and women employees in sport and Non-sport organizations. Post hoc test showed that mean of spiritual intelligence in employees of sport organizations was more than employees of Non-sport organizations. There was also a difference between total quality management of men and women employees in sport and non-sport organizations. Post hoc test showed that the mean of one dimensions of total quality management (cultural factors) in non-sport organization was more than employees of sport ones.

KEY WORDS: SPIRITUAL INTELLIGENCE, TOTAL QUALITY MANAGEMENT

INTRODUCTION

Management and subsequently sport management require possessing and acquiring a lot of features related to leadership to access management objectives. Given that management field is an interdisciplinary activity, it benefits from existing findings in the field of management, psychology, sociology, philosophy, anthropology and etc. Study, research and its achievements in different fields according to the increasing prevalence of sport and Non-sport organizations and progress in the academic and sport affairs, do noteworthy contributions for manager in improving the level of management. A variety of intelligence, as well as features such as TQM are some of cases which have been discussed in recent years (Scott, 2014).

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Recently, the concept of intelligence is not only intended as cognitive ability, but also it has been expanded to other domains such as emotional, natural, existential and spiritual intelligence. Organizations have always sought to use all possible means to achieve success. Nowadays, spirituality and morality are some of the subjects that are being widely considered in organizations. Spirituality is effective in individual moral development and this fact leads to the achieving the goals of organization or team (Sternberg, 1997).

Spirituality causes the formation of values, and results in repetition of the performance, the proper moral behavior, then promoting personality and ultimately improving the work environment (Cavanaugh & Bandsuch, 2002). Concept of spiritual intelligence is proposed and developed in the light of the global consideration and interest of Psychologists to the field of religion and spirituality. Spiritual intelligence combines structures of spirituality and intelligence within the new structure (Hildebrant, 2011). Increasing growth of information has caused every human to enjoy experience, knowledge and intelligence that other people have not had the opportunity to acquire those experiences, knowledge so their intelligence is different.

One of the secrets of success in people in today's world is to circulate information among them. No one is able to realize the rate of real information lies in the other people's minds. When this information is started to move that a strong incentive causes the release of it out of mind. At this point, human beings become sensitive to the fate of each other and strive to improve together and finally the flow of knowledge, experience and intelligence, is run through them, which would leads to innovation. In the traditional paradigm, what was thought as the most important predictor of efficacy was Intelligent Quotient (IQ). The results of research show that IQ which is a measure of cognitive intelligence and focuses on Linguistic ability, logical analysis, mathematical intelligence, high-speed computing and High memory, plays very small role in the effectiveness (Sternberg, 1997 and Amranm, 2005). Over the past few decades, studies have expanded and cover different types of intelligence (Chrmers, 2001).

Researchers have considered the possibility of other types of intelligence beyond IQ and have proposed other models such as Practical intelligence (Sternberg, 1997), Inter- and intra-personal intelligence (Gardner, 2000), emotional intelligence (Goleman, 1995) and spiritual intelligence (Zoher and Marshall, 2000 and Emmons, 2000) that spiritual intelligence also has found its place in the literature and research of management and leadership.According to Golman (1995), a strong and effective leader is a person who is inspiring, creates Motivation and commitment, strengthens their positive internal capabilities steadily and changes his leadership style according to the need (Dearborn, 2002).

During the last 9 years, there have been great tendencies in the field of integration of spirituality and intelligence structures in the form of a single structure called spiritual intelligence (Amram, 2007, Amram and Dryer, 2008, Emmons, 1999 and 2000, Halama and Strizenec, 2004, Levin, 2000, Nasel, 2004, Noble, 2000, Vaughan, 2002, Wolman, 2001 and Zohar and Marshall, 2000).As Emotional intelligence is not the same as excitement and emotion, spiritual intelligence is also different from spirituality. It means personal exploration of experimental elements, including meaning of deep and sacred, unity, connection and excellence of Sublime capabilities of human (Emmons, 1999, Wothington, 2001).

In contrast, spiritual intelligence, has integrated the personal and empirical issues related to spirituality with a sense of spirituality, sacred experiences, unity, connection and sublimity and uses them in matters of life to promote performance, adaptation and prosperity and creates achievements that are valuable within a society or cultural context (Emmons, 1999 and 2000).Therefore, spiritual intelligence can be distinguished from spirituality and totally from spiritual experiences (such as Monotheism) and spiritual beliefs such as belief in God (Amram, 2007).

Zoher (2005) is the first one who proposed the concept of spiritual intelligence. He has made this concept usable in business and organization atmosphere by having components that can be examined in his presented model. First, He proposed the model of spiritual intelligence in 2000 by Taking advantage of East mysticism in the form of a lotus flower with six petals and then in 2004, he reformed and introduced his model with twelve dimensions.

One of the first definitions and models of spiritual intelligence is definition of Emmons. According to Emmons (1999), Spiritual Intelligence, is a framework for identifying and organizing capabilities and skills that are needed for using the conformity of spirituality. Emmons (2000) considered Spiritual Intelligence to have five components: 1 - capacity for Transcendence 2 - the ability to experience heightened states of deep consciousness 3 - Ability to invest in daily affairs with the sense of the sacred 4 - The ability to benefit from spiritual resources to solve problems 5 – the capacity of having virtue.

Vaughan (2002) defined Spiritual intelligence as "human talent to inquire and ask about the meaning of life and at the same time, the experience of continuity and connection of each of us with the world in which we live in." On the other hand, Ceske and Torrance, account for spiritual intelligence as the following: 1. The main capacities: interest in the being and universe issues and

skills such as concentration and introspection, inspiration and insight; 2. Core values: coherence and unity, kindness, sense of balance and stability, accountability and worship; 3. Principal Experience: Understanding the ultimate experience and their meaning, peak experiences, a sense of transcendence, a state of deep consciousness; 4. Behavior that is virtuously important like truth, justice, kindness and care; 5. Symbolic System: poetry, music, dance, metaphor, story, brain states.

In the present study, spiritual intelligence has been considered as the ability to apply, reveal and embody the resources, values and spiritual characteristics in order to increase daily performance, efficiency and welfare. Amram, identified different dimensions of Spiritual Intelligence (SI) by taking advantage of the principal and basic theories (Glaser, 1993) As well as qualitative analysis obtained of interviews with 71 participants who volunteered to apply and visualize spirituality in everyday life.

Some of these aspects include: strengthening the meaning through a sense of purpose, mission of doing a work, Training refined Conscience, acceptance and love of the truth, living in accordance with the sanctities, the feeling of "I and you" in human relationships, taking advantage of the Holistic system in attitudes to relationships of every things, love, optimism, trust in life, lack of egotism, humility, internal leadership, revealing the inner freedom, creativity, courage, vision, honesty and utilizing the states of Interpersonal recognition such as the way of solving problems, attention and self-consciousness. These issues related to spiritual intelligence have led to the development of integrated Spiritual Intelligence scale (Amram and Dryer, 2008).

Preliminary studies have shown that this criterion has been the SI scale of measurement and it has comprehensive Reliability and Validity which contains five main criteria and 22 sub-criteria of talent. These criteria have proven and implemented many aspects of SI and have been obtained from thematic analysis of Primary and principal interviews. Effective role of people in the success, efficiency of organizations, domination of individuals over the existing problems and issues with their Intelligence and talent is no secret.

According to Corbin and Strauss(1990), spiritual leaders who own a lot of spiritual intelligence, do five actions of effective and Transformational leaders including Challenging the process of inspiration to The shared vision, empowering others, being the role model of work and heartfelt encouragement more than others. Spirituality is the foundation and basis of religious institutions and primarily it is Continuous sense of an individuals in association with themselves, World, others and the top world.it means that the spirituality is a sublime sense that improves enthusiasm of human Orientation and action for justice and equity and creates continuity with itself and the universe (Tacy, 2003).

Institutionalizing the culture of quality in a country is a very important issue and the lack of it, is a concern of most organizations and scholars who have understood the importance of and determination of quality in achieving the great objectives, in particular, for the success in the future. Total Quality Management (TQM) is one of the newest theories, which was proposed especially in the eighties and nineties by management thinkers and the world's most successful organizations have also benefited from it.

Total quality management, is a technique for the participation of each employee and manager of organizations use this technique to change the organizational culture in matters relating to their organization that covers aims, ideals, attitudes and current practices in the organization. The main emphasis of this type of management is that any employee or director must respond to constantly improvement of the quality of services and products of organization to meet customers' demands.

Today, Comprehensive total quality management is one of the best management patterns in industrial developed countries which caused promotion of quality of products in a competitive way therefore manager create change in their management model and Instead Management, they Take the leadership role, integrate three dimensions of technological transformation, human evolution and management development, and they can progress to the competitive and continuous Transcendence.

This management pattern has been used in various industrial countries such as America, Europe and Japan in the most advanced industries and companies which provide service. The move of this type of management is based on cultural change and human resource development and this has caused Fundamental change in them. The growing number of senior executives who are familiar with TQM in different countries is indicative of the fact that the principles of this management will be the next wave of transition in organizations.

Some manager have not realized the importance of this phenomenon and they may consider it as just a simple way of providing service and some also are just are aware of the its executive success While TQM is defined as follows: knowledge and new attitude to improve the activity domain of the organization "culture", vision for continuous promotion and restoration of the organization "organizational structure", Focus on the demand of customers and a commitment to quality "process" and applying proper method of management "management and leadership". According to the presented subjects, determination and comparison of the spiritual intelligence and total quality management encompasses increasing help to the organizations.

MATERIAL AND METHODS

Present study is a quantitative research and based on descriptive method. This study is an applied research in terms of aim. 100 individuals were selected from sport organizations, and 100 people were chosen from non-sport ones randomly. As a result, the study sample was composed of 200 people. 83 questionnaires from employees of sport organizations and 80 questionnaires from Non-sport organizations were returned of the distributed questionnaires. Two questionnaires were used to measure variables of research:

Questionnaire of Abdullah Zadeh (2009) was used to measure spiritual intelligence. It Includes 33 questions that was given scoring of 1 to 5 and concluded (never, rarely, relatively low, relatively high), respectively. Dimensions of This questionnaire consisted of 1. Understanding and communicating with the origins of the universe; 2. Spiritual life relying on the inner core.

Questionnaire of Saadat jooye asr (2012) was implemented to measure total quality management. It contains 25 questions, 5 choices for each, that are scored from 1 to 5 with titles of (disagree, strongly disagree, no idea, agree, strongly agree) respectively and it is based on Likert scale and dimensions include management, employees, strategic planning, organizational issues and cultural factors.

FINDINGS

Table 1 shows descriptive findings related to personal information of employees in both males and females groups and sport and non-sport organizations.

Table 2 shows the descriptive statistics of research variables which have been differentiated according to sex.

RESEARCH HYPOTHESES

Hypothesis 1 - there is a difference between spiritual intelligence and its dimensions in male and female employees of sport and non-sport organizations. In this section, spiritual intelligence and its dimensions between male and female employees of sport and Non-sport organization were compared. Multivariate analysis of variance (MANOVA) was used for testing this hypothesis.

Results of Multivariate analysis of variance have been reported in Table 3. The significance level of four different multivariate tests for factors of Sex, organization and mutual effect of gender * organization is shown in table 3.

The outcomes of this table indicates rejection of the null hypothesis for the factor of sport and non-sport organization (P=0.003), F (3,157=4.95), (Wilks' Lambda =0.91), which means that views of employees who work in sport and non-sport organization are different on at least one of the variables of spiritual intelligence and its dimensions. According to The results about research variables, there is no significant difference between male and female employees.

Table 4 represents the results of the two-way variance analysis about spiritual intelligence and its dimensions in employees of sport and non-sport organizations. Based on the results of Table 4 and 5, the significance level of organization effect for variable of spiritual intel-

Table 1: Distribution of age and years of experience of employees based on gender and organization

		Statistical indicators							
		Mean		SD		Min		Max	
variable	field	male	Female	Male	Female	Male	Female	Male	Female
age	sport	33.7	35.6	4.9	5.3	26	27	45	49
	Non- sport	34.4	33.9	5.3	4.7	24	27	44	47
Work experience	sport	6.6	9.1	5.1	4.5	2	2	25	21
	Non- sport	9.4	7.5	5.9	3.9	4	3	16	17

Table 2: Descriptive statistics of research variables differentiated according to sex

gender		Mean		SD		Min		Max	
		Male	Female	Male	Female	Male	Female	male	Female
Spiritual Intelligence	sport	4.03	4.1	0.34	0.3	3.12	1.4	4.76	4.2
	Non- sport	3.99	3.91	0.25	0.25	3.24	3.36	4.48	4.58
TQM	sport	3.4	3.31	0.67	0.45	1.8	1.8	5	4.8
	Non- sport	3.46	3.32	0.68	0.65	2.2	2.2	5	4.56

Table 3: Results of Multivariate analysis of variance

factor	Source	Value	F	df	Error df	Sig
sex	Pilla's Trace	0.01	0.98	3	157	0.4
	Wilks' Lambda	0.98	0.98	3	157	0.4
	Hotelling's Trace	0.01	0.98	3	157	0.4
organization	Roy's Largest Root	0.01	0.98	3	157	0.4
	Pilla's Trace	0.09	4.95	3	157	0.003
	Wilks' Lambda	0.91	4.95	3	157	0.003
	Hotelling's Trace	0.09	4.95	3	157	0.003
interaction gender * organization	Roy's Largest Root	0.09	4.95	3	157	0.003
	Pilla's Trace	0.03	1.4	3	157	0.2
	Wilks' Lambda	0.97	1.4	3	157	0.2
	Hotelling's Trace	0.03	1.4	3	157	0.2
	Roy's Largest Root	0.03	1.4	3	157	0.2

Table 4: Results of one-way variance analysis about spiritual intelligence and its dimensions

Source of Changes							Average	
		SS	df	MS	F	Sig	Sport	Non-sport
organization	Spiritual Intelligence	0.47	1	0.47	5.4	0.02	4.05	3.94
	Understanding the connection	0.52	1	0.52	2.7	0.09	4.47	4.35
	The Inner Life	0.09	1	0.09	1.05	0.3	3.86	3.81
**Significance level of p< 0.05								

ligence is less than 0.05 and it is significant in level of p< 0.05.

Therefore, there is a difference in spiritual intelligence between employees of sport and non-sport organizations. According to the results Table 4, Average spiritual intelligence in sport employees are more than non-sport ones.

Hypothesis 2 – there is difference between TQM and its dimensions in male and female employees of sport and non-sport organizations

In this part, Spiritual Intelligence and Total Quality management in male and female employees of sport and Non-sport organizations were compared. Multivariate analysis of variance (MANOVA) was used to test this hypothesis. Results of Multivariate analysis of variance have been reported in Table 5.

This table shows Significance level of four different multivariate tests for factors of Sex, organization and mutual effect of sex * organization. The outcomes of this Table indicate rejection of the null hypothesis for

Table 5: Results of Multivariate analysis of variance

factor	Source	Value	F	df	error df	Sig
gender	Pilla's Trace	0.047	1.36	5	155	0.2
	Wilks' Lambda	0.98	1.36	5	155	0.2
	Hotelling's Trace	0.044	1.36	5	155	0.2
organization	Roy's Largest Root	0.044	1.36	5	155	0.2
	Pilla's Trace	0.11	3.8	5	155	0.002
	Wilks' Lambda	0.88	3.8	5	155	0.002
	Hotelling's Trace	0.12	3.8	5	155	0.002
interaction gender * organization	Roy's Largest Root	0.12	3.8	5	155	0.002
	Pilla's Trace	0.25	0.77	5	155	0.5
	Wilks' Lambda	0.97	0.77	5	155	0.5
	Hotelling's Trace	0.25	0.77	5	155	0.5
	Roy's Largest Root	0.25	0.77	5	155	0.5

Table 6: Results of one-way analysis of variance of TQM and its dimensions

Source		SS	df	MS	F	Sig	Average	
							Sport	Non-sport
	Total Quality Management	0.05	1	0.05	0.13	0.7	3.36	3.39
	Management	1.38	1	1.38	2.23	0.1	3.65	3.45
organization	Employees	0.17	1	0.17	0.3	0.5	3.29	3.35
	Planning	0.12	1	0.12	0.2	0.6	3.42	3.36
	Organizational issues	0.59	1	0.59	0.9	0.3	3.15	3.27
	Cultural factors	2.12	1	2.12	5.1	0.02	3.27	3.51

**Significance level of p< 0.05

the factor of the organization (P=0.002), F(5,155=3.8) , (Wilks' Lambda=0.88), it means that there are various views in employees of Sport and non-sport organizations on at least one of the variables of TQM or its dimensions. According to the results about the research variables, there is no significant difference between male and female employees.

Table 6 shows the Results of two-way variance analysis on Total Quality Management and its dimensions in employees of sport and non-sport organizations. According to the results presented in Table 7-4 ,the significance level of the effect of organization for variable of cultural factors is less than 0.05 and it is significant in level of p<0.05 .Accordingly, cultural factors in employees of sport and non-sport organizations are different. According to the results in Table 6, the Average of cultural factors in employees of non-employees is more sport than sport ones. The significance level in Variable of TQM and its other aspects is higher than 0.05, therefore there is no significant difference between TQM and its other aspects in personnel of sport and non-sport organizations.

DISCUSSION AND CONCLUSION

The aim of this study was to compare spiritual intelligence and Total Quality Management in employees of Sport and Non-sport organizations. Every activity of human does not have the best and most complete form, but it is always possible to do better and better. The involvement of people at doing activities can cause creativity and talents discovery and new ideas. The activities can be accomplished by using these high quality ideas.

Results of two-way variance analysis about spiritual intelligence and its dimensions in employees of sport and non-sport organizations showed that average of Spiritual intelligence in employees in sport organizations is more than employees of non-sport ones. This outcome is consistent with the research (Yahyazadeh Jeloudar (2012) based on this subject that there is a significant relationship between spiritual intelligence, productivity and its subscales in employees.

The result is also consistent with the study of Kamali zarch et al. (2014) according to the subject that there is a significant relationship between spiritual intelligence of employees and its effectiveness. It is also compatible with the research done by Karimi (2015) and Haji Ali-Zadeh et al. (2015) that there is a significant relationship between spiritual intelligence and job satisfaction. It is also consistent with Abdul Rani et al. (2013) according to the subject that work performance is affected by employees' spiritual intelligence. According to Nazel (2004) spiritual intelligence enhances human capabilities, resulting in human Transcendence. Based on Amram (2007) point of view, spiritual intelligence leads to an increase in performance of daily human activities.

Results of two-way variance analysis on TQM and its dimensions in employees of sport and non-sport employees' organizations demonstrated that there was no significant difference between TQM and its other aspects in sport and non-sport employees. This result is consistent with the research () that there is No doubt that today's organizations on the basis of the old rules and the reliance on traditional management will not be able to survive. Because in an evolving world, if an organization wants to survive, must react to these changes and move accordingly (Roopchand, 1997). Therefore, an organization cannot be kept stable relying on traditional methods.

So far TQM has been widely used in the manufacturing, economic and even cultural, and scientific organizations (Packard, 1995). The results have shown that organizations must accept and implement the philosophy of TQM to preserve their survival (Machado, 1995). Many researchers have recognized the relationship between TQM and Organizational Learning through teamwork, systemic approach, individual adaptation to the environment and learning ability in the organization (Borrow, 1993).

There is inseparable and inherent relationship Between TQM and organizational learning. These two relations allow organizations to do their duties systematically

in order to develop and implement new insights and transfer new knowledge through organizing the affairs. (Steven, 2000). One of The limitations of this study was using questionnaire to collect data. Some Recommendations were also proposed for this research.

As the results showed, the average Spiritual Intelligence in personnel of sport organizations is more than employees of non-sport ones. Therefore, considering the importance of issue, manager of sport organizations should investigate and assess the status of variables including spiritual intelligence and TQM in their organizations and they should identify and resolve all the existing obstacles against the promotion of spiritual intelligence and total quality management. They should devote a period of time to sport and leisure for employees. This matter promotes spiritual intelligence, TQM and ultimately promotion and it is required for a successful and smart organization.

According to the results of research about the issue that there is no difference between TQM of personnel in the sport and non- sport organizations, It is recommended the executives build up mutual understanding and awareness among employees by clarifying their message, mission and goals of the organization and also defining the responsibilities clearly which can cause organizational growth.

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Examination of the relationship between religious orientation, attribution styles and self-esteem in high school students of Naeen

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ABSTRACT

This study was conducted to determine investigate the relationship between religiosity and self-esteem and attribution styles, from the society of male and female students, high school, in Naeen, Isfahan Province, in the academic year 2016-2015 A sample of 275 people, including 141 female students and 134 male students, stratified random sampling method through software to determine sample size, were extracted. Instruments used in this research, including orientation scale Allport (1950), documentary style scale Seligman (1979), Self Esteem Questionnaire (1967), and positive and negative perfectionism scale Terry Short et al (1995), respectively. To analyze the data, Pearson correlation coefficient and multiple regressions, SPSS Software 22 was used. The results of the test showed that there is a significant relationship between religious orientation variable outside the public with self-esteem, and the correlation between self-esteem and self-esteem, social and family variables. The variable internal orientation with internal attribution style variables - Outside and general self-esteem and relationship correlate positively with academic self-esteem is variable. In other cases, there was no significant relationship between predictor variables and criteria.

KEY WORDS: RELIGIOUS ORIENTATION, DOCUMENTARY STYLE, SELF-ESTEEM, STUDENT.

INTRODUCTION

The human need for religion is old as history. Human had been feeling the need to support a strong and powerful support because from the very beginning of his life,. The theme of religion has been debated by pioneering researchers such as James (1929), Freud (1907), Jung (1875-1961) and others, and then thinkers such as Allport (1967), have to explain religion.Religious study and theorizing in various fields, has a long history, but the study of religion from the psychological point of view about started almost a hundred years ago. Psychology of

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Religion, as we see today owes its existence comparative religious studies in the nineteenth century in Europe. It is said that the emergence of religious studies, psychology, and mental discipline begins with two analysts and Physiological Psychology (Khodayari Fard, 2009).

Development studies in religion, in the field of scientific psychology, are the product of Freud and Jung, as psychoanalysis in this context that each has a different approach to religion. In most of his works Freud treats religion as a delusion or hallucination. If Yong believes that all phenomena such as dreams and fantasies are reality, he believes, is best described religious concepts of man, and psychology is not realized except by faith. Astanlyhal (1881) is also the founder of physiological psychology, the psychology of religion, the empirical research, among the things that were done by Hall. Study of religious conversion is according to age and gender, in their clients (Khodayari Fard, 2009).Leading scientists have studied the psychology of religion, William James to be named. He tried to use the religious concept (Eliade, translation Khorramshahi, 2006).About a hundred years ago, the earliest studies on the psychology of religion began, these studies have been richer day by day, and in recent decades has attracted a lot of attention to this issue, and many studies have been conducted (Bahrami Ehsan, 2006).

There has been little research on the relationship between religious attitudes and styles documents, but claims the relationship between religion and optimism in the social sciences, has a long history and strong. However, few experimental studies have investigated the relationship between these two factors clearly about (Matisse, Fotnt and Hatchrki, 2003).

Since the beliefs and religious behaviors, with power regulation, many religious people, religion as a coping resource use. The results show that religious people are of religious confrontation in response to disease, death of loved ones and predicted own death. Pargament studied (cited in Mckfaden, 1998), about religious coping methods, referred to topics in the cognitive processes by religious people. According to experts, as a form of religion, one's assessment of the resources available, to respond to stress, influences cognitive appraisal of stressful situations as well. In addition, the religious factor influences the processes, documents, and is effective in creating a sense of meaning, sense of control and self-esteem. In the study, Ellison (1998), it was found that people with high religious affiliation, have more pleasing life, and have more joy and happiness, and in the face of difficult life events, show less negative psycho-social consequences.

Sethi and Seligman (1993), studied the relationship between optimism and different beliefs such as religious fundamentalism and liberalism. The results show a significant positive relationship between optimism and religious fundamentalism of. Tridoi (1996), the results, in the City and Seligman (1993), empirically tested. The results of his research support from the City of Seligman. But it also showed that optimism has a higher correlation with intrinsic religious orientation and fundamentalism. During the study, Matisse and others (2003) also found that, religious spirituality and relationship with God is negatively correlated with optimism. In the study group, religion, spirituality and personal beliefs World Health Organization (2006), the findings showed that there is a significant relationship between spiritual connection with the components of quality of life (including optimism). In this Shahni Yelagh, Shokrkon and Movahhed (2004), the findings showed that there is a significant relationship between religious attitude and optimism.

In addition to the documentary style, self-esteem is another variable that can be associated with the concept of religious orientation.

Self-esteem is the most important factor, is under the influence of spiritual and religious beliefs. There are different definitions of the term self-esteem. According to some researchers, the self-esteem, self-worth that to a person's psychological characteristics and traits, and arises from one's convictions about all the things in there. Self-esteem is a valuable means accepting that person feels about themselves. Your self-esteem is a person who has such a positive light, and to deal effectively with it, in other words, self-esteem and confidence in their own abilities to think and ability to cope with life's challenges (Gage and Berlainer, translation Khoinejad, 2012).

Maslow considers the merits of self-esteem, empowerment, competence, reliability, independence and freedom, which if satisfied, people feel valued, capable of being, being productive, and confident, and otherwise sense of inferiority, helplessness and their weaknesses. Self-esteem is made up of two parts connected to each other: one, to feel confident in dealing with the challenges of life, believe Khvdtvanmndy, and others feel qualify for happiness, self-respect or self-esteem (Bakhshayesh, 2011).

According to what was said above, the researchers plan to deal with the relationship between the religious orientation and attribution styles, self-esteem among girls and boys high schools, and technical schools in the city Naeen, so the question researcher's mind has engaged, that is, whether there is a significant relationship between the variables religious orientation, with attribution styles and self-esteem, high school boys and girls in society, in the city Naeen? And if this relationship is significant, elements of religious orientation, attribution style and self esteem variables in predicting how much? Much research has been done in this regard

in Iran and abroad, some of these studies are mentioned below.

The results Maltby and Day (2010), quoted Mousavi et al., (2011), the University in the UK has shown that depressive symptoms were significantly associated with external religious orientation and style of documents, but have less communication there the intrinsic religious orientation, optimism and self-esteem. Bagley and Apple (2004), by comparing 410 students in the public schools, and 497 Catholic high school students, showed that students in both schools had higher religious orientation, in terms of self-esteem also had higher scores.

The results of Wings, Remishted and Austin (2003), on the African-American adolescents showed a significant correlation between the religious orientations and better psychological functioning (quoted Badri and Farid, 2012).The results Mazloumirad and Zalkan (2014), the subject of the relationship between religious attitudes and style of documents, with students' mental health, showed that there is a significant relationship between intrinsic and extrinsic religious orientation, and Sbkasnady. The results Bakhshayesh (2011), the subject of the relationship between trust in God, self-esteem and academic achievement, demonstrated that there is a significant relationship between public trust in God and all the self-esteem include self-esteem, family, school and community.The results of Shoae Kazemi (2011), on the subject of a comparative study regarding the treatment of courage, self-esteem and religiosity, showed that there is a significant positive relationship between religious orientation and self-esteem.

RESEARCH METHODOLOGY

This research is applied and solidarity. The population is high school boys and girls in the city Naeen, Isfahan Province, in the academic year 95-94, a sample consisting of 275 people including 141 students, and 134 students, stratified random sampling method through software determine the sample size was chosen. Instruments used in this study was the scale orientation of Allport (1950), documentary style scale Seligman (1979), Self Esteem Questionnaire (1967) and positive and negative perfectionism scale Terry Short et al (1995). To analyze the data, Pearson correlation coefficient, and multiple regression using statistical software spss 22 and LISREL 9.2 were used.

RESEARCH FINDINGS

According to the calculated F and t, significant levels higher than 0.05; the model is not a significant predictor variable internal-external attribution style. So do not be predicted variable external religious orientation variance or change the variable y (internal-external attribution style), and there is a significant linear relationship between them. In other words, the effects of external religious orientation of the internal-external attribution style are not significant for students.

Tables 4, 5, 6 shows that the model is not to be unstable prediction stable- documentary style, and there is a significant linear relationship between the variables

Table 1: R values of the prediction table style documents internally and externally, of the external religious orientation.

standard error of estimate	Adjusted R-squared	R-squared	R
1.866	0.004	0.007	0.086

Table 2: ANOVA, regression, linear relationship between the variables for the internal-external attribution style and extrinsic religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	7.094	1	7.094	2.037	0.155
Remaining	950.928	273	3.483		
Total	958.022	274			

Table 3: Table regression equation and statistics related to it

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.155	-1.428	-0.086	0.036	-0.051	External religious orientation
0.0005	10.092		1.022	10.315	Constant

external religious orientation and style of documents stable- unstable, therefore, the effect of religious orientation stable- documentary style is significant destabilizing external students.

Tables 7, 8 show; the model is able to predict global variable documents and personalized style, and there is a significant linear relationship between variables external religious orientation, and specific global documentary style, so the effect of variable x (orientation external religious) variable y (exclusive global documentary style) students is not significant.

Tables 9, 10, 11 show that F is calculated according to the amount equal to 3.007 and p-value equal to 0.041 and 1 and 273 degrees of freedom model predicted significantly, and there is a significant linear relationship between two variables external religious orientation and general self-esteem. The t calculated according to the amount of 2.650,2 and 0.041 significant level, we can say that variable external religious orientation is a significant estimate for variable public esteem, and self-esteem effect on public external religious orientation significantly.

Tables 12, 13, 14 indicate that the model under consideration is a significant predictor for family self-esteem, and self-esteem effect on family was significant external religious orientation, and significant linear relationship observed between them. Beta test (0.123-) shows that, with both external religious orientations, students' self-esteem plummets family.

According to the coefficient of linear equation, the intercept and the slope of the regression line, we can

Table 4: R values of the prediction table stable-unstable documentary style, from the external religious orientation

standard error of estimate	Adjusted R-squared	R-squared	R
1.532	0.004	0.008	0.090

Table 5: Table ANOVA, regression to examine the linear relationship between variables documentary style stable- unstable, and external religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	5.186	1	5.186	2.209	0.138
Remaining	640.974	273	2.348		
Total	646.160	274			

Table 6: Tables and statistics relating to the regression equation

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.138	1.486	0.090	0.029	0.043	External religious orientation
0.0005	8.343		0.839	7.000	Constant

Table 7: Table values of R, related to specific global prediction documentary style, from the external religious orientation

standard error of estimate	Adjusted R-squared	R-squared	R
1.886	0.002	0.006	0.075

Table 8: Table ANOVA, regression to examine the linear relationship between variables specific global-style documents, and external religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	5.530	1	5.530	1.554	0.214
Remaining	971.540	273	3.559		
Total	977.069	274			

Table 9: Table values of R, related to the prediction of self-esteem, from the external religious orientation

standard error of estimate	Adjusted R-squared	R-squared	R
2.409	0.020	0.020	0.139

Table 10: Table ANOVA, regression, linear relationship between self-esteem for the public, and external religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	17.448	1	17.448	3.007	0.214
Remaining	1583.749	273	5.801		
Total	1586.196	274			

Table 11: Table regression equation and statistics related to it

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.0417	2.650	0.139	0.046	0.33	External religious orientation
0.0005	10.420		1.319	13.745	Constant

Table 12: Table values of R, related to the prediction of self-esteem, family, religious orientation of the exterior

standard error of estimate	Adjusted R-squared	R-squared	R
1.368	0.016	0.016	0.123

Table 13: Table ANOVA, regression to examine the linear relationship between self-esteem, family and external religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	6.657	1	6.657	3.560	0.041
Remaining	510.528	273	1.870		
Total	517.185	274			

Table 14: Table regression equation and statistics related to it

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.041	-2.887	-0.123	0.026	-0.49	External religious orientation
0.0005	7.547		0.749	5.659	Constant

Table 15: Table values of R, related to the prediction of self-esteem, social, religious orientation of the outer

standard error of estimate	Adjusted R-squared	R-squared	R
1.433	0.020	0.020	0.14

Table 16: ANOVA, regression, linear relationship between self-esteem for the social and religious orientation exterior

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	7.904	1	7.904	3.849	0.036
Remaining	560.456	273	2.053		
Total	561.360	274			

Table 17: Table regression equation and statistics related to it

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.036	2.664	0.14	0.027	0.13	External religious orientation
0.0005	4.897		0.785	3.842	Constant

Table 18: Table values of R, related to the prediction of self-esteem, academic, religious orientation of the outer

standard error of estimate	Adjusted R-squared	R-squared	R
1.170	-0.003	0.001	0.030

Tables 18, 19, 20 indicate that the model is not a significant predictor for academic self-esteem, and self-esteem effect is not obtainable on significant external religious orientation, and there is a significant linear relationship between them.

say, be predictive variable external religious orientation, family self-esteem is to a significant size, slope, there is an inverse relationship between the two variables.

Tables showing 15, 16, and 17; F is calculated according to the amount equal to 3.849 and p-value equal to 0.036 and 1 and 273-degrees of freedom is significant predictive models, and there is a significant linear relationship between two variables external religious orientation and social self-esteem. Also, according to the calculated value of t p-value equal to 2.664 and 0.036, we can say that variable external religious orientation, significant estimates for the variable social self-esteem, and social self-esteem significant effect on the external religious orientation.

Table 19: ANOVA, regression, linear relationship between self-esteem for academic and external religious orientation

Model	Sum of squares	Degrees of freedom	Mean Square	F statistic	significance level
regression	0.329	1	0.329	0.240	0.625
Remaining	373.911	273	1.370		
Total	374.240	274			

Table 20: Table regression equation and statistics related to it

Sig.	t statistic	Standardized coefficients	Non-Standardized coefficients		Variable equation
		Beta	Standard Eror	B	
0.625	0.490	0.030	0.022	0.011	External religious orientation
0.0005	4.069		0.641	2.608	Constant

RESULTS AND DISCUSSION

The purpose of this study is to investigate the relationship between the religious orientation and attribution styles, self-esteem of high school students in the city Naeen, in the academic year 2016-2015. The results of the research, the use of regression analysis showed that there is a significant relationship between religious orientation variable outside the public with self-esteem and self-esteem, social, family and significant negative effects on self-esteem variable.

There is a significant relationship between variable internal orientation, with a variable internal attribution style - out, and self-esteem of the public, and there is a significant positive relationship with academic self-esteem variable. In other cases, there was no significant relationship between predictor variables and criteria for research. The results are consistent with research Khaksari and Khosravi (2012), the significantly positive correlation between a positive perception of God (intrinsic religious orientation) with self-esteem, Solati and colleagues (2011). On the relationship between religious orientation and mental health and self-esteem, Mazloumirad and Zalekan (2014), the correlation between intrinsic religious orientation, and style of documents internally and externally, about the correlation between religious orientation and self-esteem, Bakhshayesh (2011), the relationship between self-esteem and trust in God, Bahrami Ehsan (2006), in the context of a significant relationship between religious orientation and self-esteem, Bahrami Ehsan and Tashak (2004), in the context of a significant relationship between religious orientation and self-esteem, Maton (1999).

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Effects of sodium nitrite on fibronectin expression of the testicular parenchyma in mice

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ABSTRACT

One of the main concerns of the World Health Organization is the environmental pollutants. Nitrite after absorbtion distributes throughout the body by circulation so the levels of Nitric oxide(NO)increase in the biological fluids. NO as a free radical and other derivatives obtained from nitrogen are called reactive nitrogen species (RNS). RNS are sub-class of reactive oxygen species (ROS). Mammalian testis is sensitive to the free radical agents and ROS will damage testicular germ cells. Twenty adult male mice weighing 25-30 g were classified into four groups; control group and experimental groupsI-III. Control group received distilled water, Exp groupsI-III, received3mg/lNaNO$_2$,10mg/l/NaNo$_2$ and 50mg/l/NaNo$_2$ respectiely in distilled water for 60 days. Immunohistochemical examination and quantitative RT-PCR for fibronectin expression in testicular tissues were conducted. The results of this study revealed that there is an apparent decline in fibronectin expression in spermatids of group III as compared with the control group. The results showed that the expression of fibronectin in the experimental groups decreased. So,the ratio of mRNA fibronectin in the experimental groupsI, II and III was 0.9fold, 0.92fold and 0.74fold respectively, which was significant in the experimental group III ($p<0.05$).Increasing concentrations of sodium nitrite in drinking water can increase the concentration of NO and RNS in the testicular parenchyma. So we can say that sodium nitrite by reducing the expression of fibronectin can affect testicular function and jeopardize fertility.These findings may help to explain the possible role of contaminants in male infertility.

KEY WORDS: SODIUM NITRITE, TESTIS, FIBRONECTIN, OXIDATIVE STRESS

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INTRODUCTION

In the numerous studies, the effects of nitrite and nitrate in different organs of the body including the heart, lungs, liver and kidneys have demonstrated (1-4). Nitrite is one of the common sources of water pollution and is naturally present in surface water and groundwater (5, 6). There are two pathways for production of nitrite and nitrate, the primary by oxidation of endothelial nitric oxide (eNO) to nitrite and different one by nutrition and drinking water (7-9). Nitrite is a storage form of NO in tissues and biological fluids and it will scale back to NO. Orally intake of nitrite absorbs and distributes within the circulation so levels of nitrite and NO rise in the plasma and tissues (8, 10-12). NO as a free radical and other derivatives that obtained from nitrogen called reactive nitrogen species (RNS), and induces oxidative stress (13). ROS depending on the amount and duration of exposure can be both helpful or harmful (14).

Evidence has shown low concentrations and controlled ROS has important role in sperm physiology. The balance between ROS and free radical scavengers is a prerequisite for fertilization 'ability (15). Increased production of free radicals often cause errors in spermatogenesis including sperm retention with more cytoplasm however, the excess cytoplasm contains enzymes that produce ROS, resulting in oxidative stress, reduced reproductive potential and induced DNA damage(16, 17). RNS is a subclass of reactive oxygen species (ROS). Nitrite and nitrate is necessary for produce NO and other RNS (6, 18, 19). Nitrite has an effective role in improving blood pressure, signaling, cell differentiation, protein expression, ischemic/reperfusion injuries and vascular tone (20-22). Nitrite and nitrate is endocrine disruptor because of endocrine glands and their hormonal productions such as thyroid, adrenal cortex, hypophysis and testis impaired by them (23). NO has effects on penis erection, testis, epididymis, prostate and seminal vesicles (12).

Nitrite and nitrate through NO have an affect on the blood vessels of the reproductive system and in turn on spermatogenesis and sperm maturation. Nitrite is more toxic than nitrate and it may combine N-nitro therefore carcinogens (24-26). Evidence has shown direct correlation between nitrite/nitrate concentrations and degenerative changes in the testicles, reduce sperm motility, sperm count, disorganization of seminiferous epithelium, and clumping of undifferentiated germ cells on the luminal surface of tubules (5). therefore seminal plasma of nitrite and nitrate in non-obstructive azoospermic men are higher than obstructive azoospermic men (27).

Mammalian testis are very sensitive so that free radical agents can damage testicular germ cells (15). For instance, varicocele and cryptorchidism related to the over production of RNS and successively, causes tissue injury (27, 28). Fibronectin (FN), which is a family of glycoproteins, presents in all basement membranes including testis (29, 30). FN has a fundamental role in hemostasis and tissue integrity. In the testis, peritubular myoid cells and developing germ cells but not sertoli cell, are responsible for fibronectin synthesis.

In addition, fibronectin localized in the adult interstitial tissue of testis (31, 32). In the world, 15% of married couples are infertile and since that contaminating agents have a role in male infertility (15, 33- 34) and regarding above mentioned studies and role of ROS in infertility (34), the present study investigated expression of fibronectin in testis following sodium nitrite administration.

MATERIAL AND METHODS

Twenty adult male mice were purchased from animal care unit of Mashhad University of Medical Sciences and were housed in standard environment. The mice were allowed to acclimate for one week before the study begun. Thereafter, they were randomly divided into two groups, control and treatment. The experimental(exp) group comprised three subgroups 3mg/l, 10mg/l and 50 mg/l sodium nitrite in distilled water for 60 consecutive days whereas the control group was only received distilled water. After that, animals were sacrificed by chloroform and cervical dislocation and their testis were removed, the right testis transferred to 10% formalin and stored in 70% ethanol for immnunohistochemical technique and the left one, placed in RNA-later solution for Real Time-PCR technique and were stored at -70 °C until use.

IMMUNOHISTOCHEMICAL (IHC) STUDIES

Immunohistochemical technique for fibronectin expression was based on an indirect immune peroxidase procedure. The testis tissues were sectioned at 5 µm thickness, and they were deparaffinized and dehydrated; then, antigen retrieval was performed in a water bath at100 °C. The sections blocked with 3% H2O2 to inhibit endogenous peroxides activity and transferred to 10% goat serum in phosphate-buffered saline (PBS). Then, they were incubated with specific anti-fibronectin primary antibody, diluted to 1 in 170(Abcam, Cambridge, UK), and kept at 4 °C overnight, followed by staining with horseradish peroxidase-conjugated secondary antibody for 2 hours. The slides were exposed to diaminobenzidine (DAB) and brown color appeared. Counterstaining with hematoxylin was performed to show off the cell nuclei. After dehydration and stabilization with mounting medium, the sections were assessed by a light

Table1: Grade of immunostaining reaction to fibronectin expression in testis	
Grade	**Reaction**
Negative	0
Very weak	1
Weak	2
Moderate	3
Intense	4

microscope(29, 35). The intensity of brown color showed the level of fibronectin in sections. Image analysis was performed by quantitative scoring methods according to the Table1 (29,36):

Real-Time Polymerase Chain Reaction (real time-PCR)

The small piece of each mouse detached and gene expressions level was measured by RT-PCR... The testis samples were homogenized and total RNA was drawing out from testis pieces using RNX-plus (ParsTous, Tehran, Iran), according to its protocol. The purity of RNA was determined by electrophoresis on agarose gel and stored at -70°c until preparation of complementary DNA. All RNAs were reverse transcribed into cDNA using a cDNA synthesis kit (ParsTous, Tehran, Iran) and following RT-PCR was performed on an 48-well optical reaction plate (Applied Bio systems Step One, Foster City, USA). The RT-PCR mixture contained 1 µL of cDNA, 0.2 µM forward primers, 0.2 µM reverse primer, 3.6 µL sterilized water, and 5 µL SYBR Green real-time PCR master mix (Parsons, Tehran, Iran). The beta-actin gene was used as internal control gene (37).

A relative quantification method was used to compare mRNA expression. Fold changes in mRNA expression were calculated using the $2^{-\Delta\Delta ct}$ equation, where ΔΔCT is the difference between fibronectin and beta-actin genes expressions (20,38). Each test was performed in triplicates and the expression level was calculated three times. Amplifiations for both genes were performed by an optimized protocol (10 minutes at95°C, 40 repeated cycles of two steps at 95°C for 15 second, 58°C for 30 seconds, 72°C for 30 second, 95°C for 15 seconds, and 55°C for 1 hour)(39, 40).

Oligonucleotide Primers

Gene		PRIMER SEQUENCE
Fibronectin	forward	5-TAGGAGAACAGTGGCAGAAAG-3
	reverse	5-CCATCGGGACTGGGTTCA-3
Beta-actin	Forward	5-GGGAAATCGTGCGTGACA-3
	reverse	5-TCAGGAGGAGCAATGATCTTG-3

The primers were produced by Oligo Macrogen Company (Seoul, Korea).

STATISTICALANALYSIS

Statistical analyses were performed using SPSS 18. One way Anova used for Real Time-PCR. The normal distribution of the data was tested using the LSD-test. The Kolmogorov-Simonov test was used to determine the differences between the group means. Kruskal-wallis was used for Immunohistchemical technique and manwhitney test was performed to compare differences among samples. Value $p < 0.05$ was considered to be statistically significant.

RESULTS AND DISCUSSION

Our findings showed that fibronectin expression has decreased in the seminiferous epithelium of exp group III in comparison with the control group so that in exp group III intensity reaction in spermatocytes was very weak whereas it was intense in control group (Figure 1, $p<0.05$). Moreover immunostaining reaction in spermatids of exp group III was weak while in control group was moderate (Figure2, $p<0.05$).

In the control group, expression of fibronectin had a particular pattern so that decreasing staining reaction from basal to apical compartment of seminiferous tubules was appeared as follow, spermatogonia and primary spermatocyte had an intense staining reaction, round spermatid was moderate, elongating spermatid, elongated spermatid and spermatozoa, showed, weak, very weak and negative staining reaction respectively(figure3A). In groups I and II, there was no significant difference in fibronectin expression between mentioned groups and the control group (figures1 and 3B, C).

Completed test was conducted to confirm more. So to measure the amount of protein expression, real-time PCR carried out. The results were as follow; amount of protein in control group was 1, while in experimental groups I, II and III were 0.9 fold, 0.92 fold and 0.74 fold respectively[($p<0.05$),figure 3)]. Results were in line with the results of immunohistochemical techniqu

Our study showed that fibronectin is expressed across seminiferous epithelium and basement membrane. High concentrations of sodium nitrite can alter fibronectin expression in seminiferous tubules specially spermatid and spermatocyte. ROS are divided into radical and non-radical oxygen derivatives and play a significant role in reproductive biology. ROS due to free electrons in their outer orbits interact with lipids, proteins and nucleic acids in the body. Such reactions not only are harmful for reproductive functions, but also produce more free

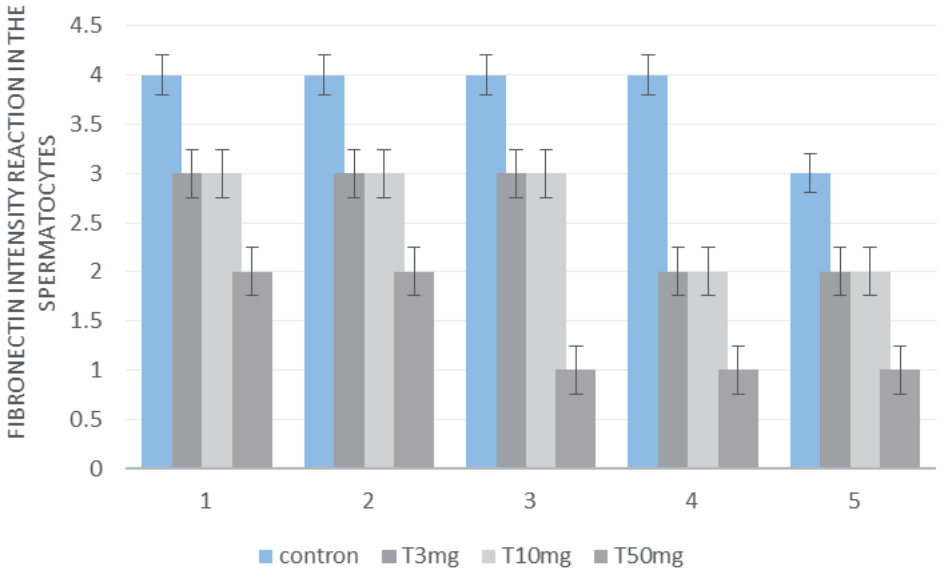

FIGURE 1. Chart shows intensity reactive of fibronectin in the spermatocytes of the control and experimental groups. According to the Kruskal-Wallis test, spermatocytes reactivity to fibronectin antibody is different .Statistical analysis was significant(p=0.007). The results of the Mann Whitney dual comparisons showed that there is significant difference between the control and experimental 2 (P = 0.01) , the control group and experimental 3 (P =0.01) , the expe1 and exp2 (p = 0.03) and the expe1 and exp3 (p = 0.02).

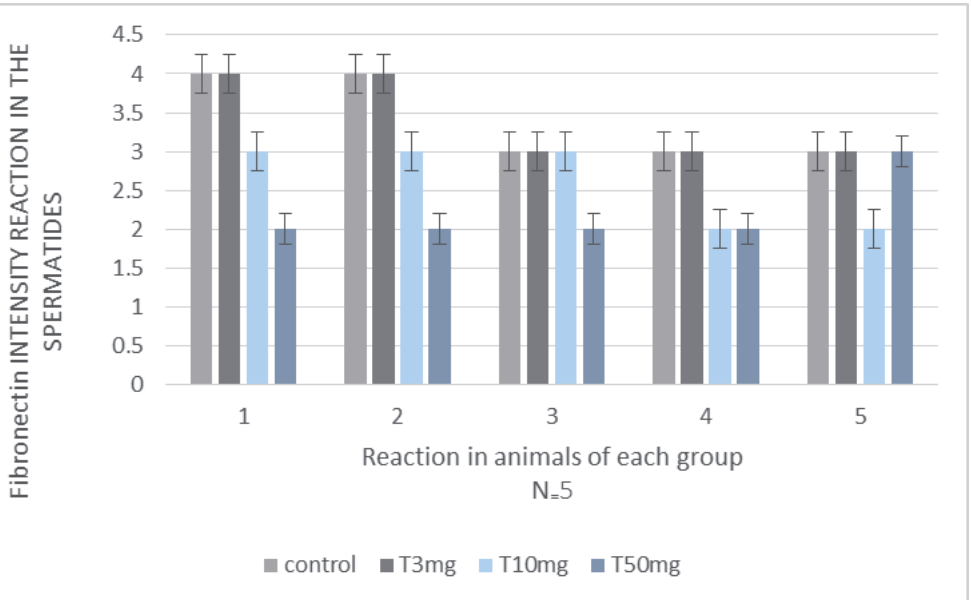

FIGURE 2. Drawing shows intensity reactive of fibronectin in the spermatides of the control and experimental groups. According to the Kruskal-Wallis test, spermatocytes response to fibronetin antibody is different .Statistical analysis was significant. (p=0.014). The results of the Mann Whitney dual comparisons showed that there is significant difference between the control and experimental 3(P =0.01) , the control group and exp2 (P =0.058).

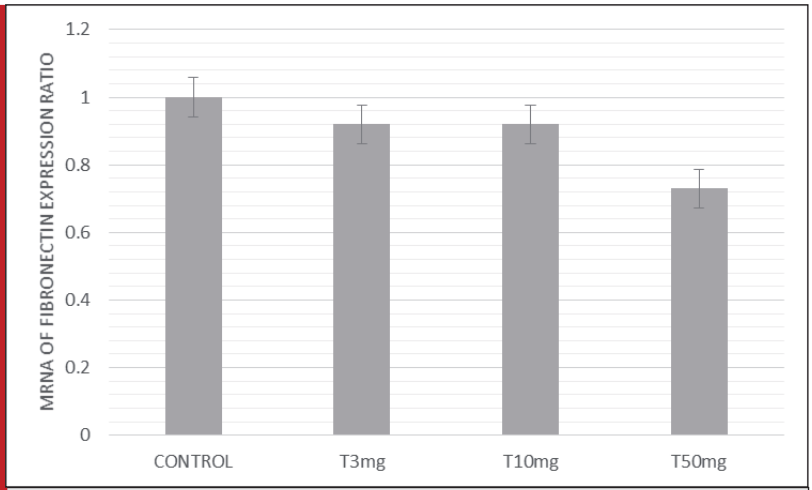

FIGURE 3. Results of relative transcription of fibronectin mRNA expression in testis using Real Time-PCR.Analysis of fibronectin expression in testis showed that mRNA expression decreased by 0.74 fold in expIII comparing with the control group. Values represent the Mean± SE (*p<0.001). According to Kolmogorov-Smirnov test Real time- PCR data follow a normal distribution. Analysis of variance results showed that real time- PCR significantly different among the 4 Groups(p<0.001). As LSD post hoc test between the exp3 and control group (p<0.001), exp1 and exp3 (P=0.001) and exp2 and exp3 (p=0.001) Real time PCR values significantly different.

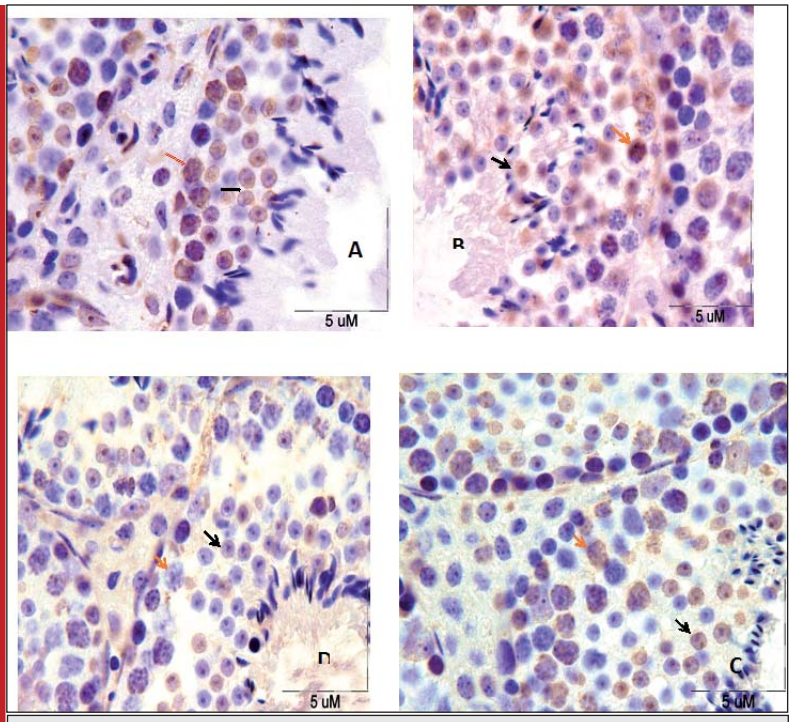

FIGURE 4. Micrograph shows the immune staining reaction in all groups. Control group(A), treatment 3mg(B),treatment 10mg(C) and treatment 50mg(D). Primary Spermatocyte (red arrow), spermatid (black arrow).

radicals and disturb balance between free radicals and antioxidants. Thus they create high amount of oxidative stress(41). RNS include peroxynitrite anion, nitroxyl ion, nitrosyl-containing compounds, and NO. While it is important for numerous physiological functions, RNS in excessive amounts, which contributes to nitrosative stress, may exert pathological effects on the male reproductive system(7, 27).

Testicular tissue has unique properties including a high amount of polyunsaturated fatty acids and high rate of the cell division that is very vulnerable to overproduction of ROS. On the other hand, the generation of ROS is essential for testicular function. Therefore, testis is equipped with antioxidant enzymes and free radicals scavengers from the microenvironment (42-44).

Germ cells for normal function require low temperatures and in response to the thermal stress generate ROS / RNS. In cryptorchidism and varicocele that are associated with high temperature cause rise testicular oxidative stress(OS) and ROS/RNS participate in it so that, increased production of lipid peroxidation , depletion of antioxidant enzymes and increased mitochondrial apoptosis of germ cells which were seen(45, 46). In clinical studies, varicocele was associated with the over production of ROS, increase of sperm DNA damage and decline in antioxidant levels in seminal plasma.

In experimental model of testicular heat shock, spermatocytes apoptosis and increased production of ROS was observed *in vitro*. At high temperatures spermatocytes generate more ROS / RNS than spermatids. The lower production in spermatids because of its high antioxidant capacity as well as lower levels of mitochondria uncoupling which its features provides mechanisms to protect against oxidative stress due to heat shock, in contrary, Spermatocytes were vulnerable(47, 48).

In our finding, spermatocytes also were more sensitive to nitrite than spermatid and showed further reduction in fibronectin expression. Spermatogonia are very resistant to ROS attacks, while developing germ cells and spermatozoa are not. Superoxide dismutase (SOD), as one of the important antioxidant enzymes against ROS, reduces during the maturation of male germ cells. In human SOD expression is very intense in spermatogonia while in spermatocytes and other differentiating germ cells was weak. thus, during spermatogenesis ,differentiating germ cells vulnerable to ROS attacks and high level of SOD in spermatogonia has secured it against the attacks(42, 44, 49, 50).In our study, in all treatment groups immunostaining reaction in spermatogonia was resistant to nitrite in comparison with other developing germ cells and there was no significant decline in fibronectin expression.

In kidney and lung, angiotensin II (AgII) is associated with nicotinamid adenine dinucleotide phosphate (NADPH) oxidase4 (NOX4) cause uncoupling eNOS (dimer separation), overproduction of ROS, decrease in NO availability and fibronectin accumulation in mesencial cells. **Peroxynitrite as ROS which is required for both eNOS uncoupling and the expression of fibronectin increases in response to Ang II**. Over expression of SOD inhibits the stimulatory effect of AgII on the ROS production and on the contrary, SOD depletion causes increase of mitochondrial ROS, NO deficiency and decrease in fibronectin synthesis in cells exposing Ag II(51)whereas inhibition AgII can be ameliorate lipid peroxidation in kidney(52).

Also in hypertensive heart diseases overproduction of ROS and ANG II was seen. ANG II increases $O2^-$ production and generation of ROS in cardiac fibroblasts. It also stimulates the collagen (Coll) production including, the coll I and III and also enhances mRNA expression in cardiac fibroblasts. Both SOD and generated ROS can regulate and organize collagen in cardiac fibroblasts(53). In our study the decrease seen in expression of fibronectin were found (Figure3).Also, decrease of fibronectin intensity reaction in seminiferous epithelium was observed (Figure 1, 2).

NADPH oxidases were stimulated by endothelins and thereby increased superoxide production, resulting in oxidative stress(54). Both Endothelin-1 (ET1) and Ag II play a role in testicular ischemia/reperfusion and increase the NO level in tissues and directly inhibit NOX in turn, cause the decrease in superoxide generation(55, 56). Furthermore, ET-1 is produced by sertoli cells enhances DNA synthesis(57) and can inhibit Nox and attenuates intracellular ROS production in endothelial cells. ET1 induces increased fibronectin expression in human bronchial epithelial cells. Inhibition of NOX4 stops the increase in ROS, peroxynitrite and eNOS uncouplig by AgII(58). In our study enhanced DNA synthesis was not observed (Figure3).

Inorganic nitrite through nitric oxide-dependent mechanism decreases NADPH oxidase-derived superoxide generation in the macrophages and renal microvascular (59,60). Endothelin play a pivotal role in pathogenesis of testicular ischemia reperfusion injury compared with angiotensin. Nitrite reduces the activity of AgII-induced NOX and nitrate administration reduced renal NOX activity(55). Evidence suggests that ANGII and ET-1 along with NOX cause the accumulation of collagen and fibronectin in tissues such as kidney, heart, lung (58, 61-63). Supplementation with dietary nitrate (10(-2) moll/L) reduced renal NADPH oxidase activity and attenuated ANG II-mediated arteriolar contractions and hypertension(60). In the present study, low nitrite administration did not change the expression of fibronectin whereas the highest nitrite concentration reduced protein expression.

It seems that nitrite administration stimulates Nitrate-Nitrite-NO pathway and may attenuate NOX derived ROS production and simultaneous enhance NO availability in testicular microenvironment (59), so in our study, we not expected that fibronectin expression increased. On the hand high dose of nitrite may cause disturbance of fibronectin expression stimulates. If taken collectively, it seems that using water contaminated with high concentrations of nitrite affected fibronectin synthesis. Moreover spermatogonia are resistant to nitrite but spermatocyte and spermatid are not. thus, high levels of nitrite in drinking water in the long term could jeopardize male fertility.

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AUTHORS' CONTRIBUTIONS

Sarah amini, Mohammad Reza Nikravesh and Mehdi Jalali designed the study, wrote the protocol, and collected the data. AlirezaFazel managed the literature searches. Ariane Sadr Nabavi assisted the real-time PCR.

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Presentation of conceptual model for effective factor identification and its interactions on the sport tourism

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ABSTRACT

The aim of this research is presentation of Model for effective factor identification and its interactions on the sport tourism. Therefore effective factors on the sport tourism development selected for the research. This factor analyzed through one limited perspective in each research. These items have impact also on each other and its interactions make its effect's strengthening and weakening, but these effects are not shown in completed investigation. This research presented a conceptual model to identify effective factors on the sport tourism, also its impacts has been analyzed. This model can be utilized in bases of sport tourism development and its benefits.

KEY WORDS: DYNAMIC SYSTEMS, SPORT TOURISM DEVELOPMENT.

INTRODUCTION

Tourism industry currently has growing role in world economy. This industry has important role also in cultural interconnection, dialogue of civilizations and nation's familiarities contact. The WTO[1] predict that world business up to 2010 would be tourism more than 43%. This subject can bring more benefits in economic and social aspects to the country. One of the items is in connection to sport which indicates sport tourism. Tourist is whom travels to different places and his purpose are not business or income. Sport tourism is temporal visitor who participate at least 24 hours in the event place and his purpose mostly is to participate in sport event, it is also possible to follow other interesting events. This part has shown more increase in compare to other tourism subjects. Also the research shows that sport tourists, political, economic and social advantages can play role in social, economic and political development and attention to it is better to plan in master managers' schedule.

There are several factors which have effect on sport tourism development and empowerment and it is considered in different researches. These factors have impacts on each other and they can make equal impacts. So any changes in setting and regulation of effective

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factors should be taken in account. The aim of this study is to present model in form of dynamic systems therefore it should consider also their interactions in addition to conclusion of sport tourism effective factor. Due to this purpose first literature review of sport tourism's effective factors in Iran has been defined then we tried to make conceptual model by presentation of dynamic system model through VENSIM software. This paper divided to other three sections. In second part, it is literature review to define effective factors on sport tourism. In third part, it is presented research conceptual model based on these variables and in forth part, it concluded. At the end of the paper there are references.

LITERATURE REVIEW

Sport tourism has had more growing in different dimensions so that it's growing estimated 10% per year. Attention to this part can lead to economic and social development it is possible to happened unpredicted events in sport tourism. Research on effective factors and its regulation should pay attention to the specific condition. Sport tourism development generally can set these factors in two categories. First group is linked to the tourists. Contact persons identification of each sport event can help authorities for its good governance. The other factor group connects to the facilities and environment that related subject happens in it. These factors can be considered directly for planning approach in development. Identification and study of first group also is significant. In first stage audience identification is significant at the service plan effect.

Audience identification and his needs and condition are a first step in offering best service quality. Nogoa and others (1996) find that love to sport and health and people economic situation is effective in leading them toward sport tourism. Interest in cultural and archaeological places and existence relatives in destination also can have influence on their trend toward sport tourism. Based on Gibson opinion, sport event audiences divide to three categories: the people who come to watch, those who come to participate in the event and those who are sport memory's nostalgic tourism. All three categories of these audiences are under the influence of services at the goal. Other people also find desire to sport activities due to natural attractions and travel to the destination. Amongst natural attraction can indicate following items: Climbing the slope, Hunting, Fishing, winter sports, beach sports, desert tourism, nature therapy and hiking and caving. So people, who have trend to these subjects, are audiences that should attend to them on the target. These audiences don't participate on the sport events in a unique and sectional time and it can be plan for them during the year, whereas sport event can happen every year or every few years in somewhere. Sport tourism is sport lovers.

Wade (2006) indicates that sport is the purpose of participation in sport tourism activities. Therefore sport tourists are sport lovers. He also believes that sport host efforts should absorb sport lovers. Sometimes people trend toward one special sport brings them to one place. Kao (2006) find out about diving tourists in his research that their main motivation is experience of this activity. The other factors are effective environmental items. Travel agencies with suitable services can have impact on the sport tourist attraction. Fests, marginal ceremonies and planning of sport event also are the factors which can encourage sport travelers. Cultural and ancient buildings in event area also can encourage sport travelers. Among other factors which have influence in the sport tourism attraction, can be as follow: recreation in the event area, landscapes, sights , event advertisement by host, cultural situation, event host economic and social aspects, hotel, restaurant, markets and sport event nature. Weather, accommodation and price level were the other factors which have been indicated in Graz (2005) inquiry.

Tourism organization's exact collaboration also was effective factor in sport tourist attraction. Sport event area security also was important item. Sport with tourism coordination in sport event area was also significant item in reinforcement of sport tourism. In Mahmoodi Yekta and other's enquiry, employ's situation and linked people with tourists, financial reward and fees for competition, political relation of event area, world credit card in event area, utility of technology in event area and athlete's exercise facilities have been added to other factors.

Soltan Hoseeini and other,s enquiry (2013), the set of effective factors on the sport tourists interduced and divided to two group as follow: political , social and cultural items, infrustructral linked items and manegial items. Each one of these facotrs also have subdivision. First group includes of 9 sudbranch as follows:

Suitable quiet environment for tourists as well as approtpreat threatment of host country , proper rules, different architechture and attractive antient area in the host country , culture, art, musik, custom, appropraite political rrelations with guest country, Visitors contact in the sport computition with atletes, Positive view of quest country than host country, specific defined regulations and visa issued, ccustoms, stay validation, ... Religion harmony, believes perspective of tourists with the world. Infrastructire's facotors includes also of 4 subbranches:High level of Host sport (host profecinal sport), well appropraite facilities for atlete's excersice and compitition,nonatlete facilities(location, tranporting system...), travel reasonal cost, accomodation, prod-

uct buying and .... In host country.Manageral factors also has 7 subdivision as follow:

Suitable planning and schedules by organisers, employer ·s approprate relation with feign tourists, special police for tourists ·s security, proper services and special attention to the tourist s wishes and needs, well advertisment of sport events in the international level by host country, good advertisment in case of tourism attraction by host country, proper rewards for best teams. Secuirity is one of the important item in tourism and it is also effective in sport tourism. The meaning of security is that the dangers should be identified and reported to destroy its probability or to be controled considerably. Some people believe that security is significant host tourism attraction. Security feeling can be under influence of some issues. Media s abuse advertising is one of the factors which increase insecurity feeling. This insecurity feeling which happened before trip can influence it during travel too.

The enquiry of Ehsani and others (2010), two factors also added to the items that they are as follow: attention to the manner of tourists and culture of tourism. The enquiry of Mosavi Gilani and other indicates more extra factors such as hygiene, cleaning and medical services. In this study has considered transportation system too. In sport effective factor identification, all important items are security, sport facilities and sport visa facilities. Enquiry of Balali and other (2012), sport tourism development barrier are as follow:

Lack of organizational planning due to sport tourism attraction, authorities inadequate support of sport plans and sport tourism, carelessness to the sport tourism attraction from urban authorities, lack of general information and knowledge in tourism section, lack of manpower, lack of harmony between organization linked to the sport tourism, sport tourism low recognition of local sports, inadequate recreation facilities, authorities unwanted national and international sport event, communication weakness and inadequate identification of sport tourism attraction, people less trend to the sport travels, lack of private website in tourism attraction, weakness in urban transportation systems and lack of sufficient transportation infrastructures, scientific research lack in this area, lack of information offices for sport tourism attraction.

Kozechian and others research(2011), access to the aims, access to the sport collection, sport collection environment, interaction of sport collection workers, sport collection price, product quality, holding process, access quality, sport collection quality and computation quality were the factors that it was efficient in sport tourism satisfaction. In Andam and others inquiry (2014) defined 7 main efficient factors on sport tourism identification as follow:

Infrastructures, visa host, tourism facilitation, advertisement, recreation activities, natural landscape and That each one includes of some subdivisions that most of them have shown in other researches too, but advertisement to make security feeling for tourists, security in tourism area, insurance services, sport sponsor supports and climate condition and season variety are also indicated. Zeytonli and others (2011) show that purpose enabling and attraction has meaning relation with sport tourism attraction. Shojai and others (2012) has pointed to the specialist role in sport tourism development beside other factors. Hamidi and others (2010), after SWOT analysis has suggested some strategies for better sport tourism as follow:

Tourist and sport necessary infrastructure development strategy in free land and ancient area in order to regional event promotion, continental and internationally, encouragement strategy as well as sport teams in the country, sport ecotourism and tourism regulation definition strategy in the society, governance strategy in direct to increase sport and science host event, upgrading of Olympic national academy role in holding camps, conferences and training in participation of other countries, foreign knowledge upgrade strategy who have interest to tourism and sport ecotourism than facilities of country, law support strategy of foreign and private investments in sport tourism facility investment in the country, support system development and empowerment strategy of world traveling as a base strategy for a country, religion support attraction strategy for tourism development.

In Iran, document legislation for sport tourism in the country, strategy of public support policy for private section in order to sport tourism infrastructure development, supply and improve strategy to support security upgrade of tourism and sport tourism, volunteer order making and development strategy in sport tourism, efficient position holding strategy in sport international organization as a autonomy politic, upgrade strategy of human resource knowledge and science in sport tourism, public knowledge upgrade strategy in compare to sport tourism, making facilities strategy for sport tourism between women, NGO and privet tourism organization increase in the country, forced English education rules for country sport workers. In this inquiry, loss of planning approach has been indicated as a basic problem in sport tourism development. Khatipzadeh and others inquiry has considered satisfaction role of tourism services in their trend to tourism return and it was clear that this satisfaction has influence in their trend to return. Also it can remember about efficiency of media and advertisement on the tourism development that right event and attraction advertisement can have positive effect on the sport tourism attraction.

MODEL PRESENTATION

In this section we present model in form of dynamic systems by VENSIM software.

First based on the literature review we prepare variables list and then we explain them. The variables are as follow:

X0: Sport tourism development, X1: linked organization collaboration level, X3: Technology, X4: easy access to the aims, X5:aim Hygiene level, X6:interest in sport and health at the society level, X7: aim welfare facilities, X8:tourism attraction places and environment security, X9: defined regulation, X10:welfare soft wares and infrastructures, X11: welfare facilities, X12: event planning quality, X13: marginal event planning, X14: holding condition quality, X15: event management quality, X16: event spatial planning, X17: event local attraction, X18: public and private financial support, X19: event local potentials, X20: athletes and tourists security feeling.The first variable is X0 that it shows sport tourism development. Additive effects stand for +sign in the other words if variable increase other will increase too and vise versa.

X1 variable shows organization collaboration range which linked to the sport tourism. Organizations such as police, natural resource, cultural heritage, transportation, sound and vision office, ministry of health, price controlling,... in case of more cooperation they upgraded variable level.

X2 shows efficient advertisement average. Advertising effects is under influence of X3 or technology level. Also it can lead to increase security level X0. Advertisement has impact also on the people interest and directly leads to sport tourism development. Also regional attraction which is effective in sport tourism development is advertised with the harmony of other organizations and it upgrades X2.

Environmental security also can be effective advertisement so X8 which has impact on the X0 growth can increase effective advertisement too. Security also improves through other organization collaboration and linked to the X1.

Other variable is X4 which shows easy access toward aims and needs other organization collaboration and has impact on the sport tourism development.

X5 is health service level which is linked to the organization harmony such as monitoring of food, insurance, rescue, hospitals,.... and can have positive impact on the sport tourism development.

X6 is sport interest and improve through linked cultural work. Also it is under influence of all sport organization efforts and health advertisement... and can directly play a positive role in sport tourism empowerment.

X7 is an aim welfare facility such as hotel and urban transportation and access to the police... which depends on the other organization collaboration and has impact on X0.

X8 shows security and organizations such as police has impact on it. Security itself is the best issue for advertisement and in case of security increase for the best advertisement and negative advertisement happens when it decrease.

X9 is the specific rules which denies stress and ambiguity and can make tourism planning easy and probable problems can be solved and finally it makes tourism work easy and is under influence of other organization legist ration and has impact on the X0.

X10 includes infrastructures such as efficient stadium for event holding, hotel, road, marketing place, recreation, and so on and based on the collaboration level which enforces X0.

X11 is welfare software facilities like access facilities to the internet, credit card, internet reservation,... in case of linked organization collaboration can improve and develop sport tourism.

X12 is planning quality for the event which has direct impact on the X0. Also can have influence on the marginal event qualityX13 which has impact on the sport tourism.

Furthermore it has impact on the X14 or significant holding condition and event hold in best situation which is effective in the tourism development. These suitable conditions also provide issue for efficient advertisements.

X12 improves management due to better planning approach (X15) and it makes regulations in implementation of planning and provides good management which has positive impact on the sport tourism. Best management can lead to the best local identification for event implementation.

X16 or appropriate place for event is part of event management quality and is under influence of it. Location with tourism attraction and facilities can provide positive effects on the sport tourism.

Event governances quality depend on the financial facilities and it is under influence of financial support of public and private section (X18). Appropriate place can prepare directly have effect on the sport tourism due to more satisfaction.

Event area attraction(X17) which is effective on the sport tourism, are under influence of advertisements and it can be more attractive when introduced well. Also good event area proportion with its audiences can find more attraction power. This power also is under influence of event area(X19).

Environment empowerment also increases under influence of financial support growth(X18).

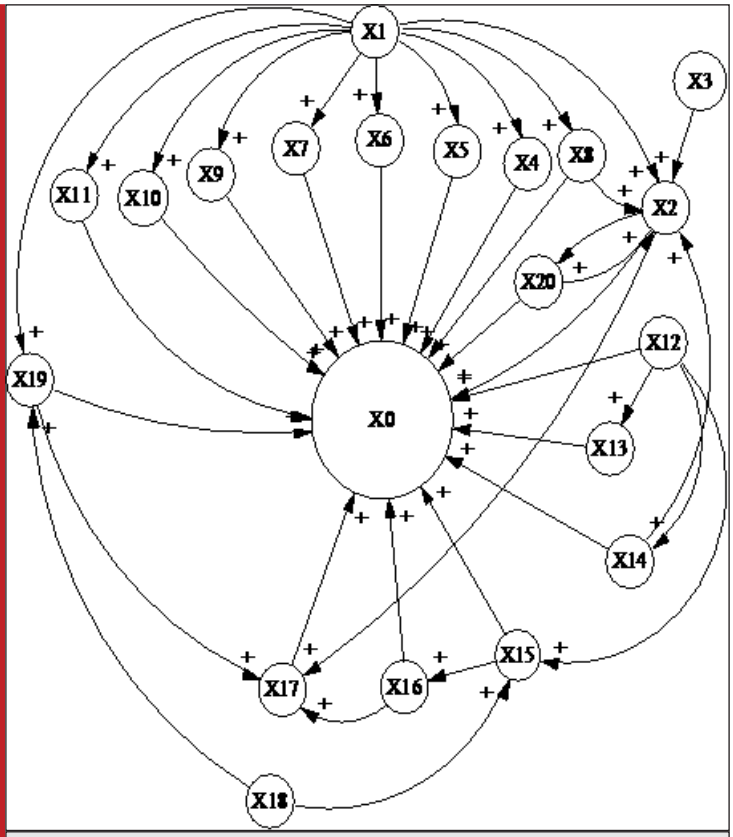

FIGURE 1. Conceptual Model defines effective factors on sport tourism and its interactions

Figure 1 shows model chart which is designed by VENSIM software and it indicates variable effects beside each other as well as its interactions.

CONCLUSION

Despite of several variables identification which has influence on the sport tourism, there was not a model to show its interactions. In the current inquiry, it is presented conceptual model for explanation of effects and impacts of variable interactions on the tourism. First effective variables on sport tourism determined and then research conceptual model developed. Model analysis shows that effective advertising and security feeling creates one additive ring and by strengthening each one, other increase and creates more increase on it and effective advertising can reinforce security feeling. Also more the effective factors on the sport tourism are under the influence of harmony and cooperation of other organizations with sport tourism.

As most of these linked organizations are busy with their works and act as decentralized one, therefore they cannot have more impact on the effective factors on the sport tourism also due to loss of mutual interests cannot rely on other organizations' sustainable collaboration. It seems while specific organization is the base of sport tourism as well as other organizations' coordination, collaboration and harmony in the organizations will increase. It is suggested that independent organization constructed to make sustainable coordination between linked organizations and sport tourism till it could bring economic and social to the country by sport tourism development. In one event most of the organization is included and they participate as they want but sectional collaboration is not sufficient for creation of most of the infrastructures. The organization with this concept can go forward during proper strategy toward sustainable cooperation and creation of mutual interests in the organizations.

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Environmental risk management of HIPS II unit of Tabriz petrochemical complex using EFMEA

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ABSTRACT

Background and Aim: Tabriz Petrochemical Complex in an area of 391 hectares and a height of 1362 m above sea level is located in the south-west of Tabriz, nearby Tabriz refinery. This complex works in the field of production of polymeric and chemical materials and its main products include: polyethylene, polystyrene and ABS. This study has been conducted due to the environmental sensitivities of Tabriz area with the purpose of eliminate, reduce and control of environmental risks using EFMEA. Analysis method: For this purpose, by EFMEA, after selecting the study area, environmental parameters of productive resources of environmental risks, was evaluated using field visit of all units in order to identify the of environmental aspects in different parts of HIPS2. After calculating the obtained RPN which represents environmental degradation coefficient, statistical formulas were used to classifying risk levels. And according to the statistical formula, all aspects were classified in the three aspects of the low-risk level (L), aspects with medium risk (M), and aspects with high risk (H). Findings: Using EFMEA 44 Environmental aspects were recognized and evaluated. After calculating the RPN which is the multiplication of probability, severity, scope and categorizing the risk levels, results showed that of the 44 priority of studied risks, about 2 percent were in low risk and 75 percent in the category of moderate risks and 23 percent in the category of high risks. Discussion and conclusion: Operational risks of compressor and Shut Down units, had the highest and lowest risk rating respectively. Finally, given the nature of environmental risk, reduction plans and strategies necessary for controlling environmental risks were identified and presented. The most important actions include: handling and inspection of storage facilities and transmission lines of recycled materials of HIPSII unit, insulation and Periodic visits of hot oil lines, water lines and feed lines to the equipment in the production process, the use of anti-fouling materials in chiller and anti-corrosion materials in wastewater transmission lines to Purification unit with appropriate dose.

KEY WORDS: ENVIRONMENTAL RISK ASSESSMENT, EFMEA METHOD, TABRIZ PETROCHEMICAL COMPANY

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INTRODUCTION

The process of industrialization of human societies and increasing and rapid growth of different technologies in the world and development and presentation of new methods in the industry led modern man to be threatened and pushed bye things he made and has created himself by his own hands. In this regard, the existence of safe working environment is one of the most important elements considered necessary to achieve continuous improvement in productivity. On the other hand by the rising pace of development of Sciences and introduction of new materials and technologies, at any moment new problems appears in the workplaces which certainly confronting them and controlling their unacceptable risks, requires the knowledge of new approaches, methods and techniques in the field of safety science (1). Complexity and extension of social system on the one hand, reduction of resources and creating laws, standards, and benchmarks on the other hand, and occurrence of accidents and adverse events, has led to more attention to studies of assessment and risk management. However, in many expertise areas obligation to assessment studies and risk management still has no legal basis in national or international dimensions, but implementation and attention to these issues in stages of Establishment or enforcement of different systems become an inseparable part of these studies, (2). All of Human Activities are Along with Risk (3). Risk assessment is basically dealing with assessment and management the effects that arise by human activities (4). Environmental risk assessment is the process of qualitative and quantitative analysis of linear potentials and the coefficient of the actuality of potential risks in the project and as well as sensitivity or vulnerability of its surrounding environment (5).

Environmental risk assessment involves identifying the affected environment, Temporal and spatial modeling and dissemination and leaks, assessment of important ecological components taking into account environmental sensitivity, estimates of quantity of risk compared to existing standards and identifying risk reduction actions (6) The planning, organizing, directing and controlling the activities and assets of the organization in a way that it reduces adverse effects on its economy and performance in accidents, in short, any attempt in order to risk reduction, called risk management (7). The proposed Plan (Plan HIPSII) with the aim of increasing the capacity of Tabriz Petrochemical Complex, Consistent with the macro objectives and policies of the development of industry section in order to the expanse of non-oil exports and supplying downstream industries need for conventional and resistant polystyrene. The main product of HIPS II unit is resistant polystyrene (high-impact polystyrene) and ordinary (general purpose polystyrene), which is used for food storage by disposable containers and for producing toys. The new HIPS production amount is of 54300 tons. The physical nature of HIPS is solid, this unit will be built on a ground of 8000 square meters in North side of polyethylene unit (Figure 1) of Tabriz Petrochemical Complex.

BACKGROUND RESEARCHES

Several studies have been conducted in the field of risk management which the most important ones are mentioned here: A study with the title of risk management and control of safety behavior of workers in coal mine, was conducted in 2012 (7). According to the features of risk management and real needs for safety in coal mine, system of risk management methodology and its implementation in coal mine is fully analyzed. System Manages and controls potential accident risks, risk resources and human risks. Accordingly, system of technology of workers' safety behavior control in coal mine has been further studied, "the three defects" were classified and managed, basic information of "the three defects" and safety countermeasures were published and risk management system- Software and countermeasures of safety optimization in the coal mine developed and applied according to B / S state, in which the intranet is used for: analyzing and monitoring "the three defects:" warning information dissemination, management of optimization and control of countermeasures.

At the same time, important messages automatically are sent to respective directors mobile phones and through public communication systems will be sent to the person in charge to improve the real-time capability and effectiveness of the unsafe behavior control. The application of technical systems software used in running on coal mine achieved good results.

In a study, assessment and Management of Environmental Risk of polyethylene unit in Arya Sasol Polymer Company by EFMEA, is done by Josie et al. in 2011 (8). After analysis of the data it was revealed that those environmental aspects that their risk priority number was higher than 15 is a high level of risk. Initial evaluation results obtained in the low-density polyethylene unit shows that the highest aspect in environmental risk is related to the emergency process system and net with risk priority number of 48 which in the result of reactor safety performance, causes air, noise and radioactivity pollution. The results of the secondary evaluation of environmental aspects and differences in calculated RPN and obtained risk levels for activities in this petrochemical, shows that the use of modern methods of identification and risk assessment can considerably reduce the severity of risks and consequently damages to the environment.

Risks of a vocational school by job safety analysis method was done by M. Mohammadi and colleagues in 2011 (9). This descriptive study is carried out with the aim of identifying risks of a vocational schools by JSA method. 9 workshops: Carpentry, turnery, diesel repairing, light machines repairing, doors and windows welding, pipes welding, Installation, milling and smoothening, were studied on the base of repetition and importance. 53 present job activity were divided into 210 stages and using the checklist, observation, interviews and records, risks of each stage were identified and the level of risk were determined using the risk matrix (MIL-SID882E) finally control measures were proposed for them so after analyzing the risks, 524 risks were identified. There were zero risk at unacceptable level, 65 risk at undesirable, 257 Risk at acceptable levels but requires revision and 202 were at acceptable level of risk. Carpentry, turnery and Installation, respectively, with 81, 75 and 72 risk were identified as the top risky occupational activities. Corrective measures such as job training and preparation of instructions, job training ... reduces the level of risk considerably.

A study was done in the field of "analysis of effects and mood of environmental failure in Radford Army's munitions factory " And results show that EFMEA in in this factory has been developed on the base of preparation for the principled identification, follow up and connections of the environmental risks at the level of activities, and this method was introduced as a model after full and effective establishment of ISO 9001 (product quality) and failure analysis system and its effects (FMEA). So the (EFMEA) method is a method for identifying the potential environmental moods and assessing risks associated with these failure modes, prioritization and prevention of the most failure modes which a production or process may be faced with (10).

In 2012 Gh. Modarres and his colleagues conducted a research in the field of the amount of risk in different parts of steel factory of Iran National Steel Industrial Group with the aim of evaluation of risks of Health, Safety and environment in order to control probable risks using the method of analyzing failure modes and its effects (FMEA).

In this study at first the various activities and processes of the factory, risks and potential harmful factors were identified, and then they were assessed and classified according to the likelihood and severity of their effects on humans, equipment, and environment. In the environmental risk assessment of Steel factory by FMEA method, 74 Risks were identified in different parts of the factory, 92 cases (16%) identified as high risk and 61 cases (92%) were in the medium risk level. In the assessment if safety risk and occupational health of steel factory by FMEA method, 61 risks were identified one case in unacceptable level of risk (11%) and 9 cases at the level of acceptable risk (91%), respectively. Thus, with determination of the relative risk of dangers and understanding the causes of risks in mentioned units, operators and the authorities will be able to address and improve risk factors according to their priority (11).

Other studies in production unit of Ahvaz Kaviyan steel co. was carried out with the purpose of safety and environment risk assessment. In this study, the method of the analysis of failure modes and its effect on the process of product production (PFMEA) and the environment (EFMEA) was used. The results show that 66 percent of safety risk RPN and 36 percent of environmental risk are in higher degree of prioritized risk-taking and corrective measures for their control have been described (12).

RESEARCH METHODOLOGY

Tabriz Petrochemical Complex is located in an area of 391 hectares and a height of 1362 m above sea level in the south-west of Tabriz city and geographical location of 38 ° degree and minutes ‹4and 17.16 seconds North, and 46 ° degree and 9' minutes and 1.16» seconds East, in the vicinity of Tabriz refinery. Tabriz Petrochemical Complex, is situated in a rectangular shape court with the dimensions: 2/4 to 1/7 km in 8th km of Tabriz-Azarshahr road and west side of Tabriz refinery. The project's main feed, is styrene and poly butadiene chowchow that comes from within and outside the country. Features of Production units is presented in Table 1 (Tabriz Petrochemical Company's site). Having in mind that the Tabriz Petrochemical industries is in the neighborhood of other industries, rural and residential centers , agricultural lands and Sahand protected area because of the unique vegetation and wildlife, rare animals, reptiles and ..., the sensitivity of attention to the environment and health of employees and neighboring residents have doubled due to the high risk of Petrochemical complex.

So in this study by the risk assessment methods, it has been tried to identify the risks of the facilities and provide convenient solutions beside reduce in the amount of the severity and impact of these risks on the environment and people. The main objective of this study was to assess the environmental risks of the HIPS unit of Tabriz Petrochemical Complex by EFMEA method, to assess the environmental impact of air, noise, water and waste of HIPS unit of Tabriz Petrochemical Complex and to present management solutions for the control and reduction of environmental risks HIPS unit of Tabriz Petrochemical Complex.

The main raw materials of complex include: light naphtha, heavy naphtha, LPG, acrylonitrile, alpha-methyl styrene, mineral oil and PBR

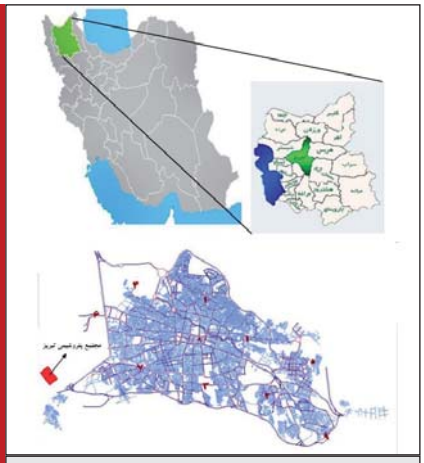

FIGURE 1. Location map of Tabriz Petrochemical thematic map

Main application of products:

Linear low-density / heavy polyethylene: fluid reservoirs, shopping bags, plastic film, toys and household appliances

Expanded Polystyrene: ice storage containers, insulated walls and packaging fragile supplies

Normal Polystyrene: automatic body, toothbrushes, industries of: Lighting, refrigerators, cars and crockery

Resistant polystyrene: body of television, radio and audio equipment, parts of refrigerators, washing machines and cars, toys, home appliances and crockery

Acrylonitrile-Butadiene-Styrene (ABS): body of typewriter and monitor, electronic components, sheet inside the refrigerator, stationary, phone and car parts

Propylene PP: The use in polymer units such as polypropylene, and production of chemical materials

Butadiene 1 and 3: PBR and ABS production

Toluene: production of chemical solvents.

The steps of risk assessment in this study:

The aim of the study in this investigation, is environmental, safety and health risk assessment, and reduction of its risks in the HIPS2 unit. In this study In order to find the mentioned objectives were attempt to environmental risk assessment of resistant polystyrene unit of Tabriz Petrochemical using failure modes analysis and its effects on the environment (EFMEA).

The method of information collection

Given that for the assessment of safety, health and environment in an industrial unit, all aspects of pollutants and accidents and their causes should be considered in order to knowing the under assessment industry, reviewing of the literature, visiting the units, reviewing the documents, studying standard procedures approved by the Department of Environment, was done. Besides for basic information and knowledge about the environmental characteristics of the study area, field visits and references to the relevant corporate bodies and organizations such as: Tabriz Petrochemical Library, Department of Environment of East Azarbaijan, East Azarbaijan Weather Bureau, East Azarbaijan was done.

For this purpose all of the various activities in divided sectors of HIPS2 Unit of complex in terms of safety, health and environment as well as documented Statistics of HSE Unit and safety and fire station of Tabriz petrochemical in the field of annual events, events leading to malfunction and health hazards were investigated and accidents caused by them and their effect on humans, environment, equipment and then all environmental parameters were identified. The survey was continued by grouping units and the assessments have done good practices to reduce the risk of any deviation was provided.

Table 1: The specifications of production units

Unit Name	Capacity (tons per year)	The company owns the process license
Olefin	136000	KTI (Netherlands) / TPL (Italy)
Linear low-density / heavy polyethylene	10000	BP (England)
Resistant polystyrene	93400	ELF Atochem (France)
Polystyrene	25000	ELF Atochem (France)
Polystyrene	45000	Sunpor (Austria)
Styrene	95000	UOP & Lummus & Monsanto (US)
Ethyl benzene	101000	UOP & Unocal & Lummus (US)
Butane -1	7000	IFP (France)
Benzene	55000	IFP (France) Krupp Koppers (Germany)
1, 3 butadiene	17000	BASF (Germany)
ABS	35000	Sumsong & Cheil (South Korea)

(Source: Tabriz Petrochemical Company site)

Identification of environmental aspects

In order to identify environmental aspects in different parts of HIPS2, first field visit of all units under review, was conducted. During the visit all the activities that have environmental aspects were listed. These include air emissions, waste production and industrial solid waste, wastewater, noise pollution, etc. (13).

Method of identifying the type and quantity of wastewater

For having accurate and complete information of the effluent of treatment plants, this wastewater was examined every three months by accredited laboratory using moment sampling and its qualitative and quantitative parameters was precisely determined. In the following table related to the last sampling and testing is presented in which important parameters such as: biochemical oxygen demand (BOD), chemical oxygen demand (COD), PH, magnesium (Mg), chloride (CL-), nitrate (NO_3), nitrite (NO_2), calcium (Ca), alkalinity, electrical conductivity (EC), total hardness ($CaCo_3$), total dissolved Solid (TDS), free chlorine, total suspended solids (TSS), sulfate (SO_4), ammonium is precisely examined in this experiment. In the results of this part the data measured by accredited laboratories approved by the Tabriz Petrochemical is used. To evaluate the air pollution it was referred to results of the measurement of air pollutants in the region by Tabriz Petrochemical laboratory documentation. The last sampling and test results relating to emissions from chimneys complex, which includes factors such as: O_2, Co, $Co_{2,NO,}$ $NO_{2,NOX}$, So_2 and... were also were studied. In order to ensure workplace safety and personnel's health to assess the level of environmental noise pollution in the factory, data from two stations outside the factory which measure the amount of noise pollution constantly during the different seasons, were used. With regard to the measures taken the amount of noise level in the four corners of the factory was 45 dB that does not exceed the standard limit.

Reviews and analysis carried out inside the factory, represented the noise outside of standard level at two points between two boilers (about 95/3 dB) and 25 m from it (85/8 dB) and the rest in terms of sound quality is in the standard limit (75 dB) is devoid of noise pollution. In the process of operation of the unit, working shifts are of 11 people which in one day a total of 44 people, plus a Chairman unit are working. According to the country's waste per capita 0.5kg for each person in a day, the total produced human waste is 22/5 kg per day. This garbage is depot and then disposed in the proper place or excreted in municipal landfill. Also according to the wastewater per capita (150 litr / day), total amount of wastewater produced is 6750 liters a day, which this amount of wastewater enters the treatment system available in the petrochemical, and be acquitted. For analyzing the data according the method used, a checklist was designed to evaluate the rate of environmental degradation.

This Checklist includes variables such as: the identification of process, potential failure modes (environmental aspects), the potential effects of failure (the outcome), potential causes of failure, initial assessment of the environmental aspects (severity, probability, exposure, RPN, the level of risk), control Action and secondary monitoring of environmental aspects (severity, probability, exposure, RPN, the level of risk), as environmental aspects. This Checklist was set with the participation of specialists of occupational health and HSE, environment in HIPS2 manufacturing unit.

Environmental risk assessment by EFMEA

After calculating the obtained RPNs which represents the rate of environmental degradation, statistical formulas were used to classify risk levels. And according to the statistical formulas, all aspects it placed in the three aspects of the low risk level (L) Aspects with medium risk (M), and aspects with high risk (H).

The steps of the EFMEA model

In order to implement EFMEA for each of the aspects identified in the process of identifying environmental aspects, the aspects are divided into two groups as follows:

- The group of environmental aspects which causes dissemination and production of kinds of pollutions, waste, solid waste and waste water in the environment.
- The group of environmental aspects which causes reduction of natural resources by using this resources including the use of fossil fuels, the use of water.

For the first group of environmental aspects, the following formula was used to obtain a coefficient of environmental degradation:

The range of contamination × probability × intensity = coefficient of environmental degradation

And for the second group of the environmental aspects, the formula mentioned below was used to calculate the rate of environmental degradation:

The possibility of recycling intensity × probability × intensity = coefficient of environmental degradation

In the application of EFMEA for scoring four parameters related to severity, probability, extent of contamination and the possibility of recycling the following tables were used.

- Probability

The intended purpose is the order of frequency of occurrence and its outcome, which score to this parameter was determined according to Table 2 (14).

Table 2: Ranking the possibility of occurrence of chemical effects on the environment

Probability	Description of occurrence	Score
Very much	Almost every day there is a possibility of it.	5
much	Almost every week there is a possibility of it.	4
Average	Almost every month there is the possibility of it.	3
little	Almost every year there is the possibility of it.	2
Very low	Almost once every 5 to 10 years it may occur.	1

Reference: (Danielson and, 2001)

- Intensity

It is the importance and seriousness of the environmental consequences of the aspect and the amount of created damage which the scores for it was determined according to the table (3).

Table 3: Ranking intensity of the impact of petrochemical on the environment

Intensity	Description of intensity	Score
Severe	Very harmful / loss or excessive consumption	5
Serious	Harmful / much waste of resources	4
medium	Somewhat harmful / wastage or average consumption of resources	3
low	Less damage / wastageor low resource consumption	2
slight	Low loss / wasting or low consumption	1

Reference: (Danielson and Gunnarsson, 2001)

- The range of contamination

It is the Range and separation of pollution which the score related to this parameter was extracted from the table (4).

- The possibility of recycling

It is the possibility of recycling of consumed materials or energy which the score related to this parameter was extracted from the table (5).

After calculating the obtained RPNs which represent the rate of environmental degradation, the following statistical formulas were used to classify risk levels:

The formula for calculating the arithmetic mean of data

Formula (1):

$$\overline{x} = \frac{1}{N}\sum_{i=1}^{N} x_i = \frac{x_1 + x_2 + \cdots + x_N}{N}$$

The formula for calculating standard deviation

Formula (2):

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \overline{x})^2}.$$

X = mean
N = the number of data
Xi = data (RPN)

And according to the above formula, all aspects were classified in three main aspects of low level risk (L), with medium level risk (M), and aspects with high level risk (H).

And based on the RPN coefficient obtained in the previous step with the weighting, Activities with high risk

Table 4: Ranking the extent of pollution caused by factory on the environment

The range of contamination	Score
For pollutions that at the regional level where the factory is located make pollution.	5
For pollutions that at Full-scale factory level make pollution.	4
For pollutions that at one of the workshops level make pollution.	3
For pollutions that at one of the units level make pollution.	2
For pollutions that only effect the related work stations or piece	1

Reference: (Danielson and Gunnarsson, 2001)

Table 5: Ranking the possibility of factory resources recovery

The possibility of recycling	Score
For circumstances that non-recyclable resources are used	5
For circumstances that non-recyclable resources are wasted	4
For circumstances that difficult to recycle resources are wasted	3
For circumstances that simple for recycle resource are wasted	2
For circumstances that Renewable energy(recyclable) sources are used	1

Reference: (Danielson and Gunnarsson, 2001)

Table 6: Descriptive statistics of risk factor derived from risk assessment (EFMEA)	
The number of identified risks	61
Mean	31.7
Standard deviation	22.88
Minimum risk	4
Maximum Risk	125

were prioritized. Table (6) shows Descriptive Statistics of risk factor derived from EFMEA risk assessment method.

RESULTS

Based on current researches and information the share of burners and chimneys in various industries in air pollution is 65-70 percent, the share of furnaces and power plants is 20-30 percent and the share of mobile pollutants like cars is 5 percent. Therefore the most important issues and environmental problems caused by emissions of air pollutants are related to combustion of gases in the burners and then are related to the activity of furnaces and gas turbines. In general, the nitrogen oxides existed in the exhaust can be divided into two categories:

- *Thermal nitrogen oxides (Thermal NO_x)*
- *Organic nitrogen oxides (Organic NO_x)*

Thermal nitrogen oxides arises from nitrogen in the excess air and organic nitrogen oxides arises from nitrogen of the fuel. Among the nitrogen oxides, nitrogen monoxide and nitrogen dioxide are of important pollutants. NOxs are created in all combustion processes with the air. The nitrogen of the combustion air in the furnace of boilers or combustion chamber of turbines, under the effect of high temperature combustion chamber, have a high affinity for oxygen and the chemical reaction leads to the formation of Unstable NO , and the resulted nitrogen oxides is converted to NO2 in atmospheric air, under the influence of photochemical phenomenon. Since NO is unstable and after a while converts to the NO2, NO2 will form a high percentage of NOx in the air. Temperature has a direct relationship with the amount of nitrogen oxides and the higher temperature will increase the amount of the production of these oxides. The standard for NOx gas based on standards of Environmental Protection Agency is 350 parts per million (ppm), whereas in output of new gas turbines the concentration of NOx is usually lower than the standard. Moreover, the obtained results of pollutants in Tabriz Petrochemical Complex is provided (Tables 7 and 8).

Table 7: The concentration of pollutants emitted by chimneys in the complex

HC PPM	SOX PPM	NOX PPM	CO PPM	Chimney name	Date of monitoring	Row
Inconsiderable	5	15	30	Central Incineration	93/12/13	1
Inconsiderable	Inconsiderable	19	1	Olefin F-10 Furnace 1	93/12/12	2
Inconsiderable	Inconsiderable	51	Inconsiderable	Olefin F-102 Furnace	93/12/12	3
Inconsiderable	Inconsiderable	49	Inconsiderable	Olefin F-10 Furnace 3	93/12/12	4
Inconsiderable	Inconsiderable	50	Inconsiderable	Olefin F-10 Furnace 4	93/12/12	5
Inconsiderable	Inconsiderable	5	Inconsiderable	Olefin F-10 Furnace 5	93/12/12	6
110	4	9	10	Benzene unit H-02Furnace 1	93/12/13	7
Inconsiderable	Inconsiderable	89	425	District F-103 Furnace 1	93/12/13	8
100	Inconsiderable	67	Inconsiderable	District 03F-3 Furnace 1	93/12/13	9
280	Inconsiderable	34	More than 10,000	District 06F-3 Furnace 1	93/12/13	10
40	Inconsiderable	9	54	District 07F-3 Furnace 1	93/12/13	11
Inconsiderable	Inconsiderable	52	16	HRSGA Furnace, Power and vapor production unit	93/12/13	12
Inconsiderable	Inconsiderable	52	12	HRSGB Furnace Power and vapor production unit	93/12/13	13
Inconsiderable	Inconsiderable	98	87	AUX.BOILER Power and vapor production unit	93/12/13	14
10	Inconsiderable	1	Inconsiderable	40-H-601 B HIPSII unit	93/12/13	15
At the time of the investigation was out of service				Furnaces chimney H-202 Benzene unit	93/12/13	16
At the time of the investigation was out of service				40-H-601 B HIPSII unit	93/12/13	17
(Source: Results of Tabriz Petrochemical Laboratory, 2014)						

Table 8: Results calculate the emissions flue in Tabriz Petrochemical

Line C-Unit F-301-C1	Olefin unit F-105	Olefin unit F-104	Olefin unit F-103	Olefin unit F-102	Olefin unit F-101	Central incinerator chimney	Measurement location Parameter
1.22	1.2	1.2	1.2	1.2	1.2	2	Furnace Diameter m
1.17	1.13	1.13	1.13	1.13	1.13	3.14	Area m 2
7.8	12.3	10.8	9.7	10.1	9.1	8.2	Speed m / s
9.1	13.9	12.2	11.0	11.4	10.3	25.7	exhaust gas discharge m 3 / S
32808.5	50054.1	43950.0	39473.6	41101.3	37031.9	92692.8	exhaust gas discharge m 3 / H
8	0	1	0	0	1	298	CO ppm
10:00	0.0	1.25	0.0	0.0	1.25	167.56	CO mg / m 3
328,202.21	0.0	54957.06	0.0	0.0	46306.41	167.56	Infection rates mg / h
2875.05	0.0	481.42	0.0	0.0	405.64	167.56	Infection rates kg / year
5.38	7.21	8.68	8.95	8.24	8.61	2.81	CO2%
10:57	14:17	17:05	17:58	16:19	16.92	5.52	Co2Mg / m 3
346,794.38	709,052.47	749,516.99	694,117.14	665,405.80	626,444.42	511,747.43	Infection rates mg / h
3037.92	6211.30	6565.77	6080.47	5828.95	5487.65	4482.91	Infection rates kg / year
71	40	41	38	37	37	8	NO ppm
95.12	53.59	54.93	50.91	49.57	49.57	10.72	NO mg / m 3
3120777	2682364	2414128	2009592	2037397	1835675	993 468	Infection rates mg / h
27 338	23498	21 148	17604	17848	16081	8703	Infection rates kg / year
74	41	42	39	37	38	8	NOx ppm
251.10	139.13	142.52	132.34	125.55	128.95	27.15	Noxmg / m 3
8238361	6963801	6263692	5223886	5160365	4775099	2516278	Infection rates mg / h
72 168	61003	54 870	45 761	45205	41830	22043	Infection rates kg / year
2	1	2	1	0	1	5	SO2 ppm
5.72	2.86	5.72	2.86	0.00	2.86	14:30	So2Mg / m 3
187 670	143 159	251 402	112 898	0.00	105 915	1325548	Infection rates mg / h
1643.99	1254.07	2202.28	988.99	0.00	927.81	11611.80	Infection rates kg / year

The results of the environmental risk assessment of polystyrene (HIPSII) unit of Tabriz Petrochemical using EFMEA

After reviewing the activities of polystyrene (HIPSII) unit of Tabriz Petrochemical and according to the project documentations as well as similar projects, a checklist was prepared. After that by personal or telephone interview with experts of operation, process, maintenance and environment (safety) of complex, 44 Environmental Risks unit 44 were identified in the polystyrene (HIPSII) unit of Tabriz Petrochemical. Then, using EFMEA method, Severity, likelihood and extent of pollution / recycling possibility of the identified risks were examined.

Determining the level of risk factors in the EFMEA method

As a result of this calculation, 22/88 was determined as the safety limit or risk index, and then by using standard deviation, Dispersion of values around the mean were calculated so the number 50 as high risk and number 8 were considered as low risk. Finally, according to the statistical calculations done and conditions of studied systems as well as experience of team members, under 8 RPNs have non-obvious aspect and between 8 and 50 are not in good condition and in need of revision is the next priority .but in RPNs of higher than 50 have significant aspect and should be placed in the first priority of improvement. So that by using determined proceedings the amount of risk index for the following years reach to a lower value and environmental situation improved to a higher level to reduce the environmental pollution.

To determine the risk level, also the RPN index was used, the risks under 8 low risk level, Risks between 8 and 50 medium risk level and the risks of higher than 50 were considered as high risk level. Figure 2 shows Categories of environmental risks. The results showed that

Continue of Table 8: Results calculate the emissions flue in Tabriz Petrochemical

line A –Benzene Pyrolysis Extraction unit H-201	plant chimney unit Aux-Boiler furnace	plant chimney unit HRSG-B furnace	plant chimney unit HRSG-A furnace	Line C- the F-601-C2 unit	Line C - the F-101-C1 unit	Measurement location Parameter
0.92	2	3.2	3.2	0.35	1.22	Furnace Diamet
er m						
0.66	3.14	8.04	8.04	0.10	1.17	Area m 2
7.7	8.3	15.4	18.1	6.8	6.3	Speed m / s
5.1	26.1	123.8	145.5	0.7	7.4	exhaust gas discharge m 3 / S
18417.8	93823.2	445,648.9	523,782.1	2354.1	26499.2	exhaust gas discharge m 3 / H
74	0	29	12	16	0	CO ppm
92.53	0.00	36.26	15:01	20:01	0.00	CO mg / m 3
1,704,258.02	0.00	16,160,542.04	7,859,538.14	47097.97	0.00	Infection rates mg / h
14929.30	0.00	141,566.35	68849.55	412.58	0.00	Infection rates kg / year
3.17	8.31	2.49	2.57	5.67	7.51	CO2%
6.23	16:33	4.89	5.05	11:14	14.76	CO2 mg / m 3
114,709.97	1,531,844.27	2,180,195.97	2,644,765.45	26224.28	390,999.01	Infection rates mg / h
1004.86	13418.96	19098.52	23168.15	229.72	3425.15	Infection rates kg / year
15	94	48	51	24	6	NO ppm
20:10	125.93	64.31	68.33	32.15	8.04	NO mg / m 3
370 124	11815608	28658407	35788116	75 691	213 011	Infection rates mg / h
3242	103 505	251 048	313 504	663	1866	Infection rates kg / year
15	95	49	51	24	6	NOx ppm
50.90	322.36	166.27	173.06	81.44	20:36	NOx mg / m 3
937 459	30245207	74098878	90644943	191 713	539 518	Infection rates mg / h
82.12	264 948	649 105	794 050	1679	4726	Infection rates kg / year
0	0	0	0	0	0	SO2 ppm
0.00	0.00	0.00	0.00	0.00	0.00	SO2 mg / m 3
0	0	0	0	0	0	Infection rates mg / h
0.00	0.00	0.00	0.00	0.00	0.00	Infection rates kg / year

(Source: Tabriz Petrochemical Laboratory results 2014)

of 52 studied risk priority, about 2 percent in low risk and 75 percent in medium risk category and 23 are percent in high-risk category. In Figure 2 shows Categories of environmental risks separately.

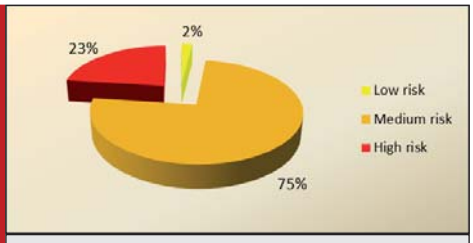

FIGURE 2. Diagram of a high, medium and low level of risks, of HIPSII unit of Tabriz Petrochemical

DISCUSSION AND CONCLUSION

This investigation was done using EFMEA and William methods, 44 environmental aspects were identified and assessed which 19 of them were in a high degree of risk taking level. The obtained results shows that the risks of operating the compressor have the most, and shut down unit have the least of environmental risk level with great danger. Also the investigation showed that of 52studied risk priority, about 2 percent of low risk and 73 percent of medium risk and 23 percent are of high risk level.

Environmental Risk Management of HIPS unit of Tabriz Petrochemical

Generally, after the identification, quantification and prioritization of environmental risks of factory, there is

need for a program for responding to the risk. Which expresses the Ways to deal with the risks and opportunities before they happen. In fact, environmental risk management program, is a program that provides reasonable coordination and communication between the indexes and various factors of environmental management system and operational activities of the factory. There is different methods and strategies for responding to a risk that include: the elimination of risk / risk mitigation / risk transfer / risk admission (21)

When the action is done to improve the process, the new scales for severity / occurrence probability / detection and intensity of incident / probability of risk/ exposure, should be considered and PSE or RPN be recalculated. For the error states that action has been token on them, markedly reduction in RPN or PSE should be seen. In defining corrective action it must be borne in mind that this action should have at least one of the following (respectively) to improve:

• eliminate the probability of occurrence. • reduce the severity of the error. • reduce the probability of occurrence. • increases the probability of detection and recovery. The results of current study confirms the research of Mojahedi and colleagues. The researchers also using EFMEA, identified and evaluated 61 Environmental aspects. After calculating the RPN which is the product of probability, severity, scope and categorizing of risk levels, 19 environmental risks with the priority number of above 50 which is in high level risk area, were identified.

SUGGESTIONS

Given the importance of environmental pollutants and the necessity of not intensification, reduction and if possible elimination of these pollutants, arrangements as the following steps to minimize adverse effects on environmental pollution in polystyrene unit of petrochemical, is provided:

- Handling and periodic inspection of storage facilities and transmission lines of recycled materials of HIPSII unit
- Insulation and period inspection of hot oil, Water and feed lines to the equipment in the production process
- The use of anti-fouling materials in chiller with appropriate dose
- The use of anti-corrosion materials with appropriate dose in wastewater transmission lines to the treatment unit
- The use of no hard water chiller
- Tuning the PH of chiller
- Pollution control methods in plant
- Suggested methods for the control of nitrogen oxides: Chimney gas cleaning, combustion with low excess air, two-stage combustion, and recirculation of Chimney gas.
- Suggested methods for the control of CO gas in the Factory: innovation and the development of more appropriate fuels, using the right fuel, adjusting the fuel to air ratio and continuous control in time of Setting
- Suggested methods of control particles: treatment chamber based on the weight of the particles, cyclone collectors, wet pacificators, electrostatic precipitators
- Suggested methods to control noise pollution in the factory: proper maintenance of devices, installing the sound reduction on the devices, enclosing the device, noise control based on sound-absorbing, separating the main sources of noise from other sources, reduction of sound exposure time
- Suggested methods for control of underground water pollution in the factory: purification and temperature control of effluent of factory, putting the tubes in the channel instead of burying them in the soil to provide the possibility of visiting and inspecting.
- Suggested methods to control soil contamination at the plant: oil collection containers placed under the equipment, replace worn parts, preventing sewage from leaking in to soil.

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Motorcycling behavior of students and general traffic pattern in the city of Dezful, Iran

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ABSTRACT

Motorcycles is welcomed as popular means of transport for people indifferent communities and the general public especially young population. However, about a quarter of all road deaths occur among motorcyclists. Motorcyclist's mortality ratio has remained largely unchanged since 2010. There is an intense cultural interest among teenagers and young adults in Dezful to ride motorcycles which has contributed to high prevalence of related accidents in this study. This study partially reported here, aimed at enhancing safety behavior of student motorcyclists in Dezful and so reduce the number of motorcyclists related road accidents. This first setp, reported in this paper, was identifying the general pattern of traffic accidents as well as motorcycling behavior of students. This paper reports the descriptive (cross sectional) phase of study a comprehensive motorcycle accident and injury prevention project in male high school students in Dezful of country Iran. A survey was carried out on 148 students utilizing cluster sampling method. In addition official report of related organization were reviewed to extract the pattern of motorcycle related accidents in the city. The students had an average daily riding of motorcycle of about 3 h and most of them (87%)

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had started motorsports before the age of 15 years. A percentage of 46.6% of students had a history of motorcycle accident. The most frequent causes of their accidents were carelessness (14.3%), trick (7.4%) and lack of observance of priority right (5.4%). The most common risky behaviors included: illegal overtaking, having pillion, running from red lights and not necessarily checking before redirecting. Accident statistics from different sources were contradictory, but all sources showed an increase in motorcycle related accidents and injuries over time, but reduced mortality in last years. Human factors play important roles in road safety for its users including motorcycle riders. Considering the fact that many motorcycle riders in Dezful possess no license as they are below the age of 18 years, lack of proper education and training, inadequate riding skills and also poor emotional management and rational thinking at this age, expose them and other road users to higher risk. Any prevention program should stress on local pattern of the problem and also local determinants of the risk.

KEY WORDS: MOTORCYCLE, MOTORCYCLIST, BEHAVIOR, ACCIDENTS, TRAFFIC, INJURY, IRAN.

INTRODUCTION

Motor vehicle crashes are considered as the major causes of deaths resulting from injuries, almost 1.2 million people worldwide die annually and 90% of this mortality is from low and middle-income countries (1). In these countries, injuries are the common causes of death in the age group between15-59 years which threatens the life of men more than that of women (2) . According to the report of World Health Organization in 2015, 49%of all road traffic deaths occur among pedestrians, cyclists and motorcyclists. The report also revealed that the proportion of deaths of motorcyclists has remained largely unchanged since 2010 and about a quarter of all road deaths occur among motorcyclists(3). Iran is one of the countries with worse situation; majority of death by road accidents happens to 20 and 30 years old people(4).

Studies have revealed that riders of two-wheeled motor vehicle are at greater risk of death estimated per kilometer traveled, as they are 20 times more than cyclists, 8 times more than pedestrians and 9 times more than car occupants(5). Factors such as lack of protective coating, low age of drivers, least required training and limited driving test conditions may increase the rate of injuries caused by road accidents(6). Moreover factors such as road problems, on-standardization of vehicles, lack of proper traffic inserts with urban design, and human factors should be considered as factors contributing to road accidents(7).

However, in addition to the main factors contributing to road accidents, characteristics of motorcycle itself and the added risk of low age increases the likelihood of risky driving behaviors among riders. Different studies have given a list of different human determinants such as personality traits, focus while driving, physical health, motivation of motorsports, sleepiness, consumption of alcohol and drugs, knowledge, attitude and behavior of motorcyclist as well as culture (6, 8-32).To be among the most important factors contributing to road accidents. In some societies, such as Iran, motorcycling safety culture and compliance with traffic rules among drivers of two-wheeled vehicles has serious weaknesses compared with other vehicle drivers (33).

Because of heavy traffic in crowded cities and narrow passages, motorcycles as a result of high speed, small size and high mobility, become a popular vehicle for transport especially among young people (34, 35) and they are also the most vulnerable type of motor vehicles. Dezful can be called “City of motorcycles” because of their cultural love to own and ride a motorcycle there is almost no family without a motorcycle. A range of different climatic, cultural, economic and social reasons, as well as the design of roads and paths, can explain or even justify the popularity of this vehicle in Dezful. For instance, the very hot weather and humid in most months of the year and also the high cost of purchasing a car and also the cost of petrol consumption by permanent use of air conditioner, traditional structure of narrow passages, especially in the city’s commercial centers help to understand why motorcycle is regarded as an affordable, easy and favorable option to move around in the city.

On the other hand, there is strange passion to ride motorcycle among boys which makes them start motorcycling from a very young age. Therefore, it is not a surprise that motorcycle accidents are regarded as one of the main problems of the city. The study partly reported here, aimed to contribute to addressing this issue. Considering multifactorial nature of the issue and the necessity of assessing the situation and paying attention to socio cultural context of Dezful in planning any motorcycle related accidents and injury prevention program, a comprehensive participatory project was developed which was partly reported in this paper. The necessity of this study was to identify the determinants of human to reduce traffic accidents leading to injury motorcyclists in the city of Dezful. Also, the study was conducted according to the road accidents statistics and significant contribution as the culprit or the victim of motorcyclists

in traffic accidents and finally, due to the lack of scientific study in traffic accidents in Dezful.

In light of the above, there was need to conduct this research in this area with the aim of preventing deaths, injuries and disabilities of teenagers and young motorcyclists as well as the psychological, economic and social impact on families and community. Because any plan to reduce traffic accidents is society and context-based knowledge and given the importance and urgency of this matter, this paper describes and analyzed the injuries pattern associated with motorcycle accidents and the human determinants in students of the city of Dezful.

MATERIAL AND METHODS

A descriptive cross sectional study, as a part of a comprehensive project, was designed to examine the pattern of motorcycles related accidents in Dezful and also the human determinants of accidents among high school students. This research was conducted in November 2015. Data were collected using a questionnaire and also reviewing relevant official documents. With 95% and power of 80% and using the following formula, the sample size of 150 was determined: n = (Z 1-a/2+Z1-b) 2. [p1 (1-p1) + p2 (1-p2)]/d2

Sampling was carried out utilizing multi-stage clustering. Clusters were randomly selected on the basis of geographical regions, type of high school (only boys), student population and students field of study. From the second and third grades of each school, six to ten students were randomly selected to achieve total sample size of 150 students. Inclusion criteria was defined as enrolled students who have motorcycles and willing to participate in the study two of the students, who did not have a motorcycle, were excluded. After a comprehensive review of related literature and questionnaires, a questionnaire on "human determinants of traffic accidents related to motorcycling" was developed. The validity of the questionnaire was determined by experts within the country. To calculate CVI&CVR, the draft of questionnaire was sent to the 10 experts. Scores obtained was compared with the Lavshe table and questions obtaining less than 0.62 points were removed. To evaluate the reliability and internal consistency, test-retest and Cronbach's alpha coefficient were used respectively.

A preliminary questionnaire was completed by 10% of the study sample, 15 students who were motorcyclist, who rode motorcycle at least twice in two weeks. Pearson correlation test was equal to 0.91. After required modifications, the questionnaire was finalized as a valid and reliable tool. The data analysis was performed using descriptive statistics. Data was analyzed utilizing SPSS software (Version 19).

For document review, all available official and reliable documents, reports and statistics of road violations, accidents and fatalities related to road accidents registered during the years 2010-2015, were collected from organizations including traffic police, Emergency department, University of Medical Sciences, and Forensics department and were reviewed...

The Code and date of ethical approval were: (66000505)10, date: 2015/11/15. Ethical considerations was observed as follow:

1. Informed consent by students
2. Ensuring confidentiality of student information and anonymous data collection method

RESULTS

Reviewed documents revealed that various authorities and centers, in parallel and sometimes independently, collect some information mainly on the frequency of car accidents annually. It was also identified that in some important cases, there are obvious contradictions among these reported statistics. For instance, from chart 1, which shows data extracted from reports of traffic police, health departments as well as forensics department, it is obvious that different data have been reported for incidence rate of road accidents during the last three years. Chart 1 includes statistics and data retrieved from traffic police and health department, it reveals that the incidence of accidents and fatalities caused by road accidents has been declining and has been down ward (though not very noticeable), but statistics of 115 emergency center shows reverse increase in the rate of accident.

Also, data from forensic department (Chart 2) reveals the reduction in statistics of motorcycle deaths.

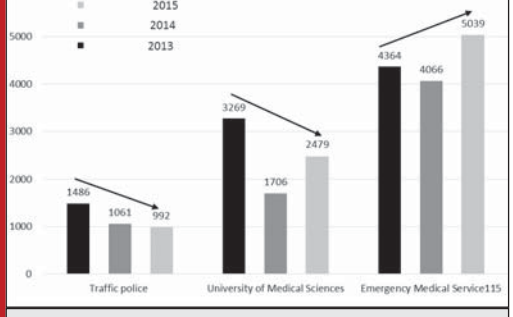

CHART 1: Comparison of traffic accidents statistics from the University of Medical Sciences and 115 emergency centers. (Source: Department of Health, University of Medical Sciences and Emergency Center, Dezful)

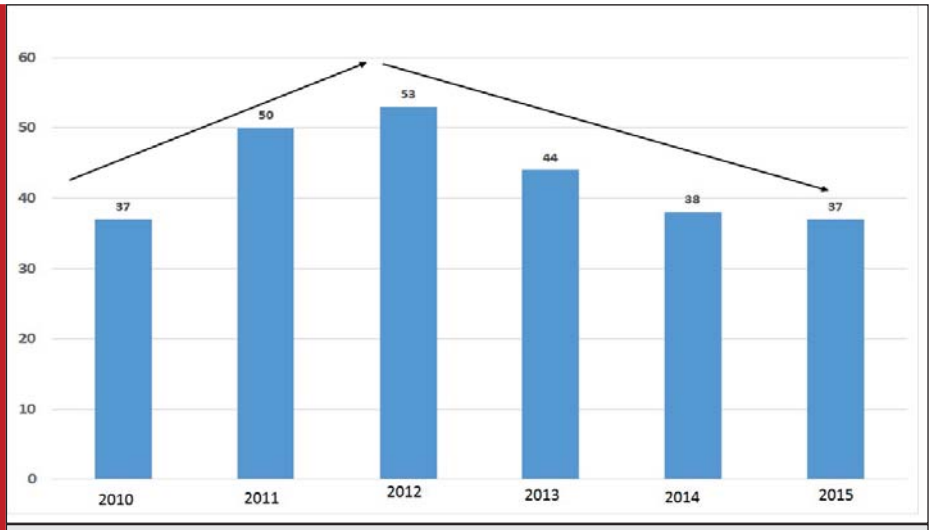

CHART 2: Deaths from motorcycling in the years 2010-2015 (Source: Legal Medicine (Organization) of Dezful)

It should be noted that, according to experts in the Department of Health, in 2013 due to the short age of staff, most of the statistics have been under-reported. Meanwhile, the study of statistics from various sources revealed that15-35 year-old age group and the holders of a diploma or less have been involved in about three-quarters of all guilty parties of accidents leading to injury associated with motorcyclists.

Data analysis of survey on 148 students with average age of 16.5 years identified various pattern of owning a motorcycle by their family; 23.6%, less than a year, 33.8%, the highest frequency, for 1-3 years, 24.3% for 3-5 years and 18.2% more than 5 years. More than half of the students (54.7%) reported that they owned the motorcycle individually and 91.4% of these students reported that they had spent more than 5 million rials to purchase the motorcycle. Regarding the first experience of riding a motorcycle, 75% reported that they started riding from the age of 10-15, and 11.5% before the age of 10 and only 13.5% after the age of15. A percentage of 64.9% of students had the experience of driving a car while 35.1% have not experience it. In terms of motorcycle defects, 56.8% said that their motorcycle did not have any defect, among the reported defects, 24.3% reported that their motorcycle did not have mirrors, and headlamps with 7.4% and rear lights with 6.1% were the next common defects. Other less common defects reported between 2-7%of the students included problems with brake, clutch, guide and horn.

Among studied students, 51.4% said that their motorcycle had insurance. Slightly more than two-thirds of students (76.5%) reported they used their motorcycles averagely 1-3 h a day while the others reported that they used their motorcycles more than three hours a day. The majority of students (85.1%) reported that they used their motorcycle within the city. Almost half of the students (46.6%) had a history of accident during motorcycling, of which 39.1% had been knocked down during the accidents. A percentage of 17.4% of students reported that the accident was their fault, 33.3% reported that the other person was at fault while 10.1% reported that both parties were at fault. For those with experience of motorcycle accident; 78.1% had been involved in accident only once and 29.1% had been involved in two accidents and in accidents in earth-bound environment, 78.9% of them had been involved only once while 21.1% of them had been involved 2 times. About the collision, collision had happened most with cars (18.9%) and overturning (14.2%) followed by collision with other motorcycles (6.8%), with objects (5.4%) and jointly with trucks and pedestrians (0.7%). Table 1 illustrates the causes of accidents in the injured students

In this study, more than half of the students (59.4%), suffered a mild injury after the accident, but 30.4% were not hurt at all while 7.8% of students suffered from severe injury and 1.4% suffered permanent impairment following the accident. About three-quarter of the students that had an accident reported that they were not blamed (30.4%) for the accident or slightly blamed for involving in an accident (46.6%), and 18.8% endured numerous blame while 4.3% reported that they are still been blamed for their past accident. About the way they feel during the accident, 34.8% reported that they experienced fear and 31.9% experienced anger while 24.6% experienced remorse.

Table 1: Causes of accidents according to the students- N=69

	absolute frequency	percentage of relative frequency
Non observance of priority right	8	11.6
Tricks	11	15.9*
Illegal overtaking	7	10.2
Carelessness	21	30.4*
Breaking the law	1	1.4
Road problem	6	8.8
Anger	3	4.4
Use of mobile phone	3	4.3
Exceeding the speed limit	3	4.4
Lack of necessary skills	2	2.9
Heat and boredom	3	4.3
Motorcycle problem	1	1.4

Table 2: Frequency of risky motorcycling behaviors among students- N=148

score	1	2	4	5	3
	always	mostly	sometimes	never	don't know
Having pillion	4.7	24.3	60.8	8.1	2
Illegal overtaking	4.1	18.2	39.9	34.5	3.4
Using mobile phone while riding	1.4	8.1	47.3	39.9	3.4
Motorcycling on sidewalk	0	4.7	22.3	70-3	2.7
Doing tricks	2	8.8	27	60.8	1.4

Table 3: Frequency of safety motorcycling behaviors among students - N=148

score	5	4	2	1	3
	always	mostly	sometimes	never	don't know
Motorcycling with speed limit	6.1	29.1	39.9	24.3	0.7
The slowdown in the short distance with other vehicles	5.4	23	31.8	37.8	2
Standing behind other vehicles and not riding between them	18.9	36.5	23	20.3	1.4
Necessary checks before redirecting	2.7	24.3	27.7	40.5	4.7
A slowdown in residential areas	5.4	33.8	31.8	27.7	1.4
Paying attention to traffic signs	6.1	19.6	37.8	34.5	2
Standing at a red light	2.7	14.2	16.9	66.2	0

It was also found that only 5.8% blamed themselves and 2.9% felt embarrassed. The majority of students (82.4%) reported that they had some kind of training as motorcyclists; 63.1% of them had been trained by family and 34.4% had been trained by friends and acquaintances. In other words, about 98% reported that they had been trained informally and occasionally by relatives and only 2.5% had been trained by official and professional institutions. Tables 2 and 3 illustrate the frequency of different behaviors of motorcycling among students.

DISCUSSION

Data from medical jurisprudence reveals the reduction in statistics of motorcycle deaths. The 2015 analysis report of World Health Organization reveals that despite the decrease in statistics of deaths from road accidents in Iran, this country is unfortunately ranked 172 among180 countries studied (3). Moradi et al in a review of comparative statistics on the number of deaths and injuries due to car accidents in the years 2010 to 2015 showed that during the past four years, the number of deaths from traffic accidents in the country has a decreasing trend with a relatively low coefficient, but the number of casualties has been relatively stable and the value increased in 2013 compared to 2012 (36). Many studies have shown that human factors have always contributed as the most important determinants of road accidents (1, 22, 24). Results of this research revealed that the general profile of the target group was consistent with the characteristics of victims of road accidents in the city, therefore the results are generalizable. It may also be argued that, these students may soon be the next victims of road accidents in Dezful and so they are at great risk and in need for urgent attention and effective prevention actions.

Considering the fact that they started riding motorcycles at a very tender age, even from childhood and they ride it for several hours a day, they are exposed to much more risk compared with adult motorcyclist or even similar age groups in other cities of Iran. At an early age, the probability of having the right knowledge, attitudes and skills about safe motorcycling is reduced. In addition, high prevalence of motorcycle accidents and their related injury or mortality and also early and frequent exposure to risk may reduce perceived susceptibility and severity and so it may lead to normalizing motorcycle accidents. Many of the students reported that they took no blame for the accident and not feeling guilty or ashamed, may be explained as normalization of this risk. This means that negative influence of human factors in road accidents is greater in these ages.

Based on the available data, it can be said that the students' behavior in relation to safe motorcycling is poor. Considering the pattern of motorcycle related accidents and behaviors, which may not be seen in other cities, it can be argued that there is an urgent need for a specific and appropriate prevention program which is adequately context and age sensitive. This also shows the importance of interventions at younger ages in Dezful compared to national level strategy. Regardless of the reasons for exhibiting such behavioral pattern which were earlier discussed, the data revealed that the starting age for motorcycling in Dezful is very low; therefore the risk the adolescents or in other words the children, as the rider will be faced with would be increased.

These findings highlight the role of local culture in transport related behaviors in this case include ownership history of the motorcycle, the amount of payment to purchase the motorcycle, the daily use of motorcycles, motorsports from an early age without a license, reckless and doing tricks, etc. It also seems that a sense of hegemony and competition was increasingly intensified among peers and violation of traffic rules and doing tricks against the law by the majority of adolescents and young children of city has become a sociological tradition and a positive value. This will produce peer pressure for those who which to ride safely. Almost all the boys were already amateur motorcyclists before they reach the legal age to apply for a license, and after the age of 18, they do not need to apply so they never have to take any professional training course for safe driving and most likely they will continue with their risky riding behaviors.Poor driving culture in Iran is visible on the individual's experiences as well as researches. For instance, in a study about driving culture in Iranian 2011, it was found that despite the ethnically and sociologically differences indifferent parts of Iran, there are varying degrees of similarities in attitude towards driving .Individuality and disregard for others, ignoring traffic regulations are examples of such attitudes which researcher argues they have roots in structure and function of the police and traffic laws and identifying it by drivers (37).

The comparative study also found that risk perception in Turkey drivers has been more than that of Iran, and behaviors contrary to the law, recklessness and fatalism in Iranian drivers were observed more. In addition, no significant relationship was observed in the behavior of Iranian drivers to risk perception. In other words, despite the fact that Iran and Turkey are classified as middle-income countries, they exhibit differences in cultural, social and political environments (38). Considering special cultural interest that exists in Dezful towards motorcycle, which needs more qualitative studies to better identify its root, it seems difficult or impossible to

totally ban riding motorcycles for youth below the age of 18 which is the legal age to ride any vehicle in Iran. If possible, there should be other opportunities and means to address youth and adolescents specific emotional needs such as fun, joy and excitement.

Therefore, doing tricks by motorcycle in crowded streets is hardly surprising as the second leading cause of accidents reported by students. This indicates the need to create healthy and safe entertainments and races like constructing facilities for motorsport and related races in order to reduce the motivation to risky motorcycling. Another important aspect that was revealed by this study was the importance of weaknesses in information and registration system related to traffic accidents of motorcycle rider's in Dezful and possibly in the country. It was found that each body uses different format of data collection and analysis, some important data were not recorded. For example, traffic statistics did not show the total number of accidents that happened (they just show injuries and drew sketches). Health Department statistics also include only accidents that were referred to health centers to be treated. It seems that statistics data from 115 emergency center can be considered more useful for road injuries as the majority of injured people, call this center.

It should be noted that medical jurisprudence have most valid statistics of deaths because of the death certificate issued by the organization; these data are also consistent with the country. Since the success of any program greatly depends on access to accurate and up to date information, this very serious and effective weakness must be addressed immediately. The importance of comprehensive information systems do not only cover deaths and injuries caused by traffic accidents, but includes the pattern of events, rates of exposure, average of the results and social costs (39). To achieve an optimal level of safety and reduced statistics, there is need for in-depth analysis of patterns of events. Reliable data from one reliable database, can lead to deep insight on the situation and reasons of accidents and discover solutions to reduce the number of accidents. Thus creating reliable databases and systems of analysis of road accidents should have a paramount importance and it should be accessible by all so that it can be relevant and effective in reducing accidents. An unreliable or unavailable database of information, will result to inefficient management of road safety (40). If the system of data collection was incorrect, it will result to underreporting, false information, thus leading to inaccurate prioritization of the problem and consequently proceedings will be less efficient (41, 42).

Similar to other studies, this study has limitations. There was no comprehensive and accurate data available on motorcycle accidents in Dezful which may have influenced this research. However, this study has managed to draw a picture of the situation and also explain the contributing human factors to this situation in Dezful. Thus, this study provides a better understanding of the problem and some of its determinants, shedding light on the way forward.

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AUTHORS' CONTRIBUTIONS

Nastaran Keshavarz Mohammadi: Study concept and design, critical revision of the manuscript for important intellectual content, study supervision. Maryam Mazaheri: Study concept and design, data collection, analysis and interpretation of data, drafting of the manuscript. Hamid Soori: advice on data collection, statistical analysis, and study supervision. Ali Ramezankhani: consultation in study design and data collection.

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Zoning of contamination of heavy metals of cadmium and lead in groundwater of Ardabil Plains

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ABSTRACT

Heavy metal contamination is very important in any area and it is necessary to investigate these resources in order to keep quality of water. Increase of these metals in drinking water may cause serious diseases in human beings. Therefore, this study aims to investigate concentration amount of heavy elements (cadmium, lead) in supply resources of groundwater in Ardabil Plain in 1394. This study is sectional and of descriptive-analytical kind. Therefore, samples of drinking water were prepared from 100 wells according to the standard method and then were sent to the laboratory. In order to zoning concentration of amounts of lead and cadmium through the identified points, the geo-statistical method was used. Also, obtained data was analyzed by using SPSS software. About lead, results indicated that in 17 wells amount of contamination was higher than the allowed limit. Average concentration of assessed metals was lower than the allowed limit determined by national standard in most underground wells in Ardabil Plain. According to T-test analysis, one can say that contamination with cadmium was little and insignificant but contamination with lead was higher in some areas of Ardabil Plain. Zoning of the studied area indicated that in northwest of Ardabil Town measured amount of concentration of the heavy metal of lead in underground was higher than national standard. Concentration of the heavy metal of cadmium was according to standard limit and it had no contamination. And contamination of underground of this area with lead can be known as presence of a landfill and its resulting latexes and also existence of roads. Also, it should be noted that according to cluster analysis, contamination of Ardabil Plain with heavy metals of cadmium and lead is divided into two groups. First group had low contamination and second group had high contamination.

KEY WORDS: CONTAMINATION, HEAVY METALS, UNDERGROUND, ZONING, ARDABIL PLAIN

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INTRODUCTION

Increase of population and enhancement of standards of living in many countries have caused increasing demands to groundwater for different agricultural, industrial and municipal consumptions. Groundwater as one of the supplying resources of water faces various challenges including natural and unnatural pollutants. Due to less-pollutedness vulnerability and also higher saving capacity than surface water, groundwater is taken into account as an important water resource. Increase of amount of electric conduction and concentration of the ions of sodium, sulfate, and nitrate in groundwater is mostly because of human activities such as agricultural operations, utilization of compact chemical fertilizers, drinking and industry.

Development of cities, increase of industrial activities and irregular use of chemical fertilizers in agriculture have caused contamination of groundwater which effect of these changes on health of men, animals and plants is harmful. In a research titled 'a case study of contamination and prevention from pollution of groundwater in Huchmin City, Japan', it was indicated that the main reasons of contamination of water of wells include (1) human activities including drainage, garbage and water of destroyed wells, (2) natural factors including polluted surface water which caused increase of TDS amount (Shirani, 2013). Water is the most important inorganic compound for live cells and lives of all organisms depend on it. Today, due to increase of population, decrease of capitation of water resources reserve and increase of physical, chemical and microbial pollutions of water, water crisis has been discussed as a world-wide great issues (Ministry of Health, Treatment and Medical Training, 2010).

Especially in recent decades, the most important concern of people living on the Earth and especially the countries located on arid and semi-arid areas including Iran is the issue of supplying water with suitable quantity and quality. On the other hand, increase of public sensitivities and awareness about environment and achievement of sustainable development have highlighted it. Therefore, stabilization of a balance among the previous aims and environmental conditions and a comprehensive insight into quality of water alongside its quantity has been necessary (Rezai, 2011). Water pollution is obtained by addition of any external item in it so that it causes changes in physical, chemical and biological quality of water which the resulting water would be harmful for consumptions of men, organisms and agriculture and even men cannot supply the water needed for living consumptions while normally treating it. In other words, water is considered as polluted when its compound or state is changed directly or indirectly due to human activities and this change causes it cannot be used for the consumptions which it normally had before (Fatai, 2011).

Access to healthy drinking water is considered as one of the essential needs of any society. Increases of population, expansion of cities and expansion of industries have caused pollution of environment, especially the resources supplying drinking water (Hajizadeh, 1998). Contamination of groundwater is considered as one of the most important discussions of environmental geology, especially in the regions where there is not surface water, or it is insignificant. Unfortunately, due to invisibility of groundwater, many people are not sufficiently aware about their importance and harmful effects of environmental pollutions on them (Davis et al, 1994). Toxic quality of a number of mineral compounds especially metallic heavy elements has been known for years. The most toxic of these materials in environment include materials containing lea, mercury, cadmium and nickel. These metals accumulate in bodies of organisms and remain there for a long time and acts as a set of toxins (Dabiri, 2013). Heavy metals enter aqueous ecosystems as a result of weathering of stones and soils, and volcanic and human activities (Khatami, 2007).

In terms of periodical and chemical changes, to have a regular controlling program seems necessary to reasonably predict quality of water of river. In addition, identifying polluting resources and determining their quantitative characteristics are necessary to control pollutants effectively and manage water reserves appropriately (Listory, 1990). In the research by Kamarei in 2009 entitled 'measuring concentration of heavy metals (Arsenic Barium, cadmium, mercury, lead, chrome) in water resources and river of Brojerd City', they expressed that this study is sectional and suggests that average concentration of metals in all wells of drinking water of Brojerd City is lower than standard limitation but concentration of heavy metals has increased after crossing the City due to entrance of municipal and industrial wastewater. Eghbali Shamsabadi et al (2010) in their work entitled 'investigation of heavy metals of chrome, cadmium, lead and organic materials with an insight into their geostructural origins' stated that concentrations of cadmium and lead were close to allowed limit or more than it. This study identified industrial activities and municipal and rural wastewater as the cause of pollution of the river's deposits with cadmium and lead.

According to Rezvani et al (2013), entitled 'evaluation of amount of contamination with heavy metals (cadmium, cobalt, lead, zinc, manganese) in Eshtehard Aquifer', groundwater constitutes some part of water cycle. This study indicated that although pollution is not in dangerous limit but its pollution trend and small area will have many environmental dangers in future. In

Turkey, Arsin Minarji et al (2009) investigated amount of heavy metals (cadmium, chrome, cupper, iron, nickel and lead) in water, their deposit and some tissues in cyprinidae in Avshar Lake. In this study, it was indicated that in tested diposits, concentration of iron was more than others and after that there were nickel, cupper, chrome, lead and cadmium, respectively. Also, results of measuring in different tissues of the fish had a different order. Results showed the highest concentration as following: in muscle, stomach, and intestine, iron, cupper, lead, nickel, chrome, and cadmium; in gill, heart and liver, iron, cupper, nickel, lead, chrome, and cadmium; and in alveolus, iron, cupper, nickel, lead, cadmium, and chrome, respectively.

This study aims to investigate quality of drinking water of Ardabil City in terms of probable pollution with cadmium and lead so that they were evaluated and obtained results were compared to national and international standards and then quality of supply reserves of drinking water of Ardabil City was evaluated in terms of drinkability. This study was performed for the first time as a comprehensive study in Ardabil Plain using the networking method.

METHODOLOGY

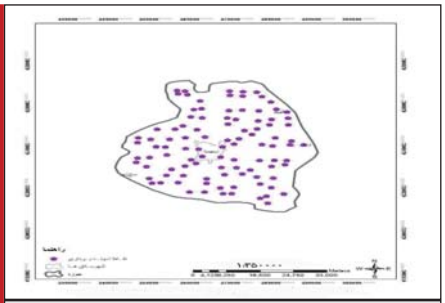
INTRODUCTION OF THE STUDIED AREA

Ardabil Province is in the northwest of Iran and borders the Republic of Azerbaijan in the north, and the provinces of Gilan in the east, East Azerbaijan in the west and Zanjan in the south. It includes 17953 km^2 which in fact contains 1.09 per cent of the whole country. This province, having the maximum height in Sabalan Peak (4811 m) and the minimum height in coasts of Aras River, has a variety of climates so that in mountainous areas, cold and semi-cold climates govern and in flat area, semi-arid to temperate climates govern (groundwater, challenges and approaches, 2015).

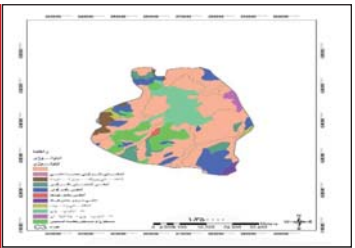
Ardabil Plain, having about 95 thousand hectare, is a highland between mountains and as a closed prairie. It has 1350 m high and is surrounded by mountains from four sides and this basin's closed alluvial deposits are resulted from erosions of its surrounding heights. The intended plain is an appropriate space for agricultural activities and production of various agricultural products especially corns and potato due to having a suitable thickness of diposits and desirable soil and various rivers (groundwater, challenges and approaches, 2015).

In this research, the studied area was divided into about one hundred networks using the networking method. In any network or pixel, one sampling station was selected (as possible as can be in center of the

MAP 1 Ardabil Province



MAP 2 Sampling points



MAP 3 Lithology of Ardabil Province in studying realm of Ardavil Province

Table 1: Allo wed limit of standards

Allowed Limit of			Parameters	
WHO (mg/l)	EPA (mg/l)	Iran (mg/l)		
0.003	0.005	0.005	Cd	cadmium
0.01	0.015	0.01	Pb	Lead

Table 2: Contamination amount of the heavy metals of cadmium and lead in both aridity and juicy seasons in Ardabil Province.

Station number	Cadmium summer	Cadmium spring	Lead summer	Lead spring	Station number	Cadmium summer	Cadmium spring	Lead summer	Lead spring
1	0.003	0.002	0.0361	0.001	51	0.000	0.000	0.0027	0.002
2	0.002	0.000	0.0026	0.002	52	0.000	0.000	0.0023	0.002
3	0.002	0.000	0.0024	0.0018	53	0.000	0.0000	0.0017	0.001
4	0.003	0.001	0.003	0.0024	54	0.001	0.0007	0.0014	0.0011
5	0.001	0.001	0.002	0.0014	55	0.000	0.0005	0.0019	0.0014
6	0.001	0.002	0.0023	0.003	56	0.000	0.000	0.0033	0.0024
7	0.002	0.002	0.0022	0.002	57	0.0016	0.002	0.0026	0.002
8	0.0016	0.002	0.002	0.0042	58	0.002	0.000	0.0036	0.0031
9	0.000	0.001	0.0017	0.000	59	0.002	0.000	0.002	0.0013
10	0.002	0.000	0.002	0.0018	60	0.002	0.002	0.000	0.000
11	0.002	0.000	0.0033	0.0029	61	0.0018	0.0013	0.0000	0.000
12	0.000	0.000	0.0096	0.005	62	0.001	0.000	0.0000	0.000
13	0.000	0.00007	0.009	0.000	63	0.001	0.0007	0.0047	0.000
14	0.000	0.0000	0.0014	0.000	64	0.000	0.000	0.006	0.0033
15	0.0018	0.001	0.0023	0.0015	65	0.000	0.000	0.0079	0.0023
16	0.0025	0.001	0.0037	0.003	66	0.000	0.001	0.005	0.0019
17	0.002	0.003	0.003	0.0022	67	0.000	0.000	0.0083	0.007
18	0.000	0.0018	0.0012	0.001	68	0.0009	0.000	0.0089	0.007
19	0.000	0.002	0.001	0.0007	69	0.000	0.000	0.008	0.008
20	0.000	0.001	0.0012	0.000	70	0.000	0.001	0.006	0.0029
21	0.000	0.000	0.0015	0.000	71	0.002	0.000	0.0066	0.0024
22	0.000	0.000	0.0022	0.005	72	0.002	0.0016	0.002	0.0016
23	0.001	0.000	0.000	0.0009	73	0.003	0.001	0.0045	0.0021
24	0.0014	0.000	0.0024	0.000	74	0.003	0.002	0.0032	0.002
25	0.001	0.002	0.003	0.001	75	0.003	0.002	0.003	0.002
26	0.0009	0.000	0.0007	0.000	76	0.000	0.0001	0.008	0.000
27	0.000	0.000	0.0007	0.000	77	0.001	0.000	0.0033	0.002
28	0.000	0.0017	0.0009	0.000	78	0.000	0.000	0.0078	0.0056
29	0.001	0.001	0.0016	0.000	79	0.000	0.000	0.0039	0.0034
30	0.001	0.001	0.0016	0.000	80	0.000	0.000	0.005	0.000
31	0.0018	0.001	0.009	0.002	81	0.0006	0.001	0.0056	0.000
32	0.0016	0.000	0.016	0.01	82	0.001	0.001	0.007	0.000
33	0.0016	0.001	0.014	0.01	83	0.001	0.000	0.009	0.0043
34	0.0025	0.003	0.01	0.01	84	0.003	0.002	0.01	0.0076
35	0.0033	0.002	0.01	0.0088	85	0.001	0.003	0.01	0.008
36	0.003	0.002	0.008	0.000	86	0.004	0.003	0.0026	0.016
37	0.002	0.003	0.016	0.01	87	0.003	0.004	0.054	0.03
38	0.0034	0.003	0.019	0.015	88	0.004	0.003	0.0467	0.033
39	0.001	0.003	0.02	0.013	89	0.002	0.004	0.015	0.01
40	0.001	0.000	0.01	0.007	90	0.001	0.002	0.013	0.009
41	0.001	0.000	0.0094	0.005	91	0.005	0.003	0.022	0.0155
42	0.001	0.001	0.0067	0.003	92	0.005	0.002	0.0165	0.01
43	0.001	0.000	0.0059	0.002	93	0.001	0.003	0.019	0.016
44	0.000	0.001	0.007	0.000	94	0.001	0.002	0.015	0.01
45	0.001	0.002	0.0085	0.000	95	0.003	0.002	0.0078	0.000
46	0.000	0.0000	0.019	0.008	96	0.001	0.000	0.0056	0.000
47	0.0008	0.001	0.0034	0.000	97	0.000	0.000	0.0014	0.0002
48	0.001	0.001	0.0037	0.002	98	0.000	0.001	0.0012	0.0005
49	0.002	0.003	0.0101	0.003	99	0.001	0.002	0.000	0.000
50	0.002	0.003	0.0024	0.000	100	0.000	0.000	0.005	0.000

network) and totally 100 networks and 100 sampling stations were chosen in the region. In the meanwhile, dimensions of the networks are 350 m × 300 m. Sampling was performed in both aridity and juicy seasons. Time of sampling was in the summer in Mordad and in the spring in Ordibehesh in 2015. After networking all of Ardabil Province, first sampling in clean polyethylene battles was performed, then to stabilize the samples thick 1.5 cc Nitric Acid was used. Characteristics of sampling stations, time of sampling, number of well, and season of sampling were labeled on the samples. Samples were transmitted to laboratory after necessary preparation in appropriate conditions of temperature and at the minimum time and they were kept in refrigerator before experiments. Also, this kind of study was descriptive-analytical. Results of chemical analyses were saved as information bank in EXCEL environment. Situations of wells were recorded and entered Arc GIS software environment using GPS.

RESULTS

Results of data obtained from sampling in 100 stations studied in Ardabil Plain through two aridity and juicy seasons in 1394 from groundwater are presented in Table (2).

T-test

For amounts measured by national standard amounts in this study, One-Sample Test was used. Results indicated that there was a meaningful statistical difference in 1 per cent possibility level in both heavy metals of lead and cadmium in both seasons of summer and spring (Table 3).

Zoning maps of the studied area Investigation of zoning maps of the heavy metals of cadmium and lead in Ardabil Plain

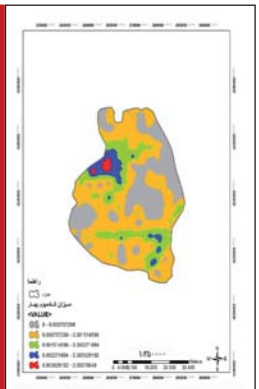
After investigating the most optimized algorithm of interpolation, zoning map of contamination amounts of the ions of cadmium and lead using Arc GIS software.

Cadmium

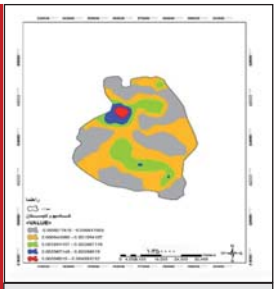
Maps (4) and (5) indicate that this metal in groundwater of Ardabil Plain is lower than national standard and EPA. But compared to WHO standard, it indicates that there is contamination in northwest of Ardabil Plain. This contamination is due to existence of a landfill and also slaughterhouses near Jabadar Village, Samian Village and access roads.

Lead

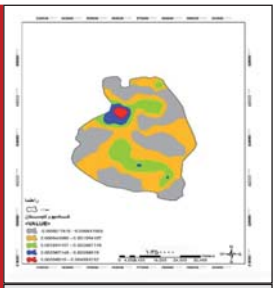
Qualitative zoning of lead in Ardabil Plain is presented in Maps (6) and (7). The mentioned maps indicate that this metal in groundwater of Ardabil Plain in both seasons is higher than WHO and EPA.



MAP 4 Zoning of amount of cadmium in spring in the studied area of Ardabil Plain.



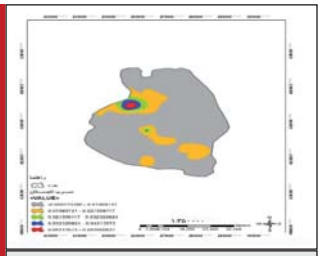
MAP 5 Zoning of amount of cadmium in summer in Ardabil Plain.



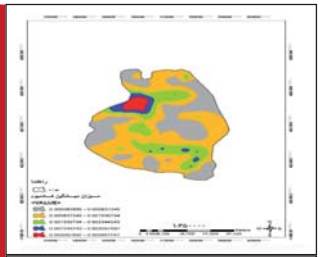
MAP 6 Zoning of amount of lead in spring in Ardabil Plain.

Table 3: Paired Samples Test to investigate contamination of heavy metals of lead and cadmium in groundwater of Ardabil Plain in spring and summer.

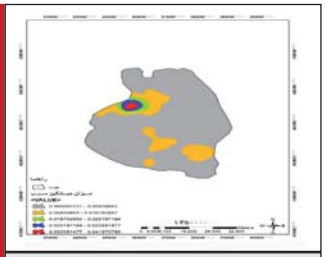
	T	df	Sig. (2-tailed)	Mean	95% Confidence Interval of the Difference	
					Lower	Upper
Test Value = 0.005						
Cadmium summer	-45	100	0.000	-0.0037895	-0.003952	-0.003627
Cadmium spring	-34	99	0.000	-0.0038800	-0.004102	-0.003658
Test Value = 0.01						
Lead Summer	-8	199	0.000	-0.0043980	-0.005456	-0.003340
Lead Spring	-10	99	0.000	-0.0060850	-0.007211	-0.004959



MAP 7 Zoning of amount of lead in summer in the studied area of Ardabil Plain.



MAP 8 Average amount of cadmium in groundwater of the studied area of Ardabil Plain.



MAP 9 Average of lead in underground of the studied area of Ardabil Plain.

CONCLUSION

According to results obtained from experiments, one can say that contamination of cadmium and lead generally in summer (Mordad) is higher than Spring (Ordibehesht) because in summer due to highness of temperature, contamination of these metals increases in certain volume of water.

Results from pollution resources in the northwest of Ardabil Town due to closeness to the landfill meaning toward Samian and Jobbedar are higher than standard level and also due to presence of slaughterhouses and access roads, contamination of these pollutants has gotten higher.

Lithography of the area indicates that in sections of old eroded surfaces of sedimentary-limy plains, volcanic evolution of pyroxene and andesite is higher. Zoning of the studied area showed that in the northwest of Ardabil Town, measured amount of contamination of the heavy metal of lead in groundwater is higher than national standard limit. Contamination of the heavy metal of cadmium is according to standard level and there is not any contamination. And contamination of groundwater with lead in this area can be known due to existence of landfill and its resulting latexes and also access roads. Also, it should be noted that according to cluster analysis of Ardabil Plain, the heavy metals of cadmium and lead were divided into two groups. First group had low contamination and second group had high contamination.

RECOMMENDATIONS

1. Innovation and initialization of gathering system of latexes resulting from the landfill
2. Management of exploitation of water from underground wells of Ardabil Plain
3. Prevention from extra use of agricultural fertilizer
4. Decrease of access roads
5. Selection of suitable area for industries in terms of stoop and taking into account land use in the realm of industrial activities
6. Treatment of wastewater resulting from slaughterhouse
7. Prevention from
8. Treatment of wastewater resulting from slaughterhouse
9. Prevention from digging underground wells

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Impact of teachers environmental awareness on urban development based eco-city indexes: A case study of district 5 of Tehran educational administration

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ABSTRACT

Eco city is a city built on the principles of living within the environment. The ultimate goal of many eco-cities is to eliminate all carbon waste, to produce energy through renewable sources, and to incorporate the environment into the city. Eco-cities also seek to stimulate economic growth, reduce poverty, organize cities to have higher population densities, and therefore higher efficiency, and improve health. An eco-city is based on four indexes: green space proportional to population, eliminating all carbon waste and transition to a clean, affordable, and safe energy future, using new technologies, visual beauties. The statistical population of this research included all male and female teachers in the schools located in District 5 of education Administration in Tehran. 350 teachers from among 5298 male and female teachers were recruited for the study. For selection, Morgan index was used. Data from 250 questionnaires distributed among the participants were analyzed and the rest were excluded from data analysis as they were incomplete. Validity of the questionnaire was confirmed by Expert index and reliability was confirmed by Cronbach's alpha. The awareness of teachers about eco-city index and its effect on students' information was determined by the data from the initial questionnaire. Attempts were then made to enhance this awareness through brochures, power point slides, and holing education workshops. The participants' awareness was measured again by a second questionnaire. Analysis of data was performed by SPSS software.

KEY WORDS: EFFECT OF AWARENESS, ENVIRONMENTAL, ECO-CITY INDEXES, URBAN DEVELOPMENT

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INTRODUCTION

One of the most important problems in environmental protection in Iran is lack of awareness and organized information on the part of members of the society, in particular those influencing individuals' attitude with regard to the environment. In addition, lack of rules and awareness of basic rights have resulted in people's inability to hold the government accountable concerning efficient performance of its environmental responsibilities.

One of the environmental issues is that of *eco-city* which is considered to be a *city* built based on environmental indexes. A standard eco city has the following properties:

1. Green space proportional to population
2. Eliminating all carbon waste and transition to a clean, affordable, and safe energy future
3. Using new technologies in all environmental activities.
4. Visual beauties such as urban furniture, panels, lightening etc.

Organizing the cities on the basis of eco-city indexes brings about positive results including the following:

1. Economic growth is increased through the use of existing industries and introduction of new ones.
2. Removal of carbon producing sources and incorporating renewable sources.
3. Creation of local economies, an increase in demand for jobs and new job opportunities.
4. Organizing cities for a larger population without increasing crime rate and poverty.
5. Improving public health, access to citizenry education and public services.
6. Creation of tourist areas for families and thus improving public happiness and satisfaction. This starts with providing citizens with education on the definition of eco-city, eco city indexes, government duties regarding the creation of infrastructures and necessary investments, cooperation of concerned institutes such as municipalities, city councils, governors, nongovernmental organizations (NGOs), ministry of education, etc.

Recognition and awareness on the part of members of the society in Iran is very limited concerning environmental issues. Most people can only obtain information from media and newspapers regarding the fact that some lakes such as Uremia Lake which is the largest lake in the Middle East, is drying out due to lack of precipitation, dam construction and poor water management, and that Hamoon Lake has been completely dried up and this has impacted agricultural activities in the region. Illegal hunting of leopards and tigers, shortage of seasonal rainfall, temperature inversion, air pollution, and traffic are some other examples. As far as the issue of eco-city and its indexes is concerned, most ordinary and even educated and elite people lack information. They not only have little information, but they also do not trust that information. The number of people active in international and national environmental organizations is very low.

Consequently, almost all people including educated, elite and ordinary people have very limited recognition and awareness of this issue. The solution to this problem is not difficult. Environmental organizations can provide complete, appropriate information according to the level of knowledge of their audience via a variety of means including cyberspace, using urban and rural propaganda, media and newspapers.

Moreover, some members of the public that, in sociological terms, are referred to as authorities play an important role in attracting people to social and cultural phenomena. Teachers and professors that deal with the next generation, and non-government organizations (NGOs) are in close contact with different social groups municipalities and urban and rural councils have a very important role to play.

Teachers are facilitators of learning, providing students with the information and tools they need to master a variety of subjects. They deal with immense populations of students. It has been observed that students take their teachers' advice more frequently than their parents and may even resist against their families because of their trust in their teachers' views That is why teachers are the subject of this research and have the most important to play in shaping the society's attitudes towards eco city.

In order to become have a greater impact on students' attitudes, teachers should gain professional education regarding eco-city and achieving success in this regard depend son cooperation among different departments of Educational Administration in running educational courses, providing and distributing educational brochures and leaflets among students.

To sum up what was stated above, there is lack of education among most people and even experts concerning the issue of eco-system. We noted some variables in the preceding section but it is necessary to shed some light on some important points.

The first consideration is that in developed countries investments aimed at creating and environmental infrastructures undertaken by the government, and then making optimal use of this infrastructure is assigned to employers, non-governmental organizations (NGOs) and members of the public. In our country, after the Islamic revolution, difficulties such as the imposed war, interna-

tional sanctions, mismanagements, political differences among people, to name just a few, led to the fact that the least amount of attention has been paid to environmental problems by the government. Only Tehran and some big cities have recently paid attention to some indexes of eco-city.

The second issue is the lack of information regarding rules and basic rights which has resulted in inability of members of the public to hold the governments accountable to perform its responsibilities regarding environmental protection. Accordingly, the aims of the current research are as follows:

1. Help to improve citizen's culture concerning eco-city and eco-city indexes as well as environmental problems.
2. Enhance the knowledge of those capable of exerting significant influence on members of the public regarding eco-system such teachers.
3. Develop new approaches by Ministry of Education and introducing educational packages regarding eco-city and environment.
4. Increase the awareness of many groups such as staff and students through running short term, long run, and midterm educational courses and providing brochures leaflets, holding special meetingstomark environmental occasions.
5. Institutionalize and localize eco city indexes in Tehran as the capital of Iran.

MATERIALS AND METHODS

This research is applied in terms of purpose and quasi-experimental in terms of the possibility to control variables control and is a field study regarding data collection. From total number of5298 teachers in District 5 of Tehran Educational Administration, 350 male and female teachers were randomly selected and asked to complete a valid and reliable questionnaire

The researcher-designed questionnaire aimed to obtain teachers' opinions in three independence areas including: 1- Knowledge of environment 2- environmental attitudes 3- environmental performance. In total the questionnaire included 44 questions (17 questions concerned with knowledge, 12 questions on attitudes and 15 questions on performance).

After removing incomplete and defective questionnaires from among the collected questionnaires, data from 250 participants were analyzed in order to obtain descriptive statistics such as age, experience, level of education, the program or grade they teach etc.

Afterwards, to test the hypothesis of the study, the obtained data were analyzed by SPSS software. First, it was essential to make sure that the data was normal. For this purpose, Kolmogorov–Smirnov*test was used*.

Table:1

Description / Variables	knowledge	attitude	performance
Kolmogorov ready	0.802	1.049	1.137
Significance level	0.540	0.221	0.151

As shown in the table above, for all variables, the level of significance is higher than 0/05; therefore, the null hypothesis is accepted indicating that data has a normal distribution.

As a result, *Pearson* Correlation *Coefficient* was used.

RESULTS AND DISCUSSION

1-From the obtained data, it was found that the smallest percentage of the sample was accounted for by teachers aged 31-35 (7.6%) with those over 41 accounting for the largest percentage of the participants (63.2%).

2-From the obtained data, it was found that the smallest percentage of the sample was accounted for by teachers serving for over 30 years (4 %) with those serving from 21 to 30 years accounting for the largest percentage of the participants (63.5%).

3-From the obtained data, it was found that the smallest percentage of the sample was accounted for by teachers teaching freshman in high school (9.5 %) with those teaching sophomores accounting for the largest percentage of the participants (64.8%).

4-From the obtained data, it was found that the smallest percentage of the sample was accounted for by teachers holding a diploma and higher than Masters (2.7 %) with those holding a Bachelor accounting for the largest percentage of the participants (75.7%).

CONCLUSIONS

This research formulated four hypotheses. The first hypothesis was that teachers are the most influential agents in education, among all the target groups. With reference to the obtained results, this hypothesis is supported. The second hypothesis was that there is no relationship between the amount of increasing awareness and familiarity with eco-city indexes and their current knowledge. This hypothesis was rejected. In other words, there is a indeed a relationship between these two factors. The third hypothesis was that the current approach

Table 2: A comparison between the current study and the studies reported in the literature

	Research subject/Researcher	Compared with current research
1	Needassessment and determination of teaching preference of students of high school in environmental and stable development/Haj Hosseini(1389)	In the study mentioned,high schoolstudents'awareness about environment is studied while in the current research , teachers' awareness is studied. Research method, research instruments and statistical methods are similar in both studies. Both studies investigated the impact of teaching on environment and reachedthe conclusion thatthe best place for thisis the Ministry of Education the difference being that the former focused on the impact on students and the latteron teachers.
2	Methods for enhancing students' rolein environmental protection/ Kaymanesh(1390)	1-Both studies were conducted in Ministry of Education(the formerin Gilan and the current research in Tehran). 2-Research instrument, procedure and statistical methods used in two studies are similar. The differenceis that the former studied the impact of teaching materials such as textbooks, training camps and teachers' awareness, but the current research studied the awareness and knowledge of teachers,running training courses and providing brochures. That is why the two studiesare similar.
3	Necessity of studying the attitudestowards environment among influential groups of society for the development of methods for environmental teaching/Soleimani(1392).	Both studied the role of training on people, especially teachers, giving information to society about environment. The difference is that the former is descriptive and analyticwhile the current research is practical.
	Research subject/Researcher	Compare with current research
4	The role of women in protection of environment/Morad Haseli (1392)	This research is analytic, focusing on the role of women in environmental protectionwhile the current research focused on teachersThe former study indicated that women could play an important role in environmental matters.
5	The status of formal environmental education in Iran/Ehsanpour (1392)	1-Both studied the effect of training on environment, particularly, in formal educational centers. 2-This study is analytic comparing environmental matters in Iran with other countries with the difference being that the current research is practical.
6	Studying the attitudes of students in Ahvaz high school towardsenvironment/ Yavari Kharrat (1392).	Both studiesstudied the impact of teaching in schools. 2-This research emphasizes training studentswhile the current research emphasizes the role of knowledge and awareness of teachers and running training courses on institutionalizing matters of environment.
7	Assessmentof courses focusing onenvironment in the high school program in Hormozgan/ Zareie (1390).	This research studied training on environment via textbooksfocusing on content and the title of the books such as Healthwhich is taught in the first year of high school and the year when training starts. This research is similar to the current research as it focused on teachers' attitudes to environment.

in the Ministry of Education is not in line with eco-city indexes. Regarding the results this hypothesis is also supported. The fourth hypothesis was that there is a significant relationship between holding training workshops and providing brochures and enhancing teachers' awareness. Regarding the results this hypothesis is also supported.

Based on the results, the following suggestions are made for further research: Running job training classes for young teachers with ten years of experience and ages lower than thirty aimed at increasing teachers' awareness about eco-city will be very effective. Also, running training workshops for high school teachers and field trips in nature to make people interested in environmental issues are great strategies in this regard. Another strategy is to appoint environmental guards from among students for protection of environment, and training on environmental issues. Also, establishing relationships between industries and environmental organization and the Ministry of Education in order to improve the level of environmental knowledge and an increase in per capita education at different levels of education in cities should be given preference.

Identifying dead and useless spaces in local regions and changing them to green spaces is another suggestion which may be very effective. With reference to lack of local and regional necessities for students, providing educational information on environment in school

books according to students' needs at different levels is suggested. It is also suggested that teachers take special courses for this purpose. Running training workshops for improving teachers 'practical and behavioral skills and institutionalization of positive behavioral and social attitudes among citizens are also desirable. Finally, it is suggested that future research should investigate this subject in other areas of Education Administration in Tehran to compare the results with those obtained from the current study.

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Investigation and assessment of flooding risk in Shirvan valley of Ardabil using the GIS software

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ABSTRACT

Every year, many people's lives and properties are threatened by flooding all around the world. Thus, it is necessary to identify areas at risk of flooding in order to apply systematic management techniques on urban river basins. First, topographical maps and land uses in the Shirvan Valley river basin were prepared and river borders on the basis of these maps. This river was divided into 3 sub-basins, the sub-basins were divided into 5 hydrologic units and the 5 hydrologic units were finally divided into 4 Hydrologic subunits. Afterwards, attempts were made to calculate the flood hydrograph in the 2, 5, 10, 25, 50, 100 recurrence intervals. The geometric information were collected from the S1-1-1 territory with a length of 3.5 km along the Shirvan valley river. Water surface profile was calculated at specific recursive intervals and the results were then inserted into the Arc GIS system and the flood zoning maps were prepared at different recursive intervals using the above mentioned software. After merging these maps into the river basin Land uses map, the average level and depth of flood was determined for the flood risk areas. Finally, the potential damages are measured using the flood damage functions and the level-damage curve was drawn. The results showed that increase in the damage trend of floods with a recursive period exceeding 25 years and an average flooding depth above 0.52 meters is more intense.

KEY WORDS: FLOODING RISK, SHIRVAN VALLEY, GIS, ARDABIL

INTRODUCTION

Population growth, urbanization and industrialization of societies, will have adverse influences on the hydrology of the above river basin and will trigger floods, increased pollution in coastal areas, reduction of basic currents and groundwater recharge (Taheri Behbehani and Bozorgzadeh, 1996). In other words, hydrological developments resulting from urbanism and urban land uses can be succinctly summarized as follows: Change in the volume of runoff, Change in the recharge rate as a result of precipitation, Change in the maximum discharge rate (peak) of floods and Change in Water quality. Most Iranian cities have been built in the basins outlet and these regions are

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no exception. Increased level of impermeable lands as a result of urbanism and building construction on permeable soils, will naturally reduce the permeable areas of this river basin that can absorb part of the rainfall and consequently increase the volume of runoff in this region.

The paved urban surfaces, building roofs, streets and parking lots prevent groundwater recharge and infiltration of rainwater into the soil, and consequently turn the bulk of rainfall to surface runoff (Asghari Moghaddam, 2005). Review of the figures associated with damages caused by flooding in Iran and the world indicate the extent of flood damages to natural, human and economic resources in different regions (Vahabi, 2006). Increase in the flood trends during the last five decades shows that the number of floods occurred in the 80s is almost 10 times more than the number of floods occurred in the 40s, which accounts for 900 percent increase in the flood occurrence frequency (Abdi, 2006).

Based on physiographic studies, studied area called Si valley Shirvan, with an area of 14666.1 hectares is located in the region to east longitude and north latitude. Its circumference is 94.8 km, the lowest and highest altitude in the region is 938.1 and 4781.3 meters. Politically, this area is located in Ardabil province, Meshkinshar city, Eastern Meshkin, Gharehsou and Lahout villages. Figure 1 indicates political situation of basin. In terms of geographical location, this basin is originated from Sabalan mountain, which is located on it northern domain. In other words, the most natural effect is Sabalan Mountain, which is located southern end of basin. Northern border of Si valley Shirvan basin is limited to Gharehsou River. Therefore, this basin is not independent, but it has multiple outputs. Among many waterways to Gharehsou River in studied area, there are 3 main waterways that comprise three independent sub-basins. The waterways between these three sub-basins developed units 1S-int to 4S-int. In figure 1, regional basic map is shown and in table 1 some regional morphometric characteristics are shown. Residential areas within the area include: Lahroud, Jalayer, Dadebyglou, Kanglou, Ghareh Qayeh. Shabyl tourist area is located in studied region and attracts many tourists each year because of mineral water. In addition, Ghotoursouie mineral water is located near border of basin.

METHODOLOGY

In this study, for hydrological analysis of zone, hydrometric stations data and statistics are used. Statistical period is from 1974-75 to 2008-9. After completing statistical errors in selected statistical period, homogeneity of Statistics was studied using doubled mass method. Hydrological parameters were evaluated in annual and monthly scales: in this study, different softwares are used. In this study the ArcGIS software was used to analyze the maps and the spatial data. The hydrometric stations' figures and data including daily, monthly, and annual discharges, and the maximum daily and momentary water flow rate were collected from the relevant organizations such as Ardabil province Water Company and Department of Energy (water resource management) and were then analyzed. In this study, the data obtained from stations around the project area were evaluated and, as for the adequacy of data, stations with less than 10 year old figures and data were excluded. The characteristics of these stations are presented in Table 2.

According to the meteorological studies, The Common statistical period was considered from the 1353-54 to 1387-88 hydrological years. Before dealing with the data analysis, it is necessary to make sure of its quality and comprehensiveness of the statistical series. Without proper evaluation of the data, the complex statistical analysis will not provide any reliable results. Although the standard readings and recordings of the hydrometer data greatly reduces the probability of error, the primary data usually need to be controlled or modified. Meanwhile, drastic local changes in the climate of a region may lead to such errors and cause data heterogeneity.

There are different methods of statistical quality control, and double mass curve test is one of them. In this method, the cumulative average of total discharge at the stations located within the flood zones is tested using the cumulative discharge of each individual station. Homogeneity of data refers to a state in which the data related to a random statistical population follow a certain trend. A common technique known as double mass homogeneity test was used to examine the homogeneity of data. At this stage of the study, the annual discharge data of hydrometric stations in the basins of the study area were used to conduct the double mass homogeneity test. In other words, the average cumulative discharge graph of selected stations within each territory was drawn using the cumulative discharge of each individual station, and the curve's slope that confirmed the accuracy of discharge figures (Figure 2: double mass test results) was studied.

STATISTICAL INDEX AND DATA COMPLETION PERIOD

In order to determine statistical index, first, statistical errors of stations with data more than 10 years were rebuilt and extended. Accordingly, based on studied areas of Iran Water Resources Management organization, stations with long data and appropriate statistical data were considered as base station to extend and rebuild annual discharge statistic of other stations, and

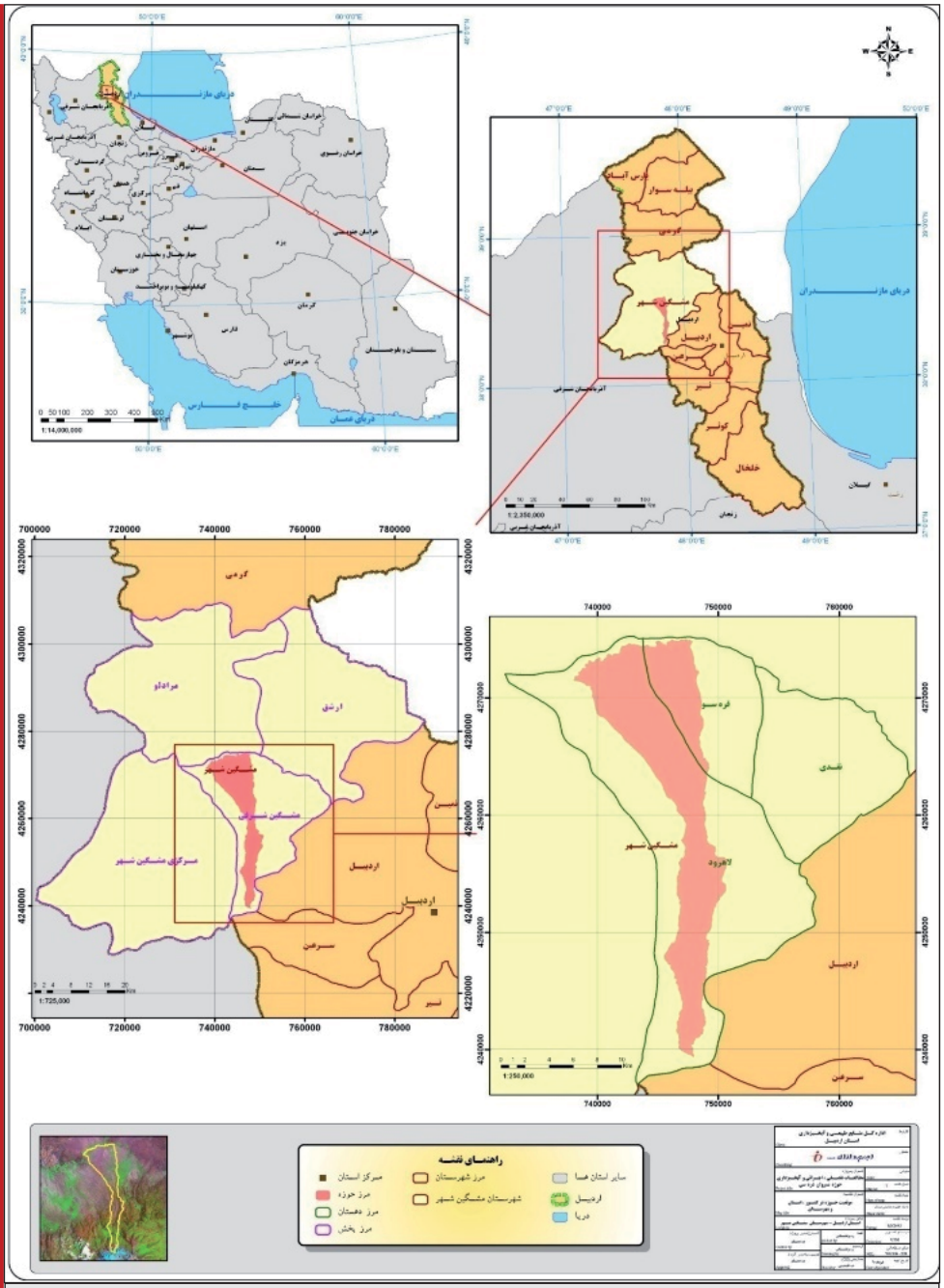

FIGURE 1. Political location of basin

accordingly, statistical deficiencies and gaps were completed. In order to complete annual discharge statistic, first, statistics extension allowed length (Ne) was determined for each of the stations based on presented criteria in the following equation:

$$Ne = \frac{N}{1+(\frac{N-n}{n-2})(1-r^2)} \quad (1)$$

In this equation: Ne is allowed time for statistics extension (year), N is number of registered statistical years in bas station (with long-term statistics), n is number of registered statistical years in destination (with short-term statistics) and r is correlation coefficient between base station and destination station.

RIVER FLOOD ZONING USING THE ARCGIS SOFTWARE

Any surface flow of water, regardless of its cause, is considered flood if the flow of water in the river is more

Table 1: Physiographic characteristics of each watershed hydrologic units in Si valley Shirvan aquiferous basin

Center of gravity Longitude	Center of gravity latitude	Compactness coefficient (C)	Concentration time (h)	Basin slope %	Medium Height (m)	Maximum Height(m)	Minimum Height (m)	area (hectare)	Basin No.	No.
38° 28' 24/49" N	47° 49' 12/54" E	2/21	3/03	16/5	1632/0	4781/3	938/1	14666/13	S	1
38° 23' 40/11" N	47° 49' 49/96" E	2/88	3/04	29/1	2262/4	4781/3	944/0	6443/42	S1	2
38° 31' 6/80" N	47° 48' 44/79" E	1/83	2/03	6/9	1202/9	1591/0	957/2	2512/73	S2	3
38° 31' 7/82" N	47° 50' 22/72" E	2/13	1/97	9/8	1234/5	1752/4	965/9	2266/18	S3	4
38° 32' 32/63" N	47° 45' 24/91" E	2/04	-	3/9	1042/7	1159/7	938/1	509/67	S-int1	5
38° 33' 17/99" N	47° 46' 37/49" E	1/93	-	3/3	1027/3	1246/7	944/2	1421/81	S-int2	6
38° 33' 55/87" N	47° 48' 40/23" E	1/69	-	6/2	1020/0	1144/9	957/6	980/49	S-int3	7
38° 34' 13/52" N	47° 50' 22/53" E	1/96	-	4/4	1027/6	1127/7	960/4	531/83	S-int4	8
38° 22' 50/96" N	47° 50' 10/93" E	2/56	2/54	31/4	2374/0	4781/3	1116/8	5898/29	S1-1	9
38° 32' 31/79" N	47° 46' 2/61" E	2/39	-	3/9	1055/0	1187/4	944/0	545/15	S1-int	10
38° 30' 51/07" N	47° 49' 24/29" E	1/66	0/76	9/4	1220/5	1417/9	1091/0	543/52	S2-1	11
38° 29' 39/93" N	47° 49' 24/59" E	2/12	1/2	9/0	1340/3	1591/0	1096/9	660/73	S2-2	12
38° 30' 19/95" N	47° 48' 22/09" E	1/64	0/99	5/8	1237/7	1400/0	1105/7	541/06	S2-3	13
38° 33' 5/78" N	47° 47' 58/53" E	1/89	-	4/3	1047/7	1140/0	957/2	767/41	S2-int	14
38° 29' 37/95" N	47° 50' 41/42" E	1/78	1/23	13/3	1363/5	1752/4	1110/7	1244/61	S3-1	15
38° 32' 57/31" N	47° 49' 59/94" E	1/94	-	5/6	1077/4	1260/0	965/9	1021/57	S3-int	16
38° 21' 34/21" N	47° 50' 25/38" E	2/55	2/04	35/6	2601/9	4781/3	1390/5	4067/71	S1-1-1	17
38° 24' 38/64" N	47° 50' 3/66" E	2/27	1/63	26/4	2019/2	2702/8	1387/8	1457/36	S1-1-2	18
38° 29' 47/02" N	47° 48' 1/55" E	2/43	-	5/3	1276/2	1489/4	1116/8	373/22	S1-1-int	19
38° 28' 42/67" N	47° 50' 1/52" E	1/43	0/51	10/4	1449/6	1591/0	1333/0	269/60	S2-2-1	20
38° 30' 19/39" N	47° 48' 59/13" E	2/17	-	8/0	1264/7	1434/4	1096/9	391/14	S2-2-int	21
38° 28' 43.09" N	47° 50' 53.00" E			16/4	1464/7	1752/4	1214/3	662/63	S3-1-1	22
38° 30' 40/40" N	47° 50' 28/22" E	1/72	-	9/8	1248/4	1474/0	1110/7	581/98	S3-1-int	23
38° 19' 38/42" N	47° 50' 1/39" E	1/69	0/98	35/9	2969/2	4781/3	2074/1	2559/31	S1-1-1-1	24
38° 24' 50/67" N	47° 51' 6/14" E	2/42	-	35/1	1978/6	2471/6	1390/5	1508/40	S1-1-1-int	25

Table 2: Hydrometric stations characteristics in the area

Basin level km^2	Geographical characteristics			Station degree	Equipments			Code	station
	Longitude	Latitude	Height		Eshel	Telephric	Limonograph		
7311	47:31:00	38:32:00	1450	3	+	-	-	19-065	doust Bigelow
98	47:40:00	38:24:00	1150	4	+	-	-	19-063	Soltani bridge
11290	47:58:00	38:72:00	680	1	+	+	+	19-069	Moshiran
480	48:03:00	38:30:00	1180	1	+	+	+	19-873	Arbab Kandi
2035	47:21:00	38:43:00	1215	1	+	+	+	19-067	Tazehkand Ahar
4000	48:15:00	38:23:00	1170	1	+	+	+	19-101	Samian
32	48:46:00	38:42:00	1450	4	+	-	-	19-099	Namin
36	47:09:00	38:12:00	2200	4	+	-	-	19-049	Lai
73	47:67:00	38:00:00	1900	4	+	-	-	31-001	Sahzab
1638	48:22:00	38:19:00	1190	4	+	-	-	19-055	Gilandeh

than the normal flow of water in the river and if the water flows out of the normal river basin and overtakes lowlands and other lands around the river, it will definitely cause financial damages and casualties. Increasing financial damages and casualties caused by floods in recent decades, has provoked water engineers and other experts to find a new way to control and manage these natural phenomena with reliance on modern equipment. In recent years, due to the development of river engineering goals, development of large-scale topographic maps rather than the maps that only cover the cross sections of rivers, has increased significantly, such that flood zones can be identified on them by extraction of rivers cross sections from these maps. In addition, with increasing access to digital information and increasing efficiency of software analyses, GIS has played an important role in modeling. The main advantage of using GIS in hydraulic modeling is its potential in extraction of digital information associated with river cross sections from the DEM models.

RESULTS PROVIDED BY THE ARCGIS SOFTWARE

The software provides different layers including flood zone layers that are among the most practical layers. In order to transfer the results of hydraulic calculations carried out in natural conditions into GIS, the topography of the current situation in the GIS environment should be converted to the topography of the normal situation. This process can be done by elimination of river features and modification of the area's TIN in the GIS environment. finally the results of the HEC-RAS mathematical model for natural conditions in discharge state with a recursive interval of (2,5,10, 25, 50 and 100 years) are applied to a modified topography (which is actually the natural topography of the river.) and path is paved for specification of riverbed. Setting the required files and layers Setting and the introducing the required files for proceeding to the next stages is the first step taken in Arc GIS to produce maps (Fig 2).

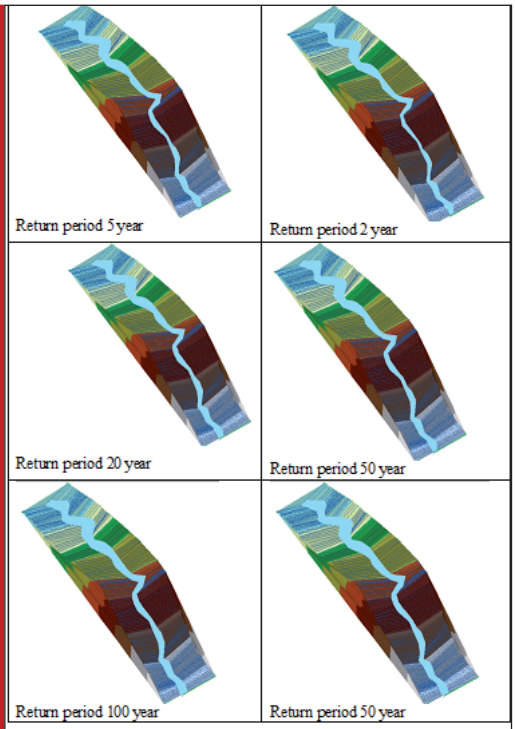

FIGURE 2. Political location of basin

Table 3: Flooded level comparison	
Flood zone area (M2)	Return period (TR) year
161382	2
162735	5
168778	10
169116	25
169754	50
161382	100

Table 4: Flood depth comparison		
Maximum depth (m)	Minimum depth (m)	Return period (TR) year
1.67	0.01	2
1.93	0.01	5
2.03	0.01	10
2.12	0.01	25
2.14	0.01	50
2.18	0.01	100

Table 5: Direct damages to residential units			
Damage (Billion riyals)	Average damage percentage	Flooding average depth (m)	Return period (year)
3.53	3.14	0.39	5
9.31	8.62	0.44	10
21.2	14.16	0.49	25
34.76	19.21	0.52	50
54.81	22.85	0.54	100

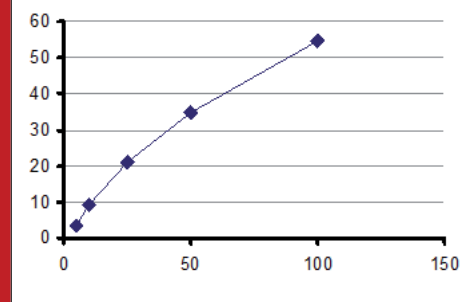

FIGURE 3. The relationship between flood return period and its damage

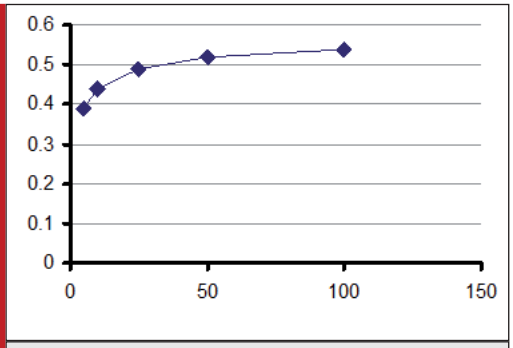

FIGURE 4. The relationship between average depth of flooding (m) and flood return period

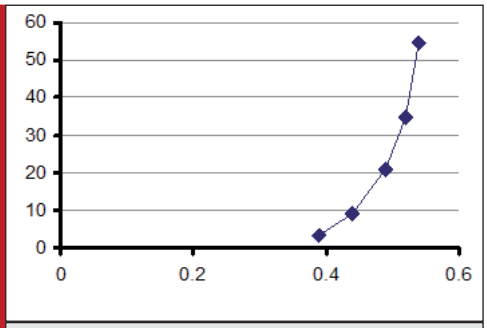

FIGURE 5. The relationship between flooding average depth (m) and flood damages

FLOODED LEVEL IN STUDIED RETURN PERIODS

It should be noted that before using these tools, software system must be determined. In the following table, results of this operation can be seen (Table 3 and 4).

FLOOD DAMAGES ASSESSMENT IN DIFFERENT RETURN PERIODS

Based on calculations and as it can be seen in table 5, by flood return period increase, its damages increases, too. It should be noted that mentioned damages are damages potential estimation.

Presentation and evaluation of results

According to studied area and obtained results, following points can be cited:

1. With minimum cost, mapping information and required data and using combined application hydraulic software and GIS, we can determine flood zoning and rivers bed easily.
2. When flood occurs, flood zoning can be shown graphically with certain discharges. In addition, if there is no obvious height difference in studied area, and topography of the area is mostly flat,

flood zoning is not clear, but in areas with steep topography, graphic display of flood is determined with significant resolution.

3. Comparison of the outputs related to flood advances in the GIS environment shows that the results obtained by GIS are more accurate and specific and this is because of the fact that the zones topography is fully defined in the GIS environment.
4. Lack of sufficient information in this method can lead to increased possibility of error and lack of access to the correct answer.
5. It is necessary to increase accuracy in mapping by Surveyor consulting firms and provide instructions and services description by water resources consulting companies, who can meet software requirements. In this case, it can be said that this method is close to actual results.
6. It should be noted that this method and all method for rivers flood zoning determination, are only some tools to increase accuracy, in this case these methods with engineering judgment provide better and more acceptable results.
7. According to this area, a significant portion of farmlands, orchards, etc with a 25-years flood, damages significantly and it is necessary to reduce flood damages with river border determination as well as control plans execution.

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Analysis of sweat gland pores in children, adolescents, young adults, and middle-aged Fars men through poroscopy

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ABSTRACT

Poroscopy is the term applied to the specialized study of pore structure in sweat glands for the purpose of identification. In this method, properties of sweat gland pores, which are unchanging and exclusive, are compared from different aspects. Overall, poroscopy can be applied in case the characteristics of skin lines are not adequately identified. Analysis of skin lines and sweat gland pores is used in medicine for diagnosis and early detection of various diseases. Since many poroscopy techniques are not highly reliable, in the present study, we attempted to introduce a method for investigating the number and symmetry of sweat gland pores in the thumbs and index fingers of the left and right hands. We evaluated the formation of sweat gland pores in Fars men within the age range of 0-60 years. This descriptive, observational study was performed on healthy men, selected via random sampling in Mashhad, Iran. After obtaining informed consents and completing the questionnaires for 25 infants, 11 children, 14 adolescents, 25 young adults, and 25 middle-aged men, the trace of the first knuckle of the thumbs (right: No. 1, left: No. 3) and index fingers (right: No. 2, left: No. 4) was recorded on the lamella and images were captured, using a Dino-Lite-Plus AM313 digital microscope with 65× magnification. The images of fingerprints and sweat gland pores were calibrated, using MIP4.2 Full software. Data analysis was performed, using SPSS version 21. The results showed that the size and average number of sweat gland pores in the thumbs and index fingers of the left and right hands reduced by age ($P<0.05$).

KEY WORDS: SYMMETRICAL ANALYSIS, POROSCOPY, SWEAT GLAND PORES, DIGITAL ANTHROPOLOGY

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INTRODUCTION

One of the most important aspects of anthropology is the study and comparison of different characteristics in different human populations. Biological and cultural characteristics have altered in various populations due to human adaptation to the environment. In fact, human populations have adopted different lifestyles and cultural strategies to overcome the existing problems. One of the anatomical characteristics of the human body is the presence of sweat gland pores in the fingers, palm of the hands, and soles of the feet. These pores characterize particular patterns for each individual. Accordingly, these characteristics, particularly the quantitative features, have been the main focus of various anthropological studies (Tafazoli et al., 2013).

Dermatoglyphics is the scientific study of fingerprints, lines, and shapes of the hands; this type of study has been carried out for more than 70 years in different settings. On the other hand, poroscopy is defined as the study of sweat gland pores, based on the comparison of orifices, pore configuration, pore size, and its relative position (Bindra et al., 2000).The identity of human beings is characterized by age, sex, race, and features of body organs. Under certain circumstances, identification of an individual is essential for medical, judicial, criminal, and forensic purposes. In fact, skin properties of fingertips and fingerprints can reveal the identity of an individual (Gutierrez-Redomero, 2011; Champod & Evett, 2001; Cole, 2001).

Based on the available literature on poroscopy of sweat gland pores, we might be able to more reliably identify individuals and predict the prognosis of certain diseases. Therefore, the present research could add to the available information and be used by other researchers in different fields (Khosravi, 2008).

MATERIALS AND METHODS

MATERIALS

A digital microscope (Dino-Lite-Plus AM313) and a laptop computer (DV6 6c55, hp) were used in the present study. Also, MIP4.2 Full software (Nahamin Pardazan Asia, Iran), Microsoft Office 2010, AreaSearch software, and SPSS version 21 were applied for analyses. A 24×24 mm lamella (Superior, Germany) and Nino cleanser wipes were employed during the experiments. Finally, a questionnaire was completed for all the participants.

STUDY POPULATION

In this study, six groups of Fars men residing in Mashhad, Iran were selected among children (from daycare centers in seven districts of the city), adolescents (from all-male schools), staff of schools in Districts 3 and 5, and university students and staff of Islamic Azad University of Mashhad. The subjects were then classified in terms of age:

1. Infants within the age range of 0-2 years, selected from daycare centers in seven districts of Mashhad;
2. Children within the age range of 2-12 years, selected from the primary schools in seven districts of Mashhad;
3. Adolescents within the age range of 12-20 years, selected from the middle schools and high schools in seven districts of Mashhad;
4. Young adults within the age range of 20-40 years, selected among the staff and students of the Faculty of Basic Sciences in Islamic Azad University of Mashhad and Ferdowsi University;
5. Middle-aged men within the age range of 40-60 years, selected among the educational staff and students of Mashhad Ferdowsi University and Islamic Azad University of Mashhad; and
6. The elderly within the age range of > 60 years (Sforza, 2010).

The sample size in these groups was calculated at 100, 70, 50, 100, 70, and 20 cases, respectively (total: 410). Considering the fact that the study population consisted of Fars men, the candidates were included in the study in case they met the following criteria: 1) Fars ethnicity (Fars father or mother); 2) male gender; 3) ideal health status (confirmed through inquiring the subject or the family); 4) absence of skin problems based on the observational or fingerprint evaluations; and 5) completion of the questionnaire.

IDENTIFICATION OF SWEAT GLAND PORES BY POROSCOPY

Technical principles were followed during all stages of the study, since classification and evaluation of sweat gland pores are not applicable unless the images are considered reliable. In this study, poroscopy was applied to identify sweat gland pores. The trace of the first knuckle of the thumbs (right: No. 1, left: No. 3) and index fingers (right: No. 2, left: No. 4) was marked on the lamella.

Images were captured, using a digital microscope (Dino-Lite-Plus AM313) with 65× magnification; this method was developed by the researcher. The index finger was evaluated in this study, given its importance in fingerprint identification and criminology (Nejabaty, 2002).

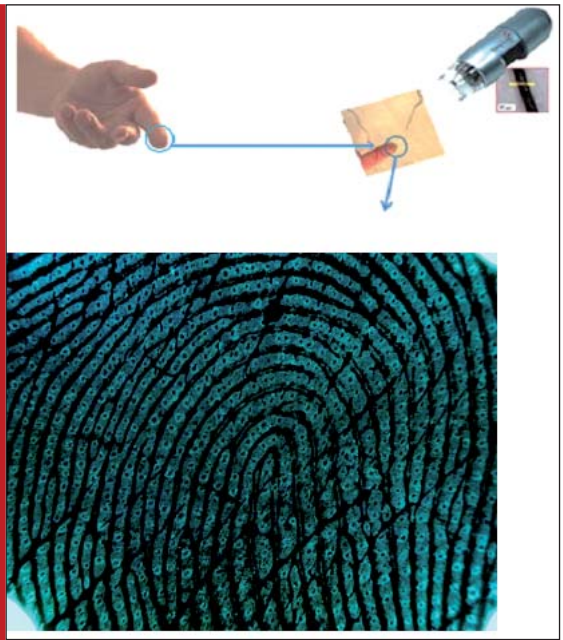

FIGURE 1. A sample of sweat gland pores captured by a digital microscope (Dino-Lite-Plus AM313)

MIP4.2 FULL SOFTWARE

MIP4.2 Full software was developed by Nahamin Pardazan Asia Co. (Iran), a knowledge-based company, as requested by the author. In four main stages, images of sweat gland pores were analyzed. In the first stage, the image was selected from the corresponding folder; specific numbers were preferably designated to each finger of an individual in the image.

The second step was to calibrate the images so that the selected area (μm^2, pre-defined by the software) was similar in all images. In the third stage, the staining method (set by the software) was selected for sweat gland pores either automatically or manually. Finally, in the fourth stage, the location where the image should be saved was determined and the final process was run.

ANALYSIS OF THE IMAGES OF SWEAT GLAND PORES

By using Microsoft Office 2010, the perfect contrast for a better view of sweat gland pores was achieved. Then, images of the sweat gland pores and fingerprints were calibrated, using MIP4.2 Full software (with a specific width and length) and divided into four sections. The sweat gland pores in each section were identified with red, blue, green, and yellow colors (Figures 1 & 2). Finally, the number, area (μm^2), and percentage of sweat gland pores were determined. The results were converted to spreadsheet data by AreaSearch software. Then, the data were copied in Excel software, and finally, SPSS version 21 was used for statistical analysis.

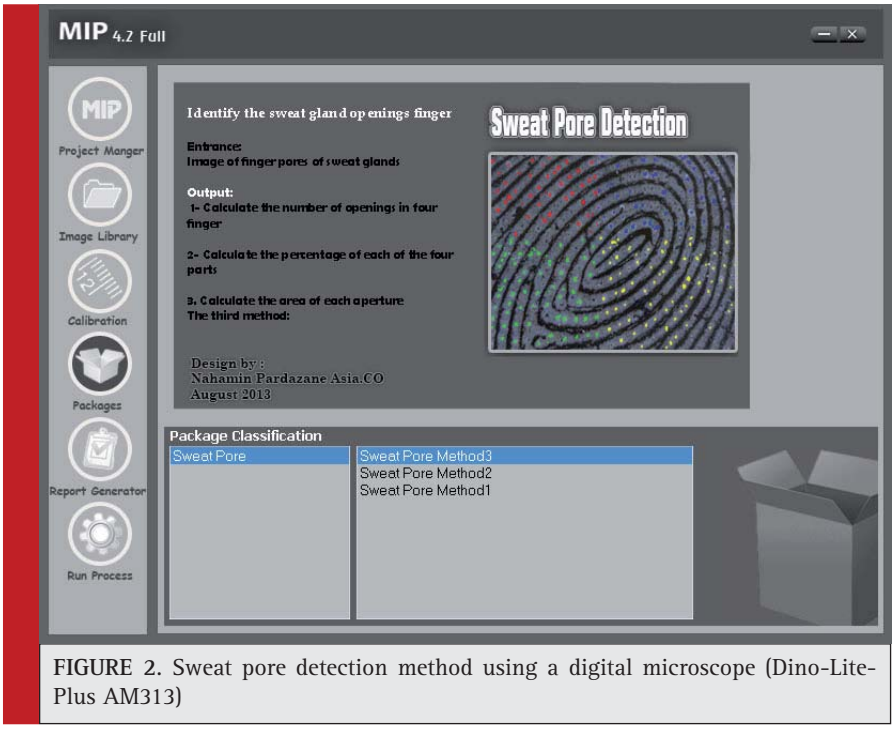

FIGURE 2. Sweat pore detection method using a digital microscope (Dino-Lite-Plus AM313)

FIGURE 3. A view of sweat gland pores in the left thumb using MIP4.2 Full software and a microscope (Dino-Lite-Plus AM313) with 65× magnification; the pores were classified into four parts identified by red, blue, green, and yellow colors.

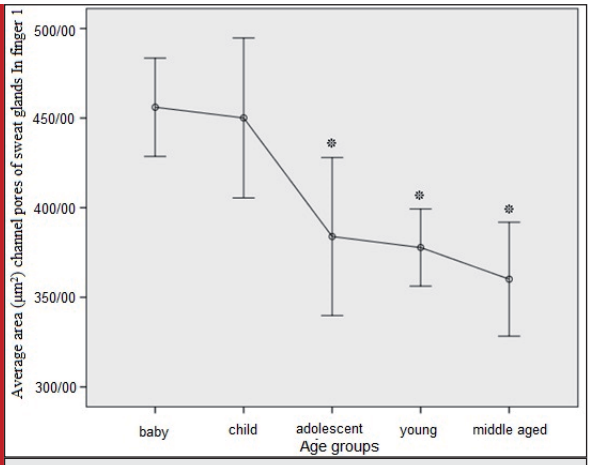

FIGURE 4. The average area (µm²) of sweat gland pores on the right thumb in different age groups *Statistically significant difference at 0.05

STATISTICAL ANALYSIS

In this analytical, observational study, Fars men were selected via simple random sampling in Mashhad and were divided into six groups. For statistical analysis, SPSS version 21 was used. In order to determine the normal or non-normal distribution of the data, Kolmogorov-Smirnov test, Shapiro test, Q-Q plots, histograms, and box plots were used. As the data were not normally distributed, non-parametric tests, such as Pearson's correlation and Wilcoxon tests, were applied.

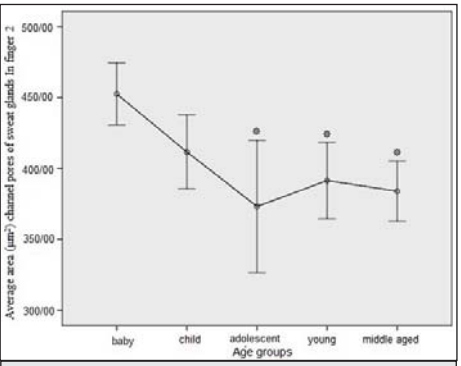

FIGURE 5. The average area (µm2) of sweat gland pores on the index finger of the right hand in different age groups *Statistically significant difference at 0.05

RESULTS

FINAL RESULTS OF QUESTIONNAIRE ANALYSIS

After completing the questionnaires, 190 out of 410 subjects were introduced to the study. The sample dropout was due to non-Fars ethnicity of some samples, environmental factors (before or after birth), and genetic defects. Fingerprints of the left and right hands were obtained from 220 men, some of which were eliminated due to the fuzziness of skin lines (caused by skin burn or abrasion). Sampling and identification were not possible for men, aged 60 years (or above) due to skin erosion. Finally, 25 infants, 11 children, 14 adolescents, 25 young adults, and 25 middle-aged men (total=100) were studied. Figure 4 shows a significance difference in the average area (µm²) of sweat gland pores on the right thumb in different age groups (α=0.50, P<0.001).

Figure 5 shows a significant difference in the average area (µm²) of sweat gland pores in the right index finger in different age groups (α=0.05, P<0.001).

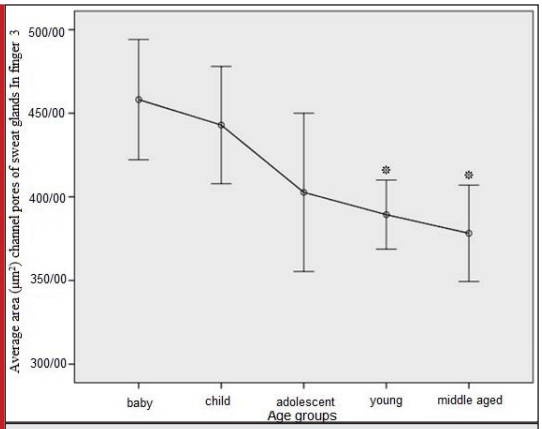

FIGURE 6. The average area (µm2) of sweat gland pores in the left thumb in different age groups *Statistically significant difference at 0.05

As presented in Figure 6, a significant difference was detected in the average area (μm²) of sweat gland pores in the left thumb among different age groups (α=0.05, P=0.001).

Figure 7 shows a significant difference in the average area (μm²) of sweat gland pores on the index finger of the left hand among different age groups (α=0.05, P<0.001).

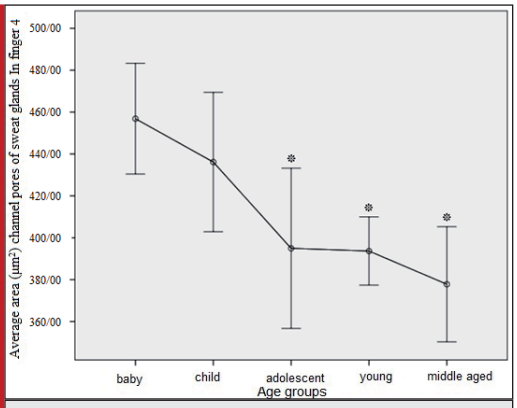

FIGURE 7. The average area (μm2) of sweat gland pores on the index finger of the left hand in different age groups *Statistically significant difference at 0.05

PEARSON'S COEFFICIENT TEST RESULTS

As presented in Figure 8, Pearson's coefficient test indicated a significant linear relationship between the average number of sweat gland pores on the right thumb and the average area (μm²) of sweat gland pores on this finger (r=0.9, P<0.001).

Moreover, Figure 9 shows a significant linear relationship between the average number of sweat gland pores on the index finger of the right hand and the aver-

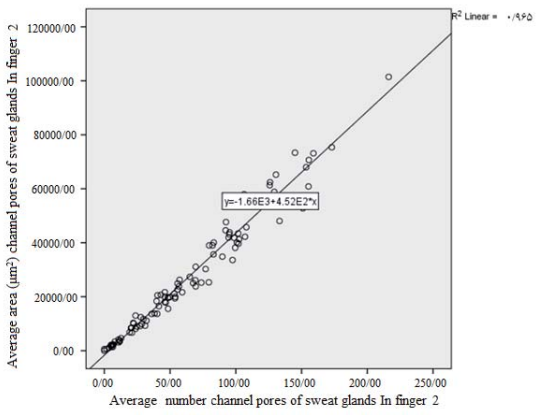

FIGURE 9. The relationship between the average area (μm2) and number of sweat gland pores on the index finger of the right hand in different age groups

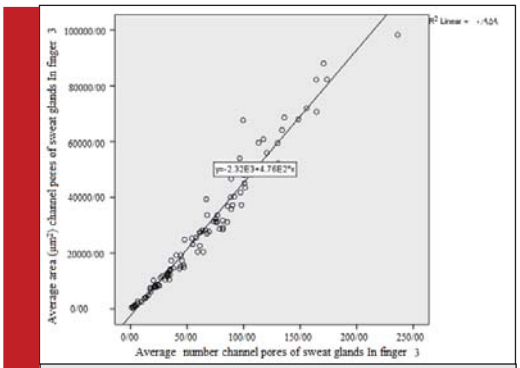

FIGURE 10. The relationship between the average area (μm2) and number of sweat gland pores in the left thumb in different age groups

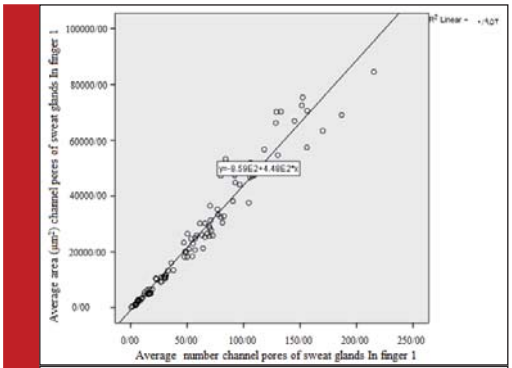

FIGURE 8. The relationship between the average area (μm2) and number of sweat gland pores on the right thumb in different age groups

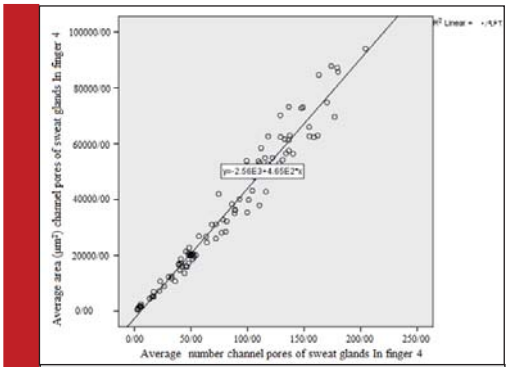

FIGURE 11. The relationship between the average area (μm2) and number of sweat gland pores on the index finger of the left hand in different age groups

age area (μm^2) of sweat gland pores on this finger (r=0.9, P<0.001).

As demonstrated in Figure 10, a significant linear relationship was found between the average number of sweat gland pores in the left thumb and the average area (μm^2) of sweat gland pores in the same finger (r=0.9, P<0.001).

As presented in Figure 11, Pearson's correlation coefficient test indicated a significant linear relationship between the average number of sweat gland pores on the index finger of the left hand and the average area (μm^2) of sweat gland pores on this finger (r=0.9, P<0.001).

DISCUSSION

According to a study by Bindra et al., characteristics such as the size and shape of sweat gland pores, similar to any other dermatoglyphic feature, can be used for identification (Bindra et al., 2000). Sweat gland pores are one of the measurable parameters in fingerprint studies. During skin formation in the uterus, sweat gland pores are developed along the skin lines. At the gestational age of 14 weeks, sweat glands begin to appear, as the existing primary ridges increase in width and continue to penetrate into the dermis (Mahdavi Shahri & Shariyatzadeh, 2004).

THE PROPOSED TECHNIQUE IN THIS STUDY

Many different methods have been applied in poroscopy and fingerprint studies. For instance, printing ink (Bindra, 2000), carbon paper (O'Llear et al., 1985), and candle flame (Khosravi, 2008) are well-known conventional methods in this area. Accordingly, in the present study, based on the findings reported in previous research, we evaluated the sweat gland pores among Fars men, aged 0-60 years in Mashhad with the help of a Dino-Lite-Plus microscope. However, information related to subjects aged 60 years (or above) was removed, given the considerable skin erosion in these individuals.

Comparison between the present research and the study by Bindra and colleagues showed a dramatic decline in working time and convenience of sampling in the present study. Manual counting of sweat gland pores was a shortcoming of the study by Bindra et al. (Bindra et al., 2000); in the present study, we tried to reduce such errors.

In this study, with the aim of proposing a more updated and comprehensive method, which could enable the detailed study of sweat gland pores, Dino-Lite-Plus AM313 microscope, 24×24 mm lamella (Superior, Germany), and MIP4.2 Full software were used. The results showed that the number of detected sweat gland pores was higher in the present study, compared to studies by Tafazoli (2011) and Khosravi (2008), which were carried out with only a Dino-Lite-Plus AM313 microscope (Tafazoli et al., 2011; Khosravi et al., 2008).

POROSCOPY RESULTS

Sweat gland pores can be found on the skin lines (skin ridges) of the first knuckle of the fingers, palm of the hands, and soles of the feet. Many different methods have been used in fingerprint studies and poroscopy for identification. For instance, printing ink (Bindra, 2000), carbon paper (O'Llear et al., 1985), and candle flame (Khosravi, 2008) are well-known conventional methods in this area.

In a study by Tafazoli and colleagues in 2013, poroscopy was applied to evaluate the size of sweat gland pores with a camera in healthy men. Similarly, this method was applied in a study by Khosravi et al. on healthy Fars women in 2008, living in Khorasan Razavi, Iran (Tafazoli et al., 2013; Khosravi, 2008).

Poroscopy can be employed in fingerprint identification (Bindra et al., 2000; Tafazoli et al., 2013), gender identity (Preethi et al., 2012), and detection of diseases such as dysplasia (Manpreet et al., 2013), hypertension (Khosravi, 2008), skin erosion (Muarraf Hussain & Irfan Ahmed), dental damage (Muarraf Hussain & Irfan Ahmed), reduced rate of sweating (Nousbeck, 2011), congenital deafness, and hearing disorders (Osunwoke et al., 2010).

In the present study, in line with the findings reported in recent research, we evaluated sweat gland pores in Fars men, aged 0-60 years in Mashhad with the help of a Dino-Lite-Plus camera. Comparison between the present research and the study by Bindra and colleagues showed a dramatic decline in working time and convenience of sampling. Manual counting of sweat gland pores was another shortcoming of their study (Bindra et al., 2000).

AGE-RELATED CHANGES

Dermatoglyphic study is one of the methods for evaluating the symmetry of skin lines and dermatoglyphic patterns in the first knuckle of fingers of the right and left hands. According to the literature, influence of factors such as age, hormones (Jamison et al., 2005), vitamins, and even skin erosion has been confirmed in dermatoglyphics (Mohammadi, 2010; Nejabati, 2009; Mehrbakhsh, 2011).

Limited studies have been conducted on the application of poroscopy techniques for the evaluation of sweat gland pores in human populations in different stages of development. In the present study, a decline was demonstrated in sweat gland pores among different age groups. Considering the fact that sweat gland pores are one of

the skin components, advanced age probably leads to the gradual erosion of skin lines and consequently sweat gland pores. In fact, the reduced number of sweat gland pores might be justified by age (Figures 4-8).

CONCLUSION

Based on the present results, the average size and number of sweat gland pores in the thumbs and index fingers of the left and right hands decreased with age in each group of healthy Fars men. In general, it seems that poroscopy can be a proper method for genetic studies, fingerprint identification, and prognostic prediction in certain genetic diseases. However, further research with a larger sample size is required to confirm the use of sweat gland pores in fingerprint identification and disease prognosis.

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Comparison of dimensions of perfectionism, anxiety, depression and time perspective in patients with migraine headaches and ordinary people

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ABSTRACT

It seems the psychological factors are among affecting factors in the emergence mild or severe headaches. The present study was done to compare perfectionism, anxiety, depression and time perspective in patients with migraine headaches and ordinary people. In this causal-comparative study, statistical population consists of ordinary women and men and women and men with migraine headaches of Talesh city and the research sample consisted of 120 people who purposefully, were selected from among the population of whom 60 patients suffered from migraines and 60 people were from the families and relatives of patients who were matched in terms of age, gender and education. The tools used in this study were Frost perfectionism questionnaire (1990), the Spielberger's anxiety inventory (1970), Beck Depression Inventory (1996) and time perspective questionnaire (1969). The data using descriptive statistics and inferential statistics (analysis of variance MANOVA) were studied. The results showed that between people with migraine and ordinary people in terms of perfectionism, anxiety and depression there is a significant difference, but in time perspective between people with migraine headaches and ordinary people there was no significant difference. According to the obtained results the relationship between anxiety, depression and perfectionism with migraine can be realized perfection and ways to reduce them can be used.

KEY WORDS: MIGRAINE, PERFECTIONISM, ANXIETY, DEPRESSION, TIME PERSPECTIVE

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INTRODUCTION

Perhaps no one can claim that there is no headache in their lifetime. In fact, in many cases, psychological changes cause mild or severe headaches, which restricting the activities of daily living, disruption of family and social relationships and create high pressures greatly affect quality of life (Patience, 2010; quoted by Kothari, 2013). Headache is a common complaint that leads patients to the doctor and all pains which are felt in the area of face and head can be included in this issue (Shirzadi and et al., 2002). The migraine headache is one of the most common, as well as most disabling disorders. Almost 18% of women and 6% of men in the United States suffer from migraine and 51% of these people express loss of productivity at work or school because of the headache. Patients usually have recurrent headaches with similar symptoms (Gilmore, Michael, 2011).

The migraine headaches influenced by many factors. Migraine has positive correlation with depression, bipolar disorder, panic attacks, panic disorder and simple phobias (Bresla, Davis, 1991, Radat, Swedesen, 2004, Jeete, Patten, Williams, Becker, 2008; quoted by Savari, 2011). Some studies suggest that there is relationship between migraine headaches, major depressive disorder and generalized anxiety disorder (Bresla et al., 1993, Merikangas, Merikangas, Angst, 1993; quoted by the Savari, 2011). Some psychological characteristics for people with migraine headache have been reported that the most important ones are anxiety, depression, perfectionism, ambition, discipline and extreme precision in daily activities, extreme sensitivity to the manner and process of life (Mcanulty, Rapport Waggoner, Brantely 1984, quoted by Shirzadi et al., 2002).

One of the psychological variables associated with migraine is perfectionism. Perfectionism is a set of very high standards for performance that accompanied by negative self-assessment, self-criticism and blame. Ambition, thoroughness, extreme accuracy and radical sensitivity to the everyday activities of life, are psychological characteristics of perfectionists which this features can be seen in patients with migraine (Mcanulty, 1984; quoted by Abolqasemi et al., 2013). Migraine is more likely to develop in perfectionist people (Patch, 1984; quoted by Savari, 2013). Another study showed that frequent headaches experience associated with high levels of perfectionism (Betos et al., 2004; quoted by Abolqasemi et al., 2013).

Another variable which in some studies has been associated with migraine is anxiety (Mcanulty, Rapport, Waggoner, Brantley, 1984, quotedby Shirzadi et al., 2002). Anxiety plays an important role in mental disorders and physical damage, as well as psychosomatic disorders (Shirzadi et al., 2202). Most patients with migraine headaches are concerned, anxious and obsessive-compulsive persons and this anxiety and worry led to externalized feelings and starting the headaches that with chronicity and lack of attention to change in character of a person can be transformed to migraine (Narimani and Wahid, 2012).

In a number of studies in various countries the relationship between depression and migraine headaches have been examined (Mcanulty, Rapport , Waggoner, Brantley, 1984, quoted by Shirazdi et al., 2002). Depression is the most common mental disorder, depression is the common cold of mental illness, blue feeling, boredom, sadness, dissatisfaction, frustration and dissatisfaction all are depression common experiences (Rosenhan and Seligman, 2013). Depression is the most disorders co-occurred with migraine so that has been reported in approximately 80% of patients with migraine (Fumal, Magis and Schoenen, 2006; quoted by Farnam et al., 2008).

Depression is associated with loss of productivity and quality of life (Schoenen, 2006; quoted by Farnam et al., 2008). The co-morbid migraine headache and depression causes additional problems for patients. Several studies have suggested that the intensity of pain feeling in women with depression much more than non-depressed women and depressed male population (Hasnaoui-El A, Doble, Gaudin, 2006; quoted by Farnam et al. 2008). Some studies suggest that successful treatment of chronic headaches is related to diagnosis of anxiety states and depression (Holroyd, Stensland, Lipehik, 2000; quoted by Chitsaz and Ghorbani, 2005).

Time perspective is an unconscious cognitive structure that the individual in deciding applies about actions and short-term or long-term goals and includes time dimensions of past (positive or negative), present (hedonistic or fatalistic) and future (Aqajani et al., 2012). In time perspective when people in decision-making tend to be one of the dimensions of time (e.g. future), his/her respond to mass daily choices can be predicted. In the Zimbardo and Boyd, (1999) study, it was shown high scores in the positive past, has negative and significant relationship with depression and anxiety and negative past scores were negatively associated with depression and present fatalistic scores had strong and significant relationship with anxiety and depression and hedonistic present scores had no significant relationship with anxiety, as well as future scores had poor relationship with anxiety and depression. Given the characteristics that patients with migraines have, it is likely that time perspective be associated with it.

According to what was said, although the relationship of some variables such as perfectionism, depression and anxiety migraine headaches have been studied, but the volume of research in this respect is low. Also there

is no comprehensive review about the engagement and mutual interaction of variable such as time perspective with migraines. Considering these factors, this research aims to answer the question that whether the dimensions of perfectionism, anxiety, depression and time perspective is different in people with migraine headaches and normal people and thereby and with the help of information can be obtained take a step to solve some of the many problems which migraine patients are faced with them.

MATERIALS AND METHODS

METHODOLOGY, STATISTICAL POPULATION AND SAMPLE

The present research was descriptive and causal-comparative one and the library and field method (in order to collect the theoretical foundations) has been used to gather information related to the study variables. The study population of this study consisted of women and men with migraine headache and ordinary men and women with their families and caregivers of people with migraine headaches in the city of Talesh in 1394. The sample consisted of 120 women and men from whom 60 subjects were suffering from migraine headaches and 60 subjects were ordinary individuals. That people with migraine were selected by purposive sampling of the population and for selecting ordinary individuals 60 persons from family and entourages of patient group were chosen using purposive sampling and on terms of age, gender and education were matched. (It should be noted that in the case of people who had low literacy levels the questions were read for them and their answers were recorded).

The information related to study placed at the disposal of them and it was noted that information will remain confidential. A questionnaire was used to collect information by field method that lasted about a month and a half. The questionnaires were given in presence to migraine samples that have been selected using purposeful method. The migraine in patients who were selected with migraine headaches had been diagnosed by a physician. Matching was done in this manner that migraine patients were asked introduce one of their family members that in terms of age, sex and education similar to his/her condition, but are not suffer from migraine headaches to fill out the questionnaire. In cases where a similar person wasn't there in the family the person suffering from migraines was asked to introduce from relatives a similar individual without migraine headache. In some cases similar person from strangers with a migraine person was elected.

RESEARCH TOOLS

FROST MULTIDIMENSIONAL PERFECTIONISM SCALE (FMP)

Frost Multidimensional Perfectionism Scale (FMPS) in 1990 was built by Frost and colleagues based on multidimensional model of perfectionism. The perfectionism multidimensional model was introduced in 1990 by Frost et al (Stober, 1998). This scale consists of 35 items which each of the items are measured with Likert scale (1 = strongly agree to 5 = strongly disagree) (Jhonson and Kuennen, 2006; quoted by Soleimani and Rekabdar, 2010). This scale was designed to measure perfectionism and measures perfectionism in six dimensions: personal standards, organizing, worry about mistakes, doubts about actions, parental expectations and parental criticism (quoted by to the boot, 2010). Cronbach's alpha of worry about components of mistakes 0.88, individual criterion 0.83, parental expectations 0.84, parental criticism 0.84, skeptical about things 0.77, trend to order and organization 0.93 have reported (Frost et al. 1990; quoted by Ghanbari et al., 2010).

In the Iranian version of the questionnaire, internal consistency coefficient for the entire questionnaire was obtained equal to 0/86 and for the sub-scale of worry about mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organize vary from 0 /85, /072, 0/78, 0/47, 0/57, and 0/83, respectively. The test-retest coefficient in a week for the entire questionnaire was equal to 0/90. The retest coefficients for the sub-scales are also was as following: worry about mistakes 0/84; doubts about actions 0/81; parental expectations 0/79parental criticism 0/53, personal criteria 0/85; and organizing 0/83.

Also convergent validity of Frost Multidimensional Perfectionism Scale based on relationship with positive and negative perfectionism questionnaire has been reported appropriate (Bitaraf, Sha'iri and Hakim Javadi, 2010).

THE SPIELBERGER'S STATE-TRAIT ANXIETY INVENTORY

This self-report questionnaire includes separate scales for measuring state and trait anxiety (Behdani, 2000). Trait anxiety scale of the form y-2 (STAI) includes twenty phrases which measures general and usual sentiment (Behdani, 2000). Mahram (1993) conducted a study to standardize STAI test. He examined the reliability coefficient of the test in two groups of norm and criterion separately. The reliability for the criterion group (600 cases) in the state and trait anxiety scale on the basis of Cronbach's alpha was respectively 0/9084 and

0/9025 and this amount in the criterion group (N = 130) was obtained equal to 0/9418.

In addition, the reliability of the test, through the variance of the true scores to observed variance was calculated and its level in normal group was recorded 0/945.

In addition, the studies indicate that the correlation between two anxiety forms is very high (0/96 to 0/98) and the correlation between the characteristic scale of Spielberger anxiety and other scales measuring structure of anxiety is high, so that the correlation of this scale with ASQ test 0/75 to 0/77 percent and its correlation with TMAS scale has been estimated 0/79 to 0/83 (Spielberger, 1983, quoted by Mahram, 1993). According Behdani et al (2000), in response to the scale of anxiety subjects, a number of options is proposed for each phrase that participants should select the option that states his/her feeling in the best way.

BECK DEPRESSION INVENTORY

Beck Depression Inventory for the first time in 1961 was developed by Beck et al. However, in recent form (BDI-IA), the items of the questionnaire have been provided more clearly, but later studies showed that these two forms are highly correlated, about 0-/94, with each other. In 1996, Beck and his colleagues to cover a wide range of symptoms and for more coordination with diagnostic criteria of depressive disorders in Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), did a serious revise (Marnat, 2008). The items of test generally consist of 21 items related to various signs that the subjects should respond to it on a four-point scale from zero to three.

Thus this scale determines the varying degrees of depression from mild to severe and its scores range is from zero to 63 (Beck et al., 1988). So far, most of the comparisons between BDI and BDI-II suggest that the factor structure of the BDI-II has been defined more clearly and represented the partial advantage of this test (marnat, 2008). Kapci and colleagues (2008) in clinical and non-clinical sample reported internal consistency coefficients, respectively, 0/90 and 0/89 and test-retest coefficient 0/94 in non-clinical sample (quoted by to the Rajabi and Kasmaee, 2012). Also, according to the results Kasmaee and Rajabi (2012) research the Cronbach's alpha for the entire questionnaire was obtained 0/86 for first factor 0/84 and for second factor 0/78; thus, the findings suggest that satisfactory reliability of Iranian Depression Inventory (BDI-II) -Persian version.

ZIMBARDO TIME PERSPECTIVE INVENTORY (ZTPI)

Time Perspective Inventory (ZTPI) which has been made by Zimbardo (1969), is a questionnaire consists of 56 items that is scored using Likert scoring method. Participants can answer any phrase from one to five grades in terms of agreement that they have. The questionnaire contains five subscales including the future (13 questions), the positive past (9 questions), the negative past (10 questions), fatalism in present (9 questions) and hedonism (15 questions). In the Taj and colleagues (1384) study the calculation of its reliability using test-retest method over 20 medical students within two weeks was done, and the correlation coefficients of various subscales were as follow: future: 0/75, positive past subscales: 0/79, the negative subscale: 0/80, fatalism subscale: 0/66, hedonism in present: 0/86 (Taj et al., 2005).

THE DATA ANALYSIS

In this study, the results of the research data using descriptive statistics (mean and standard deviation) and inferential statistics (multivariate analysis of variance (MANOVA)) using SPSS software- version 29 for testing hypotheses have been used.

RESULTS

In this study, 120 patients were participated that demographic information about them is shown in Table 1.

As seen in Table 1 in this study, 88 females and 32 males were present. Most people of sample group were Housewife (frequency 36 and percent 0/30) and had diploma (frequency 48 and 40 percent).

Table 1: Demographic information related to the sample group

Frequency percent	Frequency	level	variable
3/73	88	female	gender
7/26	32	male	
100	120	total	
30.0	36	housewife	Job
15.0	18	student	
28.3	34	Employee	
10.8	13	Unemployed	
15.8	19	self-employed	
100	120	total	
40.0	48	diploma	Education level
14.2	17	Associate Degree	
29.2	35	bachelor	
8.3	10	master	
2.5	3	doctor	
5.8	7	Middle school	
100	120	total	

Table 2: statistical characteristics of the dependent variable components in both patients and normal individuals

Migraine patient group (N=66)		Normal group (N=54)		
SD	Mean	SD	Mean	components
119/11	107	523/12	21/118	Perfectionism
305/17	87/83	843/16	80/102	anxiety
474/20	18/220	132/19	42/221	Time perspective
054/9	98/11	243/8	15/21	Depression

The statistical characteristics of dependent variables in two groups of patients with migraine headache and normal subjects are shown in Table 2.

Considering the figures of above table it is indicated that there is differences in dependent variables between the mean scores of migraine patients and normal subjects and these differences in every four variables is in favor of the ordinary people. Eta square values which are seen in the above table are a part of the variance related to new compound variable. The general rule is that if this amount is greater than 0/14 the effect size is high. In the above table this value for the new compound variable is 0/407 which represents much effect. Also the results of Wilks *Lambda test* for compound variable is significant, and significance of new compound variable indicating that participants in two groups are different and the means of group influenced by independent variable are significant.

The variance results for dependent variables have been presented in the table 3.

In the Multivariate analysis of variance (MANOVA) table, it has been shown considering that has four independent variables with dividing 0/05 on 4, the Bonferroni correction has been done, thus the significance limit is less than 0/012 and this is true and significant about all variables except time perspective. The Eta squared shows that approximately 18 percent of the variable of perfectionism variance, 23 percent of anxiety and 22 percent of depression has been accounted for group variable.

Table 3: Multivariate analysis of variance (MANOVA) of ratios to dependent variables

ETA	P	F(115'4)	Variable
182/0	000/0	310/26	Perfectionism
237/0	000/0	611/36	anxiety
001/0	733/0	117/0	Time perspective
222/0	000/0	636/33	Depression

As we can see in the variance results in table 3, there is a significant difference between two groups in perfectionism level (F (1,118) -26/310, p-0/000). As we can see in the variance results in table 3, there is a significant difference between two groups in anxiety level (F (1,118) -36/611, p-0/000, Eta-0/237). As we can see in the variance results in table 3, there is a significant difference between two groups in depression level (F (1,118) -33/636, Eta-0/222). As we can see in the variance results in table 3, there is a significant difference between two groups in time perspective level (F (1,118) -0/117, Eta -0/001).

DISCUSSION

This study aimed to compare the dimensions of perfectionism, anxiety, depression and time perspective in patients with migraine headaches with normal individuals. The first finding of the present study was that there is a significant difference between the two groups in terms of perfectionism level and individuals with migraine have high levels of perfectionism. This finding is consistent with studies such; Savari (2012), Hamachak (1978), Kaplan and Sadock (2007), quoted by Rajabi and Abbasi in 2014, Kowal and Pritichard (1990; quoted by Kothari, 2013), Shirzadi and colleagues (2002), Flett and Hewith (2002; quoted by Kothari, 2013) and (Gaelian, Felt and Sherry, 2002; Connor, 2003; Beiling, Israeli and Antony, 2004; mahmoudAlilou, 2006; quoted by Khormayee et al., 2011).

To explain this result it should be said that the obvious aspect in the people with migraine headache is negative perfectionism; that is an extreme desire to gaining the approval of others and self-criticism. Among perfectionists, permanent dissatisfaction of self and others, sometimes lead to anger and aggressiveness be and can provide conditions for the occurrence of migraine headaches. The results of this study and previous research show that perfectionism factor has always been considered as a strong correlated variable with migraine headache (Hamachak, 1979; quoted by the Savari, 2012).

People with negative perfectionism do basic mistakes and have high levels of self-doubt and self-criticism, the factors which are the predictors of negative psychological consequences such as anxiety, depression, lack of self-esteem and internal shame. Shirzadi and colleagues study showed that there is a positive relationship between perfectionism and migraine headaches and perfectionism can provide necessary conditions to create psychosomatic disorders such as migraine headache (Shirazdi et al., 2002).

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the approval of others and self-criticism. Among perfectionists, permanent dissatisfaction of self and others, sometimes lead to anger and aggressiveness be and can provide conditions for the occurrence of migraine headaches. The results of this study and previous research show that perfectionism factor has always been considered as a strong correlated variable with migraine headache (Hamachak, 1979; quoted by the Savari, 2012).

Another finding of this study showed that people with migraine headaches compared with normal people have more anxiety. This finding is consistent with research such as; Chitsaz and Abbas Ghorbani, (2005) and Villarreal (1995).

To explain these findings can be noted that anxiety plays an important role in mental disorders and physical damage and also in psychosomatic disorders. This means that some physical and somatic disorders are created with continuing and influenced by negative emotions such as stress and anxiety in a sensitive and weak part of body. These disorders interfere with the operation of those member devices that are controlled by autonomic nervous system and emotions arise by biochemical changes that are reflected to them. Some of these disorders include migraines, asthma, peptic ulcers and back pain.

In a study performed by Aghamohammadian and Kamal Shanbadi (2007), theresults from the single case study on women with migraine showed that subjects suffering from migraines are suffering from anxiety as well generally it seems that patients anxiety is more caused by feeling of intense fear of staying in this disorder at all life. The existence of this belief creates a vicious circle which causes more intensity of migraine attacks. As Narimani and Vahidi (2012) stated, most patients with migraine headaches are anxious and worried persons and this leads to internalization of feelings and starting of headaches which with chronicity and lack of attention to change in the characteristics of personality can be converted to a migraine headache.

The third finding of this study indicated that people with migraine headaches have more depression compared with the general population. This findings is consistent with research such; Ryan (1996), Chitsaz and Abbas ghorbani, (2005), Villarreal (1995), Farnam and colleagues (2008), Merkanteh (2005). In explaining this finding the positive emotions and especially optimism improve cardiovascular activity and immune systems and lower levels of depression and anxiety, and vice versa when people are depressed, their muscles contract and tighten and this is the reason for headache.

Depressed people may have trouble in sleeping and wake up times in sleep or sleep more than the usual, these are factors that can trigger migraine attacks in people, on the other hand according to researchers in some cases the existence of severe migraine attacks and that person is not able to predict these attacks and the damage that this disease bring to work and life can cause or aggravate depression in person with migraine. Holroyd, Estansland and liphik (2000) state that depression and anxiety are associated with persistence and frequency of headaches, so in the diagnosis, prognosis and treatment of headaches should pay more attention to the psychological aspect of it and psychological treatment to be considered as a complementary therapy because successful treatment of headache is associated with diagnosis of anxiety and depression states (quoted by Chitsaz and Ghorbani, 2005).

In addition to the nature of migraine headaches, chronic headache and prediction that every time the recurrence of migraine attacks is possible can lead itself to create moods of sadness, despair and depression. In addition, experts say that depression can arise as one of the disorders associated with migraine.

The latest finding of the present study was that there is no difference in the time perspective between people with migraine and ordinary people. To explain this finding, we can say that although research has been done in respect of variable of time perspective the relationship between the perspectives of time and anxiety and depression has been confirmed, also in this study and previous studies the relationship between anxiety, depression and migraine headaches has been confirmed, the findings of this study couldn't support the hypothesis that there is a difference "between the time perspective in people with migraine headaches and normal individuals. " For example, according to the Barlow (2002) and Beck and Emery (2005), theoretical definitions and empirical research on anxiety, anxiety is associated with time bias towards thinking about the future negative conditions (quoted by to the Grazia ,Carelli, Wiberg and Åström, 2015).

In the present study, we observed this trend to thinking about the future negative conditions in depressed patients, as well as this manner in patients with negative perfectionism and anxiety also is observed, so that according to, Wiberg, Sircova, Wiberg and Carelli (2014), anxiety significantly was associated with negative past and the future perspective which was measured by Swedish Zimbardo Time Perspective Inventory (S-ZTPI) even when the effects of the depression was controlled.

No age limit of the participants in this study can be one of the reasons in disapproval of above hypothesis by study findings or even different educational levels participated in the study and it is possible the above hypothesis testing among people in specific age range, such as adolescence or adulthood alter results and or testing the above assumption among highly educated people and those with low literacy levels, this research will provide different results.

According to the results of this study it can be concluded that people with migraine compared to ordinary people suffer many problems. These people suffer from higher levels of depressive symptoms that may have adverse long-term living conditions. Also, higher levels of anxiety in people with migraine which have been obtained on the previous study, was confirmed in this study. This study suggests that these individuals may experience a lot of interference in their daily functions. Given that in the variable of time perspective the differences wasn't found between individuals suffering from migraines and the normal group we can say that these two variables do not interact or impact on each other, however, this subject requires more research.

Among the limitations of this study lack of clarity about the meaning and implications of some questions in the questionnaire for some respondents can be noted that obscure questions were explained to them. Also the existence some potential personality problems which assessment of them by questionnaire used in this study wasn't possible, and also there is no possibility for matching could affect on study outcomes.

It is suggested that in future studies to overcome the limitations of the present study variables in different gender, age, ethnic and social group be investigated. The results of this study can also be used to solve some of the problems in people with migraine. For example by holding training courses in the field of irrational thinking for these people and training them in this field in order to reduce irrational thoughts and consequently reduce the negative perfectionism prevent the occurrence of migraine headaches or avoid the risk of the disease. Also by providing appropriate interventions to reduce anxiety and depression, we can help to increase the quality of life of these patients.

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Investigating the effective factors on willingness of farmers for bank facilities usage: Case study of Sistan and Balouchestan

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ABSTRACT

Given the importance of credit in the agricultural sector, of course, get a credit, lack of credit by farmers has caused a revolution in agriculture and the production of its products. Because the agricultural sector and agriculture are the major recipients of agricultural credit, in this thesis that the variables that affect farmers' willingness to use the credits studied and evaluated. Therefore, knowledge of the factors affecting the willingness of farmers is essential in the use of credit and agricultural credit sector is a suitable guide for planners and help them to take appropriate, practical strategies. Data from 100 farmers in this province for 1393 was simple random sampling. To analyze the data, Granger causality test has been used. According to the final results of variables with different religious beliefs and an increase in natural variables, the desire to take credit reduced. It is recommended that policymakers before any bank policy, customs and religious beliefs and its geographical location and then proceed to the full knowledge of the environment policy in the short term and long term. According to local fixed income funds, it is recommended to use proper planning to be in the form of agricultural credit.

KEY WORDS: BANK FACILITIES- GRANGER CAUSALITY TEST – FARMER INTREST- SISTAN AND BALUCHESTAN.

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INTRODUCTION

On the one hand agriculture, food and supplies they need to survive and continue to provide human life and on the other hand, most countries in agriculture, still have the highest share of employment and GDP (Koopahi,1379). One of the problems governments and developing countries, especially Asian countries, rural poverty and rural backwardness in terms of amenities of life. Almost half the world's population live in rural areas of developing countries who live mostly from agriculture and related activities funded it. Improve agricultural production and living conditions of the rural population largely depends on the transition from traditional agriculture to modern agriculture. Policymakers in order to help accelerate the transition in agricultural, credit policy currency (as one of the solutions) are considered. They believe the livelihood of farmers and farming system causes financial growth has been the weakness of their financial strength. As a result, the development of agriculture and rural development will not be possible to develop the agricultural sector may be seen as a precondition for economic development. Policymakers in order to help accelerate the transition in agriculture, politics and administration shall consider cheap credit (Pezeshkirad et al, 1380).

Despite the important role that agriculture in developing countries is employment and production, the production risk is higher than in other economic sectors. As a result, the financing of agricultural activities in economic activity faced with more challenges. In terms of credit risk in the allocation of funds, private banks and commercial tend to have very little presence in the agricultural sector and The orientation of these banks and other financial institutions that profit is their main objective, is focused on other economic sectors (Zubairi, 1989).

One of the main obstacles to economic growth and development of the manufacturing sector, especially agriculture, lack of capital and lack of correct and consistent use of capital resources available. In the meantime, in many cases, the activities of the agricultural sector with regard to the distribution of farm fields and farmers have limited access to information and facilities In short, the activity is considered inefficient and has always been difficult for the investment needed (sameti and F. Pour, 1383).

One way of financing businesses, credit from the banking system of each country's economic sectors. Accordingly, over the past few years to support economic sectors such as agriculture, Withholding and non-withholding lending as a tool for growth and development of this sector on the agenda were specialized banks (Lutfi and AHMADZADEH machine chi, 1386).

Agricultural sector credit from various sources, which are commercial banks and specialized banks in this regard agriculture as official sources and brokers, futures donkeys, shopkeepers and middlemen are as informal (Ahmadpur Borazjani and Hosseinpur, 1385).

Iran Agricultural Bank in the banking system, as a major agricultural Official Credit Institute, by providing financial resources needed for agriculture to increase production with multiple objectives, adjustments, facilitating acceptance of new technologies, Compensation for damages caused by the disaster, the otherwise, in such a way that the bank every year, 60 to 80 percent of credit Assigned to this sector under various sections of the clients puts it (Iran-Nejad, 1375).

Facilities granted to the agricultural sector, including variables that can increase in value added by the agricultural sector, the country's economic growth have increased. Therefore, if used properly can credits One of the major obstacles in the development of the agricultural sector, the lack of financial resources to meet and To improve the performance of agricultural production inputs resulting in the value added of the agricultural sector (Bakhtiari and pasban, 1383).

Enjoy this study was to investigate the factors affecting the farmers were willing to use credit.

HISTORY RESEARCH

Bank credit based on the priorities of economic development goals assigned to different activities That agricultural sector also given for development of production, investment and employment benefit in the end.

(Ahmad Pur, 1381) in their study of factors affecting agricultural credit demand in the region of Sistan and estimation of credit demand is concluded The projected demand for loans and product prices and acreage and family labor is a direct relationship, While applying for a loan with an interest rate of profit to the farmer and indirect relationship. The study results also showed that farmers in terms of land and labor are not faced with bottleneck While this lack of investment that has limited their activities.

Chizari and Zare (1379), the effects of credits allocated to farmers by national banks and cultivation. In this study reveal that capital is an important factor in crop production and The banking system is one of the resources that can be used with credit, capital needed to finance the agricultural sector. The results show that credit, a significant positive impact on agriculture production and comparison of regression borrowers National Bank and The impact of agricultural loans granted by banks on their production, which is not significantly different from each other.

Kopahi and bakhshi (1381), factors affecting the repayment of farmers to Birjand city divided into two

groups of bank customers to repay the loan and Using discriminant analysis have identified the lack of it. The results indicate that the use of machines in the field, during the period of loan repayment, monitoring and Supervision of the loan and the loan repayment in the current activities have a positive effect on performance. heydari (1383) guidelines to improve collection in Kurdistan and studied using conventional logit model showed that the repayment period will not exceed the greater of non-repayment. For this reason, the current collection facility has the highest volume and lowest capital facilities of their collection.

Karim koshte et al. (1383), farmers received credit from official sources to produce more in line to do so, but farmers who have received loans from informal sources of revenues have spent on daily needs.

Ansari (1386), in his study the factors affecting the repayment of agricultural loans in the city Dena, came to the conclusion that factors such as income, education and insurance of agricultural products Refund credits are effective and natural losses and risks arising from the repayment of agricultural loans does not affect production.

Foladi (1389), in their study of branches of the Agricultural Bank West, came to the conclusion that natural factors such as drought and pest damage, obliged the banks to loan from the government, insurance The facility, are expected to get loans and establish the rate of repayment of the loan and the interest rate facility late on non-repayment of debts to banks is effective.

(Moriss,1985), In a study to unpaid receivables due in India suggests that the rapid increase in lending by the banking system as a reaction to government pressure to give facilities to the borrowers default. He defaulted on loans to profitable investments, negligence related to the demand for credit in the marketing and production rates, poor lending policies, extension of loans outstanding, Very large or very small loans, improper use of loans, ineffective monitoring of important factors considered non-repayment of the loan.

(Meer,1990), With the effects of the distribution of credits, cheap to agriculture, cheap credit led to excess demand for credit knows that as a result, the gap between supply and demand, Distribution of credit institutions, a non-price rationing to distribute funds drawn adopted as a result of wealthy farmers who have greater access to information and inputs, Access to credit easier to find. As a result, credit instead be the result of different, pre-existing differences between the farmers would get credited.

(Kosholiza,1992), Check the status of corn in the agricultural credit by farmers in Tanzania showed that the rate of repayment of the loan overshadowed by factors such as the use of machines in the field, The cultivation of corn and its yield and farm income is surplus. He believes that the government's political interventions in the field of appropriate credit institutions, credit institutions as having the characteristics of an efficient administrative system and staff Skilled and experienced and have the perfect vehicles to track and follow up on overdue loans as well as socio-economic characteristics of farmers The repayment performance is impressive credentials.

(Petrick, 2002), Econometric analysis, access to credit Works of agricultural investment behavior was evaluated using the Tobit model. The results of his study indicate that access to credit Cheap (protected) determining role in the behavior of agricultural investment and the ultimate effect on investment funds is less than one, meaning that credit to some extent for the purposes other than Capital productivity, is used. But overall, the results show that the increasing credibility final effect.

(Borhano and foofa, 2008), To analyze the rate of repayment of loans from financial institutions in Ethiopia relatively small semi-formal two-stage Tobit model is used. Based on the results obtained Assigned as land, livestock Disposed of experience in the use of agricultural development services, surveillance experts and non-farm income as a significant factor in the rate of loan repayments are known.

(Adegbayt, 2009), Using logit and Tobit models, the performance of repayments of agricultural facilities in the area of Nigeria has studied Egan 4. The results show that Loan amount, delay payment, the bank away from the farm, age, knowledge and experience of farmers have had a significant effect on the repayment of loans.

(Akwa and addoo, 2011), Factors affecting the performance of loan repayments by fishermen in Ghana using multiple regression models were studied and the results show that 70 percent of fishermen in pay Have delayed their loans and factors such as experience, income, education levels and the positive effects of age and investment loans loans have had a negative effect on performance.

(Silverster and group,2013), Practice loan repayments producers and processors in foot palm oil in Nigeria were investigated using multiple regression. The results showed that the size Loan processors affected by the experience, and the investment rate is the annual gross income, asset turnover ratio and distance between home and lending are among the factors influencing the rate of loan repayments.

(Vonga and vitor,2013), Factors affecting the improvement in loan repayments by potato growers in Ghana examined using the model of probity. Based on the results obtained factors such as age, education level, Experience, monitoring and off-farm income had a positive effect on the performance of loans and repayments

gender and marital status have a negative effect on performance.

MATERIALS AND METHODS

The aim of this study was to identify factors influencing the willingness of credit by farmers is Sistan-Baluchestan province.

This study is based on objective, of applied research is based on the methodology and data collection method, the cross-sectional survey and in terms of time. Thus, the dependent variable and two dummy Receive and not receive. It is considered that these variables in the model, called discrete choice models that are essentially non-linear (Gujarati, Damodar, 1384).

Assumption of normality test samples smironov by Kolmogorov test is as follows:

Decision: If the value that is likely P-value is smaller than 0/05 the null hypothesis, ie, assuming normal distribution of the sample is rejected at the 5% level and otherwise The null hypothesis is confirmed, and this means that the distribution of the sample is normal.

Central Limit Theorem: According to the Central Limit Theorem, total and average values of a random sample n You who are selected from a population, approximately symmetrical tend to a sampling distribution. most of The authors believe that based on a rule of thumb, regardless of distribution of population of at least one sample 30 glass needs to be said statistical distribution X Normal (Azar and Momeni, 23: 1389).

Causation is a fundamental problem in the relationship between economic variables, because the direction of causality, subject noticeable in the economy. Determine the direction of causality, is used for variables that strict about it, there is no theoretical basis. Conventional methods have been proposed to check causation, is called Granger causality test.

The result of Granger causality test, the X does not Granger Cause Y" This hypothesis suggests that X not Cause Y. But for this hypothesis, if the value of F larger than F table, or the probability that given in the last column, smaller than 0. 05 is, in this case, the hypothesis is rejected. This means that is "X causes Y ".

On the other hand, according to the sectional Asmyrvnvf- Kolmogorov test data were used to normalize the data. After determining data, F-test was used for significant factors.

ANALYSIS OF DATA

The population of the study, 41 352 farmer farming and gardening Sistan-Baluchistan province, which were hit by the Agricultural Jihad Organization of the province to have been achieved.

SAMPLING AND SAMPLE SIZE

Therefore, in this study, simple random sampling was used to select samples.

According to Cochran formula, the sample size was 100 persons.

DESCRIPTIVE STATISTICS

Figure 1 shows the descriptive statistics variables.

NORMALITY TEST VARIABLES

Figure 2 shows the Kolmogorov-Smirnov test for the data.

According to P-VALUE amounts in the table above that in every 7 is variable ranging from 5% larger and given that the sample size is more than 30 (according to the central limit theorem), the null hypothesis assuming normal samples will be accepted, so all variables are normal.

Granger causality test results in table (1) to (7) is provided.

Table 1 shows that no causal relationship between interest received and interest rate credits and vice versa does not exist, or at least in the short term Granger causality test does not show anything.

According to Table 2 indicate that a causal relationship exists between the desire of the credit and religious beliefs and causal relationship between religious beliefs and a desire to receive credit in the short run there and Granger causality test, or at least it does not show. In other words, religious belief is one of the factors affecting credit is received.

Granger causality test results for the desire of the credit and natural variables in Table 3 is presented. The results showed that the causal relationship between interest received on credit and there are natural variables And vice versa causal relationship between the natural and the desire to receive credit in the short term does not exist, or at least Granger causality test does not show anything. In other words, the results show that the probability of consequences of floods, earthquakes, hail, etc., is effective in encouraging farmers to receive credit.

Table 4. Granger causality test for interest received on bank credits and from farm to show. The results show that no causal relationship between interest received and credits from the farm to the bank and vice versa in the short term There is such a thing, or at least do not show causality.

Table (5) Granger causality test shows the willingness of the credits and experience. The results show that no causal relationship between interest received and vice versa credits and experience there, or at least in the short term Granger causality test does not show anything.

Figure 1: Descriptive statistics data

	Credits	agricultural machinery	Experience	From the farm to the bank	Natural variables	Religious beliefs	Interest rate
The total amount	100	100	100	100	100	100	100
average	2/98	3/04	3/05	3/05	2/95	3/04	3/05
The standard deviation	1/38	1/38	1/38	1/38	1/38	1/38	1/38
Middle	3	3	3	3	3	3	3
Mod	1/36	1/39	1/38	1/38	1/38	1/39	1/38
SD, variance	1/85	1/95	1/92	1/92	1/92	1/95	1/92
Skewness	-0/022	-0/027	-0/022	0/022	-0/022	-0/027	-0/022
SD skewness	0/024	0/024	0/024	0/024	0/024	0/024	0/024
Strain	-1/14	-1/19	-1/20	-1/19	-1/19	-1/2	-1/19
SD strain	0/47	0/47	0/47	0/47	0/47	0/47	0/47
Range of	4	4	4	4	4	4	4
minimum	1	1	1	1	1	1	1
maximum	5	5	5	5	5	5	5

Source: Findings

Table (6) Granger causality test to receive interest credits and agricultural machinery shows and indicates that no causal relationship between interest received on credit and agricultural machinery And conversely there, or at least in the short term Granger causality test does not show anything.

Table (7) Granger causality test for receiving the credit and some credit shows willingness and interest received

Figure 2: The normal test data

Variable	Decision making	P-Value	The Kolmogorov-Smirnov statistic Z	Number	test results
The desire to receive credit	Accept the null hypothesis	0/057	1/38	100	A normal distribution
Interest rate	Accept the null hypothesis	0/051	1/35	100	A normal distribution
Religious beliefs	Accept the null hypothesis	0/056	1/33	100	A normal distribution
Natural variables	Accept the null hypothesis	0/051	1/33	100	A normal distribution
From the farm to the bank	Accept the null hypothesis	0/051	1/33	100	A normal distribution
Experience	Accept the null hypothesis	0/051	1/35	100	A normal distribution
agricultural machinery	Accept the null hypothesis	0/056	1/33	100	A normal distribution
Credits	Accept the null hypothesis	0/050	1/35	100	A normal distribution

Source: Findings

Table 1: Granger causality test for receiving the credit and interest rates

result	Possibility	Statistics F	Null hypothesis
The null hypothesis is not rejected	0/4498	0/8057	Granger Causality is not to receive credit interest rates
The null hypothesis is not rejected	0/3763	0/9876	Granger causality is not willing to receive credit interest rate

Source: Findings

Table 2: Granger causality test to receive interest credits and religious beliefs

result	Possibility	Statistics F	Null hypothesis
The null hypothesis is rejected	0/0040	5/857	Granger causality religious beliefs do not wish to receive credit
The null hypothesis is not rejected	0/1049	2/9105	Granger causality religious beliefs tend not to receive credit

Source: Findings

Table 3: Granger causality test for receiving the credit interest and natural variables

Result	Possibility	Statistics F	Null hypothesis
The null hypothesis is rejected	0/0263	3/7842	Granger causality natural variables are not willing to receive credit
The null hypothesis is not rejected	0/4818	0/7360	Granger is willing to receive credit due to natural factors

Source: Findings

Table 4: Granger causality test for receiving the credit and interest from the farm to the bank

Result	Possibility	Statistics F	Null hypothesis
The null hypothesis is not rejected	0/8720	0/1371	Granger causality desire to receive credit from farm to not Bnak
The null hypothesis is not rejected	0/7266	0/3204	Granger causality tendency to get away from the farm to the bank not credit

Source: Findings

Table 5: Granger causality test to receive interest credits and experience

Result	Possibility	Statistics F	Null hypothesis
The null hypothesis is not rejected	0/5615	0/5806	Granger causality not experienced the desire to receive credit
The null hypothesis is not rejected	0/3257	1/1354	Granger causality is not willing to receive credit experience

Source: Findings

Table 6: Granger causality test to receive interest credits and agricultural machinery

Result	Possibility	Statistics F	Null hypothesis
The null hypothesis is not rejected	0/1635	1/8467	Granger causality agricultural machinery is willing to receive credit
The null hypothesis is not rejected	0/5521	0/5978	Agricultural machinery Granger causality is not willing to receive credit

Source: Findings

Table 7: Granger causality test for the willingness of the credit and some credit

Result	Possibility	Statistics F	Null hypothesis
The null hypothesis is not rejected	0/7533	0/2841	Granger causality credit amount is not willing to receive credit
The null hypothesis is not rejected	0/2676	1/2830	Granger causality tendency to get much credit not credit

Source: Findings

Table 8: correlation between the willingness of farmers to credit and religious beliefs

The dependent variable / The independent variable	The willingness of farmers to credit		result
religious beliefs	0/2144	The correlation test	Negative correlation
	0/0040	P-Value	
	100	Sample size	

Source: Findings

Table 9: The relationship between the willingness of farmers to credit and natural variables

The dependent variable / The independent variable	The willingness of farmers to credit		result
natural beliefs	0/0437	The correlation test	The positive correlation
	0/0262	P-Value	
	100	Sample size	

Source: Findings

indicated that no causal relationship between credit and credit amounts and vice versa There are short-term, or at least it does not show causality.

TESTING HYPOTHESES

In the former, the explanatory variables were analyzed using Granger causality test. At this stage, according to FBI statistics obtained to study and test hypotheses discussed.

HYPOTHESIS 1

Given the normal distribution of population and quantitative variables, correlation test was used to test the hypothesis that the results were as follows:

The results in Table (8) shows that religious beliefs tendencies bank credit has negative impact that this effect is two-way; In other words, an increase in variable speed reduces the tendency to get Abarat religious beliefs banks by agriculture.

HYPOTHESIS 2

Given the normal distribution of population and quantitative variables, correlation test was used to test the hypothesis that the results were as follows:

The results in Table (9) shows that the natural variables on the aspirations credit effect Have a positive relationship is two-way; in other words the damage caused by natural disasters increased tendency to get credit by farmers.

CONCLUSION

In this paper to analyze the data collected and testing hypotheses from descriptive and inferential statistical methods were used. Descriptive methods, attempts to provide tables and Using descriptive statistical tools such as indicators and distribution center, describes the research data. This would help to transparency. Inferential statistical methods were used to test the hypotheses.

In the section describing the general characteristics of subjects with statistical graphs plotted frequency tables and somewhat samples This study has been described.

In the first comprehensive analysis of data normality assumption using the Kolmogorov smironov we have tested. Given that the samples observed to follow a normal distribution At the end of hypothesis testing and correlation testing using the Granger causality test and the relationship between have gained the independent and dependent variables.

The results show that variables such as religious beliefs and natural factors, factors affecting the willingness of credit by farmers.

In this regard, the following is presented:

1. executives in the banking system of Sistan-Baluchistan province, which is dominated by religious laws, measures to reflect the transfer of agricultural credit.
2. Agriculture Organization managers Sunni scholars using theories and their integration in the banking system, to transfer their funds.
3. executives in the banking system to provide interest-free loans or pay fees.
4. Local Fund to receive interest-free loans Recommended.

Suggestions for future research:

1. in independent research to study the effectiveness Farmers will be paid for agricultural credit in the bank.
2. In a separate study to examine the religious beliefs in obtaining bank credit to agriculture.
3. factors affecting the willingness of farmers to obtain credits in Sistan-Baluchistan province in towns and cities done to compare the results occur.

It should be noted in this article, there are several limitations that can be the most important of them include the following:

1. Data collection tools in this study was questionnaire, while other studies done with different instruments allows the There are different results.
2. The population of this research Crop farmers are Sistan-Baluchistan province, seems to change in the population gives different results.
3. The present study was carried out in the Sistan-Baluchistan province, seems to be doing it in other provinces gives different results.
4. The statistical sample of 100 farmers farming and gardening in Sistan and Baluchestan Province has been selected and it is possible to increase or decrease the volume of the sample In other studies obtained different results, so we must be cautious in generalizing the results.

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Evaluating the role of training in accreditation of University hospitals of Kohgiluyeh and Boyer-Ahmad Province

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ABSTRACT

In the present study entitled "Evaluating the Role of Training in Accreditation of the University Hospitals of Kohgiluyeh and Boyer-Ahmad Province", the researchers seek to examine the effect of training, which is considered as a fundamental component of human resource development, on accreditation of the university hospitals of Kohgiluyeh and Boyer-Ahmad Province. To this aim, one main hypotheses and four sub-hypotheses have been proposed in this study among all of the medical and administrative personnel in Kohgiluyeh and Boyer-Ahmad Province, and the researchers have come to the conclusion that training and its four indicators including principles and policies of training, technology and training methods, educational planning and the trainer influence the accreditation of the hospitals under study.

KEY WORDS: TRAINING, ACCREDITATION, HOSPITAL.

INTRODUCTION

Today, training in all aspects is a necessity in the world of organizations which is replete with challenges and changes in order to adapt to the environment and the changes, consider the needs of employees and learn the new techniques. This role becomes more prominent in a complex organization such as the hospital, and considering the fact that the functioning of a hospital is based on its human resources, a special plan needs to be made for training the stakeholders, including the staff, patients and their relatives as well as the society (Atashzadeh Shoorideh and Hasani, 2011).

A hospital is the most complex organization in terms of diversity of employees' knowledge and performance, abundance of human resources and specific differences

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of the patients from the clients of other organizations. Those visiting hospitals are mostly patients or their companions, who are in unhealthy and inappropriate physical and psychological conditions. Therefore, considering the needs of these people creates a lot of expectations and sensitivities. Ensuring high- quality and safe services is particularly important as one of the main functions of the health system, so appropriate policy - making, planning, implementation and control in this area require careful consideration and special reflection (Jamshidi, 2001).

In this regard, The Medical Deputy of the Ministry of Health has taken effective steps to evaluate the hospitals of the country over the past two decades in order to organize this area, and it is now undeniably essential to revise this strategy due to the dramatic changes and improvements in the area of health services management and the existing abundant scientific evidence indicating the importance of considering patient safety and improving the quality of patient-centered services (Lameei, 2005).

As one of the most reliable quality- and safety-based evaluation models with the increasing global acceptance in the health sector, and in coordination with other priorities of the Ministry of Health such as clinical governance, patient safety and patient rights, consistent with the training accreditation standards and considering the research infrastructures, particularly in terms of safety and patients' rights and service quality improvement , accreditation model has presented the health authorities with a new way to ensure the proper functioning of the health care providing organizations, thereby, its mandatory implementation for all hospitals in the country (Al-Qudah & Al-Momani, 2011).

The accreditation program of health centers, in the first step, has presented the authorities with the up-to-date standards derived from the latest resources used in developed and developing countries in accordance with the local conditions, religious, cultural, and economic norms and in the framework of the laws of the country as hospital accreditation standards in Iran, and it is hoped that the expansion of this program to all inpatient and outpatient health service providers in future take an essential step in ensuring the quality and safety of service delivery and strengthening accountability in the health system. Considering the above - mentioned points, no one can deny the importance of evaluating the control and evaluation and validation of service - providing organizations, especially hospitals in the present age (NiCad and Simon, 2003).

Since the hospitals affiliated to Yasuj (Kohgiluyeh and Boyer-Ahmad Province) Medical Science University are geographically located in disadvantaged areas, therefore these hospitals have limitations in terms of facilities and human and financial resources as well as access to specialized services.

Therefore, providing people with high-quality services with high productivity in these areas is of high importance, and evaluating the effect of teaching the methods and principles of work in hospitals located in disadvantaged areas and improving the efficiency of these hospitals is a top priority for this study.

LITERATURE

ACCREDITATION

"Accreditation" means the systematic assessment of health care centers using specific standards, that is, the standards that focus on the continuous improvement of quality, the centrality of the patients and improvement of the patients and staff's safety. "Accreditation" is used to describe the quality of the health-medical services. The health care policy and understanding of what is related to the quality of care and focus on the basic principles for the integration and dynamicity of the health care system development constitutes "accreditation" (Ivancevich, 2010).

The objectives of accreditation

- Recognizing and rewarding those hospitals that prove to be evaluating and improving their service quality and health care safety.
- Giving financial rewards to those hospitals that have been successful in accreditation.
- Continuous improvement of health care quality and service.
- Increasing public confidence in the health care of hospitals.
- Improving the national pride in the health care system.

It is important to present a clear definition of accreditation and to have consensus on definitions and the concept (definition) of accreditation should in many cases be relevant to the opinion of all stakeholders (Sedghiani, 2005).

FEATURES OF ACCREDITATION STANDARDS

- Standards should be understandable.
- The limits of the standards must be clear (it should be clear what a standard covers).
- Standards should be clear (in terms of structure, process, etc.).
- Standards must have comprehensive and simple content (recognizable for someone who uses it)
- Standards should be able to measure the processes.

- Standards must have a purposeful process.
- Standards should be in line with local conditions, government policies and the needs of each country.

Setting standards is always done through a process of consultation and attempts are made in the process to cooperate with those who use the standards. Accreditation standards are usually reviewed and revised via consensus or agreement of health care professionals periodically in order to keep pace with the latest scientific advances (Analoi, 2007).

STAFF TRAINING PROCESS

To achieve its goals, any organization, whether small or big, should have qualified and highly competent personnel at its disposal. Elementary and secondary schools and college are systems to train the knowledge and information that prepares individuals to enter the community and present effective services. But people who are employed by an organization need, in addition to this knowledge, some specialized and professional training in order to get the technical knowledge and skills necessary to perform their assigned tasks properly. These trainings help employees to play a more active and effective role in achieving the organization's objectives (Snell and Bhlander, 2010).

WHO IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF TRAINING PROGRAMS?

In large organizations, one of the units of the administration of the employees' affairs called manpower training and education is responsible for the task of staff training. The tasks usually given to this unit include the following (NiCad and Simon, 2003):

- Determining the educational needs.
- Setting the educational goals and policies.
- Providing books, magazines, articles, and audio-visual tools that are needed to be used in training courses. Choosing highly qualified instructors, coaches and lecturers for presentations.
- Controlling and coordinating different educational activities and supervising them.
- Evaluating the training courses.

Staff training is considered a duty of the line managers, and although the staff affairs administration plays an important role in designing the training programs, the successful implementation of these programs depends in part on the cooperation of and consultation with line managers. The highest-position official in the organization is responsible for approving the educational projects and allowing their implementation. This official, without being involved in the details of these plans, examines the plans in their entirety and determines the funds required for their implementation. It is natural that one of the important tasks of education unit officials is offering the projects in such a way that the senior executives and influential individuals in the organization can understand the need for their implementation and support them.

RESEARCH METHOD

The present study is an applied research in which a descriptive method of data collection has been used. This is a survey-type research in terms of method. A questionnaire has been used in the research for data collection. The questionnaire used in the research consisted of 24 questions divided into four 6-item parts. The first part examines the educational principles and policies; the second part includes technology and training methods; the 6 questions included in Part III includes the variable "Educational Planning", and Finally, the questions of the fourth part deals with the variable "trainer". The population of the research include all of the medical and administrative personnel of Kohgiluyeh and Boyer-Ahmad Province, estimated to be 140 people in this area and the sample size was determined 103 people using Cochran formula (Khaki, 2012).

We analyzed the data using SPSS Software after we sorted them using Excel Software, and then examined the accuracy of the research hypotheses using one-sample t-test, Kolmogorov-Smirnov Test, and Friedman Test.

It is noteworthy that the validity of the questionnaire was confirmed by the supervisor and its reliability was measured using Cronbach's alpha, with the results presented in Table 1. As the table shows, the questionnaire items have good reliability.

Table 1: Reliability of the questionnaire

components	Cronbach's Alpha
The entire questionnaire	0.935

ANALYSIS OF THE RESEARCH DATA

EXAMINING THE ACCURACY OF THE RESEARCH HYPOTHESES USING ONE -SAMPLE T-TEST

First hypothesis: The educational principles and policies affect the accreditation of hospitals.

Second hypothesis: Technology and training methods affect the accreditation of hospitals.

As shown in the tables above, the significance level for the second sub-hypothesis, as well as all the indicators

Table 2: Results of t-test for the first hypothesis

mean	t-value	Degree of freedom	Significance level	Mean difference	Confidence level of 95%		Indexes of H1
					low	high	
3.3155	2.838	102	.005	.31552	.0950	.5360	H1

Table 3: Results of t-test for the second hypothesis

mean	t-value	Degree of freedom	Significance level	Mean difference	Confidence level of 95%		Indexes of H1
					low	high	
3.6068	7.558	102	.000	.60680	.4476	.7660	H2

Table 4: Results of t-test for the third hypothesis

mean	t-value	Degree of freedom	Significance level	Mean difference	Confidence level of 95%		Indexes of H1
					low	high	
3.3932	4.108	102	.000	.39320	.2033	.5831	H3

Table 5: Results of t-test for the fourth hypothesis

mean	t-value	Degree of freedom	Significance level	Mean difference	Confidence level of 95%		Indexes of H1
					low	high	
3.5469	6.302	102	.000	.54693	.3748	.7191	H4

Table 6: Results of t-test for the main hypothesis

mean	t-value	Degree of freedom	Significance level	Mean difference	Confidence level of 95%		Indexes of H1
					low	high	
3.4656	5.670	102	.000	.46561	.3029	.5360	H1

related to this hypothesis are smaller than 0.05. Therefore, it can be concluded that the second hypothesis is confirmed and it can be said that technology and training methods affect the accreditation of hospitals.

Third hypothesis: Educational planning affects the accreditation of hospitals.

As shown in the table above, the significance level for the third sub-hypothesis, as well as all the indicators related to this hypothesis are smaller than 0.05. Therefore, it can be concluded that the third hypothesis is confirmed and it can be said that educational planning affects the accreditation of hospitals.

Fourth hypothesis: The trainer affects the accreditation of hospitals.

As shown in the table above, the significance level for the fourth sub-hypothesis, as well as all the indicators related to this hypothesis are smaller than 0.05. Therefore, it can be concluded that the fourth hypothesis is confirmed and it can be said that the trainer affects the accreditation of hospitals.

The main hypothesis: Training affects the accreditation of hospitals.

As shown in the table above, the significance level for the main hypothesis is smaller than 0.05. Therefore, it can be concluded that the main hypothesis is confirmed and it can be said that training affects the accreditation of hospitals.

PRIORITIZING THE VARIABLES INFLUENCING THE ACCREDITATION OF HOSPITALS

According to Friedman test conducted for prioritizing the factors, since the significant level of the chi-square statistic is smaller than $\propto$=0.05, it can thus be concluded the factors affecting the accreditation of hospitals can be prioritized. The prioritization and the priorities of the factors are presented in the tables above.

As can be seen in the table above, the significance level is less than 5% and it can be concluded that these four factors which influence accreditation of hospitals can be prioritized and this prioritization is significant. Thus, the research sub-hypothesis is confirmed. Accord-

Table 7: Prioritizing the variables influencing the Accreditation of Hospitals	
factor	**Friedman mean rank**
Educational principles and policies	2.34
Educational technology	2.77
Educational planning	2.26
trainer	2.63

ing to respondents, the first rank goes to educational technology with an average rank of 2.77, the second rank goes to the trainer with an average rank of 2.63, the third rank goes to the educational principles and policies with an average of 2.34, and the educational planning has the fourth place with an average rank of 2.26. This ranking is shown in in the graph below.

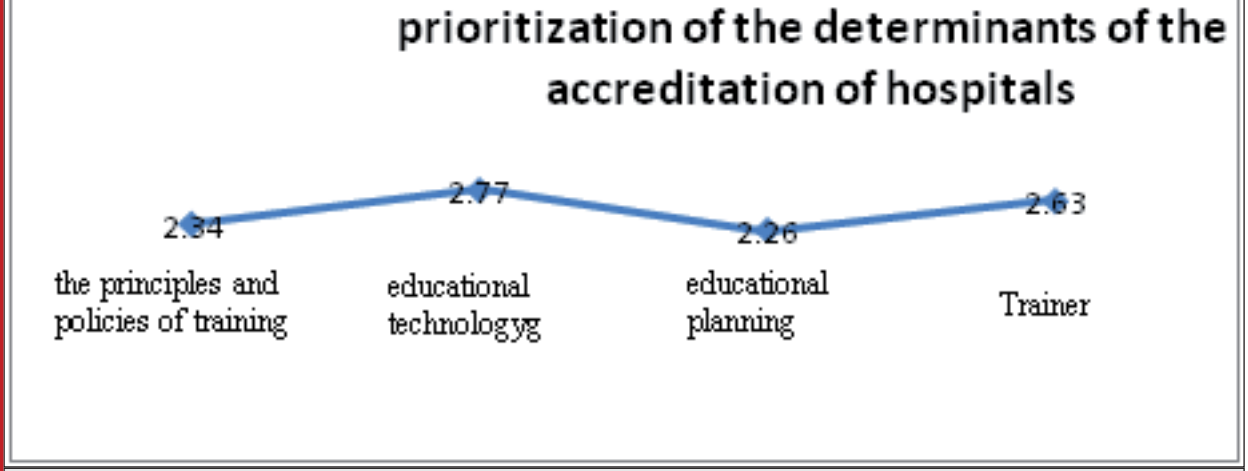
SUGGESTIONS

SUGGESTIONS BASED ON THE RESEARCH HYPOTHESES

Medical science education requires has special features compared to other fields due to its need for diverse fields of learning in a wide range of issues related to health and disease. The technological advances and expanded knowledge about basic sciences with a considerable speed in the early twentieth century led to a complete change in the medical science so that it was no longer just a technique taught and learned by heart. The pace of the changes in the health system and community needs necessitates a review of medical education so that competent physician's ready to face the problems of the twenty first century can be trained.

By emphasizing the need to focus on hospital training and acceleration of treating the patients, we now provide some suggestions based on the collected data and the analyses made in the university hospitals of Kohgiluyeh and Boyer-Ahmad Province.

- Employees need to be quite familiar with how to do their tasks by raising their level of knowledge; for this purpose, they can choose as their educational priority some courses on how to search for information resources required for their jobs, as well as courses about implementing new ways to improve the organization's activities. They are also required to take part in courses of familiarity with the hospital's quality standards such as knowledge of English and familiarity with the current legislation of the hospital.
- Examining and identifying the educational needs involves a successful educational system. This is the first step in staff training planning and in fact the first factor that ensures the effectiveness of the training function, so that a more objective basis can be provided for planning and there will no more possibility of adapting them to the needs of the organization for job areas and employees and its effectiveness will ultimately increase if the educational needs are examined and recognized properly.
- The managers and planners of hospitals need to bear in mind that a country can never develop anything unless it develops the skills and knowledge of its people and exploits it so effectively in its national economy. Therefore, if the employees are trained proportionately with job description, their will be better able to contribute to the efficiency



GRAPH 1. Prioritizing the determinants of the Accreditation of Hospitals

of their organizations, in which case the supervisors and managers will no longer need to supervise their subordinates so closely and can prepare them for obtaining higher-position and burdensome jobs, because it is in the light of proper training that the employees can perform their duties properly. Therefore, skilled, efficient and knowledgeable manpower is essential for achieving the organizational objectives of hospitals, which is to provide superior service in order to expand the health and medical levels among the community.

RESEARCH SUGGESTIONS

- Satisfaction of the staff of the medical science university with the in-service training courses.
- The necessity and role of training in the improvement of human resources and development.
- A review of the training needs of the medical science university staff in order to provide a suitable educational model and improve the human resources.

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Evaluation of the toxicity of lemon extracts on mouse lymphoma cells

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ABSTRACT

Biological and epidemiological and histopathological characteristics of Mouse lymphoma cancers are similar in humans. Cancers in mice can be used as a valid model to evaluate various therapeutic factors and lymphoma tumors in mice would be good models to biological study of human cancers (1). Herbal medicines, which are more convenient to access, include less effects and expenses than chemical medicines could be used as alternative or in conjunction with chemical compounds which in this case leads to reduction of medicine resistance. The EL4 cell lines provided from Pasteur institute and cultured. After culturing cell line in 96 cell plates and cell treatment by lemon extracts in different concentrations (10, 20, 30, 40, 50, 80 and 100 micrograms per ml) after 48 hours evaluated by MTT Colorimetry method as well as the diagram of cells viability assessment was drawn and the amount of IC50 calculated. The 96 cells plate containing cultured cells investigated by Elisa reader device after 48 hours. Then, MTT diagram was drawn and the amount of IC50 obtained equivalent to 59.41 micrograms per milliliter which in these concentration 50% of the cells were destroyed after 24 hours and MTT results showed that in a dose-dependent method, the extract has cytotoxic effect on these cells. According to the extract inhibition effect on cell growth and cytotoxic effect in the in vitro environment, the results of this study confirms that the plant total extract due to phytochemicals existence such as flavonoids were effective on Lymphoma cancer cells in mice.

KEY WORDS: LEMON EXTRACTS, LYMPHOMA CANCER, TOXICITY, LD50.

INTRODUCTION

Lymphoma is a widespread tumor which has common end points in Biological evaluation of cancer. It is the fifth or sixth common aimed place of carcinogen in mice. Lymphoma incidence increases 10-50% by increasing mice age (1). Lymphoma is a cancer which begins in the cells of the lymphatic system. The lymphatic system is part of the immune system helps the body to fight with infection and disease. As lymphatic tissue could be found throughout the body, lymphomas can almost start anywhere. In fact, lymphoma is the malignant

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of immune system cells which is a clonal disorder. As common methods of cancer treatment (surgery, chemotherapy, radiotherapy) show lethal effects or cell division inhibition on normal dividing cells in addition to tumor cells (2) and also the high costs of some of these chemical compounds, lack of desirable response of these compounds, drug resistance and sometimes extreme side effects, in recent years use of natural herbal medicines has been proposed to cancer prevention and treatment. In this way, not only tumor cells would be controlled but also healthy cells does not harm (3).

The effects of various types of edible antioxidants on cancer and Cardio - vascular diseases has been confirmed and also it has been determined that these materials Increase over sixty percent of lifetime (4). Controlled diet and epidemiological studies support this result in which high intake of fruit and vegetables reduces the risk of many degenerative diseases such as cancer. There are bioactive compounds in Citrus fruit such as carotenoids, vitamin E, C, folic acid, flavonoids and lemonoid glycosides which have antioxidant properties and induce apoptosis. According to laboratory investigations on poly Methoxyl flavonoids such as Tangryn it has been found that these materials including antioxidant and anticancer and neurons protective effects (5). In 2001, the effect of limonene (flavonoids) on Cell cycle investigated and it was found that the material will change the cell division or cell death (apoptosis) which these stops occur in cell division (6).

In 2005, tests carried out on Nobiletin (flavonoid Available in lemon peel) and it was determined that this substance has anticancer, antiviral and anti-inflammatory effects (7). In 2006, by isolating citrus lemonoids, their anticancer effect on neuroblastoma cancer cells (SH-SY5Y) and adenocarcinoma (Caco-2) was determined by MTT method and it was found that Neuroblastoma is more sensitive (8). According to a study it was found that induction of apoptosis would be done by activation of the caspase (9). Signal transduction pathways that cause cascade activation of enzymes called caspase, Cellular damage that increase mitochondrial membrane permeability and activate caspase enzymes, DNA damage that Leads to accumulation of P53 protein and facilitates DNA repair by these proteins and the path of cell membrane damages which cause the activation of sphingomyelinase enzyme and finally causes to producing Ceramide from the lipid composition of cell membranes are four main systems to setting up apoptosis. In 2000, induced cell death or apoptosis in HL-60 cancer cells by flavonoids found in lemons was reported.

Wide range of pharmacological effects of this fruit forced us to investigate anti-proliferative potential of its extract on the mouse lymphoma tumor cell line (EL4) by relying on the ability to impact the direction and various cellular compounds.

MATERIALS AND METHODS

This research is a field-experimental study which carried out in Science and Research Branch of Islamic Azad University in Tehran in 2015. In this study, stoke related to lymphoma cancer sample with EL4 characteristic was used which provided from Pasteur institute of Iran and after thawing and washing in RPMI environment containing 10% FBS, cultured in 37c incubator with 5% CO2 for 7 days and it was exchanged every 48 hours. In order to prepare 500 g extract of dried fruit, lemons were soaked in 80% ethanol for 48 hours at room temperature away from sunlight. After smoothing the solution by filter paper and what man no1. The solvent took out from the extract with a rotary device in vacuum condition.

After culturing and cell passage, treatment was carried out in 6 groups by adding 10, 20, 30, 40, 50, 80 and 100 micrograms per ml of the extract in which five repetitions of each concentration and also a control group containing cell and culture media and ethanol (extract solvent) for five repetitions were added. 48 hours after cell treatment with lemon extract in different concentrations, MTT test used to evaluate the viability of each group.

IC50 for a specific cell is a concentration in which 50% of cells are alive and 50% are gone under the impact of considered material. In fact, the viability percentage reaches 50% when this percentage would be obtained by comparing the optical absorbtion of negative control sample or control of other samples.

The percentage of living cells calculated using control samples and the following formula and it was equal to ... and the calculations recorded by EXCEL software and its diagram was drawn.

$$\% \text{ viability} = \frac{\text{average of optical absorption of treated cells}}{\text{average of optical absorption of control sample cells}} \times 100$$

The data also analyzed using Spss software version 22 and Anova program and Tukey test.

RESULTS

The results suggest that in the 96 cell plate containing cultured cells after 48 hours, cells were examined by Elisa reader device. Then MTT diagram was drawn and IC50 equivalent to 59.41 micrograms per ml obtained which in this concentration 50% of cells were gone after 24 hours and MTT results showed that in a dose-dependent method, this extract has cytotoxic effects on these cells (diagram 1).

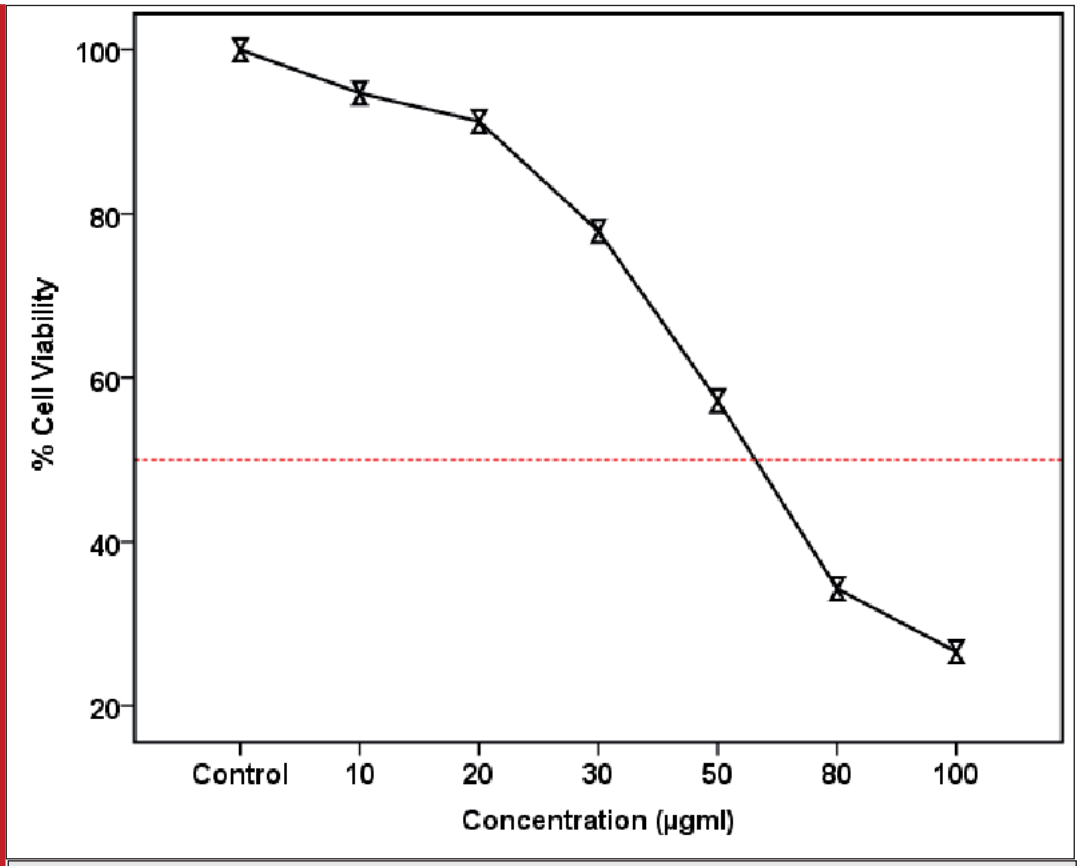

DIAGRAM 1. The viability of different concentrations of lemon extract on lymphoma cultured cells.

According to the results and cells treatment at 10, 20, 30, 40, 50, 80, 100 micrograms per ml concentrations with lemon extract and investigate after 48 hours by Elisa reader device, the results showed dose-dependent effect of lemon extract on mouse lymphoma tumor cells and its toxic effects at 80 and 100 concentrations was significant compared with control group and was less than 0.05 (Diagram 2).

The red or black line in the middle of the diagram indicates IC50 point

DISCUSSION

Lymphoma is one of the most common tumors in most species of mice, particularly those which involved in safety assessment (1).

The researchers concluded that some of the cells are resistant to these treatment methods and these kind of treatments (especially radiotherapy and chemotherapy) do not target this cell population.

In fact, the incidence of resistance to chemotherapy is one of the causes of Cancer treatment failure which assumed this problem stems from the emergence of resistant strains of cancer cells (3). In recent years, the possibility of certain population of Cancer cells has been proven which are present undifferentiated in some cancer cell lines. This issue is important because it seems that at least part of drug resistance may be due to Cancer treatment methods to reduce the risk of damage to the normal cells and cancer stem cells would survive and later lead to formation of new tumors (11). On the other hand, in some the tumors, expressing genes of ABC pumps have been identified in side population cells which these pumps were used in stem cells by using colors such as Rhodamine 123 and Hoechst33342 which capable of binding to DNA (12 and 14). If this treatment strategy is correct, the recurrence of this cancerous tumor and resulting resistance is due to the small population without division. Also, asymmetric division of this group of cells causes tumor heterogenesity (fig.13).

Heterogenesity of cancer stem cells leads to formation of various forms of cancer. Especially this issue observed in lymphoma cancer and over time leads to metastatic in the body (15). In 2001, the effect of limonene (flavonoids) investigated on cell cycle and showed that these materials change the cell division or cell death (apoptosis) which this stop occurs in cell division (16). In 2005,

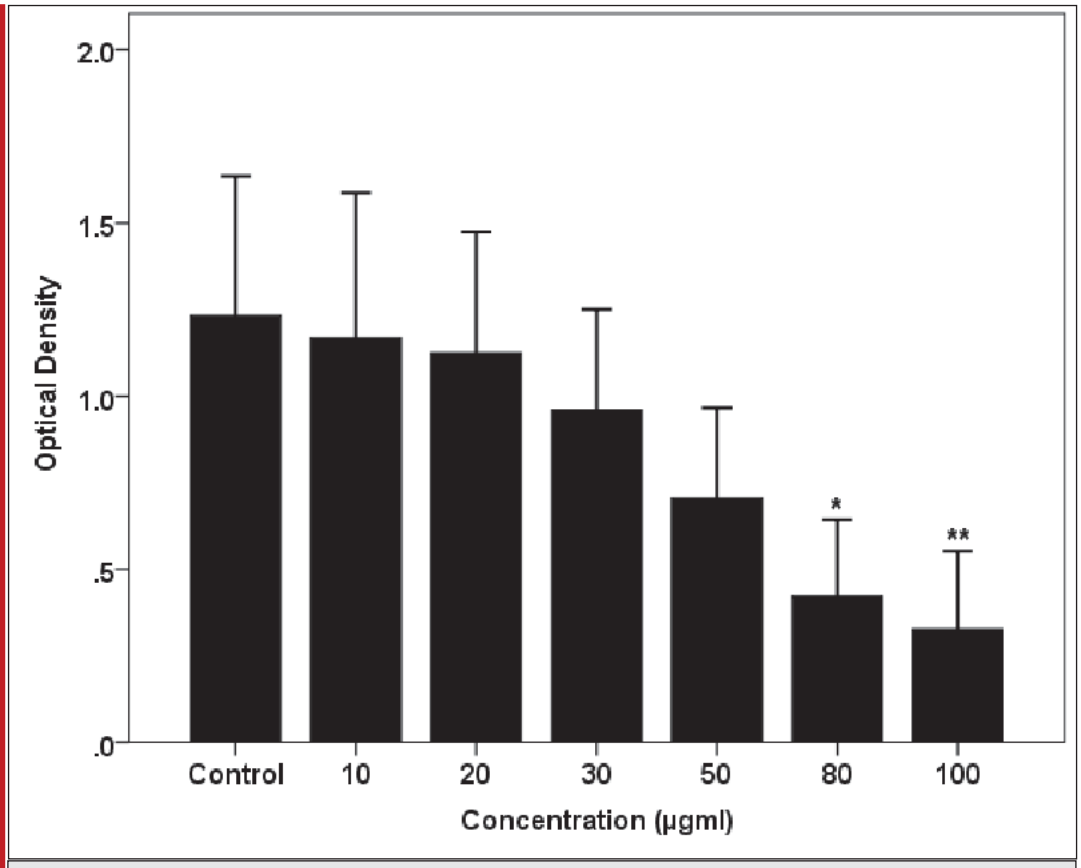

DIAGRAM 2. comparing different concentrations of lemon extract on optical absorption of lymphoma cancer cells. Mean of the data **P<0.01. *P<0.05. (SEM ± Mean)

tests performed on Nobiltin (flavonoid found in Lemon peel) determined that this substance has anti-cancer, anti-viral and anti-inflammatory activity.

In 2006, by isolating limonoid of citrus their anti-cancer effect on Neuroblastoma cancer cells (SH-SY5Y) and adenocarcinoma (Caco-2) confirmed with MTT method and determined that neuroblastoma is more sensitive (18). Based on a study it was identified that induction of apoptosis done by activation of the caspase pathway. Signal transduction pathways which cause cascade activation of enzymes called caspase, cell damages which occurs by increase cell membrane permeability of mitochondria and activation of caspase enzymes, DNA damage which leads to accumulation of P53 protein and facilitates DNA treatment by these proteins and the cell membrane damages pathway that leads to activation of sphingomyelinase enzyme and finally causes producing ceramide from lipid compounds of cell membrane, are four main systems to setting up Apoptosis. In 2000, cell death induction or apoptosis in HL-60 cancer cells were reported by the flavonoids found in lemons (20).

Due to the inhibition effect of extract on cell growth and cytotoxic effect in 'in vitro' environment, the results of this study confirms that total extract of this plant was effective on mouse lymphoma cancer cells due to the presence of phytochemicals such as flavonoids. But notable issue is requirement of clinical investigations on Organisms to definitively conclude that whether we can use this plant extract as a medicine to treat tumors alone or with other chemical compounds? If this issue is confirmed, the use of the extracts or its derivatives lead to reduce the side effects of chemical compounds used in cancer treatment and also causes reduce the drug dose.

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Critique of Bourdieu's sociological concepts

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ABSTRACT

The historical process of Bourdieu research activity, based on innovation and integration of diverse views. Bourdieu, one of the few sociologists is that innovation theorists and empirical researchers Square in practice. The theory helps to research. And empirical research to strengthen the theory applies. The current study reviewed documents and conducted sociological theories of Bourdieu in the field. Bourdieu's theory according to which criteria should be evaluated, as his goal is to get through the separation of subjectivism / objectivism that this article is aimed to evaluate the basic concepts of sociology Bourdieu's critique of these concepts.

KEY WORDS: BOURDIEU, SUBJECT, OBJECT, CRITIQUE.

INTRODUCTION

Pierre Bourdieu in August 1930, was born in a town in southern France. After the publication of his famous Distinction professor of sociology at the Collège de France in 1979 points rather than gained Raymond Aron. Bourdieu committed intellectuals in 1993 as joint book with your colleagues published under the title of world poverty. He is fifth in January 2002 after a long struggle with cancer, died in Paris (Wallace & Wolf. 1998). The reputation Bourdieu as an adventurer and leader of the student revolt in events May 9, 1968 is on. At the time the book inherited her Bible Bourdieu was named. The idea of Bourdieu's last speech in May 2001 in Athens gave fans a science purposeful and committed. In that speech Bourdieu explicitly says most educated man in the head, especially in the social sciences have a dichotomies, which I think is disastrous. Dichotomies Interrupt knowledge upon knowledge and commitment. Among those who devoted his life to science and those that have a social commitment to society and their knowledge of the day, there is a contradiction artificially. He says that non-aligned scientists, scholars in their ivory towers entrenched, so scientists applaud him and admire his knowledge, as a scientist who own knowledge (practical) not so simple to redouble scientists feel the (Tavassoli,2004).

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INTEGRATION OF KNOWLEDGE – METHOD

Through his work as follows:

- His conception of social action, structure and antidulistic understanding of the (objective-subjective, material aspects, a symbol of social life, anatomical level of analysis and interpretation, synchronic - diachronic, micro - macro).
- He combines scientific practice and thinking at the same time that the frontiers of theory, methodology hitting, intellectually practice and thinking he is the confluence of currents of thought. Intellectual current of Marx, Durkheim and Weber and different philosophy of Cassirer, Bachelard and Wittgenstein, phenomenology of MerleauPonty and Shvts, linguistic theories of Saussure, Chomsky, and Austin.In terms of methodology, statistical techniques with direct observation and interpretation of the interaction, discourse and documentary combines, for example, in the book "reproduction" Bourdieu required information was collected from various sources: the Census Bureau France, Research One eth- and pre-tested by the researchers.She is not based on the concept of philosophical anthropology and attachment interests but also based on the concept of recognition is built. In compliance with Pascal says the ultimate source of value for a person's behavior and their thirst (Stones, 2004).

Bourdieu, application-oriented research in conjunction with the methodology, the technique called genetic structuralism, enhanced and integrated approach, both on the same side of reality-oriented and aspect-oriented mind them.

This will be the dualism of methodological excellence in the social sciences shows, because the structure, as an abstraction is considered to be the antithesis of history or the history of the development of a phenomenon is. Under this methodology, not literal explanation of the action will be based on reason and not based on reason, but also to explore the field that will combine these two different moments (Parastesh, 2006).

DEVISING CONCEPTS

Bourdieu's work, in general, compliance is a theory, that society is first and foremost a system of domination that triggered numerous mechanisms to reproduce itself. he is, according to this theory, fundamental, above all to create beats and then the key concepts of the theory and concepts in the fields of social life takes place. Using empirical methods without resorting to purely subjective interpretations, suggest that meeting the spontaneity and naturalness of what is, in fact, stems from certain mechanisms.

HABITUS (SUBJECTIVE BUILDING)

In practical understanding (1980), habitus is defined by the theme: preparation of stable, moveable structures are formed and ready for the forming such structures and act as receptors, ie, as productive as the principles and Organizing actions and images, being able to objectively follow objective, without necessarily conscious to the end of the work and operations necessary to achieve the mastery necessary, be aware (Dvryth, 2006). Bourdieu's habitus is, in fact, a solution to escape from a very old conflict methodology offers in the conflict on the one hand objectivity and subjectivity is placed on the other side,(Fakohi, 2006).

Always practical preparation habits, a kind of tacit graduation, a frost, a community of students of these tastes that social factor enables the spirit of the rules, practices, directions, trends, values, methods and other of specific areas (scientific, cultural, political, etc.) to find out, within it is accepted, fit and indication effect. A kind of indirect education that makes virtues or vices that social activists are readily accepted in the community, for the Queen, without the need for reflection and homework doing (Bourdieu, 2001).Habitus, system configuration germ that is acquired in accordance with the specific circumstances in which it is formed, will be compatible. dispostions that form the foundation of the People's habits are germ action. (Jenkins, 2006).Collective unconscious habits of those who are of a similar class position. It provides emotional, and cognitive habits of a pattern that enables agents to see the world in a common way. Habitus specific symptoms, language, dress, manners, and the other creates reactions. (Turner, 1998)

FIELD

In developed countries people are not faced with the integrated space, spheres of life, art, science, religion, economics, politics and the like, small models of rules, regulations and forms of power form, that is right, (Stones,2004). Bourdieu sees the field are more related to structural way, right network of relationships that exist between the objective position (Ritzer, 2007).Bourdieu's right to have the same structure and the markets are not the same as the right but the right frame up (Lash, 1983). Filled semi-autonomous networks of social relations and systems are structured on the basis of capital (economic, social, cultural and symbolic) were classified (Corsun & Costen, 2001).

Scott Lash workmanship fields and markets to summarize Bourdieu writes:

1. The Filled of differentiated and specific area for symbolic struggle is the collective and individual strategies.
2. The purpose of this strategy and combat the production of valuable cultural goods or of the institutions and merchants, to join the production of such commodities.
3. The value of a commodity symbolic value that the consumer society are related to it.
4. These value judgments as many fields as producers have accumulated symbolic capital, is determined.
5. Symbolic win in a fight means that symbolic goods belongs to someone more valuable than symbolic goods were owned by his rival.
6. The fruits of this victory is that the person has the right to impose their symbolic producer acquires the Filled community can be against consumers in the Filled social, symbolic violence Set (Lash, 2004).

VIOLENCE SYMBOLIQUE

Violence or symbolic power, the potential and the possibility of power or violence, which causes people to strictly control their behavior and get along with the origin of the violence, coordinate. Bourdieu, the issue of violence in connection with the transition of power and it justifies. He believes that any power with concepts, they will implement it in the environment and thus imposed the concepts and legitimates them. While the pressure that is one of the foundations of this legitimacy is hidden, this is a symbolic violence (Monadi,2006).

THE DIALECTIC OF KNOWLEDGE AND PRACTICE

Bourdieu approach to theorizing about social action is a set of distinct emphasis:

Emphasis on building a statistical model of reality, as a fundamental data, emphasizing the need for analysis when the details of social life at the time and place the emphasis on the problem of what people say as anything other than a simple reflection about of what is going on in their heads, emphasis on ad hoc nature and act strategically as a phenomenon that contradicts the behavior is guided by rules (Jenkins, 2006).

However, follow-up strategies are meant to be purposeful and planned goals are not counted. It refers to the arrangement of the active lines of action that the rules have the same orientation and socially coherent patterns and intelligent form (Ritzer, 2000).According to Bourdieu, what we have to search it, is public knowledge that does not require explanations and examples of different cases, setting the rules and ethnological knowledge that exposure to stresses, but what happened to formulate rules and regulations and on the theory of priority action. Focus solely on the objective being (physical) but social action (practice) is. Practice border living, social action all the parameters that follows the traditional dichotomy is considered connected, such as individual-society, the idea of matter, mind-body, subject-object, being - the (Bourdieu, 2001). According to Marx's views on the relationship between theory and practice, his emphasis on social action, the performance (practice) (Houston, 2002). Social function and structure, rules of operation is more than the mere act like a speech that is nothing more than language (Turner, 1998).

Being practical, requires that actors that determine the status of their relationship. The key idea of temperament, habits and customs of the actors within the social groups (Weber) and social classes (Weber and Marx) establishment, as well. To maintain and improve its position in the fields of (social) hazard is that of capital, not compete. Both rival groups compete and position the free ends of the historic structures are created (Parker, 2004).

CRITIQUE ON BOURDIEU

Critics have criticized several aspects of his work, the themes that Bourdieu wanted to pass them on the dichotomy of objectivity-subjectivity, micro-macro, structure-agency overcome and the introduction of new concepts, new foundation laid the field of research on community issues to pave. Bourdieu theory was based on the evaluation criteria should be his purpose to come to traverse the separation of subjectivism / objectivism is.Jenkins, claiming that Bourdieu, (a) matters relating to the establishment of the social world as a subject of study by way of knowing or explaining the confusion. (B) this confusion, use the same words to convey meanings that are actually different, he lets you hide or ignore the ontological paradox field (Jenkins, 2006).Another aspect Bourdieu Critique goes to innovative concepts, concept field, or wrong or defined ontology (or both) is. Do you know really the social consciousness of social actors that inhabit the space, there are analytical or just made? If the latter is true, how can we draw boundaries or define them? Such a critique of the concept of habitus enters the same time, if habits are already in the social space, the agent is selected?

In addition, use of the term capital, to describe the social valuable things, we have to use Bourdieu economic metaphor for understanding social life makes concerned.

The use of the word benefit or profit, or inevitable aspect of conscious and calculated decision to enter the field or vanity epistemological analysis that is untenable.Structuralism charge on Bourdieu, another Critique is that Bourdieu could not escape from it, because Bourdieu similarity between theory and structural functionalism and appearance is nothing more than a passing resemblance, the model and the social sphere, is essentially a desire for balance and stability. Social change in this version is somewhat peripheral and marginal and difficult it can be explained. Perhaps in the final analysis the primary weakness of his work is his inability to cope with the theory of mind (Ritzer, 2007) is worth stressing that this issue from two aspects, first, the actors than it is willing to accept Bourdieu, the social world you know, the second part Bourdieu decision to deliberately and knowingly relying on a rationality that is done due time, too underestimate, (Jenkins, 2006).

CONCLUSION

Pierre Bourdieu as one of the greatest figures in contemporary social theory, he has to develop his theory in explaining social phenomena, had to invent new concepts. The most important of these concepts, habitus, field, action, and so on. these concepts, although in many cases been able to explain social phenomena, but has some inherent also be challenging.

Bourdieu theories, from the very beginning has been faced with serious criticism. These criticisms can be summarized as follows:

- In Bourdieu, such as functionalism, social change and the difficulty of nothing more than the product of external factors, considering the close ties between the subjective and Manufacturers underlines formations and objective social world is to difficult to Otherness Apart from the expected package of their feedback cycle that stabilizes each other.
- The design of Bourdieu's hardly room for significant actions emphasis on social activism in the context of their cultural and imagine.
- What is going on in people's heads, given the consequences of wrong or not entirely so. For Bourdieu assuming strategies that is why, for explanatory purposes, they must be present. On the Bourdieu, here we model a reality version of reality, have slipped. Apparently he created strategies to create his subjects (Jenkins, 2006).
- Use of the words used to describe items of value right social capital to charges he puts oriented economy.
- Sense of field, wrong ontology, or definitions or both.
- In what Bourdieu models of theoretical models about institutions, its performance or relating to the organization of social life is less. They are believed to exist as entities of assumptions that individual actors in accordance with their dignity.
- In Bourdieu's theory, the micro-level and macro-level actors, activists and social space field there are gaps that can be filled only part of it to help habitus, theoretical model institutions is necessary to fill this gap (Ibid: 143) .
- Benchmark corporeality, finding the cause of habitus individualistic concept that is acceptable to abstract social entities or collective, property seems entirely unreasonable.
- The relationship between conscious and unconscious mental processes, by rejecting conscious thought, empiricism or knowable He causes that the existence being the unconscious is invisible pessimistic. The way out of this dilemma, the habitus, fall somewhere between these two.
- Epistemologically, and his view a form of realism that we can describe it Substantialism. the social world is seen as the objective and material relations and direct observation is not available. although empiricism and Substantialism both forms of materialism, but are mutually repel each other and ontological uncertainty, caused by a combination of the two approaches are incompatible, for example, the formation of an experimental process / material that is corporeality and the explaining the act as something that exists beyond appearances.
- Concepts formations, groups, institutions and field analytical created essentially in vague that the actors act. This can be Bourdieu's epistemological and objective examination of the relevance of the objective, the objective is to break the social reality that requires, for Bourdieu defined merely in the sense of social reality as it is objective. This confusion has emerged in theory positions.
- In conceptualization, shortcomings and inadequacies and lack of action process and the process of empiricism and Substantialism between adjacent controversial issue and process analysis with empirical expression is answered. by reference to the sequencing of events. Here Bourdieu limited understanding of history becomes apparent. Because history just add something on looking for something else knows the history as narrative and biography (ibid: 152).

- The most critical weakness of his work, his inability to solve the problem is subjective. It is noteworthy in two respects: First, actors more than it is willing to accept Bourdieu, the social world to know. however, he believes that people know their objective probability that govern their lives, but this knowledge is not peculiar form of knowledge is conscious and not unconscious. second, Bourdieu deliberate and wise decision-making role that is based on the rationality due time, too underestimate. Inevitably, therefore, the explanation is deterministic. (Ibid: 154)

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The role of Quranic teachings in preschool education

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ABSTRACT

Today in the world and especially leading countries, the issue of education is seen as a cultural event. Attention to the culture of Quranic education in our country is a basic need; because many countries gain their behavior and even thoughts from their culture, literature, mysticism and religion. Regardless of the culture in teaching and learning makes that education does not have the necessary depth. Since the personality and behavior of every person is rooted in his training, children are like fertile land and are ready to plant whatever is planted in this land, as grows in him. Islam as a complete and perfect religion is the Divine religion of humans' life that its teachings can be used as valuable and efficient resource for extraction and explanation of concepts and education methods. On this basis, the aim of this study is to "investigate the role of Quranic teachings in preschool education". The results showed that teaching the Quran to preschool children and their familiarity with words, phrases, names, proverbs, etc. in addition to the important and serious role in language learning creates a good opportunity to correct training mistakes and prepares them for next stages of education and life.

KEY WORDS: QURAN, CHILD, PRESCHOOL, EDUCATION, INSTITUTIONALIZATION.

INTRODUCTION

The only school, that from human birth (but before birth) until his death has provided life program is Islam. No school in the world other than school of prophets (that all have originated from a divine source) has such property.

An analytical statistics confirms memorizing Quran in childhood not only causes to increase children's IQs but also is very effective in their social and psychological equilibrium. The statistics show that "the encouragement of parents has very effective role in Qur'anology of children; as that 80 percent of Quran memorizers are those who gained the method of memorizing Quran from Quranic schools and the strength of memorizing by encouraging parents in addition, 50 percent of the memorizers are from the families that there are other memorizers among them and it also focuses on the effective role of healthy competition." (Roshanravan, 2004: 29)

It must be said that childhood memories form the basis of the findings of person and till lifetime has dura-

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bility. Imam Ali (AS) said: "Learning in childhood is as image on stone." (Ali ibn Abi Talib, 1986: 125) So it is good to conditions to be provided that human from childhood be familiar with Quranic verses to be gradually adorned with Quranic culture and ethics.

Child's memory is very strong, active and is empty of diverse information and educations. In today's world, willingly or unwillingly in a little time, child's mind will be full of different information and education. Because child has the ability to learn (direct and indirect), imitation and a lot of replication from surroundings environment and his mind acts like magnet. Also, child at this age does not have the ability to recognize strongly and what he learns he gets and records without investigating. (Bolhasani, 2005: 45)

Most people take their child to mosques and cultural centers for learning prayer as well. In a short time, he will be familiar with the right reading, fluent reading, pronunciation of Arabic certain letters, translation of phrases of prayer, rituals and conditions and practical provisions of the prayer, but this child in this education not understands that he must pray in his lifetime; however, due to the importance of educating Quranic themes to children in preschool, with awareness of the needs of children in this age and understanding Quranic stories and verses as well as having expertise in Illustrator could use the simplest non- ornaments forms and pictures with bright and various colors, to teach beautiful Quranic concepts to children.

THE NECESSITY OF QURAN EDUCATION IN PRESCHOOL

Plato believed in about the third century BC: Education during early childhood is a social issue and at this age should separate children from their parents and take them to social institutions for care and education. (Delshad Tehrani, 2003: 287)

"The emergence of pre-school centers is due to research and studies of scholars of education, as Diyuiy in the United States, Klapard in Switzerland, Munte Soori in Italy and Dekroly in Belgium and ...that all criticized traditional education and in modern education based on knowledge of childish were with each other. Also research of Lorner (1873) stated: Exercise and education must be done in specified time and raised the issue of critical period in human development and time of creating is critical it means that child must be educated at the right time when the environmental contacts has the most effect on flourishing of child's innate talents. But when overturn word of Benjamen Bloom (1964) stated that 50% of the intelligence quotient is between birth and 4 years old, 30% between 4 and 8 years old and 20% from 8 to 17 years and the rich and cultural environment has significant effect in increasing the intelligence quotient and by getting older of child, the environment loses its effectiveness, the importance of attention to pre-school education was introduced more than ever." (Shoarinejad, 1995: 77)

These centers have been established with specific purposes, although the main purpose of education is to bring people to nearness of God. But in pre-school education in addition to this purpose, all-round development of children is considered that has a multi-domain and of the main objectives can refer to the development of cognitive skills, physical, linguistic, intellectual, emotional, and social and personality of the children in categories of 2-5 years old. However, pre-school centers, including kindergartens have been established with the primary purpose of children care, but over time it became an educational institution, because the experts found that the initial learning of behaviors and social relations, foreign languages, painting, music and crafts if start from childish, not only has more efficient in learning process, but also child in terms of time advances and important values as honesty, altruism, compassion, independence, compassion, harmony with society to be learned him.

Child should start Holy Quran with purity and chastity to his pure heart to be full of sacred lights of this holy book, so should help our child by combining knowledge and experience and with new methods and using powerful tool, by using grace of God to achieve the goals of pre-school and religious education.

We should consider someone who makes himself the leader of people should train himself before trains others and this statement of Imam Ali (as) in Nahj al-Balagha (Hekmat 73) should be the pattern of its own. "Educate by speech and train by behavior, because someone who train himself is worthy to bow than one who train others"

Creating happy moments in education is possible when students in the learning process not be as a "receptor". If they do not have any mobility and activity in education, the atmosphere of class will be boring and coach will not have a good return. So, it is better teachers involve children in learning process involved and use them at any stage of the education process.

Imam Ali (AS) said: heart of children and adolescents is as a ready land. Vacant land means a land where seed is not inside it and it accepts every seed within it. Such as an impact that a child gets from television programs so the child's heart accepts every seed that plant in it.

Necessity that is felt on starting Quran education from pre-school seems to be as follows:

1. Use of the best time to acquire required skills in the combination of letters and gestures (reading

a year before writing) motive of acquiring these skills in years of primary first grade is completed and then decreases sharply and accuracy and attention of child will be weak to this issue.
2. Create interest and motivation toward learning the Holy Quran and familiarity with it, correct and beautiful reading and pay attention to the meanings of the verses in the best time.
3. Interested of child to listen to the beautiful recitation of the Quran that has constructive role in the development of children's religious spirit.
4. Be interested to read Quran and ask its meaning from adults.
5. Be interested to memorize Quran sura and story verses of holy Quran.
6. Know the position of Quran and respect it.
7. From childhood should participate in Quranic programs and meetings.
8. Consider the Quran the word of God and respectful.
9. Be familiar with some of the customs of reading Quran, such as purity and cleanliness.
10. Be familiar with some of the words of God and stories of the Quran.
11. Provide opportunities for strengthening the religious sense
12. Attention to the blessings of God in the Life and thank blessings
13. Supporting participation spirit in social responsibilities and playin its role through the verses
14. Predict exercises and activities that strengthen the religious behaviors in child through the practice of verses, enjoining the good and forbidding the evil and cooperation and ...
15. Attention to the religious duties in daily planning of child (such as early morning waking, sleeping early at night, pray at the beginning of sleep, etc.)
16. Strengthen the sense of aestheticism and art of child to understand beauties
17. Familiarity with the Holy Quran as the only savior of the human from the darkness through the short verses and hadiths and understandable with childish language
18. We have numerous narrations of the Prophet and Imams (AS) that the best time is childhood. On the other hand, any Muslim likes to his son be able to read the Quran correct and beautiful and gradually by the help of understanding the meaning of the verses becomes familiar with divine lights of the holy book.

Today, specialists of education, to teach concepts and their considered topics benefit of direct teaching methods. According to the researchers, 75 percent of learning is done through the eyes. This implies that among the indirect teaching methods, image teaching is one of the most successful methods. (Ahmadi, 2002: 89)

The topic of learning process and understanding concepts through Quranic education for preschool children should be planning in such a way that suits their emotional and psychological needs and appropriate to the characteristics of his personality. Record childhood concepts and teachings through Quranic methods remains for many years in memory and become like a treasure hidden in the inner layers to adult life. About understanding Quranic contents is such this. (Behjat, 2006: 106)

Prophet (pbuh) said: When the riots of the world as dark night encompass you, you should read the Quran. "(Keleeni, 1990: C 2/599).

The famous hadith indicates that Quranic educations and activities of country should be able to preserve and lead the present and future generation of country against west cultural raid. If not, certainly there are drawbacks that require careful consideration and review and modify applications.

At first glance, multiplicity of Quranic activities of education is forcing us to admire, but when we carefully look at intrinsic mission and developed document and as a results actions and costs done, we see a disturbing situation. As the results and evidences indicate a decline in the status and importance of the Quran in education; So that alarm bells have been sounded and this is serious warning "Qoran lesson in education are closed." (Bagherzadeh Baboli, 2001: 125).

It is true that the complexity of cultural issues and west media attack should not be ignored, but the share of the reasons and factors due to mismanagement in the cultural fields particularly education system cannot be ignored. Because the education system if not be the most important camp of system, at least is one of the most important. It is clear that stability and authority of government and ensure the establishment of country in the present and future has a strong link with status of today's educational system. For this reason, education anywhere in the world is not the place of political and factional because the mission of education has such strength and clarity that is not negotiable and negligible.

THE PURPOSE OF QURAN EDUCATION TO PRESCHOOL CHILDREN

One of the major goals of the Quran education is training, knowing good and bad behaviors and providing behavioral appropriate model. In different societies and cultures, effective educational methods are different. Basically, in every society, there are some indicators for applying educational methods. Tastes, expectations,

intellectual growth, cultural and social allegiances, traditions, customs, beliefs, beliefs and ideology, choice of methods and their application are effective.

Of the most important and best-known educational methods that use in most societies, is the modeling method. Modeling education is also stressed in the Holy Quran, in which Allah has introduced the Prophet (PBUH) as the best model for human. (Ahzab/21)

As Imam Ali (AS) said: "I trained you before your heart is hard and your mind is busy." (Beheshti, 2006: 236/2 V). Child's heart is as empty land that every seed will be grown in it. The purpose of Quran education to children in the first is to create familiarity, and then create knowledge, interest and limit understanding from long contents of Holy Quran for him. (Turkaman, 2000: 78).

In the educational goals of Imam Ali (as) with his children, we read as:

I tried to your education ... while you were a child ... with healthy intentions and honest and clean breathe. "(Nahj al-Balagha, Letter 31).

ATTENTION TO PRESCHOOL CHILDREN AND THEIR EMOTIONAL AND PSYCHOLOGICAL NEEDS

Learning motivation and preoccupations of children at different ages may vary. A child is not small adult. His interests and emotions are quite different. He is independent with independent demands and emotional needs that must be understood them and dealt with it from the same angle. To train and educate children should pay attention to their fragile soul. Childhood is the age of do's and don'ts, only with indirect behavior and training methods can transfer values to children. Visual training methods with storytelling for child has very important role, "because children see senses and touch them and their information is objective-based. Therefore when this is not possible, speaking of these intangible phenomena will remain ineffective and time of children and educational opportunity will be lost. "(Torkaman, 2000: 70).

Curriculums should be tailored to the capabilities of the physical, mental and emotional of child. Providing improper methods, without a doubt creates fatigue and lack of interest in the child and loses its meaning and teaching. In planning for children's education, the child should also be noted patience and energy. In curriculum of children should pay attention to energy of child. Children are often lively and energetic and very limited and short time can be quiet and sit motionless and focus on a topic. "When children can be with coach with all the senses is very limited and only they can consistently between 10 to 15 minutes pay attention to statements and guided activities of coach. Therefore, in planning should respect to children's energy and time on one hand and time condition and duration of the education. "(A group of authors, 2007: 69).

Focus of children can be increased by expressing their interested issues and use of active and exciting methods.

A) The interests of the child

Child enjoys from repeating story, poem or animated films that have emotions and movement extremely. He naturally and with satisfaction listens to music, lyrics and sounds with rhythmic and rhyming. He repeats them and feels happiness and euphoria. He not feels tired from repeating them. Although duration of children's attention is little and short, but he resists about a content that is exciting and blatantly and not notice the passage of time. Mobility, dynamic, motion and mess like this are considered good stimulus that makes motivation and interest of learning in the child. In training programs should be paid attention to feel happiness and joy and contentment and stimulation of children. We take passion and joy, exercise, and exuberance, love of work and activity from him by improper methods and in turn, we give the child a bizarre content and far of mind that have no relation and understanding and experience of it. (Hosseini, 2010: 45)

B) Modeling of children

In the process of forming the personality of children, behavioral patterns have the most roles, as learning forms the basis of human behavior. Indirect learning, implicit or observation are considered the most stable and effective learning and in this regard, the most important role is in responsibility of behavioral patterns. In other words, since imitation and replication is one of the most important methods of learning in children. So the more the behavioral pattern of the children has a more popular character, verbal and nonverbal behaviors are more likely to be considered

The desirable patterns and figures in the Qur'an express and draw God's good traits. Since the awareness is different in different child age, the role of coach in introducing models and creating cognition and understanding child is very important. For this reason, the proposed methods can cause to child pay attention the models or create boredom. (Davoudi, 2007: 66) qThe desirable patterns of Quran in verses such as: "O Prophet you have a great moral" (Ghalam: verse 4) are stated for us. Some of these models are individual and some social. Maybe many Quranic patterns for children not be understandable and generalizable, but in the meantime, we have patterns that child with them has a better emotional relationship and many do's and don'ts as "instance" from them can be stated, such as animals that

in the Holy Quran, this method is used in the best way. Crow in the story of Cain and Abel is an example of it.

METHODS OF QURAN EDUCATION TO PRESCHOOL CHILDREN

In method of Quran education to children already in our country, above all, the schools of the Quran and Darolquran are active. The centers in two different ways, traditional and new teach the Holy Quran. The motivation of officials and educators of all these centers is familiar of children with Qur'an. They attempt to this issue directly or indirectly through training. In some of these centers, traditional conventional methods of education are applied but mostly tried to take advantage of the new methods. Among new methods, gesture methods are more common than the rest of the methods and then memorizing and game method is investigated. In these methods, the imagery is used as a means of teaching aids not as independent and notable method that can be taken into account the educational method for the Holy Quran. (Rahgozar, 1987: 53).

Intimacy with Quran, memorizing Sura in more advanced stages of memorizing Quran, teaching Quranic concepts and practices, expression of Quranic stories are including educational goals for children ages 4 to 7 years old. Although the teachers are asked to teach reading the Quran but since reading the Quran for children of this age is not with correct knowledge of Persian letters, understanding child in this field is short and sometimes it is seen that is incompatible with elementary education and child is suffering from fatigue, apathy, conflict, detachment and pretending to be learning, but does not affect profoundly. Of course, this type of training in the short term loses its effect.

In addition to Darolquran, many journals and publications are trying to pay attention to instill values and religious teachings and concepts of the Holy Quran. These institutions by believing the necessity of this issue that understand Quranic concepts to children with image language is successful, attempt to publish books and magazines and CD's in this regard. (Saeidian, 1984: 56).

THE INFLUENCE OF PRESCHOOL TEACHERS IN THE QURANIC EDUCATION OF CHILDREN

Teacher can be considered the most important element of school; that's why teacher features and principles that are necessary to respect in religious education of students are very sensitive.

Teachers can have model and educational roles to enhance students' understanding to the teachings of the religion. This education will be effective if at all areas of cognitive, emotional and practical to be done. Characteristics of teacher such as religious education, good ethics, match words and deeds, his popularity and acceptance in his influence have a positive impact in students. In addition to being model and training if teacher applies the education principles, it can be said he has done his duty as a teacher. Affection to student makes the religion beautiful and increases his interest and motivation. Preparation and gradual start makes the way smooth for the student. Moderation in all stages of education trainee's progress will be steady and easy. Moderation in all stages of training will facilitate and continue progress of trainee. Preserve freedom of students causes to the teacher acquire a better understanding of him and student not has a sense of forced or compulsory in doing affairs and in the shadow of his intellect blossomed his talents. Honor of student's character will follow self-esteem and prevent self-esteem from temptations of wrong people. Monitoring and continuous care from the student must be present at all stages to the efforts of teacher and student be succeed. (Marefat, 2000: 98).

Cooperation and coordination of all teachers and using the principles of training is essential. Coordination and agreed of all teachers while approving being right of Islam religion causes remembering and repeating teachings as well. If the teachers do not coordinate with each other in the religious education of pre-school learners or not apply educational principles properly, it is hated by students from religion.

Textbooks are as a teacher. Providing models, the use of diverse contents and opinions of characters and topics that pre-primary learners are most interested in it, provided that is towards religious education will be rich and useful. In textbooks, ideological education, moral and religious should be done according to aspects of human to lead to religious education. Conflict in the values of textbooks, lack of attention to the books of religious teachings, texts mismatch with the interests of students, lack of dimensions and principles of education and lack of attention to cognitive, emotional and student behavior will damage religious education of students. (Pourkhaleghi Chatrudi, 1992: 15)

Peers and friends through providing model, reward and punishment, assessment of behaviors of members and exchange of information affect the values of each other. Students who are institutionalized religious values help to religious education of other students and students who their values are anti-religious causes damage to the religious education of other students. Conflict in teachings of teacher, books and friends will cause damage to religious education of students. The conflict in training method of school and family and other social institutions causes confusion of student and ultimately damage to his religious education.

RESULTS

In the Quranic education in pre-school should be noted that the appropriate technique and technology can be used to the learning process be easy and attractive and happy.

Education of the fundamental skills and necessary for child only through providing appropriate educational opportunities and consistent with his spirit of curiosity and exploratory is feasible.

The most important factor in the failure of plans and programs including Quran curriculum during the preschool is lack of full implementation of the predicted programs. In Quran curriculum, three important factors shall be implemented within each other to the targets to be met:

1. Teachers must be familiar with the size and components of the Quran curriculum and gain the skills needed in Quran education.
2. Learning tools such as educational CDs, tapes of Quranic education of teacher and child, teaching guide book of teacher, tape recorders should be provided to education is not disrupted.
3. It should be pat attention to the role of family in education. More than one-fifth of the education is in responsibility of family. Cases that families should pay attention about providing the necessary fields of Qur'an education is in the introduction of each students' textbooks.

Parents and teachers can provide the field of cognitive growth of child by expressing Qur'anic stories, and by providing informative and interesting stories build their mental model with spiritual orientations and provide the field of their interest and motivation to religious issues, in this case a kind of enthusiasm is created in them and therefore child and adolescents feel satisfaction from performing religious acts that the consent cause the internalization of moral action in them.

SUGGESTIONS

1. Using devout teachers and aware of religious foundations
2. Holding meetings of parents and teachers and invite counselors to teach how to religious education to families.
3. Monitoring ethics, behaviors and practices of relevant training and holding meetings with them to remind, remind and evaluate the performance of them
4. Attention to the existence dimensions of human and use of these dimensions in ideological education, moral and religious of students.
5. Use of the story and providing model in order to better understand of religious teachings.
6. Grouping students to increase their authority and self-esteem.

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The effectiveness of titanium dioxide in conventional and nano scales on the optical properties of paper: brightness, yellowness and opacity

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ABSTRACT

Today the use of catalysts activated by light (photo catalysts) has been very common. One of the photo catalysts has been used in the industry is titanium dioxide. In this study, the effectiveness of titanium dioxide use in the form of nano-particles and conventional particles on the optical properties of paper was examined. Adding titanium dioxide was conducted in two methods of injection in paper pulp and coating on paper surface. Titanium dioxide in different percentages of 1% and 2% and 3%, as well as nano-titanium was used and in the same way. In this study, optical tests include brightness, yellowness and opacity. The paper brightness in terms of material percentage showed that paper brightness with the use of 1% material has the lowest brightness and on 2% and 3% has the highest brightness equally. Also, the production of paper using injection has the highest amount of brightness. The results showed that the highest amount of yellowness belonged to untapped papers that nano-titanium 1% through injection and the lowest amount of yellowness belonged to recycled papers that3% titanium dioxide using coating method has been applied on it. Yellowness of paper in terms of the material using Duncan test showed that the production of paper using titanium dioxide has the least amount of yellowness and the production of paper using nano-Titanium has the highest amount of yellowing. The yellowness in terms of percentage of material showed that the production of paper using the3% of material has the least amount of yellowness and using materials1% has the highest yellowing. The production of paper without the use of materials and using the injection method has the least amount of yellownessand the production of paper using the kind of coating (covering) has the highest amount of yellowing. Also, the highest opacity is related to recycled papers that have received nano-titanium 1% by coating method and the lowest amount of opacity is related to untapped papers titanium which have received dioxide injection 3% using injection method. The paper opacity using Duncan test showed the production of paper using 2 and 3 percent materials has the lowest amount of opacity and the production of paper using 1% materials has the highest amount of opacity. The paper opacity in terms of methods applying materials, in the papers in which materials have been applied by injection has the least amount of opacity.

KEY WORDS: TITANIUM DIOXIDE, BRIGHTNESS, YELLOWNESS, PAPER, OPACITY

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INTRODUCTION

Paper pulp is one of the products of wood and non-wood products mainly used in paper making industries. The main applications of paper pulp are in the manufacture of paper, cardboard and cellulose derivatives. Paper pulp used in paper making industries can both be untapped pulp and recycled pulp. In the developed countries recycling industry and use of recycled products in is considered as an indicator of development (1). The recycling industry besides helps to conserve natural resources and protect the environment will also prevent the outflow of currency. Waste paper is a valuable raw material for making paper. Paper is considered important in today's world. So that it can be said one of ways to recognize the Progressive nations of world in terms of culture science, technology and economy is per capita consumption of paper in that community (2).

The fibers during the first papermaking operation are damaged and during the drying on the paper machine the phenomenon of ossification on the surface of them takes place. So that in remaking of paper pulp the properties of fibers are changed and accompanied with more fines produce. So, all recycled fibers whether those that are derived from plant products and whether those that have been used and published behave very different from untapped fibers (3). Also, waste papers have non-fibrous materials that some of them can cause problems during production. In the use of printing and writing paper and industrial paper, the industrial properties, surface and light properties are very important. The surface properties, for example, the printing, smoothness, moisture taking, brightness and optical properties of paper, including yellowness, brightness and opacity in its various uses are more important.

Sometimes to improve these properties, the fillers and additives are used. These materials are added to the liquids and solids to increase or decrease one or more variables and lead to quality increase and reduce the cost of material cost and changes in the concentration. One of these materials is titanium dioxide that is used to control opacity of paper due to the high refractive index and also to reduce the amount of ink absorption to the amount of 2% to 4% are added to other materials. The main use of titanium in the industries is in two forms of metal and titanium dioxide that its main usage is in the form of titanium dioxide (4). Photocatalyst formed with two parts of "Photo" and "catalyst", which the photo represents the photosynthesis and catalyst represents the process that increases the chemical reaction speed for the participating materials without stopping the reaction.

Due to optical and electrical properties, low price, high photo catalytic activity, chemical stability, non-toxicity, abundance and availability and the lack of erosion and corrosion in the face of light, the Titania is used as a common photo catalyst (5). The titanium dioxide is known by titanium oxide IV or Titania has the chemical formula of TiO2. All properties of titanium dioxide exist in the nano-titanium dioxide, too. With this difference that its particle size is much smaller and hence has more ability and effectiveness because due to the small particle size, the surface area and efficiency are increased. When the TiO2 particle size is reduced to nano-scale, the photo catalytic activity can be increased, because the effective surface area is increased (6). This material is one of the most important metal oxides that available in the three forms of rutile crystal, anatase and brookite (7). In this study, the model 10 nm anatase has been used. In Figure 1 (a-c) structural phases of anatase, rutile and brookite are observed.

Nano-structures of titanium dioxide have unique properties such as anti-UV, anti-bacteria and fungi, eliminating air pollutants, excretion of water, decompo-

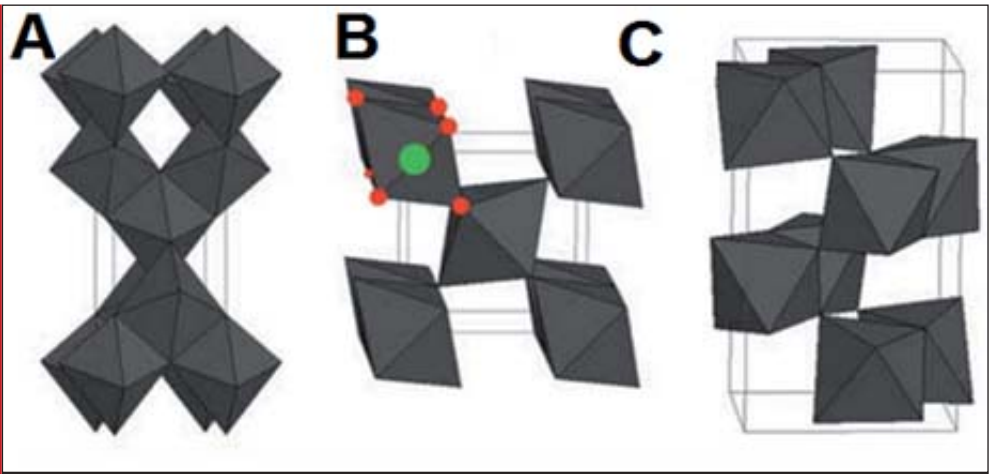

FIGURE 1. Crystal structures A) anatase, B) rutile C) brookite (8)

sition stains and dirt, etc. (9 and 10). In recent years due to the development of nanotechnology, the use of nano particles of titanium dioxide due to useful and efficient features, as well as effectiveness of these nano particles is increasing and each year, more research is done relating its properties and applications. Zaha and colleagues in 2007, examined titanium dioxide effect on the optical properties of organic-mineral polymers that results showed increase in sensitivity to light in polymers (11). Karlsson and colleagues also in 2016 studied the effect of titanium dioxide on the optical properties of glass.

The results showed the effect of this material in increasing the refractive index and light scattering and Auerbach energy loss (12). Ichiura and Taoka in 2002 with the examination of titanium dioxide effect on ink paper came to the conclusion that the papers which using specific technique in paper-making have had TiO2 and zeolite are used for removing toluene and formaldehyde in the paper (13). Titanium dioxide is used in paper making for more bleaching and as a effective filler. Ordinary and nano-sized titanium dioxide effect on the properties of papers made from untapped and recycled pulps has not been yet fully reviewed and in this regard a significant research gap has been created that justifies the need for this research.

The aim of this study is the examination of titanium dioxide and nano-titanium dioxide in two forms of injection into the paper pulp and coating on the surface of paper and finally measuring the optical properties of the paper.

MATERIALS AND METHODS

The pulp samples underlying study have been provided from the type of DIP pulp and untapped pulp from papermaking factory named Latif located in Alborz Province -industrial park of Hashtgerd. It is worth mentioning that recycled pulp included 50% waste paper (office papers) and 50% straw (printing office waste) and untapped pulp included softwood fiber of long fibers. The dryness percentage of primary untapped pulp was 50. Dryness percentage of primary recycled pulp was 10. Handmade paper-making materials included untapped pulp and recycled pulp samples that the untapped pulp was refined in the Chooka factory and recycled pulp after determination of the dryness and without refining was ready to use. In this method, a total of 14 treatments were considered.

Additives in this research included nano-titanium dioxide anatase 10 nm with a purity of 99% -made in Japan and was imported by company of Nano Pars Lima. Titanium dioxide was the product of company Merck of Germany and zeolite also was the product of company Merck of Germany. The used starch was cationic corn starch PH = 6/5 and moisture of 7/3% and viscosity of this starch with concentration of 6% is equal to 325CPS. To add these materials according to table 1-3 based on the dry weight of paper in different percentages was weighed and on the basis of each treatment was dissolved in water at c27°. Then, the fibers were added to water suspensions and were stirred for 5 minutes to materials are absorbed in cellulosic fibers.

The preparation of handmade papers was performed using the Hand sheet maker located in the papermaking section of Science and Technology Laboratory of Wood and Paper of Science and Research Branch of Islamic Azad University of Tehran (Sheikh Bahai Laboratory complexes). From each of the treatments, according to TAPPI standard regulations Number 205T, handmade paper was made. For making paper according to above standard the 1/4 gram of dry pulp was weighed. To better separating and without destroying fibers the device Disintegrator located i Science and Technology Laboratory of Wood and Paper of Science and Research Branch of Islamic Azad University of Tehran (Sheikh Bahai Laboratory complexes)- model DCG = 2000 manufactured by Regmed company of Brazil was used.

In the laboratory of Research Center of wood and paper of Mazandaran the samples were analyzed separately by ELREPHO and computer. This device measures the opacity, yellowness and brightness. Finally, the statistical analysis of pulp in terms of different characteristics of papers prepared on the base of factorial experiment based on completely randomized design was done by SPSS statistical software. After formation of variance analysis table, according to the significance level, the mean comparison was done by Duncan method.

RESULTS

The mean of brightness, yellowness and opacity indices of paper divided by the type of untapped or recycled pulp in the control sample has been presented in Figure 2.

Based on Figure 2, in the control sample the mean of brightness of paper material by the type recycled pulp is 84/07. However, in the paper with untapped pulp of this index is equal to 72/97. Also, the mean of yellowness of papers tested by the type of recycled and untapped pulp is -7/20 and 7/30, respectively. The results of the data analysis show that the opacity of paper obtained from recycled pulp is 89/80 and this index in the paper obtained from untapped pulp is equal to 69/40.

THE RESULTS OF THE INVESTIGATION OF PAPER BRIGHTNESS

According to statistical surveys, among the papers that nano-materials have been used for their brightness, the

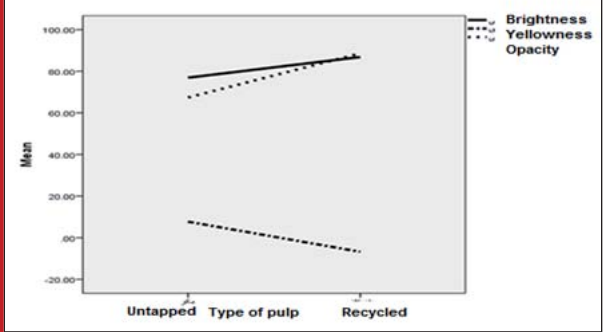

FIGURE 2. The mean of brightness, yellowness and opacity indices of paper by the type of pulp in control sample

the paper brightness (P=0/000 and f=12/822), as well as the type of pulp used has the effect of 95/4 on lightness of paper (P=0/000 and F=995/179). About the material applying also the method for applying material has effect of 23/7 on brightness of paper. It should be noted that in interaction among papermaking variables only the interaction between percentage and type of pulp on paper brightness has had the effect of 14/6. In order to discover the difference between the manufactured paper brightness, divided by studied variables, the Duncan test was used.

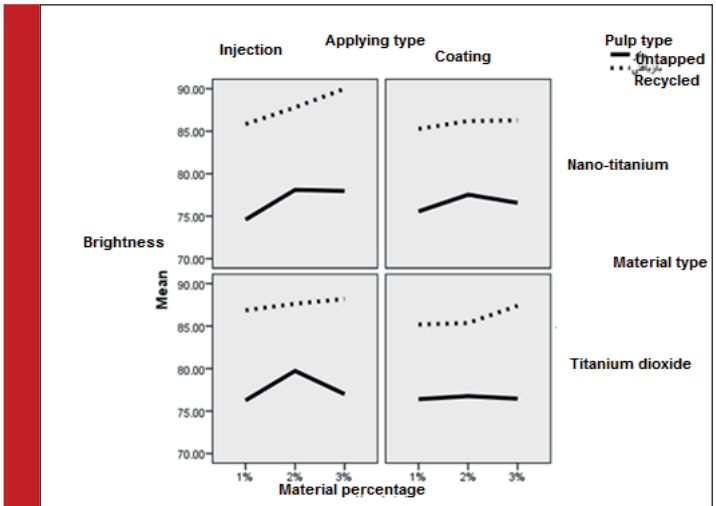

FIGURE 3. The mean of brightness by the type of paper, percentage, pulp type and applying method of materials

most brightness belonged to recycled papers that nano-titanium 3% has been applied on it by injection method (mean = 90 and std= 5/803) and also clearly seen the lowest brightness belonged to untapped papers that nano-titanium 1% method has been used to it by injection method (mean = 74/60 and std=1/652). The mean of brightness of paper divided by type, percentage, pulp type and applying method of materials are presented in Figure 3.

The variance analysis of papermaking variables effect on a the paper brightness, Duncan test results in relation to the paper brightness in terms of the percentage of used materials and Duncan test results in relation to brightness of paper on kind of material applying is presented in Tables 1 to 3.

According to Table 1, using nano-titanium or titanium dioxide has no statistically significant effect on the brightness of paper (P=0/674 and F=0/180). The percentage of used materials is almost has 34/8 effect on

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According to Duncan's test results in relation to brightness in terms of materials percentage (Table 3) it was seen that the production of paper using 1% material with the mean of 80/75 has the lowest brightness and the production of paper using 2 and 3 percent material roughly has the same size and the most brightness.

According to Duncan's test results in relation to brightness in terms of material applying method, the production of paper without the use of materials with mean of 78/52 has the lowest brightness and production of paper using injection applying with the mean of 82/50 has the most amount of brightness.

THE RESULTS OF INVESTIGATION OF YELLOWNESS

According to statistical surveys conducted among the papers in which nano-titanium materials have been used

Table 1: Variance analysis of papermaking variables on the paper brightness

Changes source	Sum of squares	Degree of freedom	Mean Square	F value	Significance level	Effect size	statistical power
Pulp type	1772/109	1	1772/109	995/179	0/000	0/954	1
Material type	0/320	1	0/320	0/180	0/674	0/004	070
Material percentage	45/663	2	22/832	12/822	0/000	0/348	0/995
Applying type	28/125	1	28/125	15/794	0/000	0/248	0/973
Pulp type×material type	1/125	1	1/125	0/632	0/431	0/013	0/122
Pulp type×applying type	15/421	2	7/711	4/330	0/019	0/153	0/725
material type×material percentage type	4/909	1	4/909	2/757	0/103	0/054	0/370
material type×material percentage	5/320	2	2/660	1/494	0/235	0/059	0/303
material type×applying type	0/180	1	0/180	0/101	0/752	0/002	0/061
material percentage×applying type	8/573	2	4/287	2/407	0/101	0/091	0/462
Pulp×material×percentage	1/123	2	0/562	0/315	0/731	0/013	0/097
Pulp×material×applying	1/561	1	1/561	0/876	0/354	0/018	0/151
Pulp× percentage ×applying	1/834	2	0/917	0/515	0/601	0/021	0/130
material× percentage ×applying	10/163	2	5/082	2/854	0/067	0/106	0/534
Pulp× material×percentage ×applying	1/194	2	0/597	0/335	0/717	0/014	0/101
Error	85/473	48	1/781				
Total	484638/220	72					
Corrected total	1983/095	71					

Table 2: Duncan test results in relation to the paper brightness in terms of the percentage of used materials

Classifying with confidence in error level of 0/05			Material percentage
3	2	1	
		80/75	1%
	39/82		2%
48/82			3%

Table 3: Duncan test results in relation to paper brightness in terms of applying method of material

Classifying with confidence in error level of 0/05			Material applying method
3	2	1	
		78/52	Lack of use
	81/25		Coating
82/50			Injection

for their yellowness, the most amount of yellowness belonged to untapped papers that nano-titanium 1% has been applied using injection method on it (std=0/058 and mean=9/93) and the lowest amount of yellowness belonged to recycled papers that titanium dioxide 1% using coating method has been applied on it (std=0/100 and mean=-7/50).

Line graph of the yellowness of the paper by the type of material, percentage of materials, pulp type and applying method of it are shown in Figure 4.

The variance analysis of papermaking variables effect on a the paper yellowness, Duncan test results in relation to the paper yellowness in terms of the materials type, Duncan test results in relation to yellowness in terms of percentage of material and Duncan test results in relation to yellowness in terms of material applying type are presented in Tables 4 to 7.

The results of the data analysis suggest that the type of material used in paper has the effect 48/7 percent on yellowness (P=0/000 and F=45/628). In relation to the percentage of used materials, the percentage of used materials has the effect of 65/5 percent on the yellowness of paper (P=0/000 and F=48/656), also the type of used pulp has 99/9 percent effect on yellowness of paper (P=0/000 and F=36610/4). About the material applying method also material applying method has 81/3 percent effect on the yellowness of paper. It should be noted that in interaction among papermaking variables only

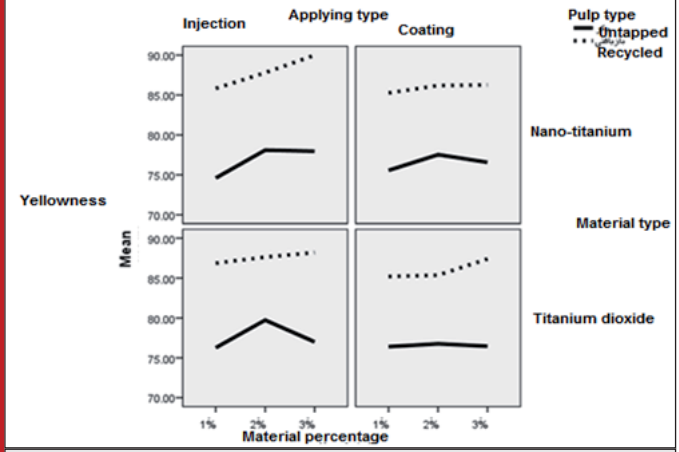

FIGURE 4. The mean of yellowness by the type, percentage, pulp type and materials applying method

Table 4: Variance analysis of papermaking variables on the paper yellowness

Changes source	Sum of squares	Degree of freedom	Mean Square	F value	Significance level	Effect size	statistical power
Pulp type	909/3772	1	909/3772	4/36610	000/0	999/0	1
Material type	702/4	1	702/4	628/45	000/0	487/0	1
Material percentage	410/9	2	705/4	656/45	000/0	655/0	1
Applying type	561/21	1	561/21	213/209	000/0	813/0	1
Pulp type×material type	027/0	1	027/0	264/0	610/0	005/0	080/0
Pulp type×applying type	270/0	2	135/0	311/1	279/0	052/0	270/0
material type×material percentage type	556/5	1	556/5	908/53	000/0	629/0	1
material type×material percentage	025/1	2	513/0	974/4	011/0	172/0	787/0
material type×applying type	720/0	1	720/0	987/6	011/0	127/0	736/0
material percentage×applying type	069/4	2	034/2	740/19	000/0	451/0	1
Pulp×material×percentage	375/0	2	188/0	821/1	173/0	071/0	362/0
Pulp×material×applying	201/0	1	201/0	946/1	169/0	039/0	277/0
Pulp× percentage ×applying	135/1	2	568/0	508/5	007/0	187/0	829/0
material× percentage ×applying	543/0	2	271/0	632/2	082/0	099/0	499/0
Pulp× material×percentage ×applying	237/1	2	618/0	001/6	005/0	200/0	861/0
Error	947/4	48	103/0				
Total	180/3844	72					
Corrected total	686/3828	71					

the interactions of materials type and applying method (12/7 percent), the interaction of percentage and type of materials (45/1 percent), the interaction among pulp type, percentage and applying method have had 20 percent effect. In order to discover the difference between the manufactured paper yellowness, divided by studied variables, the Duncan test was used.

According to the results of Table 5, the production of paper using titanium dioxide has the least amount of yellowness and the production of paper using nano-titanium with a mean of 0/72 has the highest yellowness.

According to Duncan's test results in relation to yellowness in terms of materials percentage it was seen that the production of paper without the use of materials and

Table 5: Duncan test results in relation to the paper yellowness in terms of the type of used materials

Classifying with confidence in error level of 0/05			Materials type
3	2	1	
		0/05	Lack of use
	0/21		Titanium dioxide
0/720			Nano-titanium

Table 6: Duncan test results in relation to the paper yellowness in terms of the materials percentage

Classifying with confidence in error level of 0/05			Material percentage
3	2	1	
		0/12	3%
	31/0		2%
96/0			1%

using materials 3% roughly in same size and the lowest amount of yellowness and production of paper by materials 1% with a mean of 0/96 has the most amount of yellowness.

According to the results of Table 7, Production of paper without the use of materials and using injection method has almost equally and the least amount of yellowing and the production of paper using the coverage (coating) applying method have the highest yellowness.

THE RESULTS OF INVESTIGATION OF PAPER OPACITY

Based on statistical analysis, among the papers in which nano-titanium materials have been used for their opacity,

Table 7: Duncan test results in relation to the paper yellowness in terms of the materials applying method

Classifying with confidence in error level of 0/05		Materials applying method
2	1	
	-0/08	injection
	0/05	Lack of use
1/01		Coating

the most amount of opacity belonged to recycled papers that nano-titanium 1% has been applied using coating (covering) method on it (std=0/608 and mean=90/80) and the lowest amount of opacity belonged to untapped papers that titanium dioxide 3% using injection method has been applied on it (std=1/212 and mean64/40). Line graph of the opacity of the paper by the type of material, percentage of materials, pulp type and applying method of it are shown in Figure 5.

The variance analysis of papermaking variables effect on a the paper opacity, Duncan test results in relation to the paper opacity in terms of the used materials percentage and Duncan test results in relation to paper opacity in terms of materials applying type (method) are presented in Tables 8 to 10.

The results of the data analysis suggest that apart from the nano-titanium and/or titanium dioxide that has no statistically significant effect on opacity (P=0/373 and F=0/810), the percentage of material used almost has the effect 46/4 percent on paper opacity (P=0/000 and F=20/804). Also the type of used pulp has 99/3 percent effect on opacity of paper (P=0/000 and F=6847/18). About the material applying method also material applying method has 25/6 percent effect on the

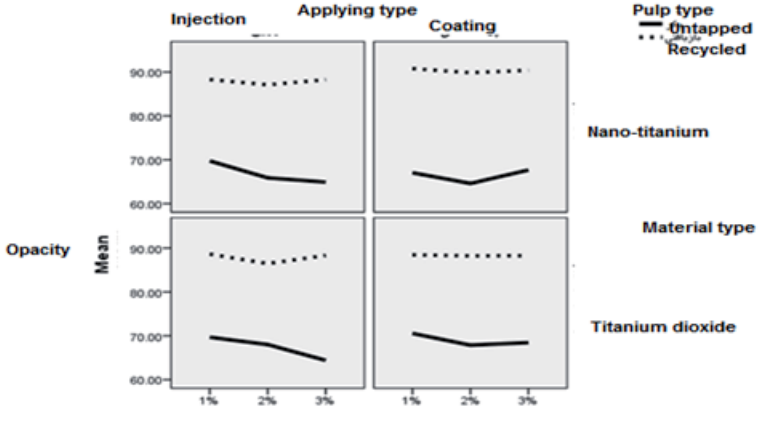

FIGURE 5. The mean of paper opacity by type, percentage, pulp type and materials applying method

Table 8: Variance analysis of papermaking variables on the paper opacity

Changes source	Sum of squares	Degree of freedom	Mean Square	F value	Significance level	Effect size	statistical power
Pulp type	04/8092	1	04/8092	18/6847	000/0	993/0	1
Material type	957/0	1	957/0	810/0	373/0	017/0	143/0
Material percentage	174/49	2	587/24	804/20	000/0	464/0	1
Applying type	531/19	1	531/19	527/16	000/0	256/0	978/0
Pulp type×material type	773/29	1	773/29	193/25	000/0	344/0	998/0
Pulp type×applying type	354/21	2	677/10	034/9	000/0	273/0	966/0
material type×material percentage type	600/3	1	600/3	046/3	087/0	060/0	402/0
material type×material percentage	710/4	2	355/2	993/1	147/0	077/0	392/0
material type×applying type	001/0	1	001/0	001/0	974/0	000/0	050/0
material percentage×applying type	726/13	2	863/6	807/5	006/0	195/0	849/0
Pulp×material×percentage	380/5	2	690/2	276/2	114/0	087/0	441/0
Pulp×material×applying	503/17	1	503/17	811/14	000/0	236/0	965/0
Pulp× percentage ×applying	514/24	2	257/12	371/10	000/0	302/0	983/0
material× percentage ×applying	636/0	2	318/0	269/0	765/0	011/0	090/0
Pulp× material×percentage ×applying	280/3	2	640/1	388/1	259/0	055/0	284/0
Error	727/56	48	182/1				
Total	910/446312	72					
Corrected total	907/8342	71					

Table 9: Duncan test results in relation to the paper opacity in terms of the materials percentage

Classifying with confidence in error level of 0/05		Material percentage
3	1	
	77/25	2%
	77/58	3%
79/16		1%

Table 10: Duncan test results in relation to the paper opacity in terms of the materials applying method

Classifying with confidence in error level of 0/05			Materials applying method
3	2	1	
		77/48	injection
	78/51		Coating (coverage)
79/60			Lack of use

opacity of paper. It should be noted that in interaction among papermaking variables the interactions between pulp and materials (34/4 percent), interaction between the pulp and material percentage (27/3 percent), the interaction between percentage and applying method (19/5 percent), the interaction of percentage and type of materials (45/1 percent), the interaction among pulp type, materials and applying method (23/6 percent) and the interaction among pulp, percentage and applying method have had 30/2 percent effect on paper opacity. In order to discover the difference between the manufactured paper opacity, divided by studied variables, the Duncan test was used.

According to Duncan's test results in relation to opacity in terms of materials percentage it was seen that the production of paper using materials 2% and 3% roughly in same size and the lowest amount of opacity and production of paper by materials 1% has the most amount of opacity.

According to the results of Table 10 in relation to paper opacity in terms of applying method, production of paper without the use of materials with a mean of 79/60 has the most amount of opacity and the production of paper using the injection applying method has the lowest amount of opacity.

DISCUSSION AND CONCLUSION

In this research the effect of nano-titanium dioxide and titanium dioxide on the brightness, opacity and yellowness factor has been investigated. The results showed that the level of brightness in control sample in paper with recycled pulp is more than that in the control sample with untapped pulp. The yellowness amount of paper in control samples with recycled pulp is much less (negative amount) than this amount in control samples with untapped pulp. The paper brightness in paper with recycled pulp in which nano-titanium 3% using injection method has been applied on it is the greatest and in the paper with untapped pulp in which the Nano-Titanium 1% using injection method has been applied on it, has the lowest values.

The Duncan test showed that the production of paper using 1% materials has the lowest brightness and the production of paper using 2 and 2 percent have the most amount of brightness. And also it was showed a paper with injection applying method has the highest amount of brightness. The results showed that yellowness value in the samples of untapped paper in which titanium dioxide 1% using injection method has been applied on it has the most value and the yellowness in the samples of recycled paper in which titanium dioxide 3% using coating method has been applied on it, has the lowest amount (value).

The variance analysis test results of papermaking variables effect on paper yellowness suggest that the material type is effective on paper yellowness. The percentage of used materials and pulp type has the most effect (99/9%) on paper yellowness. The material applying method is important in paper yellowness. Duncan test results also showed that the production of paper using titanium dioxide has the least amount of yellowness and using Nano-Titanium has the highest yellowness. As well as production of paper using 1% materials has the highest rates of yellowness. The production of paper using injection method has the least amount of yellowness and the production of paper using the coating has the highest amount of yellowness. In relation to opacity, the maximum amount of opacity belonged to recycled papers in which nano-titanium 1% using coating method has been applied on it and the least amount of opacity belonged to untapped papers in which titanium dioxide 3% using injection method has been applied on it. Duncan test also showed that the production of paper with 2 and 3 percent materials has the lowest opacity, as well as the production of paper using injection method has the lowest amount of opacity. Production of paper without the use of materials (control sample) and paper with 1% materials have of the highest amount of opacity.

In general, the brightness in the paper with recycled pulp is more, in the use of nano-titanium is more, with increasing percentage of materials is more and in the injection applying method, this value again is more. The yellowness in paper with recycled pulp is less, in the use of nano-titanium is more and by increasing the material percentage is reduce, as well as in coating (covering) applying method this value is more. All variables have affect but pulp type and applying method are most effective.

The opacity in paper is more in the recycled paper and in coating applying method is more. Among intended variables only the particles size has no significant effect and the type of pulp most effective on the opacity of the paper. The use of nano-titanium economically because of the high cost outweighs isn't affordable because in the use of nano-titanium and titanium dioxide there is no significant difference.Considering the intended paper in industry and more or less need to use each of brightness and opacity and yellowness indices, according to obtained results the recycled pulp or untapped pulp and injection or coating (covering) applying methods can be used.

RECOMMENDATIONS

1. The nano-titanium and titanium dioxide effect on the surface properties of the paper is examined.
2. Effect of nano-particles of silver and gold with the effect of nano-titanium on optical properties of paper to be compared.
3. The effect of nano-particles on Anti-uv feature of paper to be reviewed.
4. The effect of titanium dioxide on the properties of printing paper to be reviewed.
5. Effect of fillers on the strength of liner and jag cardboard to be investigated.

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The effect of breathing exercises on spirometric parameters in patients with asthma visiting the allergy and asthma clinics of Imam Khomeini hospital in Ahwaz, Iran

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ABSTRACT

Asthma is one of the most common respiratory system disorders that is characterized by apnea attacks with wheezing in the chest as a result of reversible airways obstruction. Breathing exercises are one of the important part of pulmonary patients' rehabilitations. This research was performed to investigate the effect of breathing exercises on spirometric parameters and quality of life of patients with asthma. This was a semi-experimental research with a two-group design performed on 60 patients with asthma visiting the Imam Khomeini hospital in Ahvaz. The samples were randomly divided into two control and experimental groups each consisting of 30 members. After receiving consent, the experimental group performed the breathing exercises for 20 minutes every day for 4 weeks and the control group did not receive any exercises. Spirometric parameters, were measured by spirometry in a pre and post-experiment manner. The data were analyzed using SPSS23.The acquired information showed that the data in the two groups did not significantly differ in terms of gender, age, marital status, education, living style and job distribution (P>0.05). The spirometric parameters (FEV1, FVC, FEV1, FEF25-75%) in the two groups were compared before and after intervention and the results showed a significant difference (P<0.05) between them before and after the intervention. It seems that breathing exercises are important as a part of care plans along with pharmacotherapy in the treatment planning of asthma patients.

KEY WORDS: ASTHMA, SPIROMETRIC PARAMETERS, QUALITY

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INTRODUCTION

Chronic pulmonary diseases are of the most common causes of disability and mortality in human societies (1). Among many chronic diseases, asthma is one of the most common respiratory system disorders. This diseases causes the inflammation, irritation and spasm of the airways of the lungs. This spasm causes clinical symptoms such as wheezing, heavy chest and coughing (2). Chronic diseases influence the physical interaction of patients with their society and environment (3). Today, more than 300 million people suffer from asthma and this number is predicted to increase to 400 million by 2020(4). The mortality rate of asthma is increasing in most countries. In Iran, based on the statistics of the Ministry of Health and Medical Education in 2008, 10% of the total population equaling 5.6-6.5 million people suffered from asthma (5). A study performed in 2003 in the USA, showed that the cost of severe asthma patients' care is 12.813 dollars a year (6).

Based on the weight of asthma and the special cares it requires including hospitalization, emergency unit examinations, immediate medical examinations and drug costs, this diseases is currently considered as a main health problem in every society. For the proper management of asthma, there are several different considerations of other diseases including environmental control, family cooperation and proper use of drugs and all the factors mentioned, require patient's acceptance which depends on direct training (7). According to the instructions of asthma management, patient training in adult patients with asthma is fundamental. The main emphasis in asthma patients' training, is increased information about asthma, promotion of following the treatment and improved health results (8).

Many factors influence the increased spread of asthma with the main factor being a lack of knowledge in asthma patients, therefore, attention to these patients is really important (9). Asthma changes the family and social life of those who suffer from it (5) and limits their physical activities which causes mental problems such as anxiety, depression and sadness. Therefore, asthma influences various dimensions of patients' life (10). One known way to treat asthma is rehabilitation (11). Rehabilitation programs, play a complementary role for the medical treatment of patients and significantly improves them. Physical exercises, are an important part of pulmonary rehabilitation (12).

Moghadasi et al. showed that doing physical exercises (in six groups of mild, moderated exercises, upper and lower parts, leg and arm exercises, shoulder exercises and aerobic exercises consisting of the three stages of warming up, exercising and cooling off) is effective at improving the pulmonary function of asthma patients and decreases the disease's symptoms such as chest wheezing, shortness of breath, heavy chest, and coughing (13). In a study performed by Gallfoss et al. (1999) in the USA with the purpose of investigating the effect of training to asthma patients and chronic pulmonary diseases and its relationship with quality of life, it was revealed that patient training had a significant effect on improving the physical body as well as quality of life of asthma patients (14). Ram & Robinson (2000) in England, performed a study to investigate the effect of physical training on the function of the lungs, preparedness to do aerobic exercises, clinical status and quality of life of asthma patients. The research results showed that physical exercises, increase the threshold of aerobic exercises and decreased minute ventilation during mild and moderate exercises. Therefore, pulmonary function gets improved and asthma symptoms get decreased and physical function and quality of life of patients will be improved (15). Freitas et al. (2013) performed a study with the title, investigating the effect of breathing exercises on adult asthma patients, and their results showed that even if individual studies report the positive effects of breathing exercises on asthma, still no reliable result showing the effect of breathing exercises on asthma patients will exist.

Based on the issues mentioned and given that the effect of breathing exercises on asthma patients is still ambiguous, the above study was performed to investigate the effect of breathing exercises on the spirometric parameters of asthma patients, and it is hoped that the findings of this study, can be useful for creating the foundations for the design and implementation of nursing interventions and determining effective countermeasures.

MATERIALS AND METHODS

This was a semi-experimental research with a two-group design and pre and post-test and in both groups, experiment and control were performed. The individuals under study, were asthma patients visiting the asthma and allergy clinic of Imam Khomeini Hospital in Ahvaz, who met the research units and were randomly selected. The study inclusion conditions included an age range of 25-50, asthma diagnosis by a specialized physician, a minimum of one year duration of the asthma since diagnosis, willingness to cooperate in the study. patients with cardiovascular and neuromuscular problems or patients with chronic diseases (cancer and diabetes) as well as patients with other respiratory illnesses, and patients with communicational problems and patients who did not perform the breathing exercises for 3 or 4 days consecutive days, were excluded from the study.

Therefore, 60 patients were selected subsequently, and randomly divided into the two groups of experimental and control. The study has ethical approval from the ethics committee of the Ahvaz University of Medical Sciences, and written consents were obtained from all the patients for inclusion in the study. Spirometry was used to evaluate the pulmonary function of the patients before and after intervention. Each experimental-group patient individually received breathing exercises training in the spirometry room in the allergy and asthma clinic of the Imam Khomeini hospital in Ahwaz.

Printed breathing exercises instructions were also given to the patients for use at home. To ensure the continuity of training by the patients, the patients were phoned twice a week and the phone number of the researcher was given to the patients of the experimental group for use when a question regarding the breathing exercises emerged. The patients performed the exercises every day for 20 minutes for 4 weeks, and check the function checklist for the 4 weeks every day after performing the breathing exercises according to the corresponding day, and if they avoided training in a day, they didn't check the checklist. The control group did not receive any training.

The breathing exercises include abdominal breathing, breathing sound of A and I as well as rounded-lip breathing. The procedure was like this: in abdominal breathing, we ask the patient to lie down on the ground relaxed and pull his knees up and place his feet on the ground with 20 to 30cm of distance between them and place the hands straightly on the ground next to the body. Then the patient was told to slowly breathe through the nose and direct the air towards the bottom of the stomach, this slowly moves the stomach forwards. It should be noted that in this status, the chest of the patient must not move forward and be filled with air.

Then, the breath was held and then the patient is told to slowly exhale such that the stomach is slowly pulled inwards and follows right down to the bottom of the chest, and then the next breath is immediately started. The patient was told to do this 2 or 3 times and then let the natural and relaxed breathing take place for a minute. And then immediately resume the exercise 2 or 3 times. It should be noted that between each period, there is one minute of natural breathing. In breathing the sound of A and I, the entire body must be relaxed and free and the vocal cords must be relaxed. The patient is told to inhale slowly through the nose, as if smelling something pleasant while choosing between A or I and concentrate on it and inhale it and hold the breath for 3 seconds. And then at exhale, the patient is told to try to choose a style that he can exhale in a very excellent manner and keep the exhale as long as possible.

To pronounce the sound of I, the lips are open, the face is friendly, and the tip of the tongue is pressed against to the back of the incisors. The pronunciation of the sound of A is like this: the face and mouth are neutral and the tongue presses against the back of incisors and during the pronunciation, the mouth is properly opened. For the rounded-lip pronunciation, the patient is asked to sit relaxed and close his mouth and perform a deep inhale through the nose, and as his lips are rounded, exhale and make the duration of the exhale twice as long as the inhale (2 seconds of inhale and 4 seconds of exhale). At the end of the 4th week, the pulmonary function of the patients was retested using spirometry (16). After the end of the 4 weeks, for ethical reasons, the control group also received the breathing exercises training.

RESULTS

The table below shows the demographic data of the patients.

As is evident in the diagram, there is no significant difference in terms of gender between the two groups.

Table 1 shows the distribution of the two groups in terms of demographic data. As shown in the table, the samples in the two groups do not significantly differ in terms of gender, age and marital status (P>0.05).

Diagram 1, shows the distribution of the two groups in terms of gender.

Diagram 2, shows the distribution of the two groups in terms of marital status.

Before intervention, the spirometric parameters were investigated using a spirometric device and the data gathered are shown in table 2. The data obtained from the spirometric parameters of the research samples after intervention are shown in table 3.

The tables above show that FEV1 in the experimental group before intervention was (65.52 ± 2.19) and after intervention was (68.49 ± 0.99) and FVC in the experimental group before intervention was (80.96 ± 0.92) and after intervention was (81.73 ± 0.82) and FEV1/FVC in the experimental group before intervention was (81.73 ± 0.82) and after intervention was (83.80 ± 1.72) and also the value of FEF25-75% in the experimental group

Table 1: the demographic data of the participants of both groups

demographic data		experimental	Control
age		40±7.036	41.36±6.58
gender	male	28.3%	25%
	female	21.7%	25%
Marital status	single	18.3%	20%
	Married	31.7%	30%

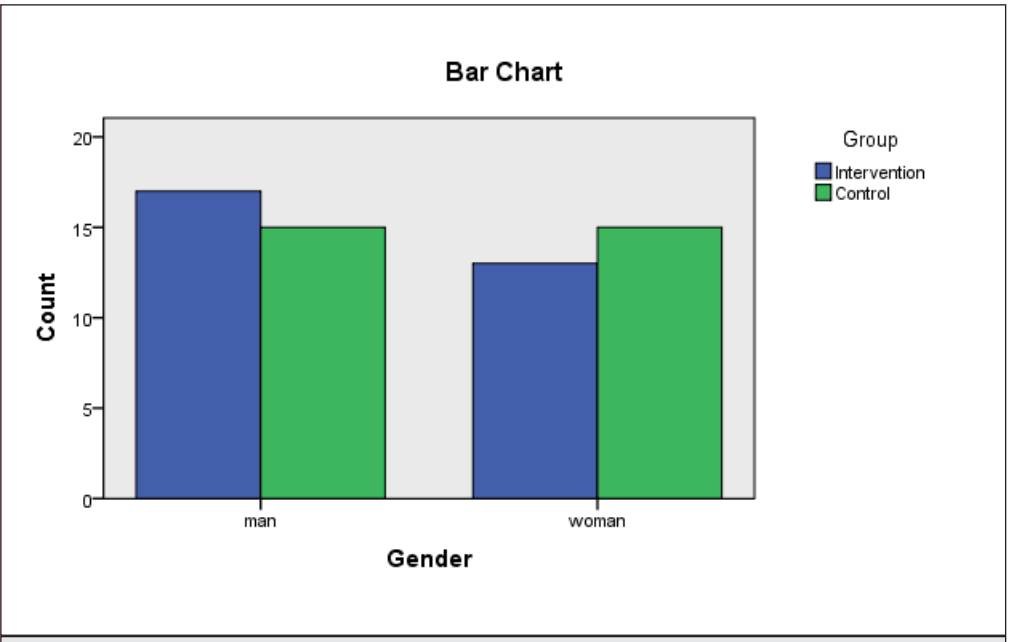

DIAGRAM 1. Gender distribution in the two groups of experimental and control.

before intervention was (47.06 ± 0.90) and after intervention was (51.23 ± 0.77), and FEV1 in the control group before intervention was (66.30 ± 1.77) and after intervention was (66.37 ± 1.69) and FVC in the control group before intervention was (80.56 ± 0.62) and after intervention was (80.66 ± 0.60) and FEV1/FVC in the control group before intervention was (82.35 ± 2.07) and after intervention was (82.31 ± 1.99) and FEF25-75% in the control group before intervention was (47.43 ± 1.07) and after intervention was (46.86 ± 1.07).

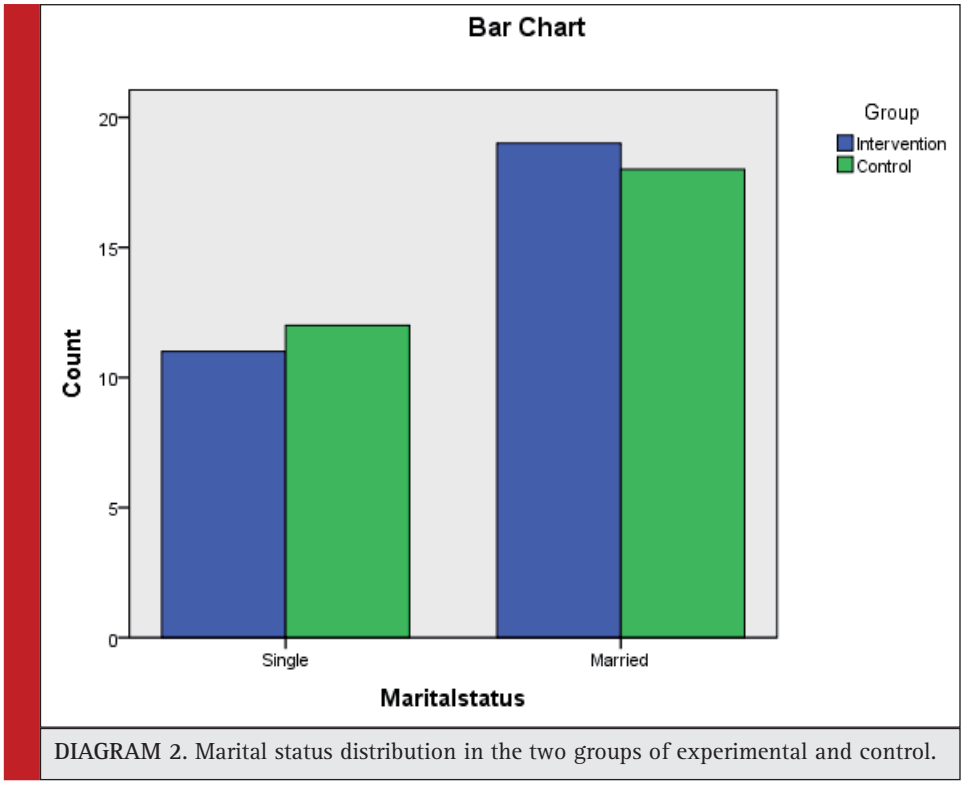

DIAGRAM 2. Marital status distribution in the two groups of experimental and control.

Table 3: spirometric parameters in the two groups of experimental and control after intervention

Spirometric parameters	experimental	Control	pvalue
FEV1	68.49±0.99	66.37±1.69	0.001>
FVC	81.73±0.82	80.66±0.60	0.001>
FEV1/FVC	83.80±1.72	82.31±1.99	0.003
FEF25-75%	51.23±0.77	46.86±1.07	0.001>

Table 2: spirometric parameters in the two groups of experimental and control before intervention

Spirometric parameters	experimental	Control	pvalue
FEV1	65.52±2.19	66.30±1.77	0.137
FVC	80.96±0.92	80.56±0.62	0.026
FEV1/FVC	80.76±3.23	82.35±2.07	0.027
FEF25-75%	47.06±0.90	47.43±1.07	0.158

DISCUSSION

Given the ever increasing importance of disease control as the foundation of medical and health planning across the world, the present research was performed to investigate the effect of breathing exercises on spirometric parameters of patients with asthma visiting the asthma and allergy clinic of Imam Khomeini Hospital of Ahvaz.

The results show improvement in the spirometric parameters after intervention in the experimental group and since the pvalue is less than 0.05, it shows the significance of the intervention between the experimental and control groups. The study of Yekke Fallah in 2005, with the title of "the effect of breathing exercises on the pulmonary function and quality of life of asthma patients" showed that performing physical exercises, improves some spirometric parameters and consequently the pulmonary function of asthma patients (17).

It seems that of the reasons for the improvement of respiratory capacity in the experimental group, was the strengthening of their respiratory muscles. The function of trampoline is creation of tremors in the muscle spindle, which improves muscle tone (18). Also, it seems that physical exercises decrease the inflammation of airways and bronchospasm and consequently asthma symptoms. The results of this study, are in alignment with the results of Halestrand (19).

Performing regular breathing exercises can improve the health of asthma patients because it decreases the respiratory symptoms of asthma, shortness of breath by mechanisms such as strengthening of respiratory muscles, reduced hospitalization, reduced use of bronchodilators and ultimately improved lung function according to spirometry studies.

CONCLUSION

In medicine, oxygen plays the most important role. A person absorbs 6 to 10 times more oxygen when taking a deep breath compared to when breathing normally. The brain consumes 80% of the breathed oxygen. And individual can accelerate the process of cleansing the lymphatic system more than 10 times through conscious inhaling and exhaling. Therefore breathing exercises, as a harmless tool, should not be underestimated. A deep and conscious breath is the most effective method for cleansing the body. A daily 10 to 20 minutes of deep abdominal exercises, completely coordinates the body's mechanisms. If deep breathing is done frequently, it turns into a subconscious habit for the body.

Based on the results and the fact that in these exercises, the intensity of the exercises is adjusted by the user and that the exercises can be performed at home, it seems that this training method is a very effective method for asthma patients. Of course this should be mentioned that the supervision of an expert on the implementation of these exercises is necessary at the beginning. Also it is necessary that to obtain more information, more research with a greater number of participants be performed.

RECOMMENDATIONS

It is recommended that in the next studies, the effect of these exercises on the shortness of breath caused by allergy and acid rains be evaluated and a group of physical exercises and a group of breathing exercises be used for it.

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Comparison between the attachment and coping styles in the affected and non-affected people to substance abuse

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ABSTRACT

In the present study, the attachment styles and coping strategies in the affected and non-affected people to the drug abuse have been compared. The statistical society consists of all the affected people to the opioid drug abuse in Tehran which have referred to the addiction clinics for quitting the drugs. The researcher selected three available clinics of Shafakhaneh, Aramesh and Mehrdad. The age range of the people was between 20 to 35 years old. The sample group consisted of 160 people and the sampling was performed in an inductive manner. This research was an evidential study and its method was causal-comparative. The instruments of this research were the adult's attachment inquiry (AAI) (translated by Besharat), the mental pressure inquiry (CISS) of Andler and Parker and the demographic form which was prepared by the researcher. The questionnaires were administered individually. Meanwhile, the T test of the independent groups and the Pearson Correlation were conducted for analyzing and investigating the findings of the hypotheses. According to the results of this study, affected people to the drug abuse compared with the others, mostly use the emotional –oriented coping strategies and less the problem-oriented strategies. Also, non-affected people to the drug abuse, mostly use the avoidant coping strategies. The results of the attachment style showed that regarding to the attachment styles ,the affected people are insecure avoidant and the non-affected people are insecure ambivalent. However, if we considered the total attachment styles as two groups of secure and insecure, it can be seen that the affected people to the substance abuse are more insecure than non- affected people regarding to the attachment styles.

KEY WORDS: ATTACHMENT STYLE, COPING STRATEGIES, SUBSTANCE ABUSE, MENTAL HEALTH

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INTRODUCTION

The substance abuse is one of the important problems in the present time which spreads worldwide. This problem has destroyed millions of lives and spent national macro-capital for struggle, treatment and the resulted damages. Daily, the number of the affected people with this catastrophe increases, therefore, its effects including the physical, mental, family, cultural, economic and social disorders lose the cultural borders of the community and put the mental and economical health of the mankind in danger. Considering the various cultural reasons such as wrong and traditional beliefs, geographical situation and proximity to the two great producer countries, our country has completely critical and sensitive conditions and drug addicted cause heavy cultural and economical damages in the community every day(Monajati, Farjam and Mohammadi,(2003)(1).

Despite the reduction of the consumption of the authorized and non-authorized drugs in the recent years, addiction to the drugs and alcohol is still one of the serious problems at early adulthood. These substances damage the cognitive processes, intensify the mental problems which consist the base of the addiction and increase the danger of the unintentional damage and death (Iberk, translated by Seyed Mohammadi, (2003) (2).Humans use the medicines for treatment of the sicknesses, relieve the pain and reduction the mental suffering for thousand years. There are different factors which can predispose a person in order to consume the drugs such as growing up in an unhappy family, non-stricted parents, the parents who prepare the pattern for medicine abuse, the effects of the friends and social nonconformity which can lead to drug consumption and attachment in the person (Etikson, Etikson and Hilgard, translated by Baraheni et al.(2001) (3).

According to the attachment theory, humans are the social creatures which have the capacity for relating to another humans to be able to be alive.
But the human maturity is not sufficient when making the social relations in order to permit him/her in order to express his/her attachment behaviors from the beginning. Therefore, dealing, cognitive, emotional and behavioral efforts for controlling the external demands and internal needs can threaten the person or invite him/her to the fight. In other words, human can deal with the confronted stresses with the coping skills. Thus, when a stressed event occurs for the person, he/she evaluates the motive and offers the coping responses. These responses can be the manipulated or adaptive responses (Najjarian and barati Sedeh,(2004) (4)

ATTACHMENT THEORY

Bowlby (1969) offered the attachment theory. According to his opinion, the social relations make from the response to the biological and psychological needs of the mother and child. Newborn has some behaviors which cause the others take care of him and stay beside him. These behaviors including the crying, laughing and crawling toward the others. Evolutionarily, these patterns have the adaptation values since these behaviors lead to necessary complete care of the children in order to be survived. The main result of the interaction between mother and child is the creation of a kind of emotional attachment between them. This is the emotional attachment and relationship with the mother which causes the child looks for the comfort from the mother especially when feels the fear and unreliability.

Bowlby and Merry Ainsworth (1991) (5) believe that all the normal children feel attachment and this severe attachment founds the base of the healthy social and emotional growth in the adulthood. Indeed, the human's attachments have critical role in his/her life. Ainsworth emphasizes on the attachment behavior in the relationships of the adulthood as the basic of the secure event in the human's life. She argued that the secure attachment can facilitate the operation and competency of the interpersonal relationships.

For example, those children who have the severe attachment to their mothers are socially extroverted in the future, pay attention to the surrounding environment, desire to explore their surroundings and can react. When the child sends a message to the mother, the closed contact of him with the mother while growing up ,result in finding the more self-reliance rather than dependence and attachment. Those mothers who do not response to the sent messages of child, cause him/her anxious. These mothers have the less IQ and are emotionally less mature compared with those mothers who response to the child's messages.

Meanwhile, Ainsworth proved that the attachment can reduce the anxiety. Whatever she called as the effect of the secure base, enables the child to abandon the attached and explore the environment, therefore, the child can analyzes the environment with assurance and confidence. Totally, the attachment theory is the joint work of the Ainsworth and Bowlby. Ainsworth with suggesting some methods for the experimental test of Bowlby's theory, provided a great help for expanding his theory. Ainsworth considered the person in attach as the secure source (secure base) of the child in order to explore his/her environment. According to her opinion , the sensitiveness of the mother is important for the newborn and has the crucial role for the growth of the attachment patterns of the mother and newborn(Khosh abi,Abohamzeh,2007) (6).

STATEMENT OF THE PROBLEM

The problem of the drug addiction is a fetal and destructive phenomenon in each community which its results

can apply the harmful effects on the political, economical and cultural settings of the community. Usually, the most vulnerable group against this dangerous phenomenon rather the other groups is the youth of a community (Farjad , Behravesh and Vajdi,1999) (7).

The characteristic variables which are related to the drug abuse consist of low self-confidence, deficiency in personal satisfaction, severe need to confirmation of the others, disobedience, getting angry, high anxiety, inability to express himself, being impatient, inability to accept the responsibilities of the adults (Pirjalilian,2001) (8).According to the statistics, the drug abuse has increased worldwide and this causes the high costs for the governments. Therefore, officials decided to provide some programs for preventing and reducing the substance abuse.

This research can be effective in identifying the attachment styles and coping skills as the infrastructure and issues which affect on the substance abuse. Meanwhile, according to the many studies which pointed to the determinative and important role of the attachment and coping styles of the people in the mental health, there are some appropriate strategies in order to promote the level of the mental health. Indeed, we try to identify the coping methods and attachment styles of these people and their attitude and reaction to the stressful situations. Therefore, the research questions of this study are as follows:

-Is there any relationship between the attachment styles and affecting to the substance abuse?
-Is there any relationship between the coping styles and affecting to the substance abuse?

In addition, the hypotheses of this research are as follows:

1. Affected people to the substance abuse use more the emotional-oriented coping strategies.
2. Affected people to the substance abuse use more the avoidant-oriented coping strategies.
3. Affected people to the substance abuse in comparison with the non-affected persons, use less the problem-oriented coping styles.
4. Affected people to the substance abuse use more the insecure attachment styles (avoidant and ambivalent).

METHODOLOGY

This research was an evidential study and its method was causal-comparative. The statistical community consists of all male affected to the substance abuse in Tehran which referred to the addiction clinics for quitting the drugs. In this research, the sampling was performed in an inductive manner. It means that the researcher selected the samples from the affected and non-affected groups based on the testable output and input criteria. The researcher selected the sample from the people who referred to the Shafakhaneh, Aramesh and Mehrdad clinics and filed for quitting the drugs from 22 of Apr. until 21 of Nov. 2008.

Also, the non-affected group was selected from those people who referred to the Razi and Parsa hospitals. The sample group consisted of 160 people which 80 people were affected to the drug abuse and 80 persons were healthy or non-affected. The data collecting instruments were three quastionaries the adult's attachment styles inquiry (AAI), the coping with the mental pressure inquiry (CISS) of Andler and Parker and the demographic form which was prepared by the researcher. Finally, the software of SPSS11has been used for investigating the statistical data. Meanwhile, for analyzing the related findings with the hypotheses of this research, the T test and the Pearson Correlation have been used for independent groups.

RESULTS

In order to compare the attachment styles and coping strategies of the people who were affected and non-affected to the drug abuse, the selected sample consisted of 160 people in two groups of affected and non-affected people to the drug abuse. The age average of the affected and non-affected persons was 28-48 and 27-39 respectively. In the group of the affected persons, there were 19 people in the ages of 20-25, 32 people in the ages of 26-30 and 29 people in the ages of 31-50.Also, in the group of the non-affected persons, there were 27 persons in the ages of 20-25,29 people in the ages of 26-30 and 24 people in the ages of 31-35.

TEST OF HYPOTHESES

First Hypothesis: the affected people to the drug abuse use emotional-oriented coping strategies more than the non-affected group.

According to the results, the first hypothesis is confirmed. It means that two groups of the affected and non-affected people to the drug abuse have the significant difference regarding to the use of the emotional strategies. Also, the non-affected group use the emotional strategies less than the affected group significantly ($p<0/0001$).

Second Hypothesis: Affected people with the drug abuse use the avoidant-oriented coping strategies more than the non-affected group.

Table 1: Comparison of the score average of the use of emotional –oriented coping strategies

Group	No.	average	S.D	Freedom degree	Levene statistics		T-value	P-value
					F-value	P-value		
Affected	80	57.28	11.691	158	1.444	0.231	7.459	0.000
Non-affected	80	44.18	10.49					
p<0/000								

Table 2: Comparison of the score average of the use of avoidant –oriented coping strategies

Group	No.	average	S.D	Freedom degree	Levene statistics		T-value	P-value
					F-value	P-value		
Affected	80	41.65	8.895	158	0.137	0.712	2.127	0.000
Non-affected	80	44.81	9.884					
p<0/000								

According to the results of the table 2, the affected group to the substance abuse use the avoidant –oriented coping strategies less than non-affected group. Therefore, this hypotheses is not accepted.

Third Hypothesis: Affected people to the drug abuse in comparison with the non-affected people, use less the problem-oriented coping styles.

According to the results of the table 3, the drug abuse affection in non-affected persons who use the problem-oriented coping strategy is less than others.

Forth Hypothesis: Affected people to the drug abuse use more the insecure attachment styles (avoidant and ambivalent).

According to the results of the table 4,the non-affected persons in comparison with the affected persons use the insecure attachment style (ambivalent). Therefore, this researcher's hypotheses is not accepted.

According to the results of table 5, the hypotheses of the researcher is conformed, therefore, there is significant relationship between the insecure attachment style (avoidant) and drug abuse affection.

Table 3: Comparison of the score average of the problem-oriented coping style in affected and non-affected groups.

Group	No.	average	S.D	Freedom degree	Levene statistics		T-value	P-value
					F-value	P-value		
Affected	80	50.79	9.903	158	1.225	0.270	5.408	0.000
Non-affected	80	58.79	8.774					
p<0/000								

Table 4: Comparison of the score average of the use if insecure attachment (ambivalent)

Group	No.	average	S.D	Freedom degree	Levene statistics		T-value	P-value
					F-value	P-value		
Affected	80	17.67	4.122	158	0.045	0.832	1.2	0.000
Non-affected	80	18.44	3.929					
p<0/000								

Table 5: Comparison of the score average of the use of insecure attachment (avoidant)

Group	No.	average	S.D	Freedom degree	Levene statistics		T-value	P-value
					F-value	P-value		
Affected	80	18.763	5.735	158	11.489	0.141	3.693	0.000
Non-affected	80	15.916	3.842					
p<0/000								

DISCUSSION

The first two hypothesis of the researcher approve that the affected people to the drug abuse use more the emotional and avoidant -oriented coping strategies. According to the results of the chapter 4, the affected people to the drug abuse use the emotional -oriented coping strategy significantly (p<0/000).The results of this hypotheses are in line with the opinions of Stanton Pill(cited from Vashton and Bandy, translated by the Masoumian sharghi,2007)(9).He believed that those people who reliant on mood-altering substances, honestly believe that they can not change the situations which give them a sense of discomfort and want to correct this feeling simply since they have not learnt the coping skills for dealing with the problems and just learnt the blame of the others and using the emotional-oriented coping skills. According to the Vashton and Bandy, usage of the inefficient coping skills is one of the reasons of affecting to the drug abuse. Since such people did not learn the efficient problem-solving methods for resolving their problems and have the few behavior patterns. Inability to tolerate the failure, disappointment, belief of the fast and rapid satisfaction of the desires and some feeling such as anger, loneliness and depression are the some factors which lead the affected people to the drug abuse to the inefficient coping skills.

According to the weakness of the coping skills in these people, comfort and convenience of the drug abuse, are more attractive and desirable for them. According to the Seyed Mohammadi (2006)(10), the youth deny their problematic emotions more than the adults, getting angry very soon, avoid from the others (they sleep or consume the drugs) or blame them. Their coping strategy is mostly emotional –oriented.

The results of the third hypotheses demonstrate that the non-affected people to the drug abuse use the problematic-oriented coping strategies more than the affected ones. According to results of the studies of Creasey (2002) (11), Creasey, Kershaw and Boston (1999) (12), Creasey and Ladd (2004) (13), Moller, McCarthy and Fouladi (2004)(14) and Maizles (204) (15), organizing the negative mood, high self-confidence, ability to solve the life issues, optimism, hope to live and stamina or in other words, the attitudes which are based on the stress resistance are some of the factors which are related to the problematic-oriented coping. Therefore, the mentioned studies are in line with the result of the present study.

According to the present research , the non-affected people in comparison with the affected people to the drug abuse use ambivalent insecure attachment style. However, only in one study which conducted by the Berant and Mikulincer (2001) (16) which is cited from the Mikulincer and Shaver 2007(17), the non-affected people in comparison with the affected people to the drug abuse use ambivalent insecure attachment style, therefore, the hypotheses of the researcher was not confirmed. In this present study, there were two groups of affected and non-affected people and we only knew the non-affection of the non-affected people to the drug abuse and we did not have the precise information about the other issues and their characteristic and mental problems.

In the other words, perhaps these people were not affected to the drug abuse but there is a possibility that they had other mental and spiritual problems and because of the used instrument of this research just investigated the attachment styles and coping strategies, this can be considered as one of the reasons of the high scores average of the ambivalent insecure attachment in non-affected people. However, if we divide the attachment styles totally into two groups of secure and insecure styles, it can be seen that the affected persons to the drug abuse have more insecure attachment than the non-affected ones. It should be noted that we do not have the precise information about the similar researches with this study.

The results of this study could be affected by the different reasons such as the reasons of the responders, performer and the researcher. Some of the reasons of the responders were incomprehension of the questions, lack of sufficient attention in responding to the questions and rush for completing them , since the non-affected people were selected from those who referred to the clinics and waited for visiting the doctors, therefore, they did not have enough attention and were worries to some extent. Meanwhile, other reasons such as the lack of proper relationship with the responders because of the short time, environmental conditions such as the crowd out of the room in non-affected group could affect the results of this test.

According to the sameness of the results in western and eastern countries, it can be concluded that the attachment styles and emotional and problematic –oriented coping strategies are non-cultural. Therefore, these results can be used for parenting styles, instruction of the parents and treatment and rehabilitation of the affected people to the drug abuse in different countries.

It should be mentioned that according to the analyses of the demographic information of the affected people to the drug abuse, it was shown that the age average of them is between 28-48 and 52.5% of them are married. Meanwhile, their educational average is under diploma and their attachment level to the drugs reduces with increasing their educational level.

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Distribution of gentamicin resistant genes of nosocomial *Enterococcus* spp from Intensive Care Unit of Shahid Beheshty Hospital in Kashan, Iran

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ABSTRACT

The aim of this study was to determine, the rate and molecular characterization of aminoglycoside resistance genes (*aac(6')-Ie-aph(2")-Ia, aph(2")-Ib, aph(2")-Ic, and aph(2")-Id*) among high level gentamicin resistance (HLGR) enterococcus isolates in Kashan, Iran. A total of 180 enterococcus species were tested for high level gentamicin resistance by using disk diffusion method and minimum inhibitory concentration (MIC>500 µg/mL) confirmatory test. High level gentamicin resistance strains were further assessed for aminoglycoside resistance genes. Antibiotic susceptibility pattern revealed that 43 isolates (23.9%) were high level gentamicin resistance (HLGR) (MIC>500µg/ml), 24 isolates (55.8%) of HLGR isolates were resistant to Chloramphenicol, 13 isolates (30.2%) to Quinupristin-dalfopristin, 7 isolates (16.3%) to Linezolid and 9 isolates (20.9%) of HLGR isolates were multi-drug resistant. The PCR method revealed that 76.7% of high level gentamicin resistance isolates carried *aac(6')Ie-aph(2")Ia gene;* but *aph(2")Ib, aph(2")Ic, and aph(2")Id* genes were not detected among our isolates. The *aac (6')-Ie-aph (2'')-Ia* was detected in (71.9%) and (28.1%), of *Enterococcus faecalis* and *E. faecium*, respectively. These results point to that high level aminoglycoside resistance genes are extensively disseminated among ICU isolates of *enterococci.*

KEY WORDS: *ENTEROCOCCUS*, AMINOGLYCOSIDE, INTENSIVE CARE UNIT

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INTRODUCTION

Enterococcus is one of the most important causes of nosocomial infections among patients in intensive care unit (ICU). Due its importance it was recently ranked as second common agents of bacteremia in ICU [1]. Although at first it was considered as an endogenous colon [2, 3], by acquisition resistance genes with horizontal transformation mechanism and conjugation changed to hazardous pathogen [4]. The *aac (6') Ie-aph (2") Ia* is one of the main genes that carried by high-level gentamicin resistance (HLGR) *enterococcus* [5]. The importance of this gene is elimination of synergistic effects between penicillin and glycopeptide or aminoglycoside antibiotics by encoding a bi functional enzyme [6, 7]. The *aph (2") Ib, aph (2") Ic* and *aph (2") Id* are the other genes that are coded by phosphotransferases which cause HLGR strains [6]. The abuse of antibiotics especially in patients with acute diseases at this ward poses enormous nosocomial infection with multi-drug resistant (MDR) bacteria [3]. Multi-drug resistant *enterococcus* can be a serious problem for treating human and causes increased rates of failure treatment [8]. Since then, the high level aminoglycoside resistance has become a serious problem in most of hospitals; so identification of clinical isolates of HLGR *enterococcus* strains is essential for an appropriate management for curing the infections. Little is known about the prevalence of aminoglycoside resistance genes in HLGR enterococcus strains recovered from rectal swabs of patients in ICU in Iran. So the aim of this study was determination of high level gentamicin resistance and distribution of aminoglycoside resistant genes of *Enterococcus species* from ICU. And also this study evaluates the rate of resistance to linezolid, Quinupristin-dalfopristin and Chloramphenicol among high level gentamicin resistance of *enterococcus species*. The other criterion which is determined is distribution of MDR isolates among high level gentamicin resistance of *enterococcus species*.

MATERIAL AND METHODS

2.1. Sample collection. A cross-sectional study was organized between October 1, 2013, and October 15, 2014. One hundred eighty non-repetitive *enterococcus* isolates were recovered from two hundred ten cotton rectal swabs of patients after 48 hours of their hospitalization at ICU (74 isolates of surgical ICU, 59 isolates of Neurosurgical ICU and 47 medical ICU) in Shahid Beheshti Hospital of Kashan, Iran. This is a general teaching hospital with different wards and 516 beds. There was no age and sex restriction for preparing samples. Any complication or underlying disease such as diabetes didn't cause disturbance in this study. The study protocol was approved by the Ethics Committee of Kashan University of Medical Sciences. And also written informed consent was obtain from all study participants or their parents/guardian.

2.2. Bacterial isolates. A cotton rectal swab which was acquired from each patient at ICU immediately transferred to the 6.5% Nacl broth medium (Merk, catalogue number: 105459). It was incubated in 37˚C within 2 hr and cultured on Bile-Esculin agar medium (Merk, catalogue number: 105459). Cultured plates were incubated at 37˚C and were examined after overnight incubation. Phonotypical test for identification of *enterococcus spp* performed based on the conventional microbiological tests. Just one *enterococcus* isolate was analyzed from each patient [9, 10].

2.3. Antimicrobial susceptibility test. The disk diffusion method and minimum inhibitory concentration (MIC) test were performed by using Mueller Hinton agar and Brain Heart Infusion agar for detection of HLGR isolates among 180 *enterococcus species* according to the Clinical and Laboratory Standards Institute (CLSI 2013) recommendation [11]. And also susceptibility of HLGR strains was determined to Chloramphenicol (S: ≥ 18mm, I: 13–17mm, R: ≤ 12), Quinupristin-dalfopristin (S: ≥ 19mm, I: 16–18mm, R: ≤ 15mm), and Linezolid (S: ≥ 23mm, I: 21–22mm, R: ≤ 20mm) (MAST, UK). The reference strain *E. faecalis* ATCC 29212 and *Staphylococcus aureus* ATCC 25923 was used as a control. Results were clarified as susceptible, intermediate or resistant according to the criteria recommended by the CLSI and the manufacturer protocols (Mast, UK) [11].

2.4. DNA extraction. The crude DNA was extracted from 108 *E. faecalis* and 72 *E. faecium* by boiling method for confirming the species and identifies the genes of interest among HLGR isolates. The template DNA stored at −20˚C until polymerase chain reaction (PCR) amplification was performed [12].

2.5. Genus identification of enterococcus by PCR. The identified genus of *enterococcus species* were confirmed by distinguishing *ddl* genes with PCR method using specific primers (Table1). Amplification of *ddl* genes were performed under the conditions that were used in similar study [13]. 25 µL Final reaction mixtures was prepared with 10 pmol of each primer, 200mM of dNTP, 1 unit of Taq polymerase, 2.5 µL of 10x reaction buffer, 1.5mM MgCl2 in final concentration, and100 ng DNA template. Amplification reactions were carried out in a thermocycler (Eppendorf master cycler, MA) under the following conditions: initial denaturation at 94˚C for 3 min, followed by 30 cycles of amplification at 94˚C for 1min, 54˚C for 1 min and 72˚C for 1 min with final extension at 72˚C for 7 min [13]. The amplified products were elec-

trophoresed on 2% agarose gels. The gels were stained in ethidium bromide (0.5mg/mL) visualized in gel document system (Biorad, UK).

2.6. Characterization of aminoglycoside resistance genes among HLGR strains. Aminoglycoside modifying enzymes (AMEs) which includes *aac(6')Ie-aph(2")Ia, aph(2")Ib, aph(2")Ic* and *aph(2")Id* genes identified by polymerase chain reaction. Amplification reactions were carried out in a thermocycler (Eppendorf master cycler, MA) under conditions that were experiment in similar studies [14, 15, and 16]. Amplification for *aac (6') Ie-aph (2") Ia* gene was performed under underneath conditions: denaturation at 94˚C for 3 min, followed by 32 cycles, annealing at 60˚C for 45 sec, extension at 72˚C for 1 min and final extension at 72˚C for 2 min [14]. PCR conditions for *aph (2") Ib* and *aph (2") Id* were as follows: denaturation at 94˚C for 1 min, followed by 30 cycles, annealing at 55˚C for 1 min and extension at 72˚C for 2 min [15]. And also the Amplification conditions that used for *aph (2") Ic* gene were as follows: denaturation at 94˚C for 40 sec, followed by 30 cycles, annealing at 56˚C for 30 sec, extension at 72˚C for 50 sec [16]. A total volume of 50µl containing 100 ng genomic DNA from *enterococcus species* culture, 200 mM each of dNTP, 1 × PCR buffer (20mM Tris-HCl, pH 8.4), 50mM KCl, 1.5mM MgCl2, 0.5 mM of each primer (Table 1) and 1.5U of Taq polymerase used for performing PCR. 10µl of Amplified samples were electrophoresed on 2% agarose gel in TBE buffer. The gel was stained with ethidium bromide 0.5 mg/ml. The amplified bands were observed under gel document system (Biorad, UK). As negative control reaction mixture without a DNA template was used. The positive amplicons were sequenced to confirm the result of PCR.

2.7. DNA Sequencing and Sequence Analysis. Sequencing performed for positive favorable gene (*aac (6') Ie-aph (2") Ia*) using the ABI Capillary System (Macrogen Research, Seoul, Republic of Korea). The sequence was analyzed using Chromas Pro version 1.7.5 Technelysium (http://technelysium.com.au/) and performed online by using the BLAST program of the National Center for Biotechnology Information server (http://www.ncbi.nlm.nih.gov/).

2.8. Statistical analysis. The statistical analysis of data was conducted using SPSS software version 15 (SPSS, Inc.). The Chi-square test or the Fisher's exact test was used to compare proportions. *P-Values* < 0.05 were considered statistically significant. Prevalence data is presented with 95% confidence intervals (CI).

RESULTS

180 isolates of *enterococcus species* obtained from 210 hospitalized patients in ICU. These isolates were collected from patients who had been hospitalized for two days or more in ICU of Shahid Beheshti Hospital of Kashan. The prevalence rate of *enterococcus* was 85.7% (108 *E.*

Table 1: Primers used for polymerase chain reaction and sequencing

Gene	Primer Sequences (5'-3')	PCR product (bp)	References
ddl (E. faecalis)	CACCTGAAGAAACAGGC ATGGCTACTTCAATTTCACG	475	[13]
ddl (E. faecium)	GAGTAAATCACTGAACGA CGCTGATGGTATCGATTCAT	1091	[13]
aac(6')-Ie-aph(2")a	CCAAGAGCAATAAGGGCATA CACTATCATAACCACTACCG	220	[14]
aph(2")Ib	ACTCCGTTATTTATCGTCCG TCATCATATGCAAGGGCATC	279	[15]
aph(2")-Ic	GAGGGCTTTAGGAATTACGC ACACAACCGACCAACAGAGG	125	[16]
aph(2")-Id	GGTGGTTTTTACAGGAATGCCATC CCCTCTTCATACCAATCCATATAACC	642	[15]

Table 2: The prevalence of 43 HLGR isolates of *enterococcus species* that confirmed with minimum inhibitory concentration (MIC) method in different ICU.

Species	Surgery ICU NO. (%)	Neurosurgery ICU NO. (%)	Medical ICU NO. (%)	MIC>500µg/mL NO. (%)
E. faecalis	14(70)	3(60)	13(72.2)	26(60.5)
E. faecium	6(30)	2(40)	5(27.8)	17(39.5)
Total	20(100)	5(100)	18(100)	43(100)

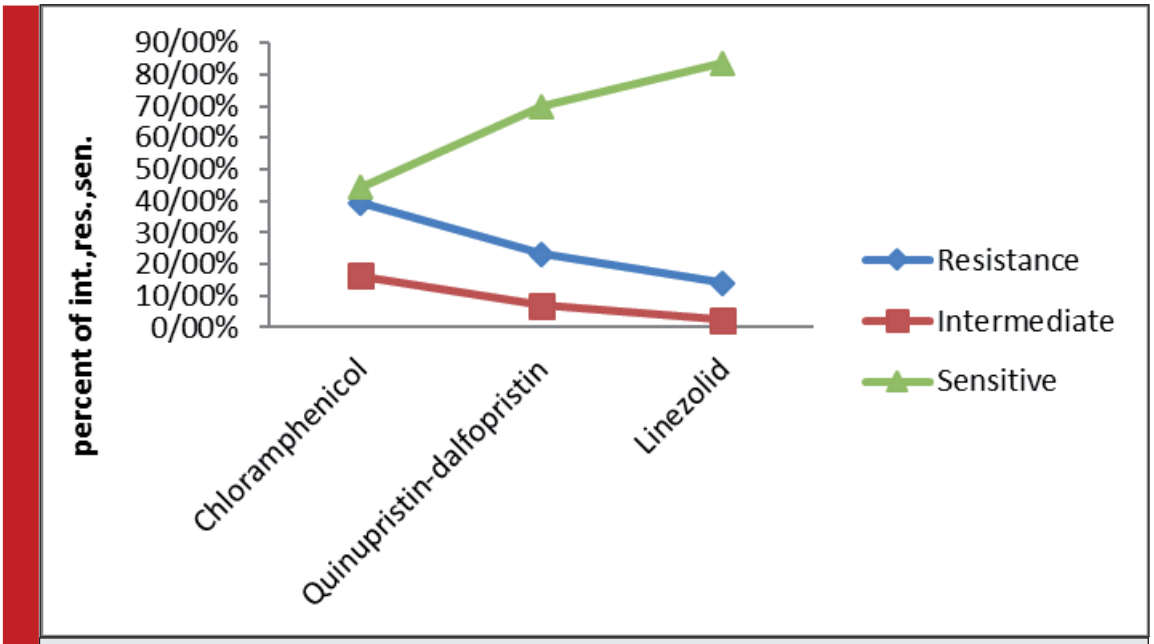

FIGURE 1. Antimicrobial resistance of high level gentamicin resistance (HLGR) enterococcus isolates was measured by disk diffusion method

faecalis and 72 *E.faecium*). The majority of patients who carried *enterococcus* isolates were males (67%). More than fifty seven percent of these patients who carried *enterococcus species* were 57≥ years.

The prevalence of HLGR *enterococcus* was 23.9% (43/180) (MIC >500 µg/mL). Of these HLGR *enterococcus* isolates, 26 isolates (60.5%) were *E.faecalis* (Table 2). The majority of patients with HLGR strains were males (74.4%). More than sixty five percent of patients with HLGR strains were 60≥ years. The mean duration of hospitalization was 12.56 ±13.927 day. In this study 20 isolates of HLGR strains (46.5%) were collected from surgery ICU (70% *E.faecalis* and 30% *E.faecium*), 5 isolates (11.6%) from neurosurgery ICU (60% *E.faecalis* and 40% *E.faecium*) and 18 isolates (41.9%) from medical ICU (72.2% *E.faecalis* and 27.8% *E.faecium*).

Antibiotic susceptibility pattern revealed that among 43 HLGR isolates, 55.8% (16 *E.faecalis* and 8 *E.faecium*) were resistant to Chloramphenicol, 30.2% (11 *E.faecalis* and 2 *E.faecium*) to Quinupristin-dalfopristin and 16.3% (6 *E.faecalis* and 1 *E.faecium*) to Linezolid (figure 1).

Among HLGR isolates of *enterococcus*, 20.9% (9/43) indicated multidrug-resistant (MDR) pattern. This pattern demonstrated resistant to at least one agent in three or more antimicrobial categories. Of isolates that were supposed HLGR bacteria by disk diffusion method

Table 3: Association between patient characterizations and the rate of high level gentamicin resistance *enterococcus species* that may carry aminoglycoside resistance genes.

Risk factor	HLGR positive No. (%)	HLGR negative No. (%)	P- Value	Odds ratio (95% CI)
Diabetes Yes (28) No (152)	 11 (39.3%) 32 (21.1%)	 17 (60.7%) 120 (78.9%)	0.038	2.426 (1.03-5.69)
Using ciprofloxacin Yes (56) No (124)	 23 (41.1%) 20 (16.1%)	 33 (58.9%) 104 (83.9%)	0.001	3.624 (1.771-7.415)
Using meropenem Yes (70) No (110)	 24 (34.3%) 19 (17.3%)	 46 (65.7%) 91 (82.7%)	0.009	2.499 (1.243-5.025)
Using amikacin Yes (9) No (171)	 6 (66.7%) 37 (21.6%)	 3 (33.3%) 134 (78.4%)	0.002	7.243(1.728-30.355)

and MIC test, 76.7% (33/43) comprising *aac (6') Ie-aph (2") Ia*. PCR assays and sequencing revealed that 60.6% (n=20) of *E.faecalis* and 39.4% (n=13) of E.faecium carried this gene. None of the *aph (2') Ib, aph (2") Ic*, and *aph (2") Id* genes were found at HLGR isolates. The nucleotide sequence of the PCR products of ddl genes and aminoglycoside resistant gene were identical to ddl (*E.faecalis*), ddl (*E.faecium*) and *aac (6') Ie-aph (2") Ia* in the GenBank nucleotide database (http://www.ncbi.nlm.nih.gov/blast/) and accession numbers obtained for them in current study are KP793143, KP793142, and KP793141. The statistical analysis confirmed proved that diabetes and using some antibiotics by patients such as ciprofloxacin, meropenem, and amikacin were clinical factors that significantly associated with the presence of HLGR *enterococcus species* that would result isolates that include aminoglycoside resistance genes (Table 3).

DISCUSSION

Gentamicin is one of the most commonly used aminoglycosides against enterococcus, since its discovery in 1963. High-level gentamicin resistance (HLGR) has been widely investigated and different frequencies have been reported depending on various regions due to the variety in climate of hetero geographical regions and origin of isolates [17]. So, the high prevalence of resistance to high level gentamicin is forecast. In this study the rate of *E.faecalis* and *E.faecium* were 60% and 40%, respectively, indicates high rates of *E.faecalis* which was identical to the other results of study conducted in Tehran, 64.4% *E.faecalis* and 35.6% *E.faecium* [18]. *E.faecalis* was dominant in this study and similar to other studies from Iran, USA and UK and some of European countries and in contrast *E.faecium* is more prevalent in some countries such India and Japan [17].

Our result showed high frequency of high-level gentamicin resistance (23.9%) in ICU. Versus our result a study in turkey showed a low frequency of HLGR, approximately 9.9% among fecal samples of patients [19]. It could be due to inappropriate use of gentamicin among patients in Kashan. A higher frequency was mentioned in northwestern of Iran (60.4%), Kuwait (47%), China (64.15%) and Thailand (55.6%) [20, 21, 6, 16]. So according to the different studies in most part of the world high level gentamicin resistance in *enterococcus species* is increasing, however low frequency was noted in some countries such India (2%) and Saudi Arabia (20.9%) [22, 23]. At this study *E.faecalis* (60.5%) was the most prevalent species among HLGR isolates, as well as the prevalence of *E.faecalis* among non HLGR enterococcus species. In northwestern of Iran the frequencies of HLGR between *E.faecalis* and *E.faecium* were 59.4% and 40.6% and in northern Tehran was 61.3% and 33.9%, respectively, which is in agreement with our findings [20, 17]. And also in Sweden the prevalence of HLGR isolates between *E.faecalis* and *E.faecium* were 20% and 0% [24].

It sounds low administration of extended spectrum antibiotic in this country reduced the rate of HLGR isolates in this country. Although the prevalence of HLGR isolates in *E.faecalis* is more than *E.faecium* in our findings and some countries, these results are in contrast to studies conducted in china and turkey that shown 51.5% and 88% HLGR in E.faecium [6, 25]. To date, *aac (6') Ie-aph (2") Ia* gene is the most prevalent aminoglycoside-modifying enzymes genes. The present study demonstrated high prevalence (76.7%) of *aac (6') Ie-aph (2") Ia* gene among 43 (23.9%) HLGR isolates. This result is alarming due to the ability of *enterococcus species* for being reservoir and transporting antibiotic resistance genes among different bacteria. Although our result is more prevalent than Chile (14.8%), but a higher prevalence was shown in Iran (100%) and china (86.8%) [26, 27, 6]. In this study high frequency of this gene is more prevalent among *E.faecalis* 60.6% than *E.faecium* 39.4%. In addition, a study in Japan showed the frequency of this gene increased to 28% in *E.faecium* [28].

The present study has shown a low frequency of this gene in gentamicin susceptible isolates that may be due to the presence of non-functional gene at these isolates [16]. The result of this study revealed that none of the isolates possess *aph(2')Ib, aph(2")Ic* and *aph(2")Id* genes which are comparable to the results of the studies in northwestern of Iran, China, Thailand, Kuwait and India [20,6,16,21,29]. The high rate of *aac (6') Ie-aph (2") Ia* among enterococcus species isolates in our region may be associated to clonal spread of a single clone, although further studies using molecular typing methods such as pulsed field gel electrophoresis (PFGE) are needed for approval this statement. Whereas a low frequency of *aph(2')Ib* gene in Cuba 5%, America 5% in clinical specimens and 3.4% in *enterococcus* blood strains in Cuba demonstrated [30, 31]. And also there were evidences in the presence of *aph (2") Ic* gene in Cuba 1.1% in *enterococcus* blood strains and 1.6% on clinical specimens and in America 2.5% in human specimens [30, 32]. In disagreement of our findings a low frequency of *aph (2") Id* gene in America 2.5% was demonstrated [32]. However, the frequency about 20.9% of multi-drug resistant (MDR) in our findings among 9 HLGR isolates (8 *E.faecalis* and 1 *E.faecium*) is comparably lower than the rate of MDR isolate in northern Tehran which was about 31.7% [17].

One of the reasons on this disagreement may due to the origin of the specimens. In our findings 5 *E.faecalis* MDR isolates are 100% resistant to Chloramphenicol, Linezolid, Quinupristin-dalfopristin and gentamicin.

Two MDR isolates (1 *E.faecalis* and 1 *E.faecium*) are resistant to Linezolid, Chloramphenicol and gentamicin and also two *E.faecalis* that are MDR, are resistant to Quinupristin-dalfopristin, Chloramphenicol and gentamicin. There is warning because infection caused by such resistant isolates can be difficult to treat. The rate of Chloramphenicol resistant among HLGR isolates 55.8% in our findings (66.7% *E.faecalis* and 33.3% *E.faecium*) is considerably more than the rate of Chloramphenicol resistant among multi-drug resistant enterococcus (26.3% *E.faecalis* and 4.8% *E.faecium*) in china [7].

It reveals that *E.faecalis* isolates are more resistant to this antibiotic which is in agreement to the result of study in china [7]. Although in China none of the isolates were resistant to linezolid but in our findings 16.3% of isolates were resistant to the linezolid [6]. An important step in controlling the dissemination of this microorganism is to identify the risk factors that associate with it. Finally, in term of relation between patients characterizations and acquisition HLGR *enterococcus*, we found that using extended-spectrum antibiotics such ciprofloxacin, meropenem, amikacin, and chronic disease such as diabetes in hospitalized patients in ICU tend them to acquisition HLGR enterococcus ($p<0.05$) (according table 3). In contrast, in study conducted in turkey with these risk factors no significant differences observed [33].

CONCLUSION

All of these data indicates that *aph (2') Ib, aph (2") Ic* and *aph (2")Id* genes don't play an important role in producing HLGR isolates in this region, but *aac(6')Ie-aph(2")Ia* gene which is more prevalent is a main gene that produces HLGR isolates by enzymatic mechanisms.

DISCLOSURE STATEMENT

The manuscript is based on the thesis of MSc student of Ms. Mona Esmailzadeh

CONFLICT OF INTERESTS

There is no conflict of interests by authors in this work.

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