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infection control standards in hospitals affiliated to Mazandaran University of Medical Sciences
Effectiveness of Proprioceptive Neuromuscular Facilitation Patterns In Comparison With General Physical Therapy in Knee Osteoarthritis

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Abstract

Purpose: knee osteoarthritis (KOA) is a musculoskeletal disorder accompanied by muscle imbalances, balance deficiency and proprioception impairment. The purpose of current study is to evaluate the effectiveness of proprioceptive neuromuscular facilitation (PNF) patterns on KOA patients balance and electromyography (EMG) activity in comparison with general physical therapy.

Method: In this randomized control trial 28 KOA patients were randomly assigned into two equal groups (n=14); PNF group and control group. Both groups had 5 minutes of ultrasound (US) and 20 minutes of transcutaneous electrical stimulation (TENS). The PNF group performed two lower extremity patterns against a theraband; D2E and D2F. The Control group performed 3 general knee exercises three times a week for four weeks. Pain assessed through visual analog scale (VAS), performance by Western Ontario and McMaster Universities Arthritis Index (WOMAC) questionnaire, balance evaluated by Biodex Balance System and surface EMG recorded from vastusmedialis, vastuslateralis and biceps femoris.

Results: Both groups revealed significant pain reduction and performance increment (P≤0.017). Overall dynamic stability was the only balance indicator improved significantly in PNF group (P≤0.05). In the control group overall dynamic stability, overall static stability and Medial/lateral dynamic stability revealed significant improvement (P≤0.017). No statistical difference were observed in EMG activity within groups. According to Mann-Whitney test, between groups comparison showed the superior efficacy of PNF group in VMO EMG activity enhancement and control group in performance progression. No other between group differences was seen.

Conclusion: The PNF patterns have significant influence on muscle imbalance correction in KOA patients. General physical therapy has therapeutic effects which assumed to last short term.

Key word: knee osteoarthritis, PNF pattern, EMG, balance
INTRODUCTION

Knee osteoarthritis (KOA) is known as the most prevalent chronic joint disease with complications such as cartilage destruction, tendon lesion, synovial inflammation and structural alteration(1). This can lead to reduction of quality of life, functional disorders and loss of dependency in elderly(2, 3). After each decade of human’s life there is around 3-8% muscle mass decline which makes troubles for 50% of population above 75(4, 5). Obviously these complications are multiple in patients suffering from KOA. For prevention of this downtrend regular physical activity is recommended in order to strengthen muscles and decrease incoming loads to joint.

Electromyography (EMG) studies in KOA patients showed muscle imbalances and co contractions(6) which can cause pain(7), load increment(8) and more loss of cartilage(9). Also motion analysis of these cases revealed changes in gait pattern due to joint stiffness and extra loads expression(10). It has been suggested that rehabilitation programs should focus on reduction of co contraction and maximum knee torque achievement(6, 10).

In this article we are going to evaluate proprioceptive neuromuscular facilitation (PNF) technic which include diagonal and spiral patterns. These patterns produce muscle activity enhancement expand distal to proximal in extremity(11). By applying a resistance, particularly in rotational section, all of those muscle synergies would be contracted so that reinforce the whole pattern(11). Accordingly PNF patterns can integrate muscle activity by coordination of synergic muscles. PNF patterns are beneficial for balance and gait training (12, 13), improve muscle strength (14) and inhibit overactive muscles(11) in order to maintain muscular balance. The purpose of this study is the comparison of effectiveness of PNF patterns with general physical therapy, mostly including exercises for single muscle at the time not the whole motion chain.

MATERIALS AND METHOD

Subjects

28 patients suffering from KOA were selected to this randomize control trial study. Patients were randomly assigned into two groups (n=14). Patients were male and female aged 35-54 with diagnosis of knee osteoarthritis. Inclusion criteria for this study were: diagnose confirmation by a specialist, minimum WOMAC score of 25(15), minimum pain score of 4 in visual analog scale(16), no history of severe trauma which leads to fracture or ligamentous and meniscus injury, no history of corticosteroid injection or physical therapy in last month. Exclusion criteria were: having another treatment method or trauma during study, not completing all the interventional sessions, and pain increment because of the intervention. This study approved by the Scientific and Ethics Committee of the School of Rehabilitation Sciences of Zahedan University of Medical Sciences.
Measurements

Patients were asked to sign a consent form at the first place. Pain was assessed by visual analog scale (VAS) and quality of life was determined by Western Ontario and McMaster Universities Arthritis Index (WOMAC). WOMAC is a questionnaire consist of 24 items evaluating pain, stiffness and function. The highest score represent worst activities of daily living, functional mobility and quality of life.

To require EMG signal, surface EMG recorded through Procomp Infiniti System (Montreal, Canada). Skin was shaved and scrubbed with alcohol and electrodes were situated on muscle bulk according to S.E.N.I.A.M recommendation(17); For biceps femoris (BF) on the long muscle head in the middle of a line between ischium tuberosity and fibular head, for Vastus Medialis (VMO)4 centimeter above and 3 centimeter medial to superiomedial patellar border with the angle of 55 degree to vertical line(18), and for Vastus Lateralis(VL) on the middle of the line between lateral epicondyle of femur and great trochanter(17). Patient was asked to perform squat to 30 degree of knee flexion in 3 seconds then holding the position for another 3 seconds and returning to start position in 3 seconds. The peak amplitude was measured through RMS. Raw data from muscles were transformed into root mean square (RMS) data. The EMG data were collected during a 9 s of squat performance. Patient repeated the procedure for 3 times with 1 minute interval and the mean RMS was calculated(19).

Balance was tested by Balance System Biodex(SD 950-340, Biodex Medical Systems, Inc., Shirley, NY, USA). The patient got acquainted with the test method in a pretest session. Patient stood on the balance board with barefoot and the screen was adjusted according to his height. The static and dynamic stability was examined through the single leg balance performance with eyes open. Hands were laid beside trunk and foot position was regulated according to patients comfort till the mark on the screen placed in the
center. The level of test difficulty was set on 8 and each test repeated 3 times with 10 seconds interval. At the end of 3 sets the overall stability index, anteroposterior stability index, and mediolateral stability index were calculated (20).

Data were collected 3 times; before intervention, after intervention and after 1 month follow up.

**Interventions**

The PNF group received 5 minutes of ultrasound (US) and 15 minutes of Transcutaneous Electrical Nerve Stimulation (TENS). The exercise which was investigated in this group was PNF patterns executed in standing position against a yellow Thera-band (minimum resistance). The selected patterns were D2E (extension, adduction and lateral rotation of hip) and D2F (flexion, abduction and medial rotation of hip). The exercise was implemented under the watch of physical therapist and verbal commands were used for patient’s guidance. The exercise was designed in progressive sets with 15 repetition in each. The mean sets in first week were 2 and each week one set was added in the way that the last week consist of 4 to 5 sets at least.

The control group had 5 minutes of US and 15 minutes of TENS either. The exercises performed by control group were as follow: straight leg raising (SLR) in supine position with opposite knee in flexion, knee extension at the edge of the bed, and quadriceps setting in sitting position. The exercise protocol was progressive as mentioned above.

**Statistical analysis**

For statistical analysis, mean and standard deviation calculated through SPSS (version 15). According to this fact that distribution was not normal within group comparison performed by Wilcoxon and Friedman test and for between group comparisons Mann Whitney test was exerted. The significance level was chosen as 0.05 except Wilcoxon test which was 0.017.

**RESULTS**

According to previous studies the sample size specified as 14 patients in each group. Gender and BMI characteristic had normal distribution between groups, but according to kruskal-Wallis test groups were not normal in age. Table 1 represent the demographic data of patients.

Table 1. Baseline characteristics of study participants in Krukal-Wallis test

<table>
<thead>
<tr>
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<th>PNF group</th>
<th>Control group</th>
<th>Kruskal-Wallis test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>43.86±8.18</td>
<td>53.57±7.02</td>
<td>0.002</td>
</tr>
<tr>
<td>BMI</td>
<td>28.63±3.09</td>
<td>27.30±4.77</td>
<td>0.39</td>
</tr>
<tr>
<td>Gender</td>
<td>12 f, 2 m</td>
<td>11 f, 3 m</td>
<td>0.99</td>
</tr>
</tbody>
</table>

According to table 2 in the PNF group pain was decreased significantly so that the mean VAS was 7.57±1.86 pre-test and 5.71±3.14 post-test (P≤0.017). Performance was improved and WOMAC score showed significant difference in Friedman test (P≤0.05). In balance indicators overall dynamic stability was significantly improved (p=0.014) and reduced from 1.23±3.40 pre-test to 0.91±2.52 post-test. None of EMG variables revealed any significant differences.

Table 2. Friedman and Wilcoxon tests results for within group comparison in PNF group
The control group has statistical improvement in pain and performance either. Pain index included the value of 1.23±6.86 at the beginning of trial and this number eliminated to 1.13±3.71 at the end of one month intervention. According to Wilcoxon test difference between pre-test and fallow up was significant in VAS (P=0.012). Performance was significantly improved according to Freidman test in comparison of 3 measurement times (P=0.001). WOMAC score was 14.89±54.14 pre-test and declined to 12.38±29.86 post-test (P=0.001), but the difference between post-test and fallow up is not significant (P>0.05). Another variable that showed statistical difference in Freidman test is overall dynamic stability and overall static stability. Although overall static stability revealed significant difference in Freidman test, Wilcoxon showed no statistical difference in 2 measurement times comparison (P>0.05). Dynamic overall stability has statistical improvement in the period of pre-test and fallow up (P=0.013). Medial/lateral dynamic stability has significant improvement in the same term (P=0.009). In the control group the EMG variables in 3 muscles presented no difference.

Table 3. Friedman and Wilcoxon tests results for within group comparison in control group

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Time of measurement</th>
<th>Friedman</th>
<th>Wilcoxon test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Fallow up</td>
</tr>
<tr>
<td>VAS</td>
<td>7.57±1.86</td>
<td>5.71±3.14</td>
<td>3.88±2.80</td>
</tr>
<tr>
<td>WOMAC</td>
<td>62.14±13.49</td>
<td>47.93±14.91</td>
<td>38.75±16.46</td>
</tr>
<tr>
<td>Overall static</td>
<td>2.40±2.14</td>
<td>1.62±0.71</td>
<td>1.52±0.53</td>
</tr>
<tr>
<td>stability</td>
<td>Anterior/posterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>static stability</td>
<td>1.76±1.87</td>
<td>1.07±0.75</td>
<td>1.00±0.50</td>
</tr>
<tr>
<td>Medial/lateral</td>
<td>1.30±1.05</td>
<td>0.87±0.57</td>
<td>0.88±0.34</td>
</tr>
<tr>
<td>static stability</td>
<td>Overall dynamic</td>
<td>3.40±1.23</td>
<td>2.52±0.91</td>
</tr>
<tr>
<td>stability</td>
<td>Anterior/posterior</td>
<td>1.97±0.78</td>
<td>1.46±0.53</td>
</tr>
<tr>
<td>dynamic stability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medial/lateral</td>
<td>2.47±1.10</td>
<td>1.80±0.87</td>
<td>1.75±0.45</td>
</tr>
<tr>
<td>dynamic stability</td>
<td>VMO EMG</td>
<td>23.22±12.24</td>
<td>37.59±40.00</td>
</tr>
<tr>
<td>VL EMG</td>
<td>13.66±6.66</td>
<td>22.58±15.11</td>
<td>11.73±4.63</td>
</tr>
<tr>
<td>BF EMG</td>
<td>113.26±258.70</td>
<td>62.74±142.74</td>
<td>6.84±2.94</td>
</tr>
</tbody>
</table>
In between group comparison only two of variables have significant difference. Mann-Whitney showed significant difference between two groups (p=0.043). WOMAC score has 14.21±11.47 reduction in PNF group pre and post-test while its 24.28±12.35 in control group. The other variable is EMG activity of VMO which the PNF group was superior to the control group with the difference of 30.82±14.36 in comparison of 14.18±2.94 (P=0.043). Table 4 represent the difference between two times evaluation in each variable; pre and post-test difference and post-test and follow up difference.

Table 4. Mann-Whitney test results for between group comparison

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>PNF group</th>
<th>Control group</th>
<th>Mann-Whitney test</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS21</td>
<td>-1.85±1.83</td>
<td>-3.14±1.09</td>
<td>0.067</td>
</tr>
<tr>
<td>VAS32</td>
<td>0.00±0.53</td>
<td>-0.20±1.81</td>
<td>0.187</td>
</tr>
<tr>
<td>WOMAC21</td>
<td>-14.21±11.47</td>
<td>-24.28±12.35</td>
<td>0.043*</td>
</tr>
<tr>
<td>WOMAC32</td>
<td>-3.75±5.59</td>
<td>-1.60±15.40</td>
<td>0.789</td>
</tr>
<tr>
<td>AP.Statis21</td>
<td>-0.69±2.06</td>
<td>-0.29±1.01</td>
<td>0.696</td>
</tr>
<tr>
<td>AP.Static32</td>
<td>-0.08±0.20</td>
<td>-0.13±0.60</td>
<td>0.823</td>
</tr>
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</table>
Discussion
In this clinical trial we studied PNF patterns in comparison with general physical therapy. Statistical analysis demonstrates significant effectiveness of the PNF patterns in reduction of pain, performance progression and increment of overall dynamic stability. General physical therapy was effective in pain reduction, improvement of performance, overall dynamic stability and mediolateral dynamic stability. Between groups comparison indicated further efficacy of general physical therapy in performance improvement and superior effect of the PNF patterns in augmentation of EMG activity of VMO muscle.

Pain
KOA as a musculoskeletal disorder causes increment of muscles co contracture(6), articular loading and stiffness(10), cartilage destruction(9) all leading to pain enhancement(7). In this article we treated KOA as a musculoskeletal dysfunction and tried to reduce pain with muscle imbalance correction approach. Both groups revealed significant pain difference before and after treatment which this number was constant till follow up demonstrating the durability of therapeutic effects for at least one month.

Most of previous studies investigate the influence of the PNF patterns on pain reduction in chronic low back pain or shoulder disorders made us unable to find relevant article in the PNF patterns pain reduction effectiveness in lower extremity dysfunctions. Lee et al.(21) noted that musculoskeletal disorder cause reduction of muscle strength, endurance and mobility eventually all lead to fatigue and pain. Is seems that the PNF patterns can correct inter muscles interactions by training unbalanced muscle and contribute in pain attenuation(21, 22).

Performance
According to WOMAC questionnaire patients performance was significantly improved and general physical therapy was premier to the PNF patterns. According to chart1 it seems that general physical therapy was more successful in performance improvement in the first month, but this progression decelerates after intervention cessation. In the other hand, the PNF patterns improve the performance in a regression line which advantage patients from therapeutic effects even after trials ending. It also has optimum effects on balance, lower extremity movement and functional skills through muscle imbalance correction and in long term can leads to pain reduction and perfection of performance in daily living(23).

In the control group with benefiting from electrotherapy and light exercise therapy pain reduced and quality of life ameliorated while it’s probable that these effects might be transient and it needs more long term studies for investigation.
Balance
For balance maintenance sensory inputs from inner ear, visual, somatosensory and vestibular system are required to process in central nervous system(24). It causes integrated neuromuscular response that keep the body center of mass within base of support(25). Patients suffering from KOA have more balance disturbance in comparison with age match group because of several reasons like pain, flexion contracture, reduction of strength and activity of quadriceps femoris muscle, deficits in knee joint proprioception and accompanying these with aging process(24). Static balance of an individual is determined by postural sway(26) which has accelerated in KOA patients(27). Dynamic stability has more importance as falling risk increase mostly during an activity(24). Hinman et al. evidenced presence of worse dynamic stability in KOA cases through step test. These patients had fewer steps which indicate poor balance in upright posture while performing unstable activity(24).

Although comparison of 3 time revealed statistical difference in overall static stability, overall dynamic stability and medial/lateral dynamic stability in the control group, but there is no significant difference among pre and post-test. Only in overall dynamic stability and medial/lateral dynamic stability differences were significant in the period of pre-test to fallow up. That means balance improves gradually and needs more than 1 month to make changes. Overall dynamic stability improved significantly in the PNF group pre and post-test which remained constant up to follow up. Despite the fact that between group comparisons revealed no significant difference, according to chart2, the PNF group was more successful in improvement of 4 balance indexes than the control group.
In the PNF patterns resistance inserted gradually and diagonal patterns boost motor unite recruitment to max and increment nerve roots responses by improving joint proprioception(23). Leads to development of individual function and motor ability such as balance preservation(23). Specifically promoting joint stability(28) and turning motions to movement patterns(29). The PNF patterns can improve balance in Parkinson(30), stroke(13, 31) and healthy subjects(32) with coordinating movement that improve patient’s gait. The PNF patterns can be utilized in the form of aquatic lower extremity patterns in hydrotherapy(23) or combined with upper and lower extremity patterns as PNF combination patterns(33). Previous study have showed the effect of the PNF patterns on reducing the falling risk in elderly(29), improvement of dynamic balance(22) and walking speed(33).

In this study patients performed patterns in standing position which obviously promote static balance also as the training leg was in frequent movement, the dynamic balance accelerate anyway. As we expected the overall dynamic stability has augmented in the PNF group. The PNF patterns are based on 10 facilitation principles which we have applied them in this trial(11). For example; resistance was exerted through an elastic band gradually (Resistance). This resistance expanded from proximal to distal (Irradiation and Reinforcement). For balance maintenance patients should be in specific position (Body Position and Body Mechanics) and fallow the right timing of each part of pattern (Timing).

**EMG activity**

EMG studies in KOA patients revealed alteration in muscle activity as activation of more muscle fiber but in an unequal way that shows muscle insufficiency(34). Also it has been proved that VMO, VL, RF and BF have over activity causing muscles co contraction and imbalance(35). Because of temporal response delay these changes occur and try to compensate lack of joint stability and overloading on medial compartment(36).

In this study we gained more EMG activation of VMO by PNF patterns. Based on recent study, VMO has higher activation in adduction, external rotation and extension(37). Therefore we select D2E and D2F pattern to gain more muscle activity and enhance mean activity of VMO from 23.22 to 37.59 in 1 month intervention course.

Chart3. EMG activity in pre and post op.
According to chart 3 EMG activity of VMO and VL has accelerated and BF has decelerated while there is no remarkable difference in the control group. These findings are in favorable with main purpose on this study which the PNF patterns can correct muscle imbalance with activation of muscle synergies. According to EMG studies in KOA patients quadriceps femoris muscle, especially VMO, inhibit and BF as the antagonist facilitate which leads to adoptive shortening of hamstring muscle. The PNF patterns can inhibit overactive muscles through reciprocal inhibition principle. General exercise include flexion and extension in 2 dimension which is not optimally in muscle fibers alignment. The PNF patterns are designed in helical and spiral patterns which are accordant with muscle fiber topographical arrangement in 3D so the exercise would be similar to daily life physical demands. Large scale movement of the PNF patterns play an important role in motor control by functional retraining. These patterns can maximize the function of motor unite, increase musculoskeletal responses and promote motor learning and motor control.

Several studies have comprised the PNF patterns with other types of exercise therapy. Kofotolis et al. find no superior effects of the PNF patterns than isokinetic exercise, but Nelson et al. revealed higher influence of the PNF patterns in performance improvement of athletes rather than weight training which is consistent with the result of this study. Authors explicate that the PNF patterns are more capable of motor skill promotion based on irradiation, spatiotemporal summation and stretch reflex theories. With applying resistance to particular part of body, the PNF patterns target muscle contraction in another part indirectly. These patterns can stimulate proprioceptor organs like tendons and muscle spindle which has the main role in central stimulation of muscle length and tensile force. It appears that patterns accelerate muscle strength, perception, coordination, endurance and consciousness by obtaining maximal responses leads to developing neurological function, reduction of muscle contraction threshold and advancing individual motor ability. Because of antagonist reinforcement effect, weaker muscles activate more efficiently in patterns rather than working by themselves.

Altogether, despite pain reduction and performance improvement, general physical therapy had no significant effect on muscle imbalances and EMG activity and no statistical difference with PNF patterns.
in upgrading balance index. In opinion of authors it seems that general physical therapy has therapeutic effects on performance and quality of life in short term, but there is no stable long term effects which leads to KOA patients’ recurrence to clinics repeatedly. The PNF patterns have fundamental effects on muscle imbalances and EMG activities in KOA and its more constant intervention benefiting patients from therapeutic effects in long term.

Conclusion

According to the findings of this article the PNF patterns influence muscle strength, balance, pain and performance in daily living by cooperation of muscle synergies and coordination of muscle imbalances. Based on evidence, general physical therapy has faster effects, but it is probably last shorter. In the other hands, PNF takes more time to show therapeutic effects, but by fundamental correction of muscle physiology it is more effective in long term. Finally authors of this article suggest clinicians to exert the PNF patterns as an effective intervention in KOA to limit consecutive patient’s referral to clinics.

This study has some limitations. Low sample size is one of the most important one which can be increased in future studies in order to normalize samples distribution to avoid any statistical errors. According the fact that many of outcomes showed no significant difference in 4 weeks intervention we suggest further studies to select a long term trial to reveal maximal responses. Also it is recommended that by rising follow up period up to at least 3 months, long term therapeutic effects can be assured.

Acknowledgement

The authors of this article would like to express their sincere appreciation to all patients who participated in this clinical trial. This study was supported by Rehabilitation School of Zahedan Medical Science University.

References


The relationship between coping styles and tendency to addiction in students of Zabol

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Abstract:

Introduction: The aim of this study has been to investigate the relationship between coping styles and tendency to addiction in students of Zabol.

Methods: This study is descriptive-correlation. In this study, 363 students entered the study. Data collection tools in this study were Coping Inventory for Stressful Situations (CISS) and drug-abuse tendency questionnaire. The collected data entered SPSS20 and were analyzed using descriptive statistical methods, correlation, and independent t-test, ANOVA, and Scheffe post hoc test.

Findings: The results showed there was a negative correlation between problem-focused coping styles and the tendency to addiction, but emotion-focused coping style had a positive correlation with tendency to addiction. There was no significant correlation between avoidance coping style and the tendency to addiction.

Conclusions: it can be argued that problem-focused coping style could be a protective factor in drug abuse, but emotion-focused coping style is considered a risk factor for drug abuse.

Keywords: coping styles, tendency to addiction, students

Introduction:

Drug and illegal drugs abuse has become very pervasive especially among teenagers and young adults in the last few decades (Jahangard, 2013) and has preoccupied today's societies mind. Diagnostic and Statistical Manual of Mental Disorders defines drug abuse as the frequent consumption of drugs and substances that lead to the person's failure to meet his obligations at work, school, and home. In other words, abuse is a non-adaptive behavior of substance use to an extent that is harmful to a person's health. Some people may have symptoms of drug abuse but not addicted to the drugs. On the other hand, The Diagnostic and Statistical Manual of Mental Disorders states that for the diagnosis of drug addiction, the person should have three of the following criteria in the past 12 months. These criteria include tolerance, withdrawal, use of drugs in large quantities, unsuccessful attempts to stop or control the consumption,
ending business and social activities, and use of drugs in spite of their physical and psychological problems (Kei, James 2012). Since adolescence is the time to experience and personal choices, and the individual's identity is shaped at this time, adults and young adults are very vulnerable against drug abuse and risky behaviors. That is why identifying the effective factors in preventing and protecting young people from drug abuse and high-risk behavior is important (Khalaj Abadi Farahani and Ebadi, 2003). Coping style is a set of cognitive and behavioral efforts of the person used to interpret and modify a stressful situation that lead to diminishing of suffering from it (Doustdar, 2015). Coping with stress involves two processes: problem-focused process in which the individual faces the problem that is the true cause of his confusion, and emotion-focused process based on which, the individual tries to regulate his emotional responses (Bagherian, 2011). Emotion-focused coping indicates self-centered reactions for reducing stress and not for logical solution of the problem, but problem-focused coping strategies represent a deliberate effort to solve the problem (Shoaa Kazemi, 2014). Researchers believe that in facing the stressors, more important than stress is the concept of the coping, because it is not the stress that impairs the performance of the individual and give the feeling of pressure on the individual, but the way to deal with stress and how to handle it are crucial (Doustdar, 2015). Mohammadifar mentioned adaptive emotion-focused and problem-focused strategies as important indicators predicting mental health (Mohammadifar, 2012). In this regard, Ghazanfari argued that emotion-focused style has a role in reducing and problem-focused style has a role in increasing mental health (Ghazanfari, 2008). Many studies have shown that coping style has a relationship with a high degree of competence in reducing and preventing drug abuse. Hence, this study was conducted aimed to study the relationship between coping styles and the tendency to addiction in the students in Zabol.

Research method:

This study was a descriptive study of correlational type where 363 subjects took part. The method of data collection was quota. Students of 15-16 years of age studying in day courses in the academic year 2014-2015 participated in this study. The only exclusion criterion was unwillingness to participate in the study.

Research Tools: Tools for this research were two questionnaires, each of which is explained below.

1) Coping Inventory for Stressful Situations (CISS): This questionnaire was developed to assess a variety of coping strategies in stressful situations by Endler and Parker (1990). The test contains 48 items, based on the Likert scale, a score from one to five is given to each item, and three problem-focused, emotion-focused, and avoidance coping strategies are measured. Jafarnejad (2003) obtained the reliability for problem-focused, emotion-focused, and avoidance coping strategies, respectively, as 0.83, 0.80, and 0.72. The reliability of CISS was obtained as 0.84 using Cronbach's alpha.

2. Tendency to addiction questionnaire: This questionnaire had 16 questions that assessed the tendency to addiction from social, personal, and environmental dimensions. In the thesis by Mir Hesami, for face validity and the accuracy of the validity of Farchad et al., the questionnaire was distributed among a number of students, and after ensuring the obtained results, the questionnaire was distributed among the
samples. Moreover, for the reliability, Cronbach's alpha was calculated. Cronbach's alpha reliability coefficient ranges from zero meaning lack of reliability to one that shows complete reliability. As the value obtained is close to one, questionnaire reliability is more, and Cronbach's alpha reliability for this questionnaire is 0.79 (Mir Hesami, 2009).

Data analysis was done using SPSS21, descriptive statistics (frequency, percentage, mean, standard deviation) and inferential tests (Pearson correlation coefficient, independent t-test, ANOVA, due to the normal description of the data).

Findings:

In Table 1, mean and SD of variables in the sample have been reported. In Table 2, the correlation of the studied variables with tendency to addiction and significance level are provided.

Table 1: Mean, standard deviation, maximum and minimum of the variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>5</td>
<td>20</td>
<td>11.45</td>
<td>2.38</td>
</tr>
<tr>
<td>Individual</td>
<td>4</td>
<td>18</td>
<td>6.30</td>
<td>2.41</td>
</tr>
<tr>
<td>Social</td>
<td>7</td>
<td>29</td>
<td>15.60</td>
<td>3.44</td>
</tr>
<tr>
<td>Total score</td>
<td>16</td>
<td>56</td>
<td>35.38</td>
<td>4.89</td>
</tr>
<tr>
<td>Problem-focused coping skills</td>
<td>21</td>
<td>72</td>
<td>46.59</td>
<td>8.36</td>
</tr>
<tr>
<td>Emotion-focused coping skills</td>
<td>24</td>
<td>75</td>
<td>45.65</td>
<td>8.11</td>
</tr>
</tbody>
</table>

Table 2: Results of the correlation between coping skills with the tendency to addiction

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation coefficient</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem-focused</td>
<td>-0.23</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Emotion-focused</td>
<td>-0.28</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>
The findings showed that there is a correlation between emotional-focused coping skills and the tendency for addiction (r=0.28), and a negative relationship was observed between problem-focused coping skills and the tendency to addiction (r=-0.23).

Discussion and conclusion:

The aim of the present study was to examine the relationship between coping skills and the tendency to addiction among students. The results showed that there is negative relationship between problem-focused coping skills and the tendency to addiction, and a positive correlation between emotion-focused coping skills and the tendency to addiction. In the process of coping, cognitive skills are considered as skills for problem-solving, and by applying effective problem-focused coping strategies, the person uses cognitive skills to solve problems. Accordingly, the ways to deal with the problem are examined directly, and usually by finding proper solutions to problems, psychological satisfaction is obtained. On the other hand, this state leads to order and coherence of thought, and emotional distress decreases. In the light of intellectual coherence and emotional relief obtained, the source of stress is recognized better and can be controlled. Thus, the controllability of the sources of stress causes the person to have better mental health and makes the person refer to drug less to eliminate stress (Epstein et al., 2000).

In this regard, we can say, people who rely on mood-altering substances sincerely believe that they cannot change the situations that make them feel uncomfortable and want to change this feeling easily and simply. Moreover, because they have not learned the skills to cope with problems and have just learned to blame others, they resort to emotion-focused coping skills. Moreover, Washton and Bandi stated that one of the reasons for developing drug abuse is using inefficient coping skills, because such people have not been trained to solve their problems by using efficient problem solving methods and have very few behavioral models. Inabilities to tolerate frustration, despair, and believe in instant gratification of desires and emotions such as anger, loneliness, and depression are of factors that make these people prone to drug abuse and use ineffective coping skills. Besides, due to weakness of coping skills, comfort and convenience of drug abuse become more attractive to such people. Moreover, drug abusers have more immature defense mechanisms and have weaker coping skills and problem solving strategies compared to others (Mousavi, 2009).

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References:


James, K (2012), sociologists addiction, prevention of drug abuse, Translator Saif Ullah Saif Ullahi, Tehran, scholars society


Workplace violence against nursing staff in a teaching hospital Shiraz, Iran
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Abstract

Introduction: Workplace violence against nurses is a complex phenomenon that can affect professional performance and job satisfaction of health care workers. This study aimed to investigate the rate of violence, its associated factors and the reactions toward such violence among nurses in a teaching hospital in Shiraz, Iran.

Methods: This descriptive cross-sectional study was conducted on all nursing staff employed at a teaching hospital, who were selected with census method. Participants were asked to complete a 3-part questionnaire, including demographic information and 12 questions about physical, 8 questions about verbal violence, in a 12-month period prior to the survey. The data analysis was done by means of descriptive and analytic statistics through SPSS statistical software (version 15).

Results: The results show that 28.8% of nurses experienced physical assault and 77.5% of them verbally abused by patients and relatives over the past 12-months. The highest physical and verbal violence occurred in the age group of 31-35 years (38.2 and 83.6 % of the participants respectively). The higher rate of physical violence had occurred in the field of general surgery, emergency department and ICU and The higher rate of verbal violence had occurred in the post-heart surgery and angiography, CCU and OB-GYN respectively. In 61.4 % physical violence and 80.1 % of verbal violence, patients' relatives were the source of violence. In both types of violence, the most common frequent reaction of personnel was informing the security guards. In 63.6% of physical and 67.1% of verbal violence, managers did not provide the necessary support for staff.

Conclusion: Considering the high prevalence of violence against nurses and the lack of rules mandating adequate protection of them from violence in the workplace, there is a need for every hospital Institute, to plan violence prevention programs to enhance staff and patient safety.

Key words: Hospitals, Nursing staff, patients, Workplace, violence

Introduction
Violence in the workplace a global issue in public health that has increased in both industrialized and developing countries in recent years. Violence in workplace refers to a situation that personnel has been abused, physically assaulted, threatened or attacked in connection with their work or on duty and this matter significantly impaired their safety, welfare, and health. This phenomenon is a threat to efficiency, productivity and success of the organizations (1).

Preventing workplace violence is a growing concern that has received growing national attention. In this context, it is important to note that violence is not unique to any part of the globe. Due to socio-economic, cultural and religious differences, some aspects of workplace violence in health centers in different countries and even within different centers of a country are not similar. Therefore, it is necessary to carry out a study on the considered population in terms of the state of violence and its dimensions, in order to make a better decision for the establishment of more suitable strategies for reducing and preventing this phenomenon and to oppose it or coping with it.

Workplace violence against healthcare professionals are higher than other establishments. About one-fourth of violence occurred in health centers and this indicates that these centers should receive more attention (1). Nurses and other healthcare professionals have the second place in violence experiences after police and security staff. Being exposed to workplace violence for healthcare workers are sixteen times more common than other professions (2,3). Also, nurses and patient care assistants are exposed to more violence among health care workers. they are the first line of facing with patients in emotional and physical pain, which has put them at risk of violence. (4). Exposure to workplace violence in nursing associated with their health problems. It affects their family life and social interactions. The violent events have also effect on nurses' productivity, particularly their ability to provide safe and compassionate patient care. It influences on recruitment and retention of nurses as well as on the extent of the amount of their sick leaves and burnout (5). Patients and their relatives, physicians, supervisors and other health care professionals are the perpetrators of violence against nurses (1).

The violence in the workplace in Iran like other countries is a growing phenomenon. Researches demonstrate that violence in health care centers is a widespread manner and nurses are at the highest risk (6). In addition, the presence of nurses in a stressful situation such as accidents, death, waiting for physician visit and transferring from one ward to another ward of hospital causes their exposure to a higher risk of violence (2).

Some wards of hospitals such as psychiatry, ICU, emergency and geriatric departments have a higher rate of violence because of their natures (5). Hospital overcrowding, lack of adequate staffs and misconceptions about the behavior of staffs, are some other reasons for this phenomenon (6). In clinical situations, if patients express dissatisfaction with the doctors’ care that followed by refusal of treatment prescribed by their physician, so nurses and health care workers are frequently subject of being blamed if they do not attempt to persuade the patients to consent to treatment (7).
Violence in a workplace has side effects on staffs and may lead to physical injuries, migraine and tension headaches, emotional manifestations, psychic disorders and also may have adverse effects on patients care. Other consequences of this matter include activity limitation, loss of working days, termination or changing the job and even death and impose high costs on the health care systems. (8)

Fatigue, sleep disorders, nightmare, chronic pains, reduced perceived general health, self-dissatisfaction, disappointment, irritability, increase the error rate, disregard for morality, loss of job satisfaction and reducing their presence in the stressful ward are other effects of violence in a workplace (9). Both observation and experience of violence have a deep effect on staffs and even may damage to the properties (10). Violence sometimes causes the post-traumatic stress disorder (11). Eventually, negative consequences of violence in workplace categorize to three group: work performance, physical health and mental health (7). Although violence in health and clinical place especially hospitals is very common and health managers are somewhat aware of this issue, but exact study about dimensions of violence and methods of dealing with this phenomenon could help managers to perform and manage efficiently. Also staffs comments can be very useful in this context. So we study different dimensions of verbal and physical violence against nurses in one of health and clinical centers of Shiraz University of Medical Sciences.

This study tries to determine the nature and incidence of verbal and physical violence from patients, their companions and colleagues against nurses in Shahid Dr.Faghihi educational clinical hospitals, and To present the results of this study …to the authorities nursing offices, supervisors, and hospital administrators to help them about prevention and supporting program.

Method:

This study has been done in descriptive – analytical method and in cross-sectional form. The statistical population of the study include all nursing personnel working in all wards at an educational in Shiraz university of Medical Sciences.

A four-part questionnaire was used for collecting data which totally contained 28 questions. The first part of questionnaire included personal and workplace information (7 questions). The second and third part of the questionnaire was designed to assess physical violence (12 questions ) and verbal violence (8 questions ) in the workplace. In Fourth part, the question of the questionnaire was open-ended, asked the respondents to give their viewpoints on workplace violence and to recommend ways the workplace opportunities could be improved to assist them in their work. This questionnaire was mainly derived from the WHO research instruments about violence in health care sectors (11), which was translated and regulated according to Iranian-Islamic culture. The validity and reliability of the questionnaire, was previously reviewed and approved in a pilot study in Namazi hospital by Ms. Ghorbani in 2011” (r>0.7).
The analysis of data was performed using descriptive (such as percentage, means, and standard deviation) and inferential statistics including frequency distribution tables and Chi-square test to compare categorical variables, using the statistical software of SPSS Version 15. A p-value of ≤ 0.05 was considered statistically significant. All of the answers to the final three open-ended questions have been grouped according to content analysis of responses.

**Ethical issues**

The research ethics committee of the Shiraz University of Medical Sciences approved the study. Moreover, before data collection, permissions were obtained from the ethics committee in hospitals and ward managers. The study objectives were discussed for all of the participants. The voluntary nature of participation was explained before completion of the questionnaire and they also signed an informed consent. They were, assured about the confidentiality and anonymity of the data.

**Results**

In this study, out of 350 questionnaires which distributed among the nurses were working in three shifts 306 questionnaires were completed (Response rate: 87.42%). The present study showed that during the past 12-months, 88(28.8%) and 237(77.5%) of nursing staff have experienced physical and verbal violence respectively. The rate of violent events against nurses regarding the baseline characteristics were shown in table 1.

<table>
<thead>
<tr>
<th>Characteristic variable</th>
<th>N(%)</th>
<th>physical violence</th>
<th>P value</th>
<th>% verbal violence</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-25</td>
<td>79(25.8%)</td>
<td>24(30.4%)</td>
<td><em>(P=0.331)</em></td>
<td>75.9</td>
<td><em>(P=0.435)</em></td>
</tr>
<tr>
<td>26-30</td>
<td>105(34.3%)</td>
<td>28(26.7%)</td>
<td>NS*</td>
<td>73.3</td>
<td></td>
</tr>
<tr>
<td>31-35</td>
<td>55(18%)</td>
<td>21(38.2%)</td>
<td>83.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36-40</td>
<td>33(10.8%)</td>
<td>6(18.2%)</td>
<td>81.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 41</td>
<td>34(11.1%)</td>
<td>9(26.5%)</td>
<td>79.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>47(15.4%)</td>
<td>13(27.7%)</td>
<td><em>(P=0.85)</em></td>
<td>39(83)</td>
<td><em>(P=0.584)</em></td>
</tr>
<tr>
<td>female</td>
<td>259(84.6%)</td>
<td>75(27.9%)</td>
<td>NS</td>
<td>198(76.4)</td>
<td>NS</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single</td>
<td>134(43.8%)</td>
<td>43(25.1%)</td>
<td>NS</td>
<td>109(81.2%)</td>
<td>NS</td>
</tr>
<tr>
<td>married</td>
<td>172(56.2%)</td>
<td>45(25.9%)</td>
<td>101(75.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional category</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical Nurse</td>
<td>50(16.3%)</td>
<td>30</td>
<td>NS</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>217(70.9%)</td>
<td>38</td>
<td>77.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head nurse</td>
<td>5(1.6)</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing student</td>
<td>12(3.9)</td>
<td>50</td>
<td>83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse’s aide</td>
<td>22(7.2)</td>
<td>27.3</td>
<td>77.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NS= Not significant
The highest rate of physical violence had occurred against nursing students (50 %) and the lowest one (nil) against the head nurses. The highest rate verbal violence had occurred against the head nurses (100 %) and the lowest one against practical Nurse (74 %). According to Chi-square test there were not any significant differences in professional categories for physical (P = 0.312) and verbal violence (P = 0.543).

During this study, it was found that the highest rates of physical violence had occurred, in the fields of general surgery (58.8 %), emergency medicine (41.4 %) and medical ICU (41.2 %) respectively, and the lowest rate in the field of OB-GYN (nil). It also found that the highest rate of verbal violence was respectively in post cardiac surgery and coronary angiography (100%), CCU (94.4 %) and OB-GYN (92.3 %) and ICU (62.5 %), dialysis (60%) and dermatology (47.4 %).

Among the 88 cases of physical violence, only 3 of them (3.4%) were the weapons. More physical violence (61.4 %) and verbal (80.1 %) had been done by the patient's relatives. Most cases of physical (97.7 %) and verbal violence (97 %) had happened inside the hospital and only two cases of physical (2.3 %) and verbal violence (3 %) in patients' homes, or in the way of work to home. The study showed that more physical violence happened during the night shift (43.1 %) and more verbal violence in the afternoon (57.8 %), but there was no significant relationship. In staff who were dealing only with female patients, physical violence against them (13.8 %) was less than other personnel (P = 0.173), but the verbal violence against them (82.8 %) was more the others (P = 0.921). The data from this study also found that the responses of the personnel, when confronted with physical violence demonstrated as follows: Informing the security guard to intervene (37.2 %), ask for help from others (36.2 %) and leave or escape from the place (24.8 %). The reactions of the personnel when faced with verbal abuse also include informing the supervisor or authority (35.8 %), informing the security guard to intervene (28.3 %) and no response (23.6 %). Most cases of physical or verbal violence had no consequence for the wrong doer or only a verbal warning (Table 2).

<table>
<thead>
<tr>
<th>consequence for the wrong doer</th>
<th>Verbal violence (%)</th>
<th>Physical violence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting to police</td>
<td>13.5</td>
<td>19.3</td>
</tr>
<tr>
<td>verbal warning</td>
<td>37.6</td>
<td>28.4</td>
</tr>
</tbody>
</table>
In this study, most of the personnel have expressed that they were not suggested by employers or managers to be protected and supported from exposure to foreseeable physical (63.6%) and verbal (67.1%) violence. Also, 14.8% of the personnel had been injured during the physical violence.

In final part of the questionnaire, participants discussed their experiences and recommendations to reduce risk of violence in professional practice (table3).

Table 3: Recommendation of participants about the solution to reduce violence in the workplace.

<table>
<thead>
<tr>
<th>Suggested solution to reduce violence at workplace</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security scales (increase the number of guards and picket, audible alarms, cordless</td>
<td>5.6</td>
</tr>
</tbody>
</table>
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| Phones) | Applying advanced tools (more lighting, availability of warning alarms) | 22.6 |
| Justification of patient (recording and informing people of violence behavior and subsequences that may be created to them following the violence actions) | 49.3 |
| Justifying the patient (recording and reporting on violent behavior and the consequences that may result from the use of violence for them). |  |
| Retaliation training for personnel (teaching self-defense and resolving conflicts, spot the early signs of aggression and either avoid it or cope with it) | 18.2 |
| Investment in development and protection of human resources in work place (providing a healthy and safety environment, assessing job satisfaction and doing related interventions, legal effort to solve the problems that is created for personnel) | 62.2 |
| Investment in training and promotion of ethical principles consideration in occupational communications (behavioral & communication skills training and anger or anxiety management skill for personnel, giving rewards for those personnel who have good behavior with patients) | 63.2 |

**Discussion**

Workplace violence is becoming a universal and problematic phenomenon. Meanwhile, violence in health centers, especially in hospitals, is higher than in other centers. This cross-sectional study attempted to determine the incidence of workplace violence against the nurses within in a teaching hospital in Shiraz, during certain past one year period.

The present study showed that 28.8% of the nursing staff has experienced physical violence in one year that was comparable but higher than several studies in other neighboring provinces (3, 10). The higher rate of violence in our study may be due to overcrowding as contributing factors to violence against nursing staff in Shiraz University hospitals, as the largest therapeutic centers in the south of Iran, and the host of patients with different cultures and nationality from different regions of the country. Anyway, this matter is a warning for the authorities and managers to pay more attention to this issue.

The results indicated that in our study, the nurses have a lower rate of exposure to physical violence than several studies in other countries (7, 12) that could be explained by social, cultural and religious differences. It is worth mentioning that the rate of verbal violence in our study (77.5%) was also as high as previous studies that also reported...
the range of 69.7% to 91.6% of verbal violence (3, 10, 13, 9, 6). In Iran, the rate of verbal violence also was reported between 23.2% and 97.8% in a systematic review (14).

It was determined in this study that the greatest rate of verbal and also physical violence occurred between 31 to 35 years old nursing staff. In the study of Ghods Bin et al. the greatest verbal violence had occurred at ages of 35 to 39 years old (10). In the study of Ahmed et al. in Jordan country younger and less experienced nurses had experienced more violence (4).

In general, current study showed, female and male experienced the same level of physical and verbal violence, whilst, several previous studies in Iran indicated, physical violence had occurred either only against male personnel (10) or was more frequent towards male than female personnel (8, 9, 15). The different result, got by our study may be due to change in social structure, culturally accepted values and societal consensus about the roles of women. Studies in other countries showed female nurses were more victims of physical violence (5, 12).

It was determined in the current study that the rate of violence in some hospital wards was more than the others. The greatest rate of physical violence had occurred in general surgery wards, emergencies and internal medicine I.C.U respectively; and the greatest rate of verbal violence had occurred in post cardiac surgery and angiography, C.C.U and gynecology wards, respectively. Similar to our study it was found in the study of Ahmed et al. that the violence has been experienced more in emergency department(ED) and Intensive care unit(ICU) (4). It was found out in the study of Ghods Bin et al. that the maximum value of verbal violence had been in internal medicine emergency department (10).

Kwok et al concluded that working in the men wards and in special wards such as accidents and emergency services, Community nursing services, , and the Traumatology and Orthopaedics Department, were identified as a risk factor for workplace violence (16). It may be argued that improvement in security is necessary for these high-risk areas.

While head nurses had experienced the highest levels of verbal violence (100%), none of them experienced physical violence in the past year period. Nursing students had the highest rates of physical violence among all staff. In the study of Ghods Bin et al., The highest rate of violence was occurred in nurse' aids and then the practical nurses, and the least rate occurred in the nurses (10). In a study by Talas et al. in Turkey, the highest rate of violence was against security guard and service personnel (2)

In the present study, the major sources of physical and verbal violence were patients' relatives and the second reported source was patients themselves as well. Some of the previous studies also reported that 64/4% to 90/9% of aggressors were patients' relatives (9, 2, 17). Ahmed et al. also stated that violence factors were usually patients and patients' families (4). Nonetheless, patients and their relatives are not the sole perpetrators of violence in workplace; nursing colleagues, supervisors, managers, and doctors as common sources of workplace violence should not be overlooked.
As if, in a study was done by Khalil et al. in South Africa, they declared that nurses' aide is the main causes of physical violence against the other nurses (18). As well as Celik et al. found that colleagues are the major causes of verbal violence and patients and their families are major causes of physical violence (7).

According to our study and study of Esmaeel Pour et al. (8), most of the violences occurred within the hospital especially patient's bedside or in the nursing station.

In a study Shoghi et al. stated in their study that 48.3 % of violence occurred inside the patient room (9). In this study, among 88 cases of physical violence, only 3 cases (3.4 %) were happened by weapons.

In a study in the United States Kansagra et al. Stated that 20% of the emergency departments witnessed a knife or gun brought there, on a daily or weekly basis(19). Study of Esmaeel Pour et al. none of the cases of physical violence happened with weapons (6).

Our results further indicate that a majority of the verbal violence occurred during the afternoon and a majority of the physical violence occurred during the night shifts. Similarly the highest rate of physical and verbal violence occurred in night and day(especially morning) shift, respectively in some other studies (2,6,9). As well as, in the study of Estrin Bahar et al. which was done in 10 European countries, the greatest risk to exposure to violence was reported on the night shift (5). This may be due to inadequate care service and shortage of human resources and the limited time in the evening and night, leading to increased anxiety and stress.

In the present study, the rate of verbal violence exposure in personnel dealing with male patients was lower than those who only deal with female patients (71.4% vs. 82.8%), and vice versa, the rate of physical violence in personnel who were dealing with male patients was more than the personnel who were just dealing with female patients (23.8% vs. 13.8%). Hasani et al. in their study found that the cause of 74 % of verbal and 78 % of physical violence were men (13).

According to obtained results, the most common reaction of personnel in time of facing with physical violence were: informing the guard or supervisors and authorities and notifying the guard to intervene. In a study of Shoghi et al., only 35.9 % of nurses had reported violence the major reason for not reporting the violence was the resolution of the problem and the lack of injury to the victim (9). The majority of nurses reported that abuse was followed by either inaction or by actions which failed to satisfy the victim.

Research of Sahebi et al showed that nurses reported violence only in 23.6 % of cases, and the major causes for not reporting the violence was not occurring reportable incident and then the fear of being stigmatized as a problematic and incompetent person, respectively (8).

The study of Ahmed et al. found that only in 35.1 % of cases violence is reported by nurses which most of them believed that its report is useless (4). Talas et al. found in their study that highest reaction to violence was sadness and
anger and the greatest way to deal with it had been silence and the lack of reaction. 43.3 % of physical and 65.3 % of verbal violence victims had not reported it to higher authorities. Some of them, perceived violence as a part of their profession and believed that they can solve the problem themselves (2,4). Smith et al. also reached to the result that the fear of retaliation and lack of support by hospital management are two main obstacles to report violence (21). In the study of Celick et al. the most common reactions against violence were anger, feeling of inability, feeling of humiliation and depression respectively, and most of the nurses do nothing against the violence (7). In the present study also personnel stated that reporting in the cases of physical (36.3 %) and verbal (38 %) violence has not had any punishment to wrongdoer, only led to a verbal warning or led to a temporary exclusion of patient's family from the hospital.

In this study, a majority of personnel said that they are not supported by hospital officials' managers from physical and verbal violence which was similar to the study of Ghods Bin et al. and Ahmed et al that the majority of personnel had the same opinion as well (4,10).

The suggestions and strategies that suggested by personnel in part of the open-ended questions can be placed into 4 main categories including:

1- Effective planning to establish arrangements for personnel' job safety by managers and justified judgment between personnel and wrongdoer when violence is reported.

2- Providing and installing the rights and duties of personnel besides patient's rights charter to inform the client.

3- Culturalization among people to respect and regard of rights of personnel of health care centers.

4- Problems such as the shortage of human resource especially licensed nurse, poor facilities such as clothing, blankets, bed sheet etc., and a high number of shifts work or long periods of duty for every personnel must be justified. An effort to see patients on time by doctors especially when a patient is critically ill, appropriately respond to questions of patients and their families, were mentioned as proper ways to reduce violence.

In a study was done by Islamian et al. revealed that holding management training sessions and anger management has had a significant influence on reducing physical and verbal violence (3). In the study of Hassani et al., 96.15 % of personnel declared that they have not had formal training in relation to recognizing and management of violence patient and 78.4 % of them considered the operations and security prediction insufficient to their safety (13). Ahmed et al. stated in their study that negative social imagination of nurses and poor support of hospital officials are the most important factors to increase violence which has said by nurses (4). Esterin Bahar et al. in their extensive study reached to the result that pressure and high physical and time load has a direct relation with violence (5).

Conclusion:
Results of this study indicated that nurses are at high risk of workplace violence. So, safety should be communicated as the priority of health service managers and prevention is key to successfully reducing the workplace violence.

References:


Effects of Non-Nutritive Sucking on in gastric residual of Tube-Fed Preterm Infant: A Randomized Clinical Trial (RCT)

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Abstract

Introduction and aim: The intolerance feeding in preterm infants is common; the aim of the study was to examining the effect of non-nutritive sucking on tube-fed gastric residual. Methods: In a randomized clinical trial, 86 preterm infants, 28–34 weeks' gestation, with a birth weight of 750-1500 grams, hospitalized to the NICU, the neonatal unit of a teaching hospital, and a Social Security hospital. Infants assigned to two groups - with non-nutritive sucking or without non-nutritive feeding using simple random method. From the beginning of gavage for the infants in the first group, non-nutritive sucking with a pacifier during gavage carried out by the researcher in 10 minutes later, three times a day for 7 days by the researcher. Nevertheless, the second group of infants underwent gavage according to ward routine and did not receive non-nutritive sucking from a pacifier. In both groups, on the study days prior to the next feeding, the residual volume (GR) of gavages measured by a researcher. Results: The residual volume in the intervention group during different days was lower than that of the control group, and there was statistically a significant difference between the intervention and control groups during the seven days and three times a day (p=0.012), which becomes more pronounced in different days (p= 0.014), however, there is no difference among the daily feeding times (p=0.14). Conclusion: The hypothesis of non-nutritive sucking being beneficial regarding the intolerance of nutrition in preterm infants confirmed. Thus, it recommended that nurses and mothers improve gastrointestinal development and nutrition of preterm infants by give the pacifier along with the gavage in tube-fed preterm infant.

Key words: Infant, Premature; Tube Feeding; Gastric residuals; Gastric residual Volume; Sucking Behavior; Newborn Intensive Care Units (NICU)

Introduction

The latest statistics published by World Health Organization (WHO) in 2012 indicated that, on average, around 15 million preterm infants are born annually in the world(1) .The most important reason of decreasing in preterm infants death in recent years is the improvement in specialized caring (2). In spite
of this improvement, infants still suffer from abnormal growth and neurodevelopmental deficits, and high amount of asthma, Cerebral palsy (CP), abnormal cognitive function, failure in academic education, and behavioral problems have been seen in the following years of their lives is being observed. Hence, the current specialists’ challenge in Neonatal Intensive Care Units (NICU) is not only the surviving, but also is supporting and facilitating the optimized growth, but also support and facilitate the optimal growth and development of these infants. Infants have special needs for survival and complete development in an extra-uterus environment, one of the most important of which is nutrition. Disability of the preterm infants in full feeding specified by in muscle tone, Poor coordination of sucking, swallowing, and respiration. Considering the possibility of aspiration, oxygen saturation drops, apnea, and heart rate reduction, the feeding method in these infants should be such that besides supplying calorie intake and the required nutrients needed for their growth and development, it doesn’t lead to the observed complications (3, 4).

Sucking reflexes exist from the 23rd week in uterus and even before it in infants, but coordination between sucking and swallowing establishes roughly from 34 weeks of age. The goal of feeding the preterm infants is to make the infant's growth continue as the same process of intrauterine. However, the fetus’ growth isn’t equalized in the uterus and the rate of growth varies during pregnancy; so that from the 37th week of pregnancy, daily weight gain reaches its maximum, i.e. about 35 grams a day (5).

The nutritional needs of the preterm infants are different from that of term infants, so that they need more energy and protein, and digestion and fat absorption are not complete. In spite of many potential benefits of breastfeeding for infants, it may not provide all the nutritional needs of these.

Thus, it is necessary to use breast milk fortifier for infants under 2,000 gr. Breastfeeding in term and preterm infants with gestational age more than 32 should start from the mother's breast after birth and continue if the maternity and infant's clinical condition is appropriate according to the demand of the infant. In an infant with a gestational age of less than 32 weeks, breastfeeding starts with the milk infused by the mother, preferably by means of lactation, a cup, a spoon, or gastric tube, based on fetal age and infant tolerance. If there is a need to use Orogastric feeding tube in infants under 2,000 grams, is utilized and Nasogastric Tube for more than 2,000 grams (6).

One of the common complications seen in preterm infants is intolerance to feeding, characterized by abdominal distension and increased residual volume. Measuring the gastric residual volume (GR) is one of the common methods for identifying tolerance or intolerance feeding in preterm infants. The increase in the residual volume of the gavage indicates the intolerance feeding in the infant, seen in the first stage of the Necrotizing Enterocolitis (NEC) - one of the mortality causes in low birth-weight infant. Thus, the nurse should measure the stomach residual volume before every gavage feeding, so that in case of miscolored secretion (bilious/blood gastric residuals), non-digestion of milk or residual volume more >30% of previous feeding volume, and if continued, stop feeding the infant temporarily (7).

Therefore, researchers have always sought to find a way to improve feeding in preterm infants. The results of some studies show that it is possible to use a right lateral or prone position to accelerate gastric emptying and improve the feeding intake in preterm infants (8, 9). On the other hand, non-nutritive sucking (NNS) has been considered as a safe intervention to improve feeding readiness. NNS is when there is no food and involves stimulating the inside of infant's mouth by pacifier of finger to stimulate sucking pattern, which is done in preterm infants during feeding through tube-feeding (9, 10). The results of the studies indicate that NNS leads to is relaxing and reduces crying in infants. It also
significantly reduces heart rate after painful stimulation in preterm infants (11, 12). Moreover, evidence show that the use of NNS, such as foot massage, can be effective in reducing pain in preterm infants (12).

The effect of non-nutritive sucking in preterm infants on weight gain, energy intake, heart rate, oxygen saturation, and hospitalization duration has been studied (13). However, it has come up with contradictory results in improving the feeding of infants. Corvagila et al. (2014) concluded that organized NNS and continued effective sucking improve the feeding of preterm infants(14), but Bingham et al. (2010) did not find a significant difference in the number of feeding days and the development of neonatal skills in the future between NNS and the control groups (15). However, in the study of Valizadeh et al., NNS method managed to reduce the time to achieve independent oral feeding in preterm infants(16). No studies were found to measure the effect of NNS on the remaining volume of infant gavage. In case of proving a relationship between NNS and reducing the volume of gavage, it is possible to start oral feeding and discharge the infant soo, and face less complications such as NEC. Moreover, this can be a good step in reducing knowledge gap, treatment costs, duration of hospitalization, and improving the quality of care of preterm infants. Thus, the researchers decided to carry out this study with the aim of determining the effect of NNS on the gastric residuals volume of gavage in tube-fed preterm infants.

Materials and methods

After gaining approval from the Ethics Committee of Tabriz University of Medical Sciences with the code TBZMED.REC.1394.1011 dated February 4, 2016 and registration on IRCT website of clinical trial with the code IRCT201601264613N16, the study was conducted on infants admitted to the NICU and the neonatal unit of an teaching hospital, and a Social Security hospital in Tabriz during 6 months from April 8, 2016 to August 22, 2016.

The inclusion criteria were preterm infants with gestational age of 28-32 weeks, birth weight of 750-1500 g, being healthy (not having congenital anomalies and digestive problems confirmed by a physician), clinical status stability (physiological parameters such as heart rate, respiratory rate, and distress and saturation) and having effective sucking. Infants was excluded from the study, if the their’ parents were not willingness to continue to participate in the study, or in case of intra-ventricular hemorrhages of grade 3 and 4, periutericular leukomalacia, necrotizing enterocolitis, bronchopulmonary dysplasia, chronic pulmonary disease, the need for mechanical ventilation, neonatal seizure, positive blood culture, meningitis, infant NPO, and not having effective sucking for any reason for more than 24 hours.

The sample size was calculated with confidence level and power of 95%, and maximum variation of variance to total square power, the difference between each mean before and after the intervention (11) is estimated to be 2.5 in each group to 34 infants, and with a probability of 20% drop in the study, the sample size was increased to be 41 subjects for group. After the permission of a neonatal physician issued to start gavage feeding preterm infants, their mothers were informed about a description of the importance and objectives of the study, and they were advised that they could withdraw at any time without their decision affecting the treatment of their infants and then informed consent was obtained.

Data collection tools were a demographic profile form and a researcher-made follow-up form. The demographic form included information such as age, gender, and weight of the infant, and parents' occupation and education, and the second part was dedicated to record the results of evaluation of the
residual volume and variables such as the amount and color of aspirated stomach secretions, the type and amount of milk received, emergence of gastrointestinal complications and vital signs of the infant.

Eighty-six infants, 28–34 weeks’ gestation, were assigned to treatment (non-nutritive nutrition) and control groups (without non-nutritive nutrition) by simple random method. Treatment infants were offered NNS with a pacifier from the start of the gavage, during and continued for 10 minutes after it, three times (at 3-5-7 pm) and for a period of 7 days. Infants in the second group underwent gavage according to ward routine, but did not receive NNS with the pacifier. The gavage method for all the infants was push.

In both groups, before the feeding at 3, 5 and 7 pm, the residual volume of the stomach was aspirated by the researcher during the study days by a syringe with same aspiration technique for the aspirated gavage tube and its amount and specification were recorded in the related form. Due to the obviousness of the intervention, blindness was not possible in the study.

**Statistical Analysis**

After entering data to the computer using statistical software SPSS13 (Inc., Chicago, IL.), first based on special statistical methods, unrelated data was discarded, and then the normality of the data was quantitatively analyzed by K-S test. In case of non-normality, their normality was achieved using special statistical transformation Box and Cox (1964) transforms and then the data were plotted based on the model of joint modeling and Kaplan Meier and Cox tests using R and Stata software, and survival charts were drawn. In cases of differences between the demographic variables between the two groups, their effect controlled by statistical methods. The results for the quantitative variables have given as $\bar{X} \pm SE$ and when P value was less than 0.05, the mean difference considered significant.

**Results**

All 86 infants (43 subjects in each group) entered the study and only one in the control group and two in the intervention group (3.5% drop rate) were excluded from the analysis (Figure 1: Flow diagram of the study). Most of the infants studied in the NNS and control groups - 24 (57.1) and 21 (51.2) respectively - were girls and they were born by cesarean section 27 (64.30) and 29 (70.70). Demographic characteristics of the infants are presented in Table 1, indicating that there was no difference between the two groups in terms of infant Gender, delivery method, fifth minute Apgar score, but in terms of gestational age and birth weight and first minute Apgar, the two groups were different (Table 1), with the impact of these variables modulated and monitored on the measured outcomes. The comparison of the residual in the intervention and control groups showed a statistically significant difference between the intervention and control groups during the seven days and three times a day (p=0.012) with this difference more evident in different days (p=0.014). Nevertheless, there was no difference between the frequency of daily feeding (p=0.14), and the residual volume in the intervention group during the different days was less than in the control group (Figure 2 and Table 2).

**Discussion and conclusion:**

The results of this study supported the hypothesis that NNS affects the residual volume of gavage in preterm infants. Various studies have been done on the benefits of NNS on various variables such as neonatal physiological and behavioral indicetor, gastric and of Gastro-Esophageal reflux (GER), feeding improvement, independent oral feeding and weigh gaining, but we found no studies to determine the effect of NNS on the residual volume of gavage of the infants in previous studies. The study by Corvaglia, et al. (2014) on the management of GER, which is a controversial issue in preterm infants, S721-18
showed no significant difference in GER characteristics between infants with NNS and without NNS. However, feeding periods with NNS reduced the mean GER acidity. Thus, the time for acid to return to the esophagus was reduced during the use of NNS. Based on these results, NNS does not have a significant effect on GER characteristics in preterm infants during the post-meal period. However, during NNS, there was a slight decrease in GER acid (17), which could somehow be related to the reduction in the residual volume of gavage and indirectly consistent with the results of this study.

In a systematic review, Fanaro summarized the information contained in the prevention and treatment strategies that tested in the clinical studies and suggested the most comprehensive definition of the inability to digest the milk in newborn infants, which was due to increase in the residual volume remaining to more than 50%, abdominal stomach disorder and disruption of the feeding plan of the patient. According to these studies, one of the prevention/therapy strategies for intolerance of feeding is NNS. The logic behind this intervention is in increase in the tolerance of feeding by stimulating the secretion of hormone/enzymes (oral lipase, gastrin, insulin, and methionine) by stimulating the vagus, oral mucus and growth of sucking behaviors, that leads to increasing the feeding tolerance and reducing residual volume. This is in line with the results of this study.

Fazli et al, in a study in 2017 in Mashhad examined the effect of NNS and abdominal massage on nutritional tolerance in preterm infants, concluding that NNS was effective in reducing abdominal distension (p=0.01) and vomiting (p=0.01), but abdominal massage only had a significant effect on vomiting reduction (p=0.01) and confirming that NNS could increase the tolerance of feeding in preterm infants. This conclusion is consistent with the results of the present study. Considering the lack of similar studies to confirm further findings of this study, it is suggested to carry out further studies with higher sample sizes.

Overall, sucking success is one of the criteria for NICU discharge in preterm infants. Discharge from NICU allows regular nutritional intake of this infant to be eliminate by breastfeeding and weight gain to happen. Thus, studies recommend that various interventions, such as music therapy, breastfeeding, kangaroo care, and non-nutritive nutrition, etc., be used to support the development of sucking skills during feeding through oral gavage or oral feeding in preterm infants(18-21) as one of the biggest problems in preterm infants is oral feeding problems, created due to lack of development and defect in the coordination of sucking, swallowing, and breathing. Oral feeding problems affect the ability of the infant to achieve independent oral feeding and prolong the duration of hospitalization. Thus, the results of the present study supported the hypothesis that NNS could have beneficial effects on feeding and the development of nutritional skills in preterm infants. Recently, various studies have focused on NNS interventions that increase oral nutritional performance in preterm infants. It has reported, in these studies, that NNS in preterm infants improves sucking ability allowing the milk to be completely delivered to the mouth. This reduces the treatment time and, consequently, medical costs (15, 18-20, 22, 23). Moreover, studies show that the use of non-nutritive feeding in preterm infants helps the infant to be awake and active, increase the secretion of the digestive hormones before feeding, accelerate the development of the infant's sucking reflex, reduce the transfer time to oral nutrition, increase daily weight, and shorten the duration of hospital stay in preterm infants(21, 24-26). As oral nutritional problems make long-term hospitalization and high costs, using the results of the present study can ease the development of oral movement skills and improve oral feeding for preterm infants, and be a step to reduce the cost of treatment, hospital stay, and improve the quality of care for the preterm infant.

It is suggested that the authorities of NICUs of infants use the results of this study. They should also give the necessary training to the nurses and infants' mothers and encourage them to use non-medical sensory-motor methods such as NNS, foot massage, and oral massage for physiological development of
preterm infants, so to reduce bed occupancy and mortality rates, and thus promote the quality of nursing care.

Competing
The authors declare that they have no competing interests.

Acknowledgement
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Table 1. Baseline characteristics of premature infants in both groups

<table>
<thead>
<tr>
<th>Groups Variables</th>
<th>Non-nutritive sucking (n=42)</th>
<th>Control (n=41)</th>
<th>P value of X2 or t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>24(57.1)</td>
<td>21(51.2)</td>
<td>0.59*</td>
</tr>
<tr>
<td>Male</td>
<td>18(42.9)</td>
<td>20(48.8)</td>
<td></td>
</tr>
<tr>
<td>Type of birth No. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal delivery</td>
<td>27(64.3)</td>
<td>29(70.3)</td>
<td>0.53*</td>
</tr>
<tr>
<td>Cesarean section</td>
<td>15 (35.1)</td>
<td>12(29.7)</td>
<td></td>
</tr>
<tr>
<td>Gestational age (wk) Mean±SD</td>
<td>30.26±0.04</td>
<td>29.85±0.047</td>
<td>0.00**</td>
</tr>
<tr>
<td>Newborn age (days)</td>
<td>6.12±0.13</td>
<td>5.02±0.11</td>
<td>0.00**</td>
</tr>
<tr>
<td>Birth weight (g) Mean±SD</td>
<td>1312.3±9.8</td>
<td>1361.2±9.7</td>
<td>0.00**</td>
</tr>
<tr>
<td>Apgar score at 1 min Mean±SD</td>
<td>6.69±0.05</td>
<td>6.34±0.06</td>
<td>0.00**</td>
</tr>
<tr>
<td>Apgar score at 5 min Mean±SD</td>
<td>8.03±0.04</td>
<td>7/95±0.04</td>
<td>0.26**</td>
</tr>
<tr>
<td>Maternal age (year)</td>
<td>Mean±SD</td>
<td>29/65±0.21</td>
<td>26.85±0.18</td>
</tr>
<tr>
<td>---------------------</td>
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</tbody>
</table>

*Chi-Square Test, **Independent T-Test
Figure 2: Comparison of residual volume in Non-nutritive sucking (treatment) and control groups

Table 2. Comparison of residual volume in Non-nutritive sucking (treatment) and control groups

<table>
<thead>
<tr>
<th>Time</th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First time</td>
<td>2th time</td>
</tr>
<tr>
<td>Residual volume</td>
<td>Mean±SE</td>
<td>Mean±SE</td>
</tr>
<tr>
<td>First day</td>
<td>0±0</td>
<td>0±0</td>
</tr>
<tr>
<td>2th day</td>
<td>0.51±0.183</td>
<td>0.34±0.115</td>
</tr>
<tr>
<td>3th day</td>
<td>0.56±0.185</td>
<td>0.45±0.154</td>
</tr>
<tr>
<td>4th day</td>
<td>0.24±0.099</td>
<td>0.04±0.037</td>
</tr>
<tr>
<td>5th day</td>
<td>0.37±0.181</td>
<td>0.4±0.182</td>
</tr>
<tr>
<td>6th day</td>
<td>0.46±0.201</td>
<td>0.21±0.097</td>
</tr>
<tr>
<td>7th day</td>
<td>0.34±0.159</td>
<td>0.2±0.1</td>
</tr>
</tbody>
</table>

Model: TIME=0.14, DAY=0.014, TREATMENT=0.012
Confounding: VAZNMOTALE=0.016, GENDER=0.002

References:
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Nurses' perception of the ethical climate of the work environment and its five dimensions: a descriptive study

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Abstract

Background and objective: The ethical climate of the work environment is one of the important factors in the hospital environment that affects the quality of nursing care. The aim of this study was the Iranian nurses perception of the ethical climate and its five dimensions.

Methodology: In current descriptive cross-sectional study, 196 nurses working in intensive care units (ICU and CCU) of selected hospitals from one of the iranian universities were selected based on an available sample selection method. Data were collected from nurses by using demographic information questionnaire and Olson's hospital ethical climate questionnaire. Due to the fact that the validity of the questionnaire was repeatedly verified and verified in several studies, it was not re-examined. Cronbach's alpha coefficient was used to verify the reliability of questionnaires.

Results: The majority of research units were male (72.45%), married (51.53%) and had mean age 33.4 ± 8.1. The Total average score for morale climate was 3.26 ± 0.56. Also, the highest and lowest mean scores among the five dimensions of the ethical climate, were related to the "colleagues" and "doctors" dimensions, respectively. Among the demographic variables, there was a significant relationship between the ethical climate with educational level (P = 0.02) and employment type (P = 0.017) of Participants.

Conclusion: According to the results of the study, the ethical climate in relation to colleagues had the highest score and in relation to physicians had the lowest score.
Accordingly, managers' planning and effort should be considered as a valuable strategy in optimizing the ethical climate of hospitals, especially in the aspect of the relationship between nurses and doctors, and in this regards, attention should be paid to improving the organizational goals of hospitals and providing community-based healthcare services.

Key words: Ethical climate, Nurses' perception, Nurses.

Introduction

Today, organizations' efforts to maintain survival and profitability are greater, which has made it more prominent for managers to recognize the factors affecting employees and their associated outcomes. Increasing the emphasis on understanding employees and their behaviors within the organization has led to special attention to issues such as reviewing employees' perceptions of organizational Climate (1). Organizational climate are defined as "common perceptions of formal, informal organizational policies, practices and procedures." Many believe that there are a variety of work climates, such as a serving climate, a climate of security, an innovation climate, and so on. One of these work climates in organizations is ethical climate (2). Nurses are one of the largest providers of health care services that that serve continuously and sustainably (3) and the ethical climate that dominates the workplace always causes the quality of their care to be influenced by this ethical climate (4). The ethical climate or ethical atmosphere is a psychological structure, which is the result of a set of common perceptions, a constant and meaningful element that employees have on ethical practices and policies in their organization (5). In a therapeutic environment, the ethical climate is referred to as a condition that facilitates ethical decision making (3). In other words, the ethical climate in the therapeutic environments is a specific organizational condition that facilitates discussion and resolution of patient health problems and provides a framework for ethical decision-making in clinical settings (6). Some researchers believe that promoting the ethical environment in health care institutions will make nurses better responses to ethical stress and other causes of dissatisfaction in the workplace (7).

ethical climate is an important part of organizational culture that affects not only the ethical dimension of the organization's employees but also the work efficiency. Several studies have focused on the relationship between ethical ethical and job satisfaction, Turnover, ethical distress, quality of nursing care, and so on, which highlights the
importance of exploring the ethical climate in hospitals(6). Therefore, recognizing the ethical climate and trying to improve it, is one of the current priorities in the field of health and treatment. Mobasher et al (2008) reported that ethical climate of Kerman hospitals are in the optimum level. Regarding the effect of ethical climate on organizational commitment of staff, despite the shortcomings in communication between physicians and senior officials with nurses, the ethical climate of hospitals was promising (8).

The importance of creating an appropriate ethical atmosphere in nursing context has been emphasized and in some cases its role has been taken into account in various outcomes of the work environment (9).

In this regard, Olson states: The ethical climate is an organizational variable that can help to improve the care environment and affect ethical behavior, and also provides groundwork for professional nursing practice which can affect the outcome of caring for the patient and even the nurse himself (10,11).

Shirey also states that creating a good and acceptable ethical climate would increase the morality of employees, promote organizational commitment, and nurture a committed workforce (12).

Victor and Cullen believe that ethical climate is used as a magnifying glass to examine, diagnose and solve ethical problems (13).

Hart's study of 463 nurses in the United States between 2003 and 2004 showed that the negative ethical climate of the work environment was related to the decision of nurses turnover or even the nursing profession (7).

By measuring the ethical climate, researchers can be aware of the morality governing the organization, practices and ethical behaviors of nurses. Thus, how nurses can get the climate in the environment, can affect their attitude to ethical issues and their roles in ethical decision-making. Although there are many studies that have been conducted on the ethical climate in different organizations, but there are a few studies that have been conducted in health services organizations. Therefore, considering the above mentioned factors to understand the ethical climate of the hospital and its level of understanding by nurses and its role in creating a favorable hospital environment, and because of the role of nurses in the structure of the ethical climate of hospitals and their views on the ethical climate context that influence their work environment, therby more studies are needed in this area.

This study has been conducted on specialist nurses in Intensive care unit (ICU), which is one of the strengths of the study. The aim of current study was to investigate the
nurses’ perception of the ethical climate of the work environment and its five dimensions among nurses working in intensive care units in selected hospitals in one of the universities in capital city of Iran.

Methodology
The current descriptive-correlational study was conducted at selected hospitals in one of the Iranian capital's universities and in special care units (ICU and CCU). Availability sampling was done among nurses who were eligible based on research criteria and working in special care units (CCU and ICU) of selected hospitals. The criteria for entering the study included having at least a bachelor's degree in nursing, as well as a minimum length of service for 6 months in the wards of study.

The data gathering tool was a demographic questionnaire and Olson hospital ethical climate questionnaires. This questionnaire was first designed and validated by Olson in 1995 to measure the ethical climate (14). It was published in the Image magazine in 1998 and then in 2002 in the Clinical Ethics Measuring Instruments book. This questionnaire contains 26 questions in 5 effective dimension for creating a hospital climate that includes: the dimension of colleagues (questions 23, 18, 10, 1), the dimension of physicians (questions 26, 22, 17, 14, 9, 5), the dimension of the organization or hospital (questions 25, 21, 16, 13, 8, 4), the dimension of patients (questions 19, 11, 6, 2) and the dimension of nursing managers "head nurse, supervisor and metron" (questions 24, 20, 15, 12, 7, 3).

According to this questionnaire, individuals' perceptions of the ethical climate of the hospital in five dimensions are measured using the Likert scale (1 = Approximately never, 2 = Rarely, 3 = Sometimes, 4 = Very often, 5 = Almost always). In this way, the minimum and maximum possible total score for each person is 26 and 130 Respectively. This range for each area proportional to the number of questions will be different. So for better comparability, the scores for each area and the total scores, divided by the number of questions were standardized and all had the range between 1 to 5 (18).

Based on the division of MacDaniel, 3.5 indicated the favorable opinion of staff about the ethical climate of the hospital and is indicator of positive climate (favorable). This questionnaire has been used in several studies and has had a desirable validity and reliability (16,17,18,19,20).

In spite of the confirmed validity in previous researches, to determine the reliability of Olson hospital ethical climate questionnaires, the questionnaire was distributed among
30 participated nurses and after completing, Cronbach's alpha coefficient was calculated for determining the internal consistency. In this research, internal correlation using Cronbach's alpha for the whole tool was 0.91, and for coworkers, patients, managers, hospital and physicians dimensions were 0.83, 0.75, 0.78, 8.80 and 0.71, respectively. After approval of the research project and receiving the ethics code No. IR.SBMU.PHNM.1395.591 and the permission of the authorities of selected hospitals, the researcher referred to the specialized care units (CCU and ICU) of the selected hospitals in various shifts (morning shift: between 10:30-9:30 after the visit is completed by physicians; evening shifts: between 17:30 and 16:30 after the hour of the meeting; night shift: between 22-21 pm) and after introducing himself and expressing the goals of the research and obtaining informed consent verbally, the samples were assured that all the information would be confidential and all the questionnaires will be anonymous and in this way, the distribution of questionnaires was done. An appointment for two days later was set with nurses to collect the questionnaires. They were asked to complete patiently questionnaires in the best possible time and with calm. Participants were asked to place the completed questionnaires in sealed envelopes (The envelopes were previously given to the participants) if they had not been in the hospital for two days later and give them to the head nurse of the ward, such that the researcher could collect them.

**Findings**

The results of this study in relation to nurses' personal characteristics showed that the majority of nurses were male (72.45%) and married (51.53%). The mean age of the participants was 33.4 ± 8.11 and the lowest and the highest participants in term of age, were 22 and 51 years, respectively. The majority of nurses (63.67%) had a bachelor's degree and only 1.02% had a PhD degree. 51.5% of the participants working in the ICU and other subjects working in the CCU ward and majority of them were employed formally (50.51%) and contractual (20.92%). (Table 1). The average of ethical climate scores, in comparison with the score of 3.5, was tested using one-sample t-test. Based on the results, the theoretical average score of the ethical climate and its five dimensions were lower than the score of 3.5 (Table 2). Therefore, it can be concluded that the nurses participating in the study are not at the optimal level in terms of this variable and its five dimensions. Among the demographic variables,
there was a significant relationship between the ethical climate and education ($P = 0.02$). It seems that people with Master's degree and Ph.D level have a lower average ethical climate score than those with undergraduate education. Also, there was a significant relationship between ethical climate and employment type ($P = 0.017$). Nurses working on a contractual basis have a lower favorability in terms of ethical climate, and even the score of nursing staffs with Projective job status is more desirable than the contractual job status.

**Discussion**

The aim of this study was to assess nurses' perceptions of the ethical climate of the work environment and its five dimensions, which showed that nurses' perceptions of ethical climate were less than Desirable level. In other words, the nurses who participated in the study did not have a desirable level in terms of this ethical climate variable and its five dimensions. The results of the research regarding the mean of ethical climate in different domains showed that the dimension of coworker has the highest average and the dimension of physicians has the lowest mean. Bahcecik and Ozturk (2003), in their study of the ethical climate in Turkish hospitals, reported a favorable ethical climate rate (21). Hwang and Park (2013) also reported 3.75 for an ethical climate based on nurses point of view which was desirable. Perhaps the reason for this difference in results is cultural diversity of society in two studies. Ulrich (2007) achieved a mean ethical climate score of 2.6 in their study, which is lower than our study and shows a poor ethical climate in their research environments (23).

In Hart's (2005) reviews, the nurses' view of ethical climate was more favorable than our study (7). It should be noted that the ethical climate is related to the public perception of the organizational functions and procedures that have ethical contents and may be varied due to differences in individual situations, working groups, and ethical perceptions, even within an institution. Since one of the areas of ethical climate is managers and co-workers, it could be possible that this difference in results is due to the fact that management is dependent on individual policies and that, each individual, given the Individual characteristics can have different management styles. Since different organizations are managed by different individuals, different results should not be overlooked. In the field of colleagues, we also encounter different people with different relationships and
connections within the organization. Therefore, it can not be expected that there is an identical ethical climate in different organizations which this reason can justify the current result. The colleagues dimension has the highest average ethical climate. In line with this, Ulrich (2007) stated that the highest score was related to the coworker dimension and the lowest score was related to the hospital dimension and then the doctors dimension (23).

Similarly, in the Fogel study (2007), the highest scores obtained for item (my coworkers help me in solving patient care problems) and in the field of colleagues dimension (9). In Pauly's (2009) study on nurses in one of the Canadian states, the field of colleagues was reported as the most positive dimension (24). It seems that colleagues have a good ethical climate due to similar situations, as well as common problems.

Also, despite the cultural and managerial differences between the two countries, some in-company relationships between nurses and other associates follow a relatively similar pattern, but in the study of Hwang and Park, which was conducted on nurses in South Korea, the most relevant dimension was reported to managers (22), which is not consistent with the results of the present study. In a study by Lemmenes et al. (2016), contrary to the results of the present study, there was the most unfavorable climate among colleagues (25). Perhaps the reason for the difference in results is the difference in the culture governing the study and also the different organizational culture in the two studies. The results of this study showed that among the ethical climate dimensions, “physicians” dimension is at the lowest level. Along with the results of the present study, Bahceci and Ozturk (2003) reported the lowest average to physicians dimension (2).

Nurses and physicians' collaborations and interactions are among the elements that build the ethical climate in care settings. It seems that the lower scores of physicians and nurses dimension than other dimensions is the lack of access of nurses and physicians to common care objectives in the care team, so in this regard, it is better to train two groups in order to improve the behaviors between Individual and groups. Given that physicians and nurses have common goals in the care and treatment of patients, and since the goal is to provide better health care, more efforts should be made to improve this relationship, since ultimately the problem becomes apparent to the patient and can lead to reduce the quality of health care (26).

Among the demographic variables, there was a significant relationship between ethical climate and education (p = 0.02). This finding suggests that, contrary to different perspectives and cultures, nurses' judgment about the variables is almost the same.
It seems that people with masters degree and PhD level have a lower average score on ethical climate than those with undergraduate education. It can be said that the level of education affects the attitude and ethical behaviors of individuals, and since the ethical climate is consisted of dimensions that relationships between individuals can affect it, thereby change in attitude, ethical behavior, and judgment is effective in understanding a more favorable climate.

In Turkey, Polat stated that understanding the values and ethics of the organizational climate is associated with demographic characteristics such as education (27).

Bahcecik and Ozturk (2003) showed that the level of education is not related to ethical climate scores (21). The results of study by Borhani et al. (2011) showed that education has no relationship with nurses' view of ethical climate (19). Perhaps the reason for the difference in the results of the two studies above with the results of present study is the diversity in the number of samples with different degrees. Nurses' view on the ethical climate governing their work environment was also significantly related to employment type, such that in nurses working on a contract basis, the ethical climate has a lower desirability, and even the score for nurses with a projective job status is a more desirable than the contract job status. This result could be due to the fact that almost all the salary and job benefits of a projective nurse are the same with a permanent nurse.

Since formal nurses have more job security than unofficial nurses (contractual), it is likely that this group of nurses will have a better ethical understanding of their organization.

From the limitations of this study, it can be noted that completion of two questionnaires at one time may cause fatigue and affect the way they respond. To resolve this problem, the researcher gave a two-day interval to the units under study and they were asked to respond to questions when they had less work. In the case of research constraints, it can also be noted that since the research was carried out only in the nurses of the intensive care units and a selection of hospitals in the capital of Iran, in order to allow the generalization of the results of the study as much as possible, it is necessary to conduct this research in other clinical settings. It is recommended that similar studies be conducted with a larger sample size for the generalizability of the results.

**Conclusion**

Our study showed that the ethical climate based on the perception of nurses was 3.36 and in relation to the dimension "colleagues" is more desirable than other dimensions. Also, the most unfavorable view was attributed to "physicians" dimension. Since the inappropriate ethical climate can play a significant role in creating ethical distress, job dissatisfaction, nursing turnover, and reducing the quality of nursing care, therefore, the results of this study can be used by authorities and policy makers to formulate a plan in order to improve the ethical climate of hospitals. Also, managers are asked to implement ethical charter styles to improve the ethical climate of hospitals. It is essential that the employees’ awareness programs be conducted with the organizational ethical climate and acquire the necessary knowledge and skills in order to identify the factors affecting it. Organizing effectiveness and effectiveness of all nurses by creating a more ethical climate. Holding ethical training classes in this regard is important to see the efficiency and effectiveness of all nurses by creating a more favorable ethical climate.

**Acknowledgments**

This research could have been completed only with the kind assistance and dedication of several parties. The authors wish to express their gratitude towards Deputy Research, Faculty members of group and nursing staff of the studied hospitals.
### Table 1: demographic characteristics of nurses

<table>
<thead>
<tr>
<th>Total frequency</th>
<th>Percentage (Relative Frequency)</th>
<th>Number (Absolute Frequency)</th>
<th>Variable</th>
<th>Sex</th>
<th>Marital status</th>
<th>Education level</th>
<th>Employment type</th>
<th>Ward</th>
<th>Employment type</th>
</tr>
</thead>
<tbody>
<tr>
<td>196</td>
<td>72/45</td>
<td>142</td>
<td>male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27/55</td>
<td>54</td>
<td>female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>43/37</td>
<td>85</td>
<td>single</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Others</td>
</tr>
<tr>
<td></td>
<td>51/53</td>
<td>101</td>
<td>Married</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5/10</td>
<td>10</td>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>63/67</td>
<td>164</td>
<td>Undergraduate</td>
<td></td>
<td></td>
<td>Master's degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15/31</td>
<td>30</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/02</td>
<td>2</td>
<td>PhD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>49/49</td>
<td>97</td>
<td>CCU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50/51</td>
<td>99</td>
<td>ICU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>50/51</td>
<td>99</td>
<td>permanent</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>9/69</td>
<td>19</td>
<td>Contractual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18/88</td>
<td>37</td>
<td>Projective</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20/92</td>
<td>41</td>
<td>Based on treaty</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Table 2: Comparison of the mean score of the ethical climate and its dimensions with a score of 3.5

<table>
<thead>
<tr>
<th>Status</th>
<th>P-value</th>
<th>Standard deviation</th>
<th>Theoretical average</th>
<th>Frequency</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>medium</td>
<td>0/250</td>
<td>0/74</td>
<td>3/56</td>
<td>196</td>
<td>Coworkers</td>
</tr>
<tr>
<td>unfavorable</td>
<td>&gt;0.001</td>
<td>0/70</td>
<td>3/04</td>
<td>196</td>
<td>Physicians</td>
</tr>
<tr>
<td>unfavorable</td>
<td>&gt;0.001</td>
<td>0/68</td>
<td>3/10</td>
<td>196</td>
<td>Hospital</td>
</tr>
<tr>
<td>unfavorable</td>
<td>0/015</td>
<td>0/72</td>
<td>3/38</td>
<td>196</td>
<td>Patients</td>
</tr>
<tr>
<td>unfavorable</td>
<td>0/058</td>
<td>0/83</td>
<td>3/39</td>
<td>196</td>
<td>Nursing Managers</td>
</tr>
<tr>
<td>unfavorable</td>
<td>&gt;0.001</td>
<td>0/56</td>
<td>3/26</td>
<td>196</td>
<td>Total ethical climate</td>
</tr>
</tbody>
</table>
References


Identifying Barriers to Senior Managers of Health for the Use of Management Reports of Modern Financial System Software Implemented in the Ministry of Health

Shiva Ehsan Maleki¹, Mohammad Javad Kameli²*, Mehdi Kazempour-Dizaji³

Abstract:

Introduction: The conversion of cash accounting into accrual accounting was one of the changes that were necessary for any organization in the world. With regard to the position, the Ministry of Health and its affiliated centers were the first organizations in the country that converted the traditional accounting method into modern method. Over the years many of those perspectives have not happened yet. Researcher in this study not only identifies some barriers to managers for the use of this financial software, but also studies the effect of each of these barriers on rate of use by managers.

Research Methodology: This is a descriptive study. The study participants included 180 people made of budget manager, financial managers and senior managers of organizations. Using Morgan table, a population of 123 persons were selected randomly. A questionnaire was used to collect data. Its reliability was determined by experts and its validity was examined by Cronbach's alpha test as 77.8%.

Results: results of the study show that resistance to change, knowledge of managers, fear of unknowns, need to use, contrast between individual and organizational objectives and risk-taking of managers are barriers to senior managers of health for the use of management reports of modern financial system software implemented in the ministry of health. Using regression test it was revealed that among the found barriers resistance to change, knowledge of managers and contrast between individual and organizational objectives affect the rate of use of the reports of modern financial system software by managers.

Conclusion: Analysis of the tests show that among the participants there was barriers resistance to change, knowledge of managers and contrast between individual and organizational objectives affect the rate of use of the reports of modern financial system software by managers.

Key Words: Change, Cash accounting, Accrual accounting, Resistance to change

Introduction:

Over the last two decades of the twentieth century and early years of twenty-first century, most developed countries and international agencies such as the Europe Union in order of changing their cash basis accounting in the public sector have moved toward various forms of accrual basis. Research shows that most countries with a middle-income of over 5% of gross domestic product devotes 10% of government budget to the health sector. Despite this effort, if there is no proper infrastructure for effective use of resources especially financial. However, as long as there is no

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proper infrastructure for effective use of resources, especially financial resources; the efficiency, effectiveness, evaluation and monitoring these resources will be difficult to the extent that increase of financial credit will not help in solving the problems (Bhattacharya & Devinney, 1998). On the other hand, it is important that access to health services such as service coverage, financial protection and population coverage should necessitate reform in the structure of report, decentralization, and financial establishment, service delivery to promote the level of unit in environmental decision-making, reporting, and reliability as well as transparency, integrity of the production system regarding financial information of people and service users. The establishment of the accrual accounting instead of cash accounting is one of the basic steps of financial reform in governmental sector. For this reason use of a system to implement government intended programs through effective use of public resources is necessary. More importantly, reports generated by the existing system are not reliable sources for evidence-based decision-making. Ministry of Health (MoH) and Medical Education as the main custodian of public health is the agency that must explain orientations, policies and strategies, influencing the behavior of players within and outside the sector, general supervision, directing efforts and developing national health actions from the government. Meanwhile, the World Health Organization is of the opinion that the Ministry of Health in developing countries is embedded with government bureaucracy thereby making it less effective and highly inflexible and centralized. This study is important because of the perspective of the MoH of the need to implement modern financial system. Based on this it is essential to utilize all the features and capabilities of the provided software system in the interest of the ministry and the manner if is managed.

When the software is fully established and utilized by all facilities, it will help create huge saving on the cost of purchasing other software and prevent the aggregation of information and the required report will be provided by the system. The standardization and homogenization of the process and data integration in the software such as unification of accounts code, cost center, good, and property code, etc. will result in uniform cycle of operation and provision of quality report whose performance can be reviewed and compared with the budget and the performance of resources of the universities (Abolhallaj, 2007&Fallah Tafti 2012).

In the 4th Development Plan of 2005 and Articles 49 and 88, it was approved that the accounting system in Iran should change from cash basis to accrual basis accounting and performance planning will be carried out in the country. The MoH as a leader in the field began an initial effort in 2003 but due to lack of proper infrastructure and shortage of financial experts, the process faced a number of problems and challenges such as lack of clear communication between the program and budget, lack of proper monitoring and evaluation of the performance which the modern financial system software was meant to solve. Too much funds and time was spent but unfortunately the gains were not properly used. Therefore this study was undertaken to evaluate the effect of the identified factors on senior health managers’ use of management reports which is one of the most important analytical result of the used software. Employees and managers in MoH regard this policy as change. At the time of such changes, each manager, supervisor, and team leader will be asked to take responsibility of creating changes in their group. Therefore it was hypothesized that senior managers would not be expected to manage the way each group transits during the change of management policy. There are signs of lack of proper functioning with the modern financial software and sometimes refusing to use this software in preparing management reports which prompted this study to identify the barrier that impede the use of the software and investigate their effect on the rate of management use of reports prepared with the modern financial software. Change phenomenon is defined as creating anything that is different from the past, but innovation is adoption of ideas which are new for organization. Therefore, all innovations reflect a change but not all changes are an innovation (Aghaie Fishani, 1998&PouroomidB 2012). Mort is accredited with undertaking the first extensive research on the process of change prefers the word adaptation to innovation and thus defines innovation as ability of organization to respond to its role in society (Shirazi, 1994&Iranzadeh 2010). Hansen defined changes in an organization as a process of transformation that occurs in attitudes, structures, policies, intentions or outcomes in a number of organization units (Hansen, 1991). However, due to the proximity and similarity of the concepts of innovation and change in many sources and scientific literature, these two terms are often considered synonymous. Other theorists such as Toffler’s, Sean’s (1971) and Berg Quest’s (1993) also suggest that today organizations cannot stop the pace of changes but rather they can convert doubts, fluctuations and insecurities to opportunities for learning, adaptation and ideal match (Sanjari, 2000, 42). In general, changes in human behavior are classified as: 1. changes in knowledge, 2. changes in attitude or orientation, 3. Changes in behavior, 4. changes in group behavior. Shoemaker & Rogers (1971) believe that factors that are essential for the realization of innovation and success change are: should be in favor of consumer, should have permanent or significant use, should not have much complexity, should meet the
value system of their consumers, should be justifiable, and should provide tangible results. Barrett (1994) stated that establishment of official rules for rewards that boost the innovation process and formal training in order to facilitate the diffusion of innovation, effective use of management information systems and use and strengthening the management leverage are effective in promotion of organizational innovations and changes (Aghaeei Fishani, 1998, 290).

Based on data available on the barriers to innovation and changes in organizations, it seems encouraging innovation and changes, reducing its barriers and ease the process of change would result in flexible organizational structure, free organizational climate, satisfy member’s needs and create democratic leadership. We should also consider material and moral incentives, participation and cooperation of members in decision-makings, group cohesiveness and freedom of expression (Shirazi, 1994, 305). Modern theories of organization consider change as a designed process in which a change factor (usually a person or a group with the right to rule) creates change in the organization calculatedly. Kurt Lewin (1950) reported of changes in ice cube pattern that developed a kind of social change theory upon which social institutions are considered as balanced vehicle of forces (driving forces and restraining forces). According to him, balance is created when total of driving forces equal total of restraining forces. Figure 1 shows the balance (equilibrium) of forces (Alvani, 2003, 204). There is much criticism of Lewin model. According to some theorists, his model is a kind of stability theory not a theory of change, because he defines change as a kind of fleeting instability. Kanter (1992) criticized Lewin model due to the quaintly linear and static conception of change (Hatch, 2006, 73). Kanter et al., (1992) in the three-level model of change also provide mechanism to investigate the phenomenon of change in the organization which combines the theories of organization and environment relationship, social structure of organization and power and politics in organization. Based on this pattern, organization is a combination of activities and whenever these activities change, organization will change too. The Three-level model examines changes in levels of environmental, organizational and individual analysis. At the environmental level, macro-evolutionary forces are discussed for change. These forces are formed through new relationships between organization and environment that is based on the theory of organizational population ecology, change in organizational populations that compete for scarce resources, forms new relationships of organization and environment, organizations generate considerable changes in their activities to reduce their dependence on the environment (resource dependence theory), and survive in the environment (Darwin’s principle of survival of the fittest) (formation-selection-survival) (Hersey & Blanchard, 2002, 37).
In individual analysis level, political forces are mentioned for change. In this level organization is seen as a kind of battlefield that various stakeholders change organization activities around their personal interests. Based on the three-level model of change, each one of the macro-evolutionary forces, micro-evolutionary forces and political forces of change tends to have different forms within the organization. In environmental level, changes in the relationships of organization and environment appear as a new organizational identity (for example relationships with new suppliers or new products). In organizational level, change in the life cycle of organization appears as a change in methods of coordination and in individual analysis level change in the ruling coalition appears as a change in control models. Although use of accrual accounting was formed as a change in the Ministry of Health and was prepared for employees and managers in this ministry, up to date after years the most effective components and capabilities of this software are not used. Despite some reforms in accounting and reporting system of the public sector, many of the Iranian governmental organizations modified cash basis accounting is used to record financial events. In cash basis accounting, incomes and costs are recorded at the time of the exchange of cash. Therefore, financial statements based on cash basis accounting show sources of cash and allocation to cash costs traditionally and compare it to budgeted costs (Babajani, 2006, 25). It seems that this accounting system is not appropriate for implementation of government intended programs through more efficient use of public resources. However, public audit act in country aside a few minor reforms was introduced almost the same as cash accounting system and the emphasis of current law on accountability is also a compliance of forecasts related to laws and regulations of budget with regard to the low essential use of accounting information by management. Moreover, according to the outputs and reports based on the cash basis accounting system it can be said that this system has a pre-designed framework to meet the needs of accountability and control. In this system, governmental managers prepare reports about their stewardship duties to show that the funds have been expended according to the lawmaker's permission. Therefore information from current system is inadequate which cannot be analyzed to achieve the two objectives of efficiency and effectiveness (Saboori, 2007, 3). In other words, we can say that conventional accounting system in today governmental organizations does not have ability to provide necessary information for government’s managers to measure and calculate cost of services and goods in public sector and due to the growing economic, political, social environment and especially change of budgeting system from the planning to performance needs accounting information for decision-making and accountability. Therefore, it seems that the governmental accounting system in Iran like most of the countries in the world is on the verge of structural reforms, but the manner of correction and the interaction of affective factors in this process are serious challenge and also the need to develop a theoretical framework that can explain the reform process and describe its surroundings and also be used to predict the outcome is essential (Talebnia et al., 2011&Iranzadeh2010). In general, in reviewing the general framework of financial performance in the public sector, the need for theorizing and change of financial perspectives is clearly important. Basis of accounting means the right time for identification and record of incomes and costs. In terms of accounting, time of recording incomes and costs is very important and may change accounting system through influencing it. In cash accounting system (full), incomes are identified and recorded at the time of cash receipt and costs are identified and recorded at the time of cash payment. Thus we see that the basis of the mentioned system is receipt or payment of cash (Babajani, 2003, 35). In this system, the realization of income and the commitment or the occurrence of cost which is usually the effect of getting or supplying goods and services is not addressed in identification and registration of incomes and costs (Aghvami, Babajani, 53, 2013).

Modified cash basis is very similar to cash basis (full) and is different just in the manner of identification and record of costs. In the semi-accrual basis, identification of costs on the basis of accrual basis (full) causes the realization of one the benefits of the mentioned basis that is real reflection of costs in a financial period. According to the problems of completion of the income process in governments of most developing countries, complete ensuring of the realization of income in these countries is not possible. Therefore, using semi-accrual basis in accounting of public sector in some countries is common (Babajani, 2003&Iranzadeh2010).

In accrual basis (full), incomes are identified and recorded at the time of earning or realization. Time of earning or realization of income is when income is recognized decisively or is realized through supplying services. Thus in this method the time of budget receipt is not important. What is important in the identification and registration of income is the time of earning or income registration. On the other hand, identification and record of costs in the mentioned basis occurs at the time of their creation. In other words, regardless of any receipt and payment of cash, when a good is delivered or a service is offered payable debt is created for the institute as equal as the cost of delivered good or offered service. Thus by a simple comparison can realize the most important difference between accrual and cash accounting principles. The mentioned difference is that the actual costs of a financial period, using the cash basis of
accounting is not reportable while it will be possible using the accrual basis of accounting (Aghvami, Babajani, 2013, 1217). Despite the growing acceptance of accrual accounting around the world, the manner of its acceptance in different countries varies. According to Cristiano & Ray Neyriz (2009) these differences are seen in three levels based on content, duration of the transition from cash to accrual basis accounting, and manner of accrual accounting acceptance. It should be noted that the main difference between cash and accrual accounting principles is the time of record for financial events and the mentioned time has a vital role in accountability of management and his decisions (Guthrie, 1998, 143). Therefore, income of accrual accounting information for decision-making process in the public sector is more than the income of cash accounting information in the mentioned sector. Accrual accounting basis is based on the principles and assumptions.

Matching Principle: according to matching principle, when a financial event affects the income in a fiscal period, its impact is identified on the costs of the same period (Hasas Yegane, 2001: 76). On the other hand, it seems that the prerequisite for its realization is a direct relationship between incomes and costs. Of course, it is possible that in the public sector there is no clear and direct relationship between incomes and offered services or costs and monetary value of operations results.

Principle of Consistency (Compliance Uniformity): According to the principle of consistency each accounting entity is required to choose a special accounting method for identification, measurement, record, and report of financial events. It also use them for the same financial events and next financial periods (Hasas Yegane, 2001: 86).

Principle of Conservation (Caution): This principle is often stated simply as identification of all losses without consideration of any of the incomes. The use of this principle means that accountants should report assets and incomes with the least possible values of the applicable values while reporting liabilities and costs with the most possible values of the applicable values. This principle can also be used in public sector accounting; that is in the public sector all costs and commitments must be deducted from related budget as soon as the identification and all incomes will be recognized only if they ensure of their realization. It seems that in budgeting and financial reporting in the public sector pessimism is preferred to optimism (Avoda, 2003, 98).

Principle of Disclosure (Full Disclosure Principle): This principle in accounting means that all important facts which are related to the financial condition and results of operations should be released in financial statements and reports of the reporting unit (Hasas Yegane, 2001, 64).

Continuity Concept: In addition to the above principles, continuity concept is also the issue that should be addressed here. This assumption means that accounting entity continues its activity for a long time and to play its full commitment. In other words, life of accounting entity will continue into future and the final identification of the commitments by accrual accounting system (Petersen & Martin, 1991, 183).

Literature Review: In the past research has been undertaken on this issue. Fayazi & Yadegari (2010) in their study entitled “Comparison of the Iran budgeting system with the budget law of selected countries” suggest that budget estimates were accepted initially using estimate technology, modification of preparation methods, and classification of information.

Jefreh & Roshnasan (2010) in a study compared the performance of a budgeting process with the annual budgeting in National Organization for Civil Registration in Iran. Results showed that since cost was not the basis for calculating the credit of each activity, provincial units bargain in one level and in various forms. Regression test proves the presence and influence of bargaining on the total approved credits in provinces. It should also be taken into account that performance budgeting, based on comparative studies in other countries will not be achieved practically in a short term. As shown in this study, the fundamental difference in changing of budgeting process from traditional performance was not found. The study of Rajabi showed that budget allocation based on the incremental method leads to no attention to the activities and performance of each province. Therefore he proposed that a part of the budget of each program in each province was allocated based on the performance and efficiency of each manager therefore the evaluation and accountability of managers for existed methods will be more logical (Rajabi, 2012, 1-6).

Theoretical studies have shown that conceptual model and research hypotheses of a study such as this one are based on the following:

1. Resistance to change in health sector managers has a significant effect on the use of management reports of modern financial system software.
2. Knowledge of health managers has a significant effect on the use of management reports of modern financial system software.
3. Fear of unknowns in health managers has a significant effect on the use of management reports of modern financial system software.
4. Need of reports use by health managers has a significant effect on the use of management reports of modern financial system software.
5. Contrast between individual and organizational objectives in health managers has a significant effect on the use of management reports of modern financial system software.
6. Risk-taking of health managers has a significant effect on the use of management reports of modern financial system software.

Research Methodology:

The research method of this study is descriptive. The study population consisted of 180 budget managers and financial and senior managers of the organizations and using Morgan table. The sample size was determined as 123 persons who were selected randomly. The data collection tool in this study was a questionnaire. Its reliability was determined by experts and its validity was determined as 77.8% using Cronbach's alpha test. Results show that barriers to senior managers of health for use of management reports of modern financial system software implemented in the Ministry of Health are resistance to change, knowledge of managers, fear of unknowns, need of use, contrast between individual and organizational objectives and risk-taking of managers. Moreover, to analyze information and data, descriptive and inferential statistics were used to examine the relationship between independent and dependent variables correlation coefficient (gamma test) and to investigate the influence of independent variables on the rate of use by managers, regression test was used. Kruskal-Wallis and Mann-Whitney tests were also used to investigate the significant difference of the mean of reports use of the modern financial system software by managers based on background variables. Finally, multivariate regression analysis was used to determine predictor variables of rate of use of reports of modern financial system software and SPSS software was used for all the tests.

Results:

To analyze the information of this study, two descriptive and inferential statistical methods were used. Results of the descriptive analysis of the study are as follow:

Figure 1: percentage chart of workers’ age
The chart above shows that 12 people or 9.9% of the employees aged 20 to 30, 46 people or 38% aged 31 to 40, 56 people or 46.3% aged 41 to 50 and just 7 people or 5.8% aged 51 to 60.

Figure 2: percentage chart of workers’ gender

Similarly the chart above shows that 18 people or 14.6% of the studied persons are female and 105 people or 85.4% are male. Then more than 85% of managers are male.

Figure 3: percentage chart of workers’ education
The above chart also shows that 5 people or 4.1% of the analyzed managers have associate degree, 39 people or 31.7% have undergraduate degree, 77 people or 62.6% have graduate degree and just 2 people or 1.6% has postgraduate degree.

Figure 4: percentage chart of workers’ experience

The above chart shows that 44 people or 35.8% of respondents were budget manager, 75 people or 61% were financial manager and 4 people or 3.3% were senior manager.
Based on the results of above chart, 44 people or 35.8% of respondents were budget manager, 75 people or 61% were financial manager and 4 people or 3.3% were senior manager.

Table 1: table of variables frequency

<table>
<thead>
<tr>
<th>Statements</th>
<th>Very many</th>
<th></th>
<th>Many</th>
<th></th>
<th>Middle</th>
<th></th>
<th>Little</th>
<th></th>
<th>Very little</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Resistance to Change</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.8</td>
<td>18</td>
<td>14.6</td>
<td>76</td>
<td>61.8</td>
<td>28</td>
<td>22.8</td>
</tr>
<tr>
<td>Knowledge of Managers</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>4.9</td>
<td>66</td>
<td>53.7</td>
<td>38</td>
<td>30.9</td>
<td>13</td>
<td>10.6</td>
</tr>
<tr>
<td>Fear of Unknowns</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.8</td>
<td>10</td>
<td>8.1</td>
<td>65</td>
<td>52.8</td>
<td>47</td>
<td>38.2</td>
</tr>
<tr>
<td>Need to Use Reports</td>
<td>33</td>
<td>26.8</td>
<td>40</td>
<td>32.5</td>
<td>44</td>
<td>35.8</td>
<td>5</td>
<td>4.1</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Contrast between Individual and Organizational Objectives</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3.3</td>
<td>8</td>
<td>6.5</td>
<td>59</td>
<td>48</td>
<td>52</td>
<td>42.3</td>
</tr>
<tr>
<td>Risk-Taking of Managers</td>
<td>47</td>
<td>38.2</td>
<td>64</td>
<td>52</td>
<td>12</td>
<td>9.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rate of Use of Financial Reports by Managers</td>
<td>2</td>
<td>1.6</td>
<td>31</td>
<td>25.2</td>
<td>65</td>
<td>52.8</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Resistant to change in about 85% of respondents should be regarded as small. More than 92% of the respondents benefit from the knowledge to a middle and little extent. 91% of respondents to a little and very little extent fear of modern financial software. More than 95% of the respondents use modern financial software to certain extent because of the need to use it. More than 90% of managers feel there is conflict between their objectives and...
organization objectives to some extent. More than 90% of respondents to a larger extent are risk-taking managers. More than 78% of managers use modern financial software to some extent.

Moreover, in the inferential analysis of the research, regression has been used for assumptions and results are in the table below:

Table 2: table of correlation and regression in variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>r Correlation Coefficient</th>
<th>Significance of Correlation (M)</th>
<th>F</th>
<th>Significance of Regression</th>
<th>Coefficient of Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance to Change</td>
<td>-0.339</td>
<td>0.00</td>
<td>14.478</td>
<td>0.00</td>
<td>0.107</td>
</tr>
<tr>
<td>Knowledge of Managers</td>
<td>0.276</td>
<td>0.001</td>
<td>22.801</td>
<td>0.00</td>
<td>0.159</td>
</tr>
<tr>
<td>Fear of Unknowns</td>
<td>-0.064</td>
<td>0.418</td>
<td>0.192</td>
<td>0.662</td>
<td>0.002</td>
</tr>
<tr>
<td>Need to Use</td>
<td>0.081</td>
<td>0.311</td>
<td>1.380</td>
<td>0.242</td>
<td>0.011</td>
</tr>
<tr>
<td>Contrast between Individual and Organizational Objectives</td>
<td>-0.233</td>
<td>0.003</td>
<td>4.559</td>
<td>0.035</td>
<td>0.036</td>
</tr>
<tr>
<td>Risk-Taking of Managers</td>
<td>-0.033</td>
<td>0.707</td>
<td>0.293</td>
<td>0.589</td>
<td>0.002</td>
</tr>
<tr>
<td>Found Barriers</td>
<td>0.092</td>
<td>0.448</td>
<td>5.830</td>
<td>0.017</td>
<td>0.046</td>
</tr>
</tbody>
</table>

The results of the hypotheses test show that:

1. It can be concluded that resistance to change by managers is effective in managers’ use of modern financial software and about 10.7% use of modern financial software by managers is predictable through managers’ resistance to change.
2. 15.9% of the software use by managers is predictable through managers’ knowledge variable and knowledge of managers is effective in the use of reports of modern financial software.
3. Fear of unknowns is not effective on the use of modern financial software by managers.
4. Need to use the reports by managers is not effective on the use of modern financial software by managers.
5. Contrast between individual and organizational objectives is effective in the use of modern financial software by managers and 3.6% of the use of modern financial software by managers is predictable through contrast in individual and organizational objectives.
6. Risk-taking of managers are not effective in the use of modern financial software by managers.

In studying the average difference test based on groups with variables background which include age, gender, education, work experience, and position. The only significant average difference in use of reports of modern financial software system is between groups of work experience and position of people. The significance level of the significant difference between averages of the use of financial reports based on work experience shows that these differences were significant at 95% level and in groups with more work experience, the average use of software is more. Moreover, the significance level of the significant difference between averages on the use of financial reports based on position shows that these differences were significant at 99% level and in lower position the average use of software is more.

The results of multivariate regression analysis with significance level of 0.00 indicates that among six independent variables of resistance to change, knowledge of managers, fear of unknowns, need to use, contrast between individual and organizational objectives, and risk-taking of managers, just four variables of knowledge of managers, resistance to change, fear of unknowns, and contrast between individual and organizational objectives have the power to predict the use of the reports of modern financial software by managers.
Discussion and Conclusion:

The use of accrual basis in governance and non-commercial activities is important factor that should be noted despite the recommendation of international agencies and committees of accounting standards codification in the public sector in developed countries which are based on the use of accrual basis. It seems that agencies that are responsible for financial affairs in the country do not have any belief in the evolution of the accounting system and financial reporting in government governance and affiliated centers as well use of accrual accounting; for e.g. management and planning organization have stated some of the activities which would promote the performance of budgeting system and the way to classify income, cost, and come operational needs. It emphasis that national account systems should be viewed as legal requirement which should be prepared and implemented in the 2002 budget onwards. But the studied system which is require as basis of accrual accounting in recognizing incomes and costs have been ignored. In addition, most developed countries and some developing countries have undertaken a number of scientific studies in this area before moving to the accrual basis. Other countries that intend to use the accrual basis should also follow the same rule. Although this type of accounting was implemented in the Ministry of Health since 2002, its entire usefulness has not been utilized. Sometimes lack of sufficient skills by managers in the use of this software and lack of sufficient knowledge about all the dimensions and abilities of the software can have a positive impact on use of these reports by managers and the second hypothesis of the study supports it. As Fayazi & Yadegari (2010), Jufrah & Roshnasan (2010) and Rajabi (2012) stated in their study, the use of technology in accounting due to supervision, planning, and allocation of resources between organizations is necessary but some barriers for the adoption of new financial software by managers in organization were reported in other studies. These barriers were also identified in this study. Resistance to change as a feature in people who hardly accept changes about what they are accustomed to and also contrast between individual and organizational objectives are factors that can have a positive impact on use of these reports by managers which was supported by the 1st and 5th of this study.

Research Suggestions:

- Comparative research on the known dimensions of the barriers to the use of modern financial software reports.
- Analytical review of the incidence of resistance to change.
- Qualitative evaluation of barriers to the use of financial reports of modern financial software in organizations.
- Comparison of the performance of the Ministry of Health and affiliated centers before and after the use of accrual accounting.

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The Roles of Attachment Styles and Identity Patterns in Sexual Functioning and Sexual Self-Esteem of Iranian Married Women

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Abstract

Objective: The aim of this study is to investigate the association of attachment styles and identity patterns with married women’s sexual self-esteem and sexual functioning.

Method: Participants were 200 married women aged 26-40 living in Mashhad, Iran. Persian versions of Revised Adult Attachment Scale (RAAS), Identity Style Inventory (ISI-6G), Female Sex Function Index (FSFI) and Sexual Self-Esteem Index for Women-Short Form (SSEI-W-SF) were used for measuring subjects. The results were analyzed using Pearson’s correlation test and multiple regression analysis in SPSS software.

Results: The results showed that attachment styles and identity patterns are significantly associated with sexual functioning and sexual self-esteem of Iranian married women living in Mashhad city (p-value <0.05). Also, It was reported that “insecure anxious/ambivalent” attachment and “normative” identity style can predict the sexual functioning of them as 16 and 11%, respectively; and identity commitment can predict their sexual self-esteem as 8%. In addition, a significant relationship between married women’s sexual self-esteem and sexual functioning was found.

Conclusion: It was concluded that the early years of life which is associated with attachment, play a significant role in developing identity of married women as well as their sexual functioning and sexual self-esteem in the future.

Keywords: Attachment Styles, Identity Styles, Sexual Functioning, Sexual Self-Esteem, Iranian Married Women

1. Introduction

According to The World Health Organization (WHO) “sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviours, practices, roles and relationships”, and “it is influenced by the interaction of biological, psychological, social, economic, political, cultural, ethical, legal, historical, religious and spiritual factors”. Healthy sexual functioning in women plays an important role in their sense of health and quality of life. Lack of knowledge or incorrect information about sexuality can increase person's vulnerability to sexual disorders. Systematic study of human sexual response and its functions first was conducted by Masters and Johnson (1996). They presented a four-stage model of physiological responses to sexual stimulation which are the excitement phase, plateau phase, orgasmic phase, and resolution phase. The latest theory of sexual functioning is of Rosen et al. (2000) who proposed six domains for female sexual functioning: (1) desire, (2) arousal, (3) lubrication, (4) orgasm, (5) global satisfaction, and (6) pain. Epidemiological studies in the US, the UK and Sweden indicate that approximately 40% of women aged 18 - 59 have significant complaints about their sexual lives. The majority of complaints concern low sexual desire. Other common problems include difficulty reaching orgasm, insufficient lubrication and painful coitus (Segraves, 2003). Study of female sexual dysfunction (FSD) on Austrian women aged 20-80 years reported that 22% had desire disorders, 35% arousal disorders, 39% orgasmic problems, and 12.8% pain disorders (Ponholzer et al. 2005). Another study of FSD prevalence on Malaysian married women aged 18-70 showed that The prevalence of women with lack of orgasms, low sexual arousal, lack of lubrication, sexual dissatisfaction, and sexual pain were 59.1%, 60.9%, 50.4%, 52.2%, and 67.8%, respectively (Sidi et al. 2006).

Normal and abnormal characteristics of interpersonal relationships are strongly affected by individuals’ attachment styles. According to Hazan and Shaver (1987) established relationships between lovers and spouses are attachments.
Attachment is a relatively stable emotional bond which is established between the child and the mother or the others with whom the baby interacts regularly and consistently (Papalia, 2002). One of the three major attachment styles: Secure, insecure avoidant, and insecure anxious/ambivalent (Ainsworth, 1970) is established during infancy and childhood as part of an enduring set of social and self-mental models. Adults with avoidant attachment style are characterized by fear of intimacy, emotional highs and lows, and being close to others, and find it difficult to trust them; Adults with anxious/ambivalent pattern describe love as an obsession, and have desire to experience romantic relationships emotional highs and lows, extreme sexual attraction jealousy (Hazan and Shaver, 1987). Researchers have shown the relationship between attachment styles and marital satisfaction (e.g. Alexandrov et al. 2005; Banse, 2004; Meyers & Landsberger, 2002; Butzer & Campbell, 2008). A number of research has examined how attachment is associated with sexual behaviours and attitudes. Some studies have revealed that secure attachment is related to positive sexual experiences including more frequent and satisfying sex and having sex to express love to one’s partner, while insecure attachment is associated with negative outcomes such as less frequent and less satisfying sex and more negative emotions during sex (e.g. Birnbaum, 2007; Brassard et al. 2007). Secure attachment has been found to be related to the belief that sex should occur in the context of relationships, having fewer partners, and the decreased likelihood of participating in hook-ups and extra-dyadic relationships (e.g. Tracy et al., 2003). Avoidant attachment has been found to be associated with greater acceptance of and engagement in casual sex (e.g. Gentzler & Kerns, 2004). Also, anxious-attachment has been found to be related to participating in unwanted sex (e.g. Gentzler & Kerns, 2004) (cited in Sprecher, 2013). In a study conducted in Iran, it was found that there was a significant relationship between sexual desire andattachment styles among married women (Terimourpour et al. 2011).

There is a link between the concepts of identity and sexual functioning. Based on Erikson’s psychosocial theory (1968), identity formation is associated with the successful resolution of the identity crisis. This is followed by the intimacy crisis, i.e. “those who have not resolved their crisis of identity confusion are likely to either isolate and avoid intimacy altogether or else make futile, desperate and frantic attempts at intimacy, often with improbable or inappropriate partners” (Berman et al. 2006). Although identity statuses have different personality outcomes, the most preferred identity patterns are: informational, normative, and diffuse/avoidant patterns presented by Berzonsky (1988). Those with informational identity styles are “positively associated with self-reflection, problem-focused coping efforts, a rational epistemic style, a high need for cognition, cognitive complexity, planful decision making, conscientiousness, experiential openness, and identity achievement” (e.g. Berzonsky, 1990; Berzonsky & Neimeyer, 1994; Berzonsky & Sullivan, 1992); those with normative identity style “are agreeable and conscientious and they possess stable, foreclosed self-concepts” (Berzonsky, 1990; Nurmi et al. 1997; Berzonsky & Kuk, 2000). They have also been reported to be “highly defensive and intolerant of ambiguity, possessing a strong need for structure and cognitive closure” (e.g. Berzonsky & Kinney, 1995; Berzonsky & Kuk, 2000). Finally, individuals with a diffuse-avoidant identity style are “reluctant to confront and deal with personal conflicts and decisions; their behavior tends to be dictated and controlled by situational demands and incentives (Berzonsky, 1990; cited by Berzonsky and Kuk, 2005). The relation between the feminist identity styles and self-esteem has been found to be stronger in women who had experienced sexual traumatic events (Kucharska, 2015). In a study conducted in Iran, it was reported that there were significant correlations between identity styles, gender roles and marital satisfaction among married couples (Maaref et al. 2015).

According to Rogers’ (1959) theory of personality, self-esteem is what we think about ourselves. He believed that feelings of self-esteem were developed in early childhood and were formed from the interaction of the child with the mother and father. Gaynor and Underwood (1995) describe sexual self-esteem as “the tendency to value, versus devalue, one’s own sexuality, thereby being able to approach rather than avoid sexual experiences both with self and others” (p. 334). Zeanah and Schwarz (1996) define sexual self-esteem as “one’s affective reactions to one’s sexual thoughts, feelings, and behavior” (p.3). Studies on self-esteem showed that individuals tend to evaluate different aspects of themselves in different ways (Markus & Wyrf, 1987; Harter, 1982). Experimental evidences have reported that body image (e.g. Franzoi & Herzog, 1986) self-efficiency judgments (e.g. Rosenthal et al., 1991), moral judgments (e.g. Mosher, 1979), and childhood sexual abuse (e.g. Finkelhor & Brown, 1985) all lead to women’s persistent feeling of sexuality. According to Snell and Papini (1989), sexual self-esteem usually refers to how individuals feel about themselves as sexual beings, which can include both sexual identity and sexual acceptance. Adolescents with greater sexual esteem feel more assured in sexual situations, and more positive about their sexual activity (Hensel et al. 2011). According to Oattes & Offman (2007), young women with higher sexual esteem place higher value on their sexual being and experiences, and are willing to engage in discussing issues related to sexual relations such as satisfaction and emotions.
Considering above materials, the purpose of current study is to examine the association of attachment styles and identity patterns with sexual functioning and sexual self-esteem of married women in Iran by applying three attachment styles of Ainsworth (1970), and three identity patterns of Berzonsky (1988, 1990).

2. Materials and Methods
This research is a correlational study which investigates the relationship between attachment styles, identity patterns, sexual functioning and sexual self-esteem of Iranian married women. Using convenience sampling and visiting public places such as parks, recreation and shopping centers, participants in this study were selected from among married women living in Mashhad city of Iran which were 200 subjects. The following scales and questionnaires were used to assess attachment style, identity style, sexual self-esteem, and sexual functioning of the participants:

- **Revised Adult Attachment Scale (RAAS)** (Collins and Read, 1990): includes 18 statements, and the respondents rate the extent to which the statements describe their feeling about romantic relationship based on 5-point Likert Scale ranged from 1=Not at all characteristic of me, to 5=Very characteristic of me. The scale contains three subscales CLOSE, DEPEND, and ANXIETY each composed of six items. In this study, a Persian version of RAAS was used.

- **Identity Style Inventory- Six-grade (ISI-6G)** (Berzonsky, 1989): A Persian version of ISI-6G which include 40 items with three subscales of information, diffuse-avoidant, normative as well as identity commitment was used. The scoring was based on 5-point Likert scale ranged from 1=strongly disagree to 5= strongly agree.

- **Female Sex Function Index (FSFI)**: a 19-item questionnaire which is used to assess six dimensions of sexual functioning in women (desire, arousal, lubrication, global satisfaction and pain). Scoring is based on 5-point Likert scale ranged from 0 to 5. Zero score indicates that the respondent reported having no sexual activity in the past month. Individual domain scores can be obtained by adding the scores of the individual items that comprise the domain and multiplying the sum by the domain factor. Full scale score can be obtained by adding the scores for the six domains. In this study, a Persian version of FSFI was used.

- **Sexual Self-Esteem Index for Woman (SSEI-W)** (Zeanahand Schwarz, 1996): sexual self-esteem index for woman (SSEI-W) is a questionnaire designed to measure the effective responses to sexual self-esteem in women. In this study, a Persian version of short form SSEI-W-FS was used which has 32 items scored based on a 6-point Likert Scale ranged from 1=strongly disagree to 6= strongly agree. The questionnaire has 5 subscales of Experience/ skill, Attractiveness, Control, Moral judgment, and Adaptiveness.

After choosing measures, they were given individually to the participants and asked them to fill them out. Due to ethical considerations, in all questionnaires we used a code instead of using the name title. After collecting completed questionnaires, we used statistical tests (e.g. frequency, mean, standard deviation, Pearson’s correlation and linear regression) in SPSS software to analyze the collected data and hypotheses.

3. Results
3.1. Preliminary Analyses
Results reported that most of participants (39.5%) were aged between 31 and 35; maximum length of marriage was related to 86 of them (43%) which was 11-15 years; and most of them (48.5%) had only one child (see table 1). Results of ISI-6G showed that the mean (± SD) of the informational identity style of participants was 3.59± 0.58, for normative identity style it was 3.58± 0.98, for diffuse-avoidant style it was 3.1± 0.87, and for identity commitment it was 3.09 ± 0.85. Also, results of RAAS showed that the mean (± SD) of the secure style was 4.19± 0.62, for insecure avoidant style it was 3.09± 0.84, and for insecure anxious/ambivalent style it was 2.09±0.83. Reports in FSFI questionnaire revealed that the mean (± SD) of sexual functioning of participants was 2.96 ± 1.23. Finally, results of SSEI-We reported that the mean (± SD) of self-esteem of subjects were 3.05±0.23.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-30</td>
<td>65</td>
<td>32.5</td>
</tr>
<tr>
<td>31-35</td>
<td>79</td>
<td>39.5</td>
</tr>
<tr>
<td>36-40</td>
<td>56</td>
<td>28</td>
</tr>
<tr>
<td>Length of marriage (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>33</td>
<td>16.5</td>
</tr>
<tr>
<td>6-10</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>11-15</td>
<td>86</td>
<td>43</td>
</tr>
<tr>
<td>Higher than 16</td>
<td>21</td>
<td>10.5</td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Baseline characteristics of study participants
3.2. Testing hypotheses

3.2.1. Hypothesis one
Hypothesis one stated that there is a significant relationship between married women’s attachment styles, sexual self-esteem, and sexual functioning. Participants were categorised into one of three attachment styles (secure, insecure avoidant, and insecure anxious/ambivalent) according to their scores in RAAS scale (see table 3). Pearson’s correlation test was carried out to examine the association between variables in this hypothesis. A significant association was found between them (p-value <0.05) (see table 2).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sexual functioning and Sexual self-esteem</th>
<th>Sexual functioning and Sexual self-esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment styles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure</td>
<td>Pearson correlation: 0.64</td>
<td>Sig.: 0.02</td>
</tr>
<tr>
<td>Insecure avoidant</td>
<td>Pearson correlation: 0.38</td>
<td>Sig.: 0.04</td>
</tr>
<tr>
<td>Insecure anxious/ambivalent</td>
<td>Pearson correlation: 0.38</td>
<td>Sig.: 0.01</td>
</tr>
</tbody>
</table>

3.2.2. Hypothesis two
Hypothesis two stated that married women’s identity styles, sexual self-esteem, and sexual functioning have significant relationship with each other. Participants were categorised into one of three identity styles (informational, normative, and diffuse/avoidant) according to their scores in ISI-6Gscale.Pearson’s correlation test was carried out to examine the association between variables in this hypothesis. A significant association was found between them since p-value <0.05 (see table 3).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sexual functioning</th>
<th>Sexual self-esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity styles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>Pearson correlation: 0.18</td>
<td>Sig.: 0.001</td>
</tr>
<tr>
<td>Normative</td>
<td>Pearson correlation: 0.23</td>
<td>Sig.: 0.001</td>
</tr>
<tr>
<td>Diffuse/avoidant</td>
<td>Pearson correlation: 0.31</td>
<td>Sig.: 0.03</td>
</tr>
</tbody>
</table>

3.2.3. Hypothesis three
Hypothesis three stated that attachment styles can significantly predict women’s sexual functioning. Multiple regression analysis was carried out to examine the prediction ability of attachment styles. Two identity styles of insecure avoidant and insecure anxious/ambivalent were entered into the equation. Results showed that the strongest predictor of their sexual functions was insecure anxious/ambivalent attachment style (R=0.33, p<0.001) which can explain the variance of the sexual functioning by 16% (Adj. R²=0.16) (see table 4).

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized coefficients</th>
<th>Standardized Beta coefficient</th>
<th>t</th>
<th>Sig.</th>
<th>R</th>
<th>Adj. R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insecure avoidant</td>
<td>0.19</td>
<td>0.21</td>
<td>4.01</td>
<td>0.001</td>
<td>0.31</td>
<td>0.7</td>
</tr>
<tr>
<td>Insecure anxious/ambivalent</td>
<td>0.12</td>
<td>0.11</td>
<td>5.32</td>
<td>0.001</td>
<td>0.33</td>
<td>0.16</td>
</tr>
</tbody>
</table>

3.2.4. Hypothesis four
Hypothesis four stated that identity styles can significantly predict women’s sexual functioning. Multiple regression analysis was used to examine the prediction ability of identity styles. Two identity styles of diffuse/avoidant and normative were entered into the equation. Results showed that the strongest predictor of their sexual functions was normative style ($R=0.23$ and $p<0.001$) which can explain the variance of the sexual functioning by 11% (Adj. $R^2=0.11$) (see table 5).

### Table 5. Multiple regression analysis results of hypothesis four

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized coefficients $\beta$</th>
<th>Std. error</th>
<th>Standardized Beta coefficient</th>
<th>$t$</th>
<th>Sig.</th>
<th>$R$</th>
<th>Adj. $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffuse/ avoidant</td>
<td>0.16</td>
<td>4.6</td>
<td>0.28</td>
<td>3.45</td>
<td>0.01</td>
<td>0.29</td>
<td>0.3</td>
</tr>
<tr>
<td>Normative</td>
<td>0.12</td>
<td>3.09</td>
<td>0.11</td>
<td>4.09</td>
<td>0.01</td>
<td>0.23</td>
<td>0.11</td>
</tr>
</tbody>
</table>

3.2.5. **Hypothesis five**

Hypothesis five stated that identity styles can significantly predict married women’s sexual self-esteem. Multiple regression analysis was employed to examine the prediction ability of identity styles. Two variables of diffuse/avoidant and identity commitment were entered into the equation. Results supported this hypothesis and showed that the strongest predictor of sexual self-esteem was identity commitment ($R=0.17$ and $p<0.001$) which can explain the variance of the sexual self-esteem by 8% (Adj. $R^2=0.08$) (see table 6).

### Table 6. Multiple regression analysis results of hypothesis five

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized coefficients $\beta$</th>
<th>Std. error</th>
<th>Standardized Beta coefficient</th>
<th>$t$</th>
<th>Sig.</th>
<th>$R$</th>
<th>Adj. $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffuse/ avoidant</td>
<td>0.10</td>
<td>3.2</td>
<td>0.36</td>
<td>7.21</td>
<td>0.01</td>
<td>0.19</td>
<td>0.2</td>
</tr>
<tr>
<td>Identity commitment</td>
<td>0.11</td>
<td>2.6</td>
<td>0.13</td>
<td>5.44</td>
<td>0.01</td>
<td>0.17</td>
<td>0.8</td>
</tr>
</tbody>
</table>

3.2.6. **Hypothesis six**

Hypothesis seven stated that there is a significant relationship between married women’s sexual self-esteem and sexual functioning. Pearson’s correlation test was carried out to examine the association between variables in this hypothesis. A significant association was reported between them (p-value <0.05) (see table 7).

### Table 7. Pearson correlation test results for hypothesis six

<table>
<thead>
<tr>
<th>Sexual functioning</th>
<th>Pearson correlation</th>
<th>Sig.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual self-esteem</td>
<td>0.12</td>
<td>0.03</td>
<td>200</td>
</tr>
</tbody>
</table>

4. **Discussion**

Satisfactory sexual relation of couples has been introduced as one of the most important factors in strengthening the stability of the family. Desires and the quality of human sexuality is complex as much as living principle. Sexual activity and gender are important parts of marital life. Dissatisfaction with sexual intercourses can bring deep problems in the marital relationship, such as annoyance, jealousy, competition, revenge, feelings of humiliation, and lack of confidence (Christopher & Sprecher, 2000).

According to the results supported the first hypothesis of our study, it was found out that is a significant relationship between attachment styles, sexual self-esteem, and sexual functioning. Sexual functioning and sexual self-esteem can lead to satisfaction or dissatisfaction with life. Boosting self-esteem was one of reasons people have sex. In this regard, Feeney et al. (2000) indicated that attachment dimensions are reliably related to many aspects of sexual attitudes and behaviors among late adolescents. For example, those who are highly anxious about their relationships may engage in more risky sexual practices because they fear that non-compliance with partners' wishes will jeopardize their relationship. Dhal et al. (2007) also revealed the relation between self-esteem and attachment in adolescents. Our findings also is consistent with the results of Brassard et al (2015). They showed the potential of sexual self-esteem as a mediator of association between attachment styles and women’s sexual functioning.

According to the results supported the second hypothesis, we found out a significant relationship between identity styles, sexual self-esteem, and sexual functioning. Moreover, according to the results supported the hypothesis four, it was revealed that identity styles is significantly associated with sexual functioning. This is consistent with the
findings of Kucharska (2015) and Maaref et al (2015). Kirpatrick (1999) also showed that identity styles have relationship with sexual functioning.

Also, according to the results supported the hypothesis three, it was found that attachment styles has a significant association with sexual functioning. Results of Stefanou & McCabe (2012) supported our findings. They demonstrated that higher levels of anxious and avoidant attachment were related to less satisfying sexual relationships, higher levels of sexual dysfunction, and different sexual intercourse frequencies and motivations for sex. Findings of Granota et al. (2010) also suggested that women with higher frequency of physical complaints in various body areas and insecure attachment style are more susceptible to report pain during intercourse. Our result also is consistent with the findings of Feeney et al. (2000); Birnbaum (2007); Brassard et al. (2007); Tracy et al. (2003); Gentzler & Kerns (2004); and Terimourpour et al. (2011).

According to the results supported the hypothesis five, identity styles has significant association with sexual self-esteem. In this regard, few studies have been conducted. In a research, Mombini Nia (2014) studied the relationship between identity styles, self-esteem and educational performance of high school students (male and female) in Iran and showed that the identity commitment and self-esteem were meaningfully related, and both can explain the educational performance of Iranian students. This result is in accordance with our findings.

Finally, according to the results supported the hypothesis six, in this study it was found that there is a significant relationship between self-esteem and sexual functioning. According to this result, Baumeister et al (2003) suggested that individuals with high self-esteem may engage in more sexual activity and take more risks, whereas bad sexual experiences and unwanted pregnancy might lower self-esteem. This result also is consistent with the results of Hensel et al (2011) and Oettes & Offman (2007). Inconsistently, Visser et al (2010) found out that sexual behavior is roughly uncorrelated with the esteem variables in both sexes.

5. Conclusion

The aim of our study was to investigate the relationship between attachment, identity, sexual functioning and sexual self-esteem of Iranian married women aged 26-40. Three attachment styles of Ainsworth (1970) and three identity patterns of Berzonsky (1988) were employed in this research. According to results we found out that attachment styles and identity patterns are associated with sexual functioning and sexual self-esteem of Iranian married women. In this regard, insecure avoidant and insecure anxious/ambivalent attachment styles, and avoidant and normative identity patterns are potential predictors of sexual functioning of Iranian married women, and identity commitment can predict their sexual self-esteem.

Reference


Effects of a Combined Aerobic and Resistance Exercise Program on the Quality of Life and Motor Function of elderly Men with Parkinson’s disease

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Abstract
Parkinson’s disease is a prevalent chronic neurodegenerative disorder which is characterized by symptoms such as slowed movement, rigid muscles, tremor (shaking) at rest and impaired posture. They can impose serious motor and mental problems to patients. The aim of this study was to assess the effect of combined aerobic and resistance exercise program on the quality of life and motor function of male with Parkinson’s disease. Thirty patients were selected in Isfahan using targeted and convenience sampling method. The patients were divided equally and randomly into two experimental (mean ± SD; age 60.6±6.01year, weight, 73.8±12.1kg and height, 170.2±8.3cm) and control groups (mean ± SD; age 61.9±5.2years, weight, 74.3±12.6kgs and height, 171.2±7.8cm). The experimental group underwent combined exercise program for 8 weeks (3 sessions per week) while the control group had no regular physical activity. The quality of life and motor function were measured using PDQL and UPDRS questionnaires and the data was analyzed using dependent and independent t-tests (P<0.05). There was a significant difference in all sub-scales of the quality of life and motor function of the experimental group before and after the exercise programs (P<0.05) as all variables improved, but no significant difference was observed in the control group (P>0.05). There was a significant difference between the experimental and control groups (P<0.05). It can be concluded that combined exercise program can be recommended for Parkinson’s disease patients.

Keywords: aerobic exercise, motor function, Parkinson, quality of life, resistance exercise

Introduction
Parkinson’s disease is categorized within long-term progressive degenerative disorders of the central nervous system which occurs slowly over time. It is the second most frequent disorder of the central nervous system in the 21st century which is preceded only by Alzheimer as well as being one of the main disabling condition in aged people [1, 2]. The cause of the disease has not been well identified yet. However, different genetic and environmental factors has been implicated (3, 4). Slowed movement, tremor, impaired posture, decreased balance and automatic nervous system disorders are the main symptoms of Parkinson’s disease [5]. Parkinson’s disease patients lose their power and motor function as their physical activity decreases due to aging [6, 7]. They quickly lose their physical fitness and suffer decreased self-confidence and coordination [8]. Decreased postural control reduces functional activities in Parkinson’s disease patients including walking, standing up from a chair and moving on bed [9]. Decreased functioning and self-confidence on the one hand and slowed movement on the other hand make Parkinson patients dependent on others. This in turn results in their social isolation. In addition to physical presentations, they experience too many socio-mental symptoms which appears as the disease progresses. This affects their quality of life [11, 12]. Keeping functioning capability, maintaining the quality of life and avoiding the side effects of drugs are the objectives of treating Parkinson’s disease [10]. Parkinson’s disease is a multi-dimensional disease therefore, it is expected that multi-dimensional approaches is adopted for treating and controlling it [13]. According to a result of a study, besides drug intervention, exercise and physical therapy as a supplementary treatment method positively controls some side effects of Parkinson’s disease and improves the daily functions of patients [14]. Other studies reported that exercise-therapy is more advantageous than drug-therapy and surgery in terms of improved functioning and the quality of life of Parkinson’s disease patients [15]. Exercise and physical activities positively affect...
Dopamine level and improve the performance of nervous-muscle system. In addition, the disruption of the negative combined cycle of disease, aging and decreased movement improves the functioning of patients with Parkinson’s disease [16, 17, 18]. Since exercise and physical activity can improve the motor function and quality of life of Parkinson’s disease patients, they can slow down the progress of this disease at early stages [7] and delay the incidence of symptoms [19]. Shou et al (2014) conducted a systematic study and meta-analysis titled “effect of aerobic exercises on Parkinson’s disease” in the form of a random controlled study. The aim of their systematic review was to assess the evidences indicating whether aerobic exercises positively affect the improvement of Parkinson’s disease patients. From the results, it was shown that aerobic exercises had superior effect on improving motor activities and quality of life in Parkinson patients [20]. Alexandalis et al (2001) showed in their study that by relying on resistance exercises Parkinson’s disease patients can promote their muscle power, posture and the length and speed of their pace similar to normal people in the same age range [21].

Considering the fact that the problems of Parkinson’s disease patients including imbalance, power shortage, reduced functioning capacity and the quality of life, accompany these from the beginning of the disease, such problems have been introduced as important factors in different studies all over the world. There are many studies on the effects of different exercises on the factors indicating that each exercise is effective to some extent. It should be noted that some factors, including motor function and the quality of life, cannot be improved merely by resistance exercises and they demand aerobic exercises. Therefore, this study assesses the effect of an 8-weeks combined exercises (aerobic + resistance exercises) on the quality of life and motor function of aged male Parkinson patients.

**Material & Methods**

A total number of 30 Parkinson’s disease patients were selected in Isfahan using targeted sampling method. Inclusion criterion was the lack of chronic cardiovascular diseases or cognitive disorders approved by a specialist physician. The patients were at stages 1 to 3 of Parkinson’s disease base on Hohen and Yahr scale. They were equally and randomly divided into experimental (mean ± SD; age, 60.6±6.01year, weight, 73.8±12.1kg and height, 170.2±8.3cm) and control groups (mean ± SD; age, 61.9±5.2 years, weight, 74.3±12.6kgs and height, 171.2±7.8cm). In addition to drug treatment, the experimental group underwent exercises for 8 weeks (3 sessions per week).

Observing all scientific principles, the exercises were designed and conducted under the supervision of an experienced and specialist coach. The control group had no regular physical activity at the same time and received only drug. The consent forms were obtained from patients. All cases were assessed in the same condition in terms of the study variables before and after study.

**Measurement tools-Hoehn and Yahr scales**

Measurements were done using Hoehn and Yahr scale, which is an accepted index for the classification of Parkinson disease. It includes stages 1 through 5 where HY=1-2, HY=3 and HY=4-5 stand for midline, moderate and severely involvement, respectively. The cases of this study were in the midline to moderate stages.

**Quality of life**

**Parkinson Disease Quality of Life questionnaire** (PDQL) is an exclusive tool used to measure health-associated quality of life. It consists of 37 items measuring the quality of life in four dimensions: Parkinson’s symptoms (14 items), systemic symptoms (7 items), emotional functioning (9 items) and social functioning (7items). The items are scored from 1 (always) to 5 (never) [23, 24]. This study assessed motor function using the part 3 of Unified Parkinson’s Disease Rating Scale questionnaire (UPDRS). The motor functioning of Parkinson’s disease cases was measured using UPDRS scale. This scale is used to assess the Parkinsonian symptoms in clinical studies and exercises [25].

**Resistance exercise Program**

Each session of resistance exercise program included the following steps: warming up with stretching (duration =5 minutes), the main exercise and cooling down by walking and stretching (duration =5 minutes). The main exercise was to conduct resistance exercises for 8 weeks (3 sessions per week). The trials repeated each exercise in 2-4 sets and for 3-12 times. The maximum rest time between two exercises was 2 minutes. The exercise program for the first two weeks was to repeat the maximum four repetitions by 60%. This raised to 80% at the end of program (at the end of every two weeks, four maximum repetitions obtained by every patients in each exercise were being measured and the exercise plan was being set based on it).
The exercises were conducted by DYNAFORCE (made in South Korea) in the following order: one exercise for upper torso and one for lower torso. The exercises included bench press, paddling on chair, front leg exercise, back leg exercise, shoulder press, foot press, triceps arm exercise, biceps arm exercise and sit-up

**Aerobic exercise program**
Aerobic exercise program consist of walking on treadmill for 8 weeks and 3 sessions in every week. In the first week, each trial walked 4 times on treadmill with the highest possible speed and each time lasted for 4 minutes. The rest time between every 4-minute walking was three minutes. Every week, an additional 4-minute walking was added to their program. Walking speed was determined depending on the physical power of every trial. This speed remained constant across the exercise period. All trials were obliged to hold the treadmill knob installed at the side of it. At the beginning of every session, following warming-up step, the examination group first conducted aerobic exercises and then conducted resistance exercises.
Data was analyzed using SPSS version 18 and dependent and independent -t –tests (P<0.05).

**Results**

**Quality of life (Parkinson symptoms)**
Following an 8-week combined exercise, the symptoms of Parkinson’s disease significantly improved in the experimental group (T=9.9, P<0.05), while no significant change was seen in control group (T=1.91, P>0.05). Significant difference was observed between the groups (T=4.94, P<0.05) (Fig. 1)

![Fig. 1: Quality of life (Parkinson’s disease Symptoms) (score)](image)

**Quality of life (Systemic symptoms)**
Systemic symptoms significantly improved in the experimental group (t=9.2, P<0.05), while no significant difference was seen in the control group (t=2.05, P>0.05). Significant difference was observed between the groups (t=6.97, P<0.05) (Fig. 2)
Quality of life (Systemic Symptoms)

Emotional function significantly improved in the experimental group ($t=8.4$, $P<0.05$) while no significant difference was seen in the control group ($t=1.82$, $P>0.05$). Significant difference was observed between the groups ($t=4.45$, $P<0.05$) (Fig. 3).

Quality of life (Emotional Function)

Social function significantly improved in the experimental group ($t=8.36$, $P<0.05$) while no significant difference was seen in the control group ($t=1.4$, $P>0.05$). Significant difference was observed between the groups ($t=5.76$, $P<0.05$) (Fig. 4).
Motor Function
Motor function significantly improved in the experimental group ($t=9.8$, $P<0.05$) while no significant difference was seen in the control group ($t=1.85$, $P>0.05$). Significant difference was observed between the groups ($t=7.95$, $P<0.05$) (Fig. 5)

Discussion and conclusion
The aim of this study was to assess the effect of combined resistance and aerobic exercises on the quality of life and motor function of elderly male Parkinson’s disease patients. Following an 8-week combined exercises, the quality of life significantly improved in the experimental group including Parkinson’s disease symptoms, systemic symptoms, emotional function and motor function. Patel et al (2000) reported in their study the increased motor ability and quality of life in Parkinson patients following an 8-wek individual exercise program [26]. Levin et al (2000) studied the impact of aerobic exercise on the cardiovascular health and Parkinson’s disease symptoms. Their results showed
decreasing in the severity of the symptoms and consequently improved quality of life of Parkinson patients [27]. Abedzade and Barghi - Moghaddam (2013) evaluated the effect of balance exercises on the depression and quality of life of Parkinson’s patients. Their results showed a significant improvement in depression and quality of life in all dimensions [28]. Yousefi et al (2009) studied the effect of a period of exercise-therapy on the quality of life and daily activities of male Parkinson’s patients. Their results showed that there was improvement in daily activities and quality of life in the studied cases [29]. Cruise et al (2010) evaluated the effect of aerobic exercises for 12 weeks on the cognition and quality of life of Parkinson’s patients. Their results showed improved quality of life and cognition [30]. Natalia et al (2014) reported that the quality of life and motor signs are improved in Parkinson’s patients following a 16-week balance exercise intervention [31].

The patients of this study participated in group resistance and aerobic exercises. It seems, therefore, that conducting such exercises in the presence of other people improved the sub-scales of their quality of life and motor function. The exercise program used in this study had a positive significant effect on the motor function of the studied patients which agrees with previous results [32, 33]. The study of Tadibi et al (2008) reported a significant improvement in the motor functioning of Parkinson’s disease patients following a 10-week exercise-therapy [34]. Hosienpour et al (2013) evaluated the impact of 8-week laughter Yoga on Parkinson’s disease patients and reported a significant improvement in the motor functioning of the experimental group [35]. The study of Heyberger et al (2011) showed that dance-therapy has a significant impact on the motor functioning and quality of life of Parkinson’s disease patients [36]. Bambaeichi et al (2013) reported in their study the significant improvement of motor functioning of Parkinson’s disease patients of experimental group following a 10-week combined resistance and balance exercise program [37]. It appears that conducting resistance exercises increased the tension strength of tendons, ligaments, and muscle mass and cardiac contractility in this study [38]. On the other hand, aerobic exercises improved the function of cardiovascular system, compensated body mass loss and aging-induced power loss, increased life expectancy, maintained mental power and increased self-confidence through increasing aerobic capacity. A combined resistance and aerobic exercise program can further improve the quality of life and motor function.

It can be concluded that an 8-week combined resistance and aerobic exercise has a positive effect on the quality of life and motor function of elderly Parkinson’s disease patients. Therefore, the combined resistance and aerobic exercise program can be recommended for these patients.

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Group spiritual intervention and happiness of Help-Seekers Receiving Methadone Maintenance Treatment

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Abstract

The treatment of drug dependence is a multi-dimensional therapy, however, frequent remission after the treatment reduces self-esteem, respect and family and friends support which can significantly reduce the quality of life and their happiness and lead to a vicious cycle of their treatment and rehabilitation. This study aimed to determine the effect of group spiritual intervention on the happiness of help-seekers receiving Methadone Maintenance Treatment.

This study was a single-blind clinical trial. To achieve the purpose, 60 drug-dependent clients under MMT treatment were randomly selected in an available sampling method and were randomly divided into two groups of intervention and control. The group spiritual intervention was held in 10 sessions a week for 70-90 minutes and the Oxford Happiness Inventory (QHI) was completed by participants before and four weeks after the last intervention session.

The results indicated that the mean score of the intervention and control groups were 24.7 and 20.5 before the intervention and reached 43.9 and 20.6 after the intervention. The difference was significant in the intervention group (P<0.05) and insignificant in the control group. The mean difference between the intervention and control groups was non-significant before the intervention and significant after it (P<0.05).

It can be said that group spiritual intervention can be effective as a useful interventional method for increasing happiness in addicts under MMT and be used as a complementary treatment at the same time with methadone treatment to reduce the likelihood of returning to substance abuse.

Keywords: Spiritual intervention, MMT, Happiness, Drug users
Introduction

Addiction and drug dependence is a phenomenon that has dipped a wide range of the world's population, has affected most families by the unpleasant consequences and has endangered the security of societies [1, 2]. The latest studies published in 2016 have reported that 24.6 million Americans that are 9.4 percent of Americans over 12 have serious problems associated with drug use [2]. Substance Abuse Disorder is a relapsing chronic disorder and is associated with many problems in medical, psychological, familial, occupational, legal, financial and spiritual areas [3]. This disorder not only affects the individual's life but causes many problems for the family and society and imposes high loads on them [4]. There are several treatment programs in the field of addiction treatment the main objective of most is to reduce or stop drug use and methadone treatment is one of the best-known drug therapy methods for drug users [5]. Methadone use as a treatment for drug dependent people started in New York from 1964 after the epidemic of heroin abuse after World War II. At that time, the studies indicated that the use of methadone reduces heroin use and reduces the rate of death from abuse [6].

Drug users exposed to methadone treatment have a reduction in secret use of substance [7], crime and death [8, 9] Longitudinal studies have indicated that most consumers, who are treated with an alternative therapy, cannot avoid substance use in a long period and return from the treatment or simultaneously use drugs [10]. From among the adverse psychological consequences of withdrawal that has attracted the attention of researchers, is unhappiness or sadness of the individuals in this period [1]. The addicts describe themselves as "happy" or "well-disposed" during substance abuse which changes into sadness and pain by quitting the happiness of people severely reduces after quitting substance use [11]. Being unhappy and having a negative affection is one of the main causes of the failure of individuals to maintain long-term withdrawal [12]. Various treatment programs have been introduced for addiction treatment over the past years, but we continue to see failure in some patients in this treatment programs that perhaps one of the reasons is that paying too much attention to negative emotions and improving symptoms in addicts, has prevented psychotherapists from the psychological strengths and positive points including drug-dependent patients [13]. Spiritual intervention as an effective care has been taken into consideration in recent years [14]; because spirituality provides a collection through which one can understand the meaning of his life [15]. That is why spirituality is a strong predictor of hope and mental health [16] and is an important source of physical health and improvement of illness condition [14, 15]. Considering the importance of the psychological factors of addicted people including happiness in the success of treating addicts and affective factors in these psychological qualities such as spirituality, the present study was conducted with the aim of investigating the effectiveness of interventions on the happiness of patients under MMT.

Methods

This was a single-blind clinical trial. The study population consisted of all drug users referring to MMT centers in Shiraz in 2016 and with active Medical records where 60 of them were selected through available sampling based inclusion criteria and were then randomly assigned into two groups of intervention and control and were homogenized regarding confounding variables. In addition to the usual intervention of the clinics, the intervention group received ten sessions of group spiritual intervention for 70-90 minute in a group and the control group received only the usual clinic interventions.

Inclusion criteria included informed consent and willingness to participate in meetings, being in the age range of 18 to 65 years, having the experience of drug abuse for at least 6 months, passing at least a month of starting treatment with methadone, no history of identified mental illness, having the ability to read and write, lack of a physical illness that affects the ADL and lack of HCV, HBS, HIV illnesses and exclusion criteria included the withdrawal of cooperation, the absence in more than one session and quitting methadone treatment during the study.
This research has approved in research and ethics committee in Kermanshah university of Medical Sciences (No. KUMS.REC. 1395.172) and recorded the IRCT with code IRCT2016081526844N4.

**Instruments:**

Demographic checklist and Oxford Happiness Inventory (OHI) are two tools for this research. The OHQ was developed in 1990 by Argyle and Lu. The 29-item questionnaire has four options that which are scored from zero to three. The total score of the 29 items constitutes the total score of the scale. The total score of the subject ranges from zero to 87. Argyle et al. reported the alpha coefficient of 90 percent of 347 subjects. This questionnaire includes five subscales of life satisfaction, satisfaction, self-esteem, positive mood and positive energy [17]. Liaghatdar and et al(2008) indicated in their study that all the 29 items of the test have a high correlation with the total score and Cronbach's alpha and split-half reliability of the test were respectively reported as 92% [18].

**Spiritual intervention:**

The spiritual interventions based on the spirituality model[19] and needs and modified Quadro spiritual relationship of the human which are the relationship with God, relationship with the self, relationship with the others and relationship with the nature and the environment [14, 19, 20]for the intervention group was held for 50 to 70 minutes in 2 sessions per week and for 10 sessions. Topics such as: explaining the spiritual situation and needs, the concept of spirituality and its effect on life, relationship with the self through meditation, relationship with the others through the promotion of communication skills, identifying the people with whom they feel relaxed, promoting mood and spirit through healthy and constructive thoughts, relationship with the environment and the nature through going to the nature in these sessions by encouraging members to express feelings and spiritual and religious beliefs, explaining the concept of spirituality and its effect on life, free group discussion, responding concerns and questions of the members were raised in these sessions.

**Results:**

Thirty patients under MMT were present in both experimental and control groups in this study. Both two groups were been matching for demographic variables, and two groups had matched from marital status (P=0.31), job (P=0.718), drugs dependency history (P=0.957) and means of age (P=0.24).

In relation to the analytical tests, all the quantitative scales were investigated for normality through conducting Kolmogorov-Smirnov test that all the variables were normal (P>0.05).

In the case of mean scores of the control and intervention groups in happiness variable and the subscale of satisfied with life, sake of satisfactions , self-esteem, positive mood and positive energy, independent t-test indicated no significant difference before the intervention (P>0.05). However, the difference was significant after the intervention (P<0.05).

Paired t-test results indicated that the average scores of happiness and the subscales of happiness and life satisfaction, satisfaction, self-esteem, positive mood and positive energy, before and after the intervention had no significant difference in the control group (P>0.05), but the difference was significant in the intervention group (P<0.05)(Table.1).
Table 1. Compare of Happiness scores mean and its aspect in pre & post spiritual intervention in two groups

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD</th>
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<tbody>
<tr>
<td></td>
<td>Intervention</td>
<td>Control</td>
<td>T</td>
<td>sig</td>
</tr>
<tr>
<td>Happiness</td>
<td>Before</td>
<td>After</td>
<td>T=6.36, sig= 0.006</td>
<td>(10.78, -2.38)</td>
</tr>
<tr>
<td></td>
<td>24.7±11.77</td>
<td>20.5±13.64</td>
<td>T=7.27, sig=0.001</td>
<td>(30.39, 17.27)</td>
</tr>
<tr>
<td></td>
<td>(1.02, -25.37)</td>
<td>20.06±11.66</td>
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<tr>
<td></td>
<td>Satisfied with life</td>
<td></td>
<td>T=-6.19, sig=0.001</td>
<td>(15.3, 8.85)</td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>T=2.07, sig=0.04</td>
<td>(1.52, 0.009)</td>
</tr>
<tr>
<td></td>
<td>10.3±5.64</td>
<td>8.43±3.56</td>
<td>T=7.46, sig=0.001</td>
<td>(4.64, 2.19)</td>
</tr>
<tr>
<td></td>
<td>(6.42, -12.44)</td>
<td>7.67±5.47</td>
<td></td>
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<tr>
<td></td>
<td>Sake of satisfactions</td>
<td></td>
<td>T=-5.4,sig=0.001</td>
<td>(4.77, 2.02)</td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>T=0.44, sig=0.66</td>
<td>(0.75, -0.48)</td>
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<tr>
<td></td>
<td>4.4±2.54</td>
<td>4.16±3.2</td>
<td>T=5.55, sig=0.001</td>
<td>(4.64, 2.19)</td>
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<tr>
<td></td>
<td>(1.88, -4.18)</td>
<td>4.03±2.41</td>
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<td></td>
<td>Self-esteem</td>
<td></td>
<td>T=-5.43, sig=0.001</td>
<td>(3.81, -0.68)</td>
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<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>T=-0.98, sig=0.33</td>
<td>(0.25, -0.72)</td>
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<tr>
<td></td>
<td>4.1±2.12</td>
<td>3.53±2.68</td>
<td>T=4.95, sig=0.001</td>
<td>(4.77, 2.02)</td>
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<tr>
<td></td>
<td>(1.91, -4.22)</td>
<td>3.77±2.59</td>
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<tr>
<td></td>
<td>Positive mood</td>
<td></td>
<td>T=-5.46, sig=0.001</td>
<td>(3.6, 1.79)</td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>T=1.14, sig=0.26</td>
<td>(0.21, -0.75)</td>
</tr>
<tr>
<td></td>
<td>3.6±2.14</td>
<td>2.37±2.23</td>
<td>T=1.76, sig=0.08</td>
<td>(2.13, -0.13)</td>
</tr>
<tr>
<td></td>
<td>(5.33±1.72)</td>
<td>2.63±1.77</td>
<td></td>
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<tr>
<td></td>
<td>Positive energy</td>
<td></td>
<td>T=-3.63, sig=0.001</td>
<td>(3.08, 0.42)</td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>T=-0.13, sig=0.89</td>
<td>(0.55, -0.48)</td>
</tr>
<tr>
<td></td>
<td>2.5±1.55</td>
<td>2.00±1.57</td>
<td>T=5.28, sig=0.001</td>
<td>(3.08, 0.42)</td>
</tr>
<tr>
<td></td>
<td>(4.2±1.86)</td>
<td>1.96±1.38</td>
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**Discussion**

As the results indicated, the significant intervention can increase the happiness of patients under MMT. The findings of this study are consistent with the results of some previous studies. For example, Bagheri et al (2015) conducted a study entitled as reviewing the effectiveness of spiritual-religious psychotherapy on reducing stress, anxiety and depression in addicted women, so that this treatment has reduced stress, anxiety, and depression in the sample group. They emphasize that focusing on the role of spirituality in the recovery process, is essential to reducing stress and depression as well as increasing happiness [21]. The findings of another study clearly indicate the importance of spirituality in addiction recovery of the individuals because all the elements that are associated with spirituality are the most important determiners of success or failure of quitting [22]. The findings are also consistent with the findings of some studies [23-25]. Explaining the findings, it can be said that spirituality that includes social support, purpose, and hope is one of the most important factors of happiness [26].

The findings of the study are not consistent with the findings of Hang et al (2013) who have indicated that high spirituality in people with depression is not associated with high happiness. In explaining this difference, it can be said that the nature of sadness is more resistant in depressed people and are more than the natural people which is mostly rooted in feelings of guilt that may even be more in religious individuals [27]. The study by Quick (2014) indicated that spirituality in children can predict their happiness and in explaining the consistency between this study and our study, it is due to the children’s difference in spirituality concepts and their perceptions of spirituality that they are completely different from addicted people and even adults who have high levels of cognitive and moral arguments [28]. On the other hand, joy and happiness has prerequisites among which we can refer to the sense of security, hope, sense of control over life and creating efficient human.
relations[29] that almost all of these cases are disrupted because of the adverse consequences of drug addicts and the spiritual intervention with an emphasis on human values and lack of judgment can heal these prerequisites and thereby can improve happiness in addicted people that these cases are somehow emphasized by spiritual intervention. Being unhappy and having a negative affection during the consumption period and especially at the time of withdrawal from substances particularly on stimulating substances can be observed abundantly in addicts and this is one of the main causes of the failure of individuals to maintain long-term withdrawal [12].

Thus, by providing psycho-educational interventions such as spiritual intervention we can reduce the amount of happiness and consequently the reduction in returning the individuals under treatment, because happiness and joy reduces depression and anxiety on the one hand and strengthen self-esteem, sense of security, reduced immune deficiency and improvement of a person's physical and mental health, accelerating decision-making process and increasing the sense of life satisfaction in individuals on the other hand. In other words, by increasing the happiness of drug-dependent patients they overestimate the proportion of their skills and remember positive events more than negative events, become more accurate in planning; because they take advantage of important strategies like searching for health information. The major problem of these patients is that they describe themselves as happy and well-disposed while drug abuse that this happiness changes into sadness and pain by quitting drug abuse, their recovery rate can be raised through providing treatments that increase the happiness in these people.

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Authors’ Contribution:

Mahvash Kaskouli Behrouzi: Sampling, Data gathering and corresponding author Amir Jalali: supervisor and revised the paper; Mahmoud Rahmati: Help the intervention, writing paper, and Nader Salari: Analysis of Data.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.


The role of pain vulnerabilities and pain coping resources in pain catastrophizing within the fear – avoidance model framework: The case of chronic musculoskeletal pain patients

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ABSTRACT

Background and aim: Currently, fear-avoidance model (FAM) is known as one of the best evaluation models employed for the treatment of chronic musculoskeletal pain, but the contribution of pain vulnerabilities and pain coping resources is yet to be understood. This study was designed to examine a hypothetical model showing the contribution of pain vulnerabilities and pain coping resources to catastrophizing pain within the FAM framework.

Methods: A sample of 314 patients with chronic musculoskeletal pain as diagnosed by an orthopedic specialist based on world health criteria were selected. This was done using the convenience-sampling method in private clinics and hospitals of Isfahan City (Iran) in 2016 as well as the completed measures of Neo-Five Factor Inventory (NEO-FFI), Positive and Negative Affect Schedule (PANAS-NA), Acceptance and Action questionnaire (AAQ), Pain Self Efficacy (PSEQ), Life Orientation Test (LOT-R), Resilience Scale (CDRS) and two core FAM components (pain catastrophizing (PCS), pain-related fear (TSK) and pain adjustment outcomes (pain disability, pain intensity (CPG). A structural equation modeling was developed for the purpose of data analysis.

Results: The empirical model showed that pain vulnerabilities had a significantly direct effect on catastrophizing pain, while pain coping resources had a significantly inverse effect on pain catastrophizing; however, the direct effects of pain vulnerabilities and pain coping resources on pain adjustment outcomes within the FAM framework were not confirmed. Besides, the mediating role of catastrophizing pain and pain-related fear in the relationship between pain vulnerabilities and coping resources with pain adjustment outcomes were supported.

Conclusion and implications: The study provides evidence confirming the role of a pain vulnerabilities pathway (i.e. Neuroticism) and pain coping resources (i.e. Optimism) in pain catastrophizing within the FAM framework.

Keywords: pain vulnerabilities, pain coping resources, catastrophizing, fear-avoidance model, chronic musculoskeletal pain

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Introduction
Chronic pain has been referred to as an individual’s subjective perception of an unpleasant feeling which lasts for a period of at least 3 months. Its prevalence as reported in the general population varies from 11 to 55% (1-2). Accordingly, a number of theoretical models have proposed more-specific ways in which psychological factors could be related to pain and disability over time. Fear-avoidance model (FAM) which is a psychological model for chronic pain is particularly applicable for chronic musculoskeletal pain (3). On the basis of this model, pain experience can result in problems such as catastrophizing, fear of moving (kinesiophobia), re-injury, avoiding behaviors, lack of moving, and finally causing intense pain and a defective cycle of chronic pain (4). Despite the evidence that validates the FAM model, some contradictory observations have been reported. As an example, it has been revealed that fear could not predict pain (5). Furthermore, changes that occur in pain catastrophic cognition have been shown to fail in the prediction of changes in the pain-related fear (6). The key mechanism that can account for the fear-avoidance is that catastrophic thinking can have impact on avoidance behavior, thereby amplifying disability. There is some inconsistent evidence showing that differences observed in the primary appraisal of pain experience (catastrophizing vs. non-catastrophizing) can seriously influence pain avoidance behaviors and disability (6, 7). Based on these findings, some attempts have been made to explore the reason for the existence of such individual differences. Ramirez-Maestre and Esteve (8) for instance developed a conceptual model based on the fact that personal characteristics (pain vulnerabilities and pain coping resources) could act as differential variables which determines how pain is experienced and how the chronic pain patient could adjust himself to it. Traditionally, while attempting to explain this variability, the focus centered on vulnerability factors. These include negative affect (NA), which refers to a mood dispositional dimension featuring negative emotionality and self-concept (9), neuroticism, which refers to a personality trait that is characterized by anxiety, moodiness, worry and jealousy (10), and Experiential avoidance (E.A) which denotes an attempt to avoid the shape, frequency or situational sensitivity of internal events (11); it must be noted that these may all underlie individual differences in pain-catastrophic cognitions. However, the effect of pain coping resources that are likely to decrease sensitivity to acute pain (12) and nurture adaptation to chronic pain (13, 14) has been confirmed. It has been revealed that positive psychology that pain coping resources such as optimism, resilience, and self-efficacy can enhance the patients’ capacity to manage pain effectively (8). Overall, a review of previously research indicates that there are a large number of vulnerability factors and pain coping resources that can have impact on catastrophizing pain, fear of pain and pain adjustment within FAM framework. It should be noted that individual differences between persons in the case of pain understanding (15, 8) can be explained based on it. As for neuroticism, it has been reported by Esteve and Camacho (16) that there is a significant moderate relationship between neuroticism and catastrophizing. Goubert et al (17) conducted a study among individuals showing that of neurotic symptoms even low pain intensity could lead to provoking catastrophic thoughts about pain. Also from a theoretical point view, individuals with higher NA are expected to scan their environment for threat indicators and selectively interpret ambiguous stimuli in a negative and threatening manner (18). It should be pointed out that literature review shows pain catastrophizing-mediated NA and somatic complaints in a group of children suffering chronic pain (19). The other vulnerable variable related to catastrophizing is known as experiential avoidance. Two studies have shown that individuals reporting higher levels of EA are more likely to have lower pain tolerance and higher pain catastrophizing (20, 21). On the other hand, there is some evidence showing that positive resources such as optimism, resiliency and self-efficacy are some important pain coping resources used for successful adaption to acute and chronic pain (22, 23, 24). It has been revealed by Goodin et al. [25] that pain catastrophizing relationship could be moderated by optimism; this is such that greater dispositional optimism might lead to the attenuation of the pernicious influence of catastrophizing pain response during and immediately following a cold presser task. The common belief is that the tendency to catastrophizing during painful stimulation promotes more intense pain and emotional distress. Recent studies have analyzed the possible effect of resilience on the chronic pain experience. It has been shown that resilient people avoid catastrophic pain through positive affect.
Other studies also revealed that self-efficacy could act as a modifier between catastrophizing, pain, catastrophizing and pain-related outcomes. To summarize, the empirical evidence suggests that FAM is unable to predict catastrophizing and adjustment of pain in all cases due to individual differences in terms of personality and emotional traits. In this study, many vulnerable variables of pain and pain coping resources which can cause individual differences among people in pain catastrophizing have been mentioned in the frame of separate researches but none of them has examined these variables in terms of an integrated model. Thus, this study was developed to test, use structural equation modeling a hypothetical model showing the contribution of pain vulnerabilities and pain coping resources to adjustment of pain in a sample of chronic musculoskeletal pain patients within the framework of FAM. It was hypothesized that there is a direct causal relationship between vulnerable variables of pain (neuroticism, negative affect and experiential avoidance) and pain coping resources (optimism, resilience and self-efficacy), with pain catastrophizing (magnification, rumination and helplessness) and pain adjustment outcomes (pain intensity and disability). We also hypothesized that pain catastrophizing could play a mediating role in pain-related fear through exogenous variables of pain vulnerabilities and pain coping resources; also it is possible that pain-related fear could play a pain mediating role in pain adjustment outcomes through pain catastrophizing. Therefore, the purpose of this study is to examine the fitness of model of chronic musculoskeletal pain adjustment within FAM framework.

**Methods**

**Participants**

A cross-sectional study was employed to examine the hypothesized model. The participants serving as a sample consisted of 314 patients with chronic musculoskeletal pain. These participants were diagnosed as patients with musculoskeletal pain by an orthopedist based on clinical assessments and standards of World Health Organization from several primary care health centers in Isfahan (Iran) during March 2016. The inclusion criteria included musculoskeletal pain of benign origin for at least 3 months and continuous or intermittent pain that appeared for five or more days per week. Thus, the final sample included 314 patients who based on informed consent completed the questionnaires. The majority of them who were female (58.9%), had completed the secondary education. They were within the age group of 20 to 60 years. It was observed that all of them had musculoskeletal pain in the following regions: back (36.3%), arms and legs (27.7%), neck and shoulders (21.7%) and chest and abdomen (14.3%). Patients with chronic musculoskeletal pain took part in the study after they were provided with some explanations about information confidentiality and filling out consent. Then they were asked to complete 10 questionnaires related to Chronic Pain Grade (CPG) Questionnaire, Tampa Scale for Kinesiophobia (TSK), Pain Catastrophizing Scale (PCS), Revised NEO Five Factors Inventory (NEO-FFI), Acceptance and Action Questionnaire (AAQ), Positive and Negative Affect Schedule (PANAS), Pain Self-efficacy Questionnaire (PSEQ), Life Orientation Test-Revised (LOT-R) and Connor-Davidson Resilience Scale (CDRS).

**Measures**

*Chronic pain severity and disability was assessed by employing the Chronic Pain Grade (CPG) Questionnaire* [29] which is a seven-item instrument measuring domains of pain severity. Three intensity items asked respondents to rate their current, average and worst pain intensity on 0–10 Numerical Rating Scales (NRS) (0=“no pain at all”; 10=“pain as bad as possible”). A Characteristic Pain Intensity Score was derived by averaging the responses to the intensity items and multiplying this by 10. Three CPG items assessed pain interference with (1) daily activities, (2) social activities and (3) working ability, using 0–10 NRSs (0 = “no interference/change”; 10 = “extreme change/unable to carry on activities”). The CPG Disability Score (Pain-Dis) was derived through multiplying the average of the three interference items by 10. It must be explained that the English version of the CPG possesses good psychometric properties.
Pain-related fear was assessed by the Tampa Scale for Kinesiophobia (TSK) [32]. The 11-item TSK, which included two subscales including Somatic Focus (TSK-SF) and Activity Avoidance (TSK-AA), was developed to measure fear of (re)injury and movement. Respondents were required to rate on a four-point scale (1 = “strongly disagree”; 4 = “strongly agree”), with the higher scores suggesting the higher pain-related fear. In a study conducted by Wong et al (2010), Cronbach’s α for the whole test was obtained to be 0.67 [33]. The Iranian version of TSK has already been validated demonstrating acceptable psychometric properties (Cronbach’s α for the total score = 0.82) [34].

Catastrophizing cognition was assessed by the Pain Catastrophizing Scale (PCS) [35], which is a 13-item instrument designed to evaluate negative self-statements and thoughts about pain. The PCS consisted of three subscales (rumination, magnification and helplessness). Each item was related by employing a Likert Scale (0 = not at all, 4 = all the time). The psychometrics values of the PCS are well documented, indicating good test–retest reliability, as well as concurrent, criterion-related and discriminate validity [35]. It must be added that the Iranian PCS also showed good psychometric properties (Cronbach’s α for the total score = 0.80) [36].

The 12-item neuroticism subscale derived from Revised NEO Five Factors Inventory (NEO-FFI) was employed to measure neuroticism [37]. Neuroticism subscale was used in this study in a single manner. This subscale included 12 items that were measured on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”. It has been found that the Iranian version of neuroticism subscale exhibits good reliability (Cronbach’s α = 0.80) [38].

The Acceptance and Action Questionnaire [39] is a nine-item questionnaire developed to measure the tendency to engage in experiential avoidance. Each item is rated on a seven-point scale that ranges from 1 (Never) to 7 (Always). Higher scores indicate higher levels of avoidance and immobility. The instrument has good psychometric properties [39]. It must be pointed out that the Iranian version was employed in the current research [40] and enjoys psychometrics properties similar to those of the original one.

Negative Affect The 10-item negative affect subscale from the Positive and Negative Affect Schedule (PANAS-NA) was employed in order to assess NA [41]. Respondents were required to indicate the extent to which they experienced NA during the week preceding the interview on a five-point scale (1 = not ‘at all’, 5 = ‘extremely’) with higher scores representing more negative affect. Again, it must be noted that the Iranian version of negative affect subscale has been shown to have good reliability (Cronbach’s α = 0.87) [42].

Pain Self-efficacy was assessed using the pain Self-Efficacy Questionnaire (PSEQ) [43]. The PSEQ measures both the strength and generality of a patient’s beliefs with regard to his/her ability to accomplish a range of activities despite his/her pain. Accordingly, patients were asked to rate how confident they were that they could do each of the 10 activities or functions at present, despite their pain, by selecting a number on a 7-point scale, with 0 being equal to “not all confident” and 6 being “completely confident”. Scores on the PSEQ may range from 0 to 60, with higher scores suggesting stronger self-efficacy beliefs. Good reliability and validity of the PSEQ have already been reported [43]. The Iranian version of PSEQ has been validated, demonstrating acceptable psychometric properties (Cronbach’s α = 0.83) [44].
Revised Life Orientation Test (LOT-R) [45]. The LOT is a 10-item self-report measure of dispositional optimism. Items are related on a 5-point response scale that ranges from 0 (strongly disagree) to 4 (strongly agree). Internal consistency has proved to be acceptable (Cronbach’s $\alpha=0.78$). The acceptable reliability and validity of the Iranian version of this scale [46] have been confirmed too.

Connor-Davidson Resilience Scale (CDRS) [47] comprises 25 items that are scored on a seven-point from 1 (Disagree) to 7 (Agree). The Iranian version used in this study comprised 25 items, with good internal consistency, stability and construct validity [48].

Statistical analysis

SPSS (Windows version 23 SPSS) and Amos Graphics (version 23) software were employed to analyze the data obtained. Univariate and multivariate distribution was examined too. There was no evidence showing significant univariate skewness or kurtosis across any of the variables. As the measure variables were normally distributed, the maximum likelihood estimation method was utilized. In line with contemporary guidelines, model fit was evaluated using several fit indexes and convergence between the findings was assessed too. These included the root mean square error approximation (RMSEA), the goodness- of- fit index (GFI), the adjusted goodness- of- fit index (AGFI) and the comparative fit index (CFI). Regarding RMSEA, values less than 0.08 reflected an adequate fit. As for GFI and AGFI, it was hypothesized that the closer the values of these indexes to 1, the better the fit. The CFI measures the proportional improvement in fit by comparing a hypothesized model range from 0 (absolute lack of fit) to 1 (perfect fit) [49, 50]. A sample size of 100 to 200 subjects is generally regarded adequate for testing complex models in SEA [51]; then there would be a sufficient sample size for the cross-sectional (n=314) model. As the first step, the partial correlation between all the variables considered in the analysis were examined. Then the fit of the model was evaluated. Five latent variables including pain vulnerabilities, pain coping resources, pain catastrophizing, pain-related fear and pain adjustment outcomes were associated in a hypothetical structural equation model.

Results

Partial correlation was calculated as a first step in the data analysis. Table 1 shows the partial correlation of the measures employed in the structural equation analysis. It was found that all measurement scales were significantly correlated with each other. As a preliminary test of the model, the structural equation analysis was used. According to the results presented in table 2, the reported values of $\chi^2$ and RMSEA did not confirm the total fitness of the model. Hence, fitness indices of the model were recalculated after model modification. It could therefore be inferred that the recalculated indices showed the desired fitness of the model. The estimation of standard coefficients of the direct effects in the model is shown in table 3 which shows that pain vulnerabilities have a direct and significant relationship with pain catastrophizing. In addition, it has been shown that pain coping resources have inverse and significant relationship with pain catastrophizing. Also, pain catastrophizing have a direct and significant relationship with pain-related fear, which is, in turn, associated with pain adjustment outcomes. However, pain vulnerabilities and pain coping resources do not have a direct and significant relationship with pain adjustment outcomes. The estimation of standard coefficients of the indirect effects in the model was done using bootstrap method (see table 4). In this method new sample is drawn from the original samples by the replacement and estimation of parameters obtained by filling the model to the new data. It must be noted that the empirical distribution of the parameters estimation could be used as estimation of their true distribution. Results in table 4 indicate that all indirect paths were significant. In fact, pain catastrophizing should be considered as the mediating variable between pain vulnerabilities, pain coping resources and pain-related fear. Also pain-related fear to be considered as the mediating variable between pain catastrophizing and pain adjustment outcomes. Confidence level for this confidence interval was found to
be 95 and the number of re-sampling of Boot Strap was 5000. Since 0 was out of this confidence interval, mediating relationships were significant.

### Table 1. Correlation of measurement scales

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Neuroticism</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Negative Affect</td>
<td>0.545*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Experiential avoidance</td>
<td>0.423*</td>
<td>0.450*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Optimism</td>
<td>-0.412*</td>
<td>-0.361*</td>
<td>-0.273*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Resilience</td>
<td>-0.388*</td>
<td>-0.293*</td>
<td>-0.199*</td>
<td>0.296*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>6. Self-Efficacy</td>
<td>-0.393*</td>
<td>-0.291*</td>
<td>-0.284*</td>
<td>0.393*</td>
<td>0.345*</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>7. Helplessness</td>
<td>0.579*</td>
<td>0.515*</td>
<td>0.421*</td>
<td>-0.368*</td>
<td>-0.407*</td>
<td>-0.424*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Rumination</td>
<td>0.576*</td>
<td>0.535*</td>
<td>0.425*</td>
<td>-0.383*</td>
<td>-0.399*</td>
<td>-0.439*</td>
<td>0.659*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Magnification</td>
<td>0.578*</td>
<td>0.517*</td>
<td>0.416*</td>
<td>-0.360*</td>
<td>-0.420*</td>
<td>-0.489*</td>
<td>0.698*</td>
<td>0.635*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Activity Avoidance</td>
<td>0.453*</td>
<td>0.365*</td>
<td>0.372*</td>
<td>-0.337*</td>
<td>-0.249*</td>
<td>-0.290*</td>
<td>0.509*</td>
<td>0.502*</td>
<td>0.494*</td>
<td>1</td>
<td></td>
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<tr>
<td>11. Somatic Focus</td>
<td>0.496*</td>
<td>0.412*</td>
<td>0.339*</td>
<td>-0.337*</td>
<td>-0.383*</td>
<td>-0.430*</td>
<td>0.566*</td>
<td>0.520*</td>
<td>0.563*</td>
<td>0.503*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Pain Intensity</td>
<td>0.490*</td>
<td>0.437*</td>
<td>0.373*</td>
<td>-0.362*</td>
<td>-0.362*</td>
<td>-0.390*</td>
<td>0.561*</td>
<td>0.516*</td>
<td>0.571*</td>
<td>0.501*</td>
<td>0.519*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13. Pain Disability</td>
<td>0.613*</td>
<td>0.545*</td>
<td>0.426*</td>
<td>-0.420*</td>
<td>-0.384*</td>
<td>-0.497*</td>
<td>0.724*</td>
<td>0.678*</td>
<td>0.713*</td>
<td>0.551*</td>
<td>0.647*</td>
<td>0.647*</td>
<td>1</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.01

### Table 2. The statistics amounts of goodness of fit

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$/df</th>
<th>RMSEA</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial model</td>
<td>2.803</td>
<td>0.076</td>
<td>0.935</td>
<td>0.899</td>
<td>0.946</td>
</tr>
<tr>
<td>Final model</td>
<td>0.970</td>
<td>0.000</td>
<td>0.974</td>
<td>0.959</td>
<td>1.000</td>
</tr>
</tbody>
</table>

$\chi^2$/df was indexed by Normed Chi-Square, RMSEA root mean square error approximation, GFI goodness-of-fit index, AGFI adjusted goodness-of-fit index, CFI comparative fit index
Fig 1. Empirical model. Standardized path coefficients are presented. All paths are significantly at \( P<(0.05) \) except paths pain vulnerabilities and pain coping resources on pain adjustment outcomes.

### Table 3. The estimation of standardized coefficients of the direct effects

<table>
<thead>
<tr>
<th>path</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>CR</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pain vulnerabilities</td>
<td>pain catastrophizing</td>
<td>0.606</td>
<td>0.049</td>
<td>4.535</td>
</tr>
<tr>
<td>pain coping resources</td>
<td>pain catastrophizing</td>
<td>-0.370</td>
<td>0.033</td>
<td>-2.800</td>
</tr>
<tr>
<td>pain catastrophizing</td>
<td>pain-related fear</td>
<td>0.953</td>
<td>0.103</td>
<td>13.438</td>
</tr>
<tr>
<td>pain-related fear</td>
<td>pain adjustment</td>
<td>0.927</td>
<td>0.706</td>
<td>4.891</td>
</tr>
<tr>
<td>pain vulnerabilities</td>
<td>pain adjustment</td>
<td>0.026</td>
<td>0.289</td>
<td>0.181</td>
</tr>
<tr>
<td>pain coping resources</td>
<td>pain adjustment</td>
<td>-0.057</td>
<td>0.169</td>
<td>-0.459</td>
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</table>
### Table 4. Results of Boot Strap for the indirect paths of model

<table>
<thead>
<tr>
<th>path</th>
<th>Standardized Indirect Effect</th>
<th>Upper Bounds</th>
<th>Lower Bounds</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pain vulnerabilities → pain catastrophizing → pain-related fear</td>
<td>.578</td>
<td>.793</td>
<td>.321</td>
<td>.022</td>
</tr>
<tr>
<td>pain coping resources → pain catastrophizing → pain-related fear</td>
<td>-.352</td>
<td>-.122</td>
<td>-.607</td>
<td>.032</td>
</tr>
<tr>
<td>pain catastrophizing → pain-related fear → pain adjustment</td>
<td>.883</td>
<td>1.324</td>
<td>.363</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Discussion and Conclusion**

This study examined a hypothetical model showing the contribution of pain vulnerabilities and pain coping resources within FAM framework in a sample of chronic musculoskeletal pain patients. The hypothetical model predicted the direct effect of pain vulnerabilities and pain coping resources on pain catastrophizing, pain catastrophizing on pain related- fear and the pain-related fear on pain adjustment outcomes. But it must be acknowledged that the direct effect of pain vulnerabilities and pain coping resources on pain adjustment outcomes was not confirmed. The findings were consistent with some previous studies showing the direct effect of pain coping resources (self-efficacy, optimism, resilience) on pain catastrophizing [22,27]. Other studies demonstrated that positive psychological trait, such as self-efficacy can also act as mediators between catastrophizing and pain-related outcomes [27, 52]. According to social cognitive theory, people with high levels of self-efficacy can use the desired resource to reduce pain catastrophizing [53]. Those with higher levels of positive traits, such as self-efficacy and optimism, are in fact less likely to go through pain catastrophizing [26]. Optimism leads patients to use the approach of active coping, thereby achieving better adjustment to chronic pain [8]. Other studies have analyzed the influence of resilience on the chronic experience. For example, Ong et al [26] suggested that psychologically resilient individuals could rebound from daily pain catastrophizing through experiences of positive emotion. Resilience has a direct and positive effect on pain acceptance and active coping; part of the effect of resilience on emotion distress could be owing to the mediating role of active coping [8]. Moreover, the results showed that pain vulnerabilities (neuroticism, negative affect, experiential avoidance) had a direct effect on pain catastrophizing. Regarding neuroticism it was observed by Esteve and Camacho [16] that there is a significant moderate relationship between neuroticism and catastrophizing. The moderate effects of neuroticism on pain catastrophizing could be due to several mechanisms. First, neuroticism may influence physiology through pain-related mechanisms. Second, neuroticism could also influence adjustment to pain, which is independent of the intensity of pain, because individuals high in neuroticism are likely to report more emotional distress and physical symptoms regardless of the actual severity of pain [8]. In the wider personality literature, it was assumed that neuroticism is a primary trait, while negative affect is regarded as a secondary trait [15]. Theoretically, individuals with higher negative affect are hypothesized to consistently scan their environment for threat indicators and selectively interpret ambiguous stimuli in a negative and threatening manner [18]. Pain catastrophizing mediated negative affect and somatic complaints have already been observed in a sample of children with chronic pain [19]. One kind of the pain vulnerabilities is experiential avoidance. This shows a constant effort to escape and avoid unpleasant emotion, thought, memories, and other private experiences [54]. These results suggest that when individuals with chronic pain try to control the negative emotional experiences related to experiencing pain, they are likely to intensify their suffering [55]. The structural model also revealed that pain catastrophizing could be considered as a mediating variable between pain vulnerabilities and pain coping resources with the pain-related fear. Also, the pain-related fear can be regarded as mediating between pain catastrophizing and pain adjustment outcomes. On the basis of the previous performed research [56, 57, 58] the FAM posits that the negative appraisal of acute pain evokes pain-related fear which result in avoidance and escape behaviors. Overall, research has revealed that pain coping resources can have a reverse and direct effect on pain catastrophizing. In fact,
pain coping resources serves as a defensive buffer against catastrophic cognition, while pain vulnerabilities increases pain intensity. This study provided a unique opportunity to simultaneously assess the impact of vulnerability and coping resource factor on pain catastrophizing and pain adjustment outcomes. This study showed that personal characteristics acted as differential variables determining how pain was experienced and how chronic musculoskeletal pain patients adjusted to pain. These variables could predict a causal path between pain catastrophizing, pain related fear and pain adjustment outcomes, but cannot predict pain adjustment outcomes alone.

Although the current study is of interest, it has limitations which must be taken into account. First of all, this study relied on self-report data which could be biased regarding information and also non-controlled factors that could have affected the relationships between variables. Second, the study sample included patients with chronic musculoskeletal pain. Thus, the results obtained could only be generalized to patients with specific pain complaints. In spite of these limitations, the results of this study demonstrated the role of vulnerabilities pathway and pain coping resources pathway in adaption to pain. Furthermore, the structural analysis showed that the two pathways were interconnected. Based on this, intervention programs for chronic musculoskeletal pain patients should include therapeutic techniques aimed at affecting both pathways. Identifying patients who have low levels of coping resources may provide interventions with added benefit, leading to enhancing adjustment with pain.

**Conflict of interest statement**
The authors report no conflict of interest.
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11. Guadiano AG, Herbert JD, Hayes SC. Is the symptom or the relation to it? Investigating potential mediators of change in acceptance and commitment therapy for psychosis, Behav Ther. 2010;41:543-54.
Results of Histologic and Cytological Sampling in Thyroid Solitary Nodules

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Monireh Halimi, corresponding Author, Department of clinical pathology, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Objective: This study aimed to investigate the prevalence and age and sex distribution of solitary thyroid nodules in patients who underwent Fine needle aspiration or thyroid surgery.

Methods: A retrospective study conducted on consecutive 191 patients with solitary thyroid nodule presenting to Tabriz Imam Khomeini Hospital since 2000 to 2003 with primitive clinical diagnosis of solitary thyroid nodule. All pathologic examinations had been performed in the pathology laboratory of Imam Khomeini Hospital by two expert clinical pathologists.

Result: The patients had the average age of 49 year (range of 15 to 91 years). The most affected age group is 30-39 years. The most common age range for occurrence of common thyroid pathologies are as following: multi nodular goiter within 20 - 60 years, follicular adenoma in 10 - 70 years, Papillary carcinoma in 20-80 years, follicular carcinoma in 40-70 years, and distributed goiter in 10 -40 years. The most common reported pathology was multi nodular goiter (90 cases, 47%), followed by follicular adenoma (28%), papillary carcinoma (15%), follicular carcinoma (3%), distributed goiter (3%), lymphocytic thyroiditis (1%), medullary carcinoma (1%), lymphoma (1%), granuloma (0.5%), and abscess (0.0%). The most common compliant in presentation was neck swelling (table 2). The occurrence of pathology in thyroid lobes was not significantly different (p>0.05). Of all reported pathologies, multi nodular goiter and follicular adenoma were more prevalent in women (p<0.05) but the sex distribution of other pathologies were not significantly different (p>0.05).

Conclusion: Our findings showed the higher prevalence of malignant thyroid cancers in studied populations especially in women, requiring long time health and hygiene programs for prevention and screening.

Key words: Diagnosis, Goiter, Thyroid nodule, Tumor

Introduction

Puluble thyroid nodules are very common. This lesions present in 4-7% of general population (1-3) but their incidence has been raised in recent years, probably because of wider application of thyroid imaging and diagnostic techniques (4). However, the increased rate encourages the physicians to apply more reliable procedures to evaluate these nodules (3).
Solitary thyroid nodule (STN) is defined clinically as the local enlargement of thyroid with normal remaining of the gland (5). The epidemiological studies have suggested that prevalence of solitary nodules in adults and children ranges from 5-10% and 0.2-1.2% respectively (6).

Although the clinical examination especially the soft consistency of nodules can help to rule out the malignant pathologies, definite diagnosis is made only in base of microscopic findings (3). The patients with STN should undergo fine needle aspiration cytology (FNAC) because they have malignant potential (7), hence evaluation of these nodules is essential (7,8). FNAC is a convenient, safe, simple, rapid, and cost effective modality which plays an important role in preoperative screening and the diagnosis of thyroid lesions. It is also a valuable tool in the management of these lesions (3,9-11).

Despite the recent vast progresses in clinical diagnostics, both the diagnosis and treatment of thyroid cancer remain challenging (12). This study aimed to investigate the prevalence and age and sex distribution of solitary thyroid nodules in patients who underwent Fine needle aspiration or thyroid surgery.

**Materials & Methods**

This is a retrospective study conducted on consecutive patients with solitary thyroid nodule presenting to Tabriz Imam Khomeini Hospital since 2000 to 2003.

Of 17349 presentations, 191 patients had been presented with primitive clinical diagnosis of solitary thyroid nodule, which enrolled in the study. Data sources were patients’ medical records in hospital archive. The data including age, sex, primitive clinical diagnosis, and final pathologic diagnosis was collected and recorded in prepared questionnaire.

Inclusion criteria were patients with primitive clinical diagnosis of solitary thyroid nodule underwent fine needle aspiration or thyroidectomy and pathologic examination. Exclusion criteria were cases with unknown pathology report and those with insufficient data recorded on their medical files. All pathologic examinations had been performed in the pathology laboratory of Imam Khomeini Hospital by two expert clinical pathologists.

The study was approved by local ethic committee and the patients data was kept as secret.

The data were presented as frequency and percent as tables and diagrams. The data were analyzed using SPSS-18 and p-values less than 0.05 were considered as significant.

**Results**

The patients had the average age of 49 year (range of 15 to 91 years). The distribution of pathologies in the age groups is demonstrated in table 1. As showed, the most affected age group is 30-39 years. The most common age range for occurrence of common thyroid pathologies are as following: multi nodular goiter within 20 - 60 years,
follicular adenoma in 10 - 70 years, Papillary carcinoma in 20-80 years, follicular carcinoma in 40-70 years, and distributed goiter in 10 - 40 years.

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Age group</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>10-19</td>
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<tr>
<td>Multi nodular goiter</td>
<td>1</td>
</tr>
<tr>
<td>Follicular adenoma</td>
<td>7</td>
</tr>
<tr>
<td>Papillary carcinoma</td>
<td>1</td>
</tr>
<tr>
<td>Follicular carcinoma</td>
<td></td>
</tr>
<tr>
<td>Distributed goiter</td>
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</tr>
<tr>
<td>Lymphocytic thyroiditis</td>
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</tr>
<tr>
<td>Medullary carcinoma</td>
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</tr>
<tr>
<td>Granuloma</td>
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</tr>
<tr>
<td>Lymphoma</td>
<td></td>
</tr>
<tr>
<td>Abscess</td>
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<tr>
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</tbody>
</table>

The most common reported pathology was multi nodular goiter (90 cases, 47%), followed by follicular adenoma (28%), papillary carcinoma (15%), follicular carcinoma (3%), distributed goiter (3%), lymphocytic thyroiditis (1%), medullary carcinoma (1%), lymphoma (1%), granuloma (0.5%), and abscess (0.0%).

The most common compliant in presentation was neck swelling (table 2).

<table>
<thead>
<tr>
<th>Symptom/ Sign</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck Swelling</td>
<td>129</td>
<td>67.5%</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>21</td>
<td>11%</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>12</td>
<td>6.3%</td>
</tr>
<tr>
<td>Difficult Breathing</td>
<td>8</td>
<td>4.2%</td>
</tr>
<tr>
<td>Hoarseness</td>
<td>7</td>
<td>3.6%</td>
</tr>
<tr>
<td>Dysphasia</td>
<td>6</td>
<td>3.1%</td>
</tr>
<tr>
<td>Vocal Cord Palsy</td>
<td>4</td>
<td>2.1%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

The occurrence of pathology in thyroid lobes was not significantly different (p>0.05) (table 3).
Table 3. Localization of thyroid nodules in studied patients

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Right lobe</th>
<th>Left lobe</th>
<th>Isthmus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi nodular goiter</td>
<td>35</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>Follicular adenoma</td>
<td>23</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>Papillary carcinoma</td>
<td>15</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Distributed goiter</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Medullary carcinoma</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Also, the distribution of patients by thyroid scan as documented in the patients records are showed in table 4.

Table 4. Distribution of patients by thyroid scan

<table>
<thead>
<tr>
<th>Thyroid scan result</th>
<th>Male</th>
<th></th>
<th>Male</th>
<th></th>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Cold nodule</td>
<td>55</td>
<td>28.8</td>
<td>92</td>
<td>48.1</td>
<td>147</td>
<td>76.9</td>
</tr>
<tr>
<td>Hot nodule</td>
<td>8</td>
<td>4.2</td>
<td>36</td>
<td>18.9</td>
<td>44</td>
<td>23.1</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>33</td>
<td>128</td>
<td>67</td>
<td>191</td>
<td>100</td>
</tr>
</tbody>
</table>

Of all reported pathologies, multi nodular goiter and follicular adenoma were more prevalent in women (p<0.05) but the sex distribution of other pathologies were not significantly different (p>0.05).

Diagram 1. Sex distribution of solitary thyroid nodular pathologies in the studied patients
Discussion

Thyroid nodular lesions remain as a common clinical problem in the world. These lesions are more common within women and in areas of iodine deficiency (13).

One of the main difficulties of management of suspected malignancy in multiple thyroid tumors is in the determination of which nodule should be biopsied. To date there is no agreement among specialists regarding the selection of a nodule for biopsy, but ultrasonography findings and criteria that are predictive of malignancy have been described. They include a single hypo-echogenic and solid nodule with an irregular shape, edge and size (12,14-17). It has been reported that patients with a single or dominant lesion are at a higher risk of malignancy than those with multiple nodules (12).

The diagnostic value of fine-needle aspiration biopsy (FNAB) in thyroid pathologies has been established; however, it has debatable reliability in some specific situations. This is appropriate and valuable diagnostic modality for the assessment of single thyroid tumors, but has shown fewer efficacies for evaluation of multinodular thyroid glands (12). FNA cytology is a simple, easy to perform and repeat, and cost effective procedure for the diagnosis of thyroid cancer. It is recommended as the first line investigation for the diagnosis of solitary thyroid nodule (3).

Ongphiphadhanakul et al. performed surgical removal of solitary thyroid nodules within 24 men and 105 women with male to female ratio of 1:4.3 (18). The sensitivity and specificity of FNAB were 71.4% and 85.1%, respectively, with an accuracy of 82.2% (18). Also in the study by Kaliszewsk the women include 85.5% of thyroid cancers. In their study, the prevalence of papillary, follicular and medullary cancer in solitary thyroid nodules was 78.6%, 5.2%, and 8.1%, respectively (12).

The age range and mean age of the patients in the present study were similar to studies done by previous studies (6,19,20). The mean age of Arul and Masilamani study group was 38.22 years, with a range from 16-80 years among 483 patients (6,13). Of these patients, 33 (6.8%) were males and 450 (93.2%) were females with male and female ratio of 1:13 (6). Although solitary thyroid nodules are common in females, they are more likely to be malignant in males (21,22). In Basharat study, 16% were male and 64% of patients were female (13). Male to female ratio of the patients was 1:8.5 (23).

The prevalence of multinodular goiter is very high worldwide, particularly in endemic areas. Approximately 93% of all thyroid nodules are benign. Papillary thyroid carcinoma has reported as the most common thyroid malignancy and sometimes can present with a very aggressive course (12).

Wahid et al. study included 82 cases consisting on 57 female and 25 male, with female to male ratio of 2.28: 1. The age of the patients was ranged from 16-65 years with mean age of 42.56 + S.D 11.60 years. Most of the patients presented in 3rd and 4th decade followed by the 5th and 2nd decade (21).

The malignancy rate in our study was much more than the study of Arul and Masilamani (6).
Our findings showed the raised incidence of follicular carcinoma. This finding is compatible with some recent epidemiological studies which have reported an increase in the number of patients diagnosed with thyroid nodules. This finding at first, indicate the increased awareness of patients and their health care providers about the possibility of underlying malignancy of the thyroid, and at second, it may point towards an increased incidence of thyroid nodules. Albeit, this might result from increased detection of asymptomatic thyroid nodules incidentally on ultrasonography or CT scans/MRI examinations done for non-thyroid related pathologies (24,25).

In Keh et al study, 225 patients underwent thyroid surgery. The prevalence of solitary thyroid nodules was 27.1%. Of all 255 studied patients, 72% were women and the mean age at presentation was 52 ± 16 years. Overall, 75.4% of solitary nodules had neoplastic pathology and the malignancy rate was 34.4% (26).

The likelihood of thyroid cancer was independent of the number of thyroid nodules. Moreover, compatible with other studies (7), our data show that the malignancy rate is not influenced by the distribution of the nodules or their size.

Similar to prior studies (24), the localization of thyroid nodules in studied patients was not significantly different in our study and the distribution of patients by thyroid scan is similar to the previous studies (13).

The most common compliant in presentation was neck swelling which is compatible with other studies (21).

Commonest malignancy detected was papillary carcinoma in 15.1% of patients which is similar to previous studies (3). Also, similar to prior studies (3), Localization of swelling in thyroid gland was not significantly different.

**Limitations**

This is a small study that includes only the results of one institution, and therefore, it is not necessarily representative of the nation as a whole.

**Conclusions**

Our findings showed the higher prevalence of malignant thyroid cancers in studied populations especially in women, requiring long time health and hygiene programs for prevention and screening.

**References**


The effect of self-care education program on mental health in patients with type II diabetes
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³Department of Biostatistics, Iran University of Medical Sciences, Tehran, Iran.

Abstract

Background and objective: Diabetes is one of the most common chronic disease and metabolic health problems in the world. In Iran, it is leading cause of death in men and the ninth leading cause of death among women. It is anticipated that by 2030, it would be the world's leading causes of death. With proper control of diabetes with diet, exercise and mental health, diabetics can have a normal life. This study aimed to determine the effect of self-care education program on mental health in patients with type 2 diabetes who were referred to health centers is the city of Amol city.

Materials and Methods: This quasi-experimental study that was conducted on 78 patients with diabetes. For this purpose, the participants were selected by convenience sampling method and were divided into two groups of 39-person experimental or control. A type II diabetes self-management education programs for face-to-face in three one-hour sessions over three weeks to the experimental group was held. Method of data collection is using a standard questionnaire. To analyze the data, SPSS version 20 and Mann-Whitney tests, and chi-square test was used.

Results: The results show that in the intervention group with the educational program, somatic variables (Z= -2.224 & P= 0.026), social dysfunction syndrome (P=0.000 & Z= -3.716), symptoms of depression (P=0.011 & Z=-2.528) and mental health (P=0.002 & Z= - 3.152) showed significant differences. But the amounts were not significant in the control group. The education program had no effect on mental health and its subscales.

Conclusion: The results of this study showed that the implementation of education program on mental health in patients with type 2 of diabetes did not have any affect.

Key words: Training program of self-care, mental health, patients with type 2 of diabetic.

Introduction

Diabetes is a lifelong disease, its treatment difficult, and often cause a variety of acute and chronic complications as well which affects the patient's quality of life. Diabetic foot is one of the main complications of diabetes. Despite medical advances and prevention reports, the incidence of diabetic foot complications is still high around the world (13). Proper foot care, proper control of blood sugar and diabetes education can prevent up to 85% of diabetic foot amputations (14). Diabetics can be controlled appropriate to have a normal life but the presence of psychiatric symptoms, often restive patient's life, reduce performance, and affect family life (17). Hence, diabetes self-care is required throughout life (18) and can result in reduction 0.8% to 0.5% of leg amputation in patients who had been trained in diabetic foot care (19).
to the views of Negro, positive psychology, mental health includes a person's ability to enjoy life, a balance between life activities and efforts to achieve psychological resilience (1). Mental health is the most important health issues and how people think, feel, and performance situations in our lives show our understanding of life and it’s meaning (20). Mental health, science and art that helps people to create the correct ways of psychologically and emotionally able to and its environment and select better ways to solve problems (5). Numerous studies worldwide have shown that the training given to diabetics in various ways to reduce weight or improving the profile of Van thirty hemoglobin in blood sugar helps control diabetes which is a metabolic condition. For the diabetic patient to take good care of themselves, adequate training with skills to enhance their knowledge about their disease should be part of the control strategies. The rehabilitation and self-care support by training, is key to controlling diabetes (8). Knowledge of diabetes correct principles of nutrition, food selection, strict observance of the treatment, foot care, exercise and proper physical activity along with lifestyle changes and health care and psychological factors that play a role in regulating metabolism and metabolic control and prevent the occurrence of short-term complications is important. Also this will delay the development of long-term complications. Achieving these goals requires patient participation in their care and education is dynamic and continuous process which will be essential. Considering the importance of self-care education to promote mental health in patients with type II of diabetes, this study was performed in selected patients from health centers Amol city.

**Methodology**

This was a non-randomized clinical trial study involving pre-test and post-test. By determining the appropriate sample size at 95% and 80% with test ability and 78 patients with type 2 of diabetic referred to health centers covered by Amol city urban family physicians who fulfilled the inclusion criteria were selected as the sample. Researcher after obtaining the necessary permits, the city of Amol covered health centers Urban family physician and then out of the 20 health centers, six centers were randomly selected and of these six centers with lottery were selected; three of them as the three test groups and three as a control group which was given due to the prevention of contamination. Mental health questionnaire were given at the first meeting with the investigator. The meeting and questionnaire were completed within 8-10 minutes. 39 patients in the experimental group were given type II diabetes self-management training programs through face-to-face intervention, speech and question and answer in three one-hour sessions over three weeks. In each center, individually and collectively training was conducted in nine sessions for the case group held in three centers. The groups were asked to learn the principles that operate in their homes. During the period of intervention, the control group did not received any intervention. Coordinating investigator held 9-hour training session with a health center Amol city officials and elected officials to act as center coordinators and the schedule for the written exam has to attend training sessions. The test group was given weekly training sessions and the control group was not given any training. The training sessions was tried in traditional ways. The first session of their education was on drugs and regular control of blood glucose or urine, in addition to the recall in the second meeting of the first session, about foot care and proper nutrition were also discussed. In the third session, in addition to recall the first and second sessions, training on sport and physical activity were appropriate. Mental health patients and control groups, in two stages, before and one month after the training self-care education, (Hemmati Maslak et al 2012) by Goldberg mental health questionnaire, measured at the end of the mental health groups studied and was analyzed. At the end of the research ethics
training manual was provided to the control group. The conditions researcher, three days a week for training sessions in the intervention group and 10 to 11 hours and on-site health centers of coordination centers were considered respected authorities. The data in order to gather the necessary information, included two questionnaires, which includes 1) and demographic data samples, 2) Goldberg general health questionnaire with 28 questions (GHQ-28) with Cronbach's alpha coefficient was 74.0.

**Findings**

After collecting information about the variables, the Kolmogorov-Smirnov test was carried out which indicated that all variables were abnormal therefore non-parametric tests were used to evaluate and test. With the demographic characteristics, the experimental group, 9 males (23.08%) and 30 females (76.92%) and 10 men in the control group (25.64%) and 29 females (74.36% percent) that there was no significant difference between the two groups in terms of gender (P =0.729). In the experimental group of 16 patients 40 to 45 years (41.03 percent), 11 patients 45 to 50 years (28.21), 5 patients 50 to 55 years (12.82%) and 7 patients 55 to 60 years (17.95), all in Zahedan and in the control group of 13 patients 40 to 45 years (33.33%), 13 patients 45 to 50 years (33.33%), 8 patients 50 to 55 years (20.51 percent) and 5 people 55 to 60 years (12.82), there a significant difference between the two groups in terms of age (P = 0.682).

In a survey of education in the experimental group of 31 patients with diploma or less (71.49%) and 8 academic persons (20.51 percent) in the control group of 32 people all in diploma or less (82.05 percent) and 7 were academic (17.95 percent), there was significant difference between the two groups in terms of level of education there (P =0.729). Also in the descriptive study of disease, the treatment group, 27 patients (69.23 percent) had history of less than 5 years and 12 patients (30.77%) had more than 5 years and an important loss in the control group 24 (61.54 percent) had history of less than 5 years and 15 (38.44%) had more than 5 years, there was no significant difference between the two groups in terms of disease (P = 0.475). Table 1 shows that on average somatic before the intervention, the experimental group versus the 9.23±4.46, and in the control group 9.26±4.90 had no significant difference (P =0.952). The average symptoms of anxiety and insomnia before interfering in the experimental group with 7.85±4.28, and in the control group 8.15± 4.31, there was no significant difference (P =0.782). Average social dysfunction syndrome before the intervention, the experimental group versus the 9.51± 4.95 and in the control group 9.90± 4.78, had no significant difference (P =0.680). The average symptoms of depression before the intervention, the experimental group versus the 9.44±4.70, and in the control group 9.77± 5.27, had no significant difference (P =0.849). Finally, the average mental health (general) before the intervention, the experimental group of 37.28±17.59, and in the control group 28±18.68, there was no significant difference (P =0.477). So two groups of experimental and control variable before self-care, mental health and its subscales were the same with no significant difference. After the educational intervention, the mean physical symptoms in the experimental group at 7.51± 3.1 and in the control group 9.74±4.78, and the differences were not significant (P =0.059). Average syndrome, anxiety and insomnia after the intervention, the experimental group versus the 6.65±2.20, and the control group equal to 8.28± 4.09, there was no significant difference (P =0.159). Average social dysfunction syndrome after intervention, the experimental group versus the 6.64±2.98, and the control group equal to 7.79±3.13, the differences were not significant (P =0.088). The average symptoms of depression after the intervention, the experimental group at 02/3 ± 74/7 and the control group equal to
the differences were not significant (P =0.952). Finally, the average mental health after the intervention, the experimental group of 29.38± 7.71 and in the control group 34.92 ±13.19, which according to the level (P =0.105) of health differences after training, there was no significant between experimental and control groups. So two groups of experimental and control variable mental health and its subscales with each other after-care, there was no significant differences, although there was improvement in some of the following measures, but this reduction was not statistically significant, in other words, it seems to be based on information obtained from intervention (self-made) which had significant effect on mental health and its dimensions. As presented in Table 2 in the experimental group variables somatization (P =0.026), social dysfunction syndrome (P =0.000), symptoms of depression (P =0.011) and mental health (P =0.002) based on the statistics before and after intervention therapy showed significant P values. In the control group, the variables of social dysfunction syndrome (P =0.005), symptoms of depression (P =0.017) and mental health (P =0.037) P values obtained on the basis of statistics and therapy showed before and after meaningful intervention. According to tests performed and generally conclude, although in variable physical symptoms, symptoms of social dysfunction, symptoms of depression and mental health before and after training the experimental group, a significant difference was observed but according to group control as well Mann- Whitney U test results it can be concluded that self-care education had no effect on mental health and its subscales.

**Discussion and conclusion**
The findings showed that the education program had no effect on mental health and its subscales. In explaining why the result should be used it must be added that diabetes requires intensive care behaviors throughout life (14). Education program on raising awareness and promoting self-care in type II of diabetic patients have a desirable return which have impact on care in terms of diet, medication and foot care. With proper training up to 80% of diabetic complications can be reduced. Knowledge of diabetes, correct nutrition, food selection, strict observance of the treatment, foot care, exercise and physical activity along with lifestyle changes and appropriate medical care and psychological factors in the regulation of metabolism and metabolic control play a role in preventing short-term complications. Also by observing these, it will delay the development of long-term complications. No doubt the achievement of these goals requires patient participation in their care and education is dynamic and continuous process. Without self-care education to patients and their participation in self-care, health care will be more costly (7). Although self-care education has no significant effect on mental health, but subcomponent such as somatic, the symptoms of social dysfunction and depressive symptoms are significantly affected. Therefore, with regard to the items listed above, such an outcome seems somewhat logical. The researchers did not identified any study that was consistent with this study. The result of this study was not consistent with the results of Bakhtiarri et al (2011) which may be due to the gender of the study participants because in this study the participants consisted of men and women with diabetes type II while in the mentioned study it included women undergoing chemotherapy for breast cancer. The other important thing to keep in mind is that individual and cultural differences, age and health of patients and their perceptions of the impact on their mental health score could be one reason for the different results from two studies.

**Acknowledgments**

Thank the cooperation of professors and head of research, Iran school of Nursing and Midwifery and staff painstaking care centers of Amol city with patience and tolerance of therapy and patients involved in this study.

References
3. Jaliliand, Farzad. Zinat Motlagh, Fazel. Solhi, Mahnaz. Survey impact on increasing self-care educational program type. Journal of Medical Sciences, the twentieth period, the first number, the spring 91.
Table 1 compares the mental health and its subscales between two groups before and after intervention by Mann-Whitney-U test

<table>
<thead>
<tr>
<th>Mental health component</th>
<th>Number</th>
<th>Control mean</th>
<th>Control Standard deviation</th>
<th>P</th>
<th>Z statistic</th>
<th>Yu – Whitney mean</th>
<th>Yu – Whitney Standard deviation</th>
<th>Z statistic</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical signs</td>
<td>39</td>
<td>9.23</td>
<td>4.90</td>
<td>0.952</td>
<td>0.06-</td>
<td>4.63</td>
<td>9.26</td>
<td>0.06</td>
<td>0.952</td>
</tr>
<tr>
<td>Anxiety and insomnia syndrome</td>
<td>39</td>
<td>7.85</td>
<td>8.15</td>
<td>0.782</td>
<td>0.28-</td>
<td>4.28</td>
<td>7.51</td>
<td>1.89</td>
<td>0.059</td>
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<tr>
<td>Social dysfunction syndrome</td>
<td>39</td>
<td>4.78</td>
<td>9.90</td>
<td>0.680</td>
<td>0.41-</td>
<td>4.95</td>
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<td>1.71</td>
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<td>Symptoms of depression</td>
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<td>5.27</td>
<td>9.77</td>
<td>0.849</td>
<td>0.19-</td>
<td>4.70</td>
<td>7.74</td>
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<td>Mental health</td>
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<td>18.68</td>
<td>37.28</td>
<td>0.477</td>
<td>0.71-</td>
<td>17.59</td>
<td>34.28</td>
<td>1.62</td>
<td>0.105</td>
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Table 2. Comparison of Mental Health and its subscales in the control and experimental groups based on paired t-test of Wilcoxon

<table>
<thead>
<tr>
<th>Mental health component</th>
<th>Test</th>
<th>Control mean</th>
<th>Control Standard deviation</th>
<th>P</th>
<th>Z statistic</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical signs</td>
<td>4.63</td>
<td>9.23</td>
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<td>0.026</td>
<td>-2.224</td>
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<tr>
<td>Anxiety and insomnia syndrome</td>
<td>4.28</td>
<td>7.85</td>
<td>0.277</td>
<td>0.068</td>
<td>1.825</td>
<td>39</td>
</tr>
<tr>
<td>Social dysfunction syndrome</td>
<td>4.95</td>
<td>9.51</td>
<td>0.005</td>
<td>0.000</td>
<td>3.716</td>
<td>39</td>
</tr>
</tbody>
</table>
A review of the use of painting in the health of the elderly

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Abstract

Introduction: The elderly population is growing and their mental health has become a concern. Among the various psychological problems such as depression, anxiety and cognitive disorders, with a prevalence of 58%, 29% and 12%, respectively, at the top. Studies show that using complementary therapies with medical treatment was more effective and most patients are more likely to complete treatment against medical treatment. Art therapy is a form of complementary therapies and painting is also placed in this category. Studies show that painting use in other age groups and is effective. We decide to search the databases and review of the studies that have been done in this field among the elderly and provide information of applying this technique.

Method: We searched English and Persian languages electronic databases. English-language databases consist of: PubMed, ScienceDirect, Scopus, ProQuest and Ovid. Persian language Electronic databases is consist: Magiran, IRANDOC, SID, and IranMedex. 1151 related articles from the period of 2000-2016 were found, we checked the reference lists of all papers of included studies for further potentially eligible studies. Eventually, 10 relevant papers were studied.

Conclusion: The Art Painting among different groups of the elderly is studied: elderly with depression, cognitive disorders, home-bound and healthy. Our review shows the positive impact of Art Painting on various aspects of mental health in older people. Use of the Art Painting in reducing depression, anxiety and symptoms such as agitation, hallucinations and delusion in elderly dementia and improving quality of life, self-esteem and social participation of elderly participating in the studies, was effective. Art Painting is a relatively inexpensive intervention that can be used for different purposes. We suggest the use of painting in nursing homes and elderly day care centers. Quality intervention studies are needed that specifically studied the influence of art painting in the aged.

Keywords: elderly, painting, art therapy

Introduction

The growth of the elderly population, has become a global phenomenon (1). The number of elderly in the world (persons above 60 years) 9.2% in 1990 to 11.7% in 2013 has increased. It is expected to rise to 21.1% by 2050 (2). In Iran similar to the worldwide, the elderly population is increasing. Based on the results of census 2011, amount of population aging index has increased from 3.39 in 1992 to 5.72 in 2012 in Iran (3). Due to the growing population of the elderly, their mental health has become a concern (4). The study performed among 1313 elderly in Tehran, reported that 50.2% of participants have mental health problems. Among the various psychological problems as...
depression, anxiety and cognitive disorders, with a prevalence of 58%, 29% and 12% are in the top (5). Studies show that using complementary therapies with medical treatment is more effective. Most patients are more likely to complete treatment against medical treatment (6, 7). One of the methods employed by the medical team is Complementary and Alternative Medicine (CAM). Complementary medicine is effective in the treatment of many diseases such as depression. These methods divided into six groups and one of the most important is "Mind-body therapies" that can be performed individually or in groups (8). Art Therapy is doing creative activities by audio-visual materials and methods. (9, 10). One type of art therapy is painting therapy. It is employed in the treatment of chronic diseases such as depression. Painting therapy has a positive effect in improved quality of life (11). The painting is a most important ways of expressing purpose, thoughts, beliefs and internal needs of humanity. Painting are able open to new ways for looking at the world, to ourselves and to the positions, and its effective solving problems that require innovative solutions (12). Research are performed on the effect of painting therapy in several of children's behavioral such as happiness, and reduce aggressive behavior. Painting therapy is an effective in these groups (12-15). Also art therapy in other groups, were examined. It decreases anxiety in patients with breast cancer, decrease despair and depression in subfertile women, improving mental health consequences, including depression, anxiety and stress in hospitalized patients (16-18). Therefore, art therapy has been desirable in different age groups. We decided to search the database and review of the studies that done in this field among the elderly. We put up a report on the efficacy of this method. Several reviews have examined the various aspects of art therapy such as: Blomdahl and et al are investigating the factors affecting the use of art therapy (19), Maujean and et al done review of clinical trial studies in art therapy intervention (20), Wilson and et al done review health care workers understand the value and position of arts in health care (21), Geue and et al looked at the effects of art therapy on mental health of cancer patients (22), And Van Lith review for best practices of art therapy in mental health(23). Have not been to the art of painting in previous review studies specifically then we're going to look specifically to art painting. The painting is cheap and available for everyone. It is hoped that the results be considered in planning for the care of the elderly.

Method

We searched English and Persian languages electronic databases. English-language databases consisted of: PubMed, Science Direct, Scopus, ProQuest and Ovid. Persian language Electronic databases consisted of: Magiran, IRANDOC, SID, and IranMedex. Articles published from 2000 to 2016 were studied. Search keywords include: art therapy, elderly, painting, and visual art. List of resources selected papers were searched manually to find relevant papers. Article selection process was performed (Diagram 1) respectively, and based on the under protocol:

- The relationship between subject titles in the literature with the study objectives
- The relationship between the articles abstract with objectives of the study
- Full text search and its relationship to the objectives of the study

The inclusion criteria were original articles, articles in Persian and English languages and articles that studied the effect of painting on elderly. Articles published in languages other than Persian or English and not access their full-
text were excluded. 1151 the number of related articles found in databases. Articles were screened by title, abstract and full text and 10 article were selected at the end.

Findings
Ten studies reviewed, include: six interventional study, two case studies, a study to determine the validity and reliability of the tree drawing test in the elderly and a cohort study. The total subjects were 572 elderly. In addition 5058 elderly were followed in the cohort study. Outcomes assessed in selected studies Including: depression, measuring and calculating the percentage of positive and negative words in story of elderly defines about their lives, Barthel index, instrumental activities of daily living, mini-mental state examination, Tinetti balance and gait scores, self-rated affective, positive and negative affect schedule, state-trait anxiety inventory, Rosenberg self-esteem scale, neuropsychiatric inventory, memory complaint questionnaire, short form 36. Studies performed in different groups of elderly including: Depressing elderly, elderly patients with cognitive impairment, home-based elderly and healthy elderly. Table 1 is a summary of selected papers presented.
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<th>References</th>
<th>The main objective</th>
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<th>Conclusion</th>
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<tr>
<td>McCaffrey 2011</td>
<td>Investigation effect of walking in the garden and art therapy on depression in the elderly.</td>
<td>Interventional</td>
<td>39 elderly in three groups with 13 members</td>
<td>Geriatric Depression Scale with 30 question (GDS), Measuring and calculating the percentage of positive and negative words in story of elderly defines about their lives, conducting Focus group discussions at the end of meetings.</td>
<td>Findings of the study show that participants in all three groups had less depression after the 6-week intervention.</td>
</tr>
<tr>
<td>Chen 2014</td>
<td>investigation the effect of non-medicinal therapy of psychotic symptoms in elderly patients with dementia</td>
<td>Interventional</td>
<td>29 elderly patients with dementia in Intervention group and control group</td>
<td>Index Barthel-IADL-MMSE-GDS-Tinetti balance and gait scores, Neuropsychiatric Inventory</td>
<td>Non pharmacologic interventions have a positive impact on the behavioral symptoms and psychologically in the elderly dementia it have positive effect on behavioral and psychological symptoms of dementia.</td>
</tr>
<tr>
<td>Rafidi 2009</td>
<td>investigation the effects of group art therapy on mood in depressed individuals living in a nursing home</td>
<td>Interventional</td>
<td>6 elderly in two groups</td>
<td>Self-rated affective questionnaire</td>
<td>Group art therapy in controlled position can positive results on the treatment of major symptoms depression. The results of this study help to understand how to use creative approach in depressed elderly.</td>
</tr>
<tr>
<td>Kim 2013</td>
<td>investigation Effect of group art therapy on older Korean adults with neurocognitive disorders</td>
<td>Interventional</td>
<td>50 elderly Korean Americans in two intervention and control groups</td>
<td>positive and negative affect schedule, state-trait anxiety inventory, Rosenberg self-esteem scale</td>
<td>Art therapy sessions in the elderly lead to a positive attitude, improve confidence, remove negative feelings and improve sense of well-being.</td>
</tr>
<tr>
<td>Kyung Kim 2016</td>
<td>investigation the effect art therapy groups on elderly Korean patients with neurocognitive disorders.</td>
<td>Interventional</td>
<td>28 elderly in the intervention and control groups</td>
<td>GDS short form and structure of the mandala coloring (SMC) to measure their self-expression</td>
<td>Significant differences was seen in the intervention group between depression score before and after art therapy. In the intervention group, self-expression score improved in four dimensions and In this group there was significant difference between before and after art therapy.</td>
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<tr>
<td>Im 2014</td>
<td>Evaluation the effect of art and music therapy on depression and cognitive performance the elderly</td>
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<td>94 elderly in two groups, music therapy and art therapy</td>
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<td>Sezaki 2000</td>
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<tr>
<td>Ravid-Horesh 2004</td>
<td>Evaluation the use of art therapy in life review with an elderly woman</td>
<td>Case Study</td>
<td>One elderly</td>
<td>interview and visual aspects of the art work</td>
<td>The findings of this study show that art therapy is a useful tool for life review.</td>
</tr>
</tbody>
</table>
### Depressed Elderly

McCaffrey et al examined the impact of walking in the garden and art therapy for depression in elderly. They were divided into three groups: art therapy, walking alone, walking with guided imagery. The Art therapy group painted in six sessions. They drew themselves when they were young, middle-aged and elderly. After the intervention, there was a significant decrease. Rates of depression in all groups (P = 0.000) and there was no significant difference between the groups (P = 0.09). After the intervention, used of positive emotional words, increased (P <0.05) and the used of negative emotional words were decreased (P <0.01). There was no significant difference between groups (24). In this study, the researchers used life review method in the art therapy, for express feelings participants. Life review method at this age, very useful and shown positive effects in this study. Rafidi et al examined the impact of group art therapy on mood of depressed people living in nursing home. Two women were treated for depression in the group A and Two men and two women who free of depression were in the group B. The two groups were intervention in eight sessions individually. Elderly drawing, according to the subjects were asked in weekly sessions. The results showed art therapy groups can in the position controlled positive results on the treatment of depression people with symptoms of major depression. The outcomes of this study help to realize how to apply a creative approach in depressed elderly (25). One of the very important factors in which individuals obtain the experience is selection of art materials. The significant factors in this study were that participants evaluated themselves without researcher's judgment. Researcher controlled external interfering factors, through choice of art materials was known for to the participants. The participants knew each other before the intervention and then their feelings sharing more comfortable. A study by Murayama et al in 2015 titled "Characteristics of depression in community-dwelling elderly people as indicated by the tree-drawing test" which performed among elderly people that had "home visits". 260 candidates registered. According to the GDS, 60.9% were normal and 33.2% had a tendency to depression and 5.9% were depressed. Painting materials was put at the disposal of elderly and instructed:" Please draw a tree". A4 sheet divided into 20 sections vertical and 16 horizontal sections that used to analyze the painting.
The TDT is clinically useful because of low cost. In addition, it is a good test for patients with aphasia and prevent the distortion of results with patients. TDT indicates the depression in the elderly. If the painting is less than 40 regions and less than that show depression. It have sensitivity 71.4% and specificity 79.9%. The results of this study show some quality criteria in youth are depression symptoms, in the elderly is not reflective of depression (26).

Elderly patients with cognitive impairment

A special group of elders who used art therapy in various forms are elderly with cognitive impairment. Chen et al used non-pharmacological interventions for elderly dementia. Non-medicinal interventions that were done once a week including: Music therapy in groups of 10 to 15 people for each session, orientation training, exercise and art cognitive activities. At the end, the intervention group showed a significant decrease in total score neuropsychiatric (NPI) (−2.36, P = 0.046) also in the delirium group (−0.9, P = 0.018) delusion (−0.82, P = 0.004) and restlessness (−0.91, P = 0.038). Non-pharmacological interventions have a positive effect on behavioral and psychological symptoms of dementia, not only in outward symptoms like agitation, but also intrinsic psychotic symptoms like hallucination and delusion, and agitation in older Chinese men with dementia (27). Another interventional study was performed to investigate impact of art therapy on reducing depression and increasing "self-expression" in elderly patients with Neuro-cognitive disorders. The participants followed 36 sessions art therapy, each session was held during the 45-minute. In this study traditional Korean materials were used to increase motivation among the elderly. The elderly could used various materials of art, including colored pencils, crayons, Marker, pastels, drawing color, clay pottery, along with traditional Korean materials, including pulp and Korean, Oriental painting, beads, chalk, jewelry decorative. Data analysis showed that in the intervention group, depression scores decreased from 9.14 to 6.50, while in the control group there was little change from 7.14 to 6.93. Significant difference was seen between depression score before and after art therapy in the intervention group (P <0.036). In the intervention group, self-expression score improved in four dimensions and the significant difference was seen between before and after art therapy in this group. (Coloring: P <0.001, clustering of: P <0.010, completion work: P <0.001, carefully: P <0.000)
While the scores did not have significant change in the control group before and after the intervention (28). The strengths of this study include the large number of interventional sessions and the use of various art work materials.

Healthy Elderly
In another study evaluated the effect of art therapy on healthy elderly Korean - Americans. The pre-test and post-test, done with the control group. Intervenional art therapy was held for 12 sessions. During art therapy sessions, participants tried to help with expression and exploration of feelings and opinions of the participants. A subject selected and fit into it, used of the art materials include acrylic paint, white clay, and other basic tools such as art color pencil, crayon, marker and pencil. After analyzing the data, it was found that the use of art therapy among 50 elderly Korean Americans led to improved health by reducing negative emotions, improving confidence and reduce anxiety. For the participants in the intervention group compared with the control group was seen 84.6% positive change in emotions people \( (r = .92) \) and 70.6% positive change in anxiety \( (r = .84) \). The art therapy interventions average effect size showed, positive changes in self-esteem and anxiety in them (respectively \( r = .75 \) and \( r = .74 \)) (29).

Im and et al evaluate to effects of art and music therapy on depression and cognitive function of the elderly. 65 people participated in the art program and 29 people participated in music therapy. The Program was performed in 12 sessions once a week for 60 minutes. Contents sessions of art therapy include: drawing Mandara, drawing circles, making handicrafts with mud, the expression of different parts of the body and collage. Two researchers measured before and after the intervention the cognitive abilities and depression. The result shows that a significant decrease was seen between before and after art therapy for people who received art therapy \( (P = 0/000) \). There was a significant difference between before and after music therapy \( (P = 0/003) \). Music and art therapy is effective in decreasing depression and the rate of reducing depression was lower in art therapy (30). In a case study which evaluated use of art therapy based on psychological theory of Ericsson in a woman elderly. In the first session, were asked of the person the functions that again in the last session were evaluated. 8 sessions held during a month. Consequently, differences between the images before and after the intervention shows the positive impact of art therapy. Comparison between the first and last photo session show, the progress emptiness to the more balanced view. The study shows there were appropriate interaction between the processes of making artwork and recall memories with the goals of treatment. Qualitative changes were seen in observable behavior participating, her artwork and her verbal narration. In conclusion, this single case study has generally demonstrated a positive response to art therapy when used as a vehicle for life review (31).

Painting pictures and playing musical instruments: Change in participation and relationship to health in older women”. This study was performed in the years 2005-2008 among 5058 elderly women. Based on the answers to the question "In the past month, did you a painted image or worked with musical instruments?" Women were divided into 4 groups: 1. those who had participated across both surveys; 2. those who had participated in 2005 and stopped by 2008; 3. those who had not participated in 2005 and had started by 2008; and 4. those who had not participated at either survey. In regard to painting pictures or playing a musical instrument, 7.9% had continued participation, 3.5% had stopped participation, 3.4% had started participation; and 76.3% had not participated at either survey. Comparing the group ‘continued participation’ and ‘stopped participation’, the second group showed less in social
activities, a further reduction in IADL and had reduced SF36. Comparing the groups ‘started participation’ and ‘nonparticipation ’the first group had greater participation in social activities and in the second group was seen a further decline in IADL. The findings of the study therefore defended the policies and programs that artistic activity among elderly women increases (32).

**Home-based elderly**

Sezaki et al performed a study in 2000 titled "Home-based art therapy for older adults ". This study was performed to analyze the impact of art therapy on two elderly people staying at home: Mrs. J, a 73-year-old resident suffering from osteoarthritis, scoliosis, and osteoporosis and Mr. M is a 69-year-old man who was cared for by his wife in their house because of the debilitating effects of his Alzheimer's disease. Art therapist, went to the home of two elderly and based on the objectives set, encouraged them to do the art work especially painting. Art therapist for Mr. M and his wife used different media and various activities such as printing, rubbing, magazine photo collage, making a town map, mandala art, play dough sculpture, etc. At the end of the study it was concluded by using art therapy and allied professions, there was improvement in quality of life for the homebound person especially home-based elderly. The presence of family and working the person's home can as helpful in treatment (33). Home-base care is satisfactory and worthwhile and applicable. This method can help the elderly in home-based for various reasons including Alzheimer's, a stroke or decreased physical abilities.

**Discussion**

In this review, four studies among healthy elderly, three studies among depression elderly, two studies among the elderly with cognitive impairment and a study among the home-base elderly were analyzed. The studies performed among the depressed elderly, one study reported improved depression symptoms in elderly after art therapy intervention (24). Another study evaluated the effect of art painting, reported a positive effect of art therapy on the individual's depressed mood (25). The third study in this group, in a different way, exploring the use of art in the elderly (26). The results of this study approved the use of test tree-drawing to measure depression in the elderly. Also painting art was examined among the elderly with cognitive impairment elderly. Two studies that were included in this group did not pay exclusively attention to painting and it was one of the performed activities among the elderly in the intervention group, other activities were music, sports, and sculpture. It was reported that there was positive effect on the symptoms of behavioral and psychologically elderly who were demented and improving depression symptoms and self-expression (27, 28).Painting among this group had a positive impact on psychological health too including reduced negative emotions and anxiety, improve self-esteem, depression score, social participation, IADL and quality of life. Art therapist should not forget the elderly who for various reasons, either physically and mentally are forced to stay at home for a long time. Although the study performed among this group of elderly has been studied, only two elderly were studied but showed positive effects on quality of life (33). Different style of painting used among the elderly including life review methods (24, 28, 31), eight-stage Ericsson's theory of psychology and coloring Mandela (34). With experience that people acquire choose kind of art devise is a
very important factor. In this study, emphasis should be on traditional materials and designs that the elderly like use. The use of art is not confined to a particular location. Studies in different environments should evaluated. The duration of the use of art varied for the elderly in different studies. In intervention studies, the minimum was six sessions and the maximum was 36 sessions. Although in the case studies, the intervention was performed for a few of the elderly by art therapist continued home visit for six months. Evaluating the effects of painting in the long term are important but not done in any interventions. Only cohort study examines the activities of art and its impact on various aspects of life.

Conclusion

The purpose of this study is to review the use of painting and their results among the elderly. Painting art used among different groups of the elderly include: elderly depression, cognitive disorders, healthy and Home-base elderly. Review shows the positive effect of painting on different aspects of mental health elderlies. The painting was effective in reducing depression, anxiety and symptoms of agitation, hallucinations and delirium in the elderly dementia and also used to improve the quality of life, self-esteem and social participation. More research are needed on the use of painting in the elderly group. Therefore studies that specifically pay attention for painting with higher quality, in the longest time, and with control groups in the elderly should be undertaken. Painting is relatively cheap intervention which can be used for different purposes in the elderly. It is suggested that the program painting used in a nursing home or elderly daily centers.

Reference:

25. Rafidi RS. The effects of group art therapy on mood in depressed individuals living in a nursing home: Hofstra University; 2009.
Evaluation of the cesarean section rate and its reasons in Shariati Hospital of Bandar Abbas in 2015

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Abstract:
Introduction: Cesarean is one of the most common surgeries in women. According to the World Health Organization announcement, the expected cesarean rate should be 10-15% of the births in various regions. The main purpose of cesarean is to protect mother and baby's health and is the best choice only in situation where there are some problems for the mother and baby. So, the objective of this study is to evaluate the cesarean rate and its reasons in Bandar Abbas.

Methods: The present study is a cross-sectional one and the samples were collected from the cases who had given birth from April to August 2015 in Shariati Hospital of Bandar Abbas based on the research aims, available information in the file including age of mother, number of pregnancies and causes of cesarean delivery according written records by a doctor from 1875 files of the research samples and then data were analyzed by SPSS software and descriptive statistics.

Results: According to the findings of this study, 52.1% of deliveries were performed by cesarean surgery. The most common cause for doing cesarean by a doctor was repeated (51.73%) and the other factors such as fetal distress, disproportion of fetal head to the mother's pelvis, abnormal presentation, the lack of progress in delivery and pre-eclampsia were placed in the next.

Conclusion: Findings show that the frequency of cesarean had been high by the world standards in this city. Thus, considering the increasing rate of cesarean and its possible adverse consequences in mother and baby as well as its high cost, it seems that determining the common causes of cesarean can lead to develop solutions and strategies from the authorities to reduce the amount of unnecessary cesarean sections.

Keywords: Cesarean, Pregnant woman, delivery, vaginal delivery.

1. Introduction
Cesarean delivery means the fetus birth through laparotomy (abdominal incision) and then hysterectomy (uterus cut) (1). In fact, cesarean section is one of the methods for termination of pregnancy which has been only proposed in cases of medical indications. First, it was only carried out to save mothers' lives who were at risk of death because of vaginal delivery stop but in the recent years, cesarean rate has been increased selectively and unnecessarily (2). More than 85% of cesarean causes are cases such as previous cesarean, dystocia, fetal distress or breech presentation (3). According to the World Health Organization (WHO) announcement in 2010, the expected rate of cesarean should be 10-15% of births in different countries of the world. However, statistics reported that in most parts of the world as well as our country, it is very different and much higher ratio (4). Cesarean rate has been reported as 44% in Iran (5) which much higher than the global rate; also, it is higher than the rates in the developed countries such as United States of American (33%) and United Kingdom (32%) and the European countries (23%) and the east Mediterranean countries (16%) (6).

Cesarean section is one of the most common surgeries in most deliveries which needs to the facilities, equipment and many hospital beds. Although cesarean delivery is relatively safe but mortality and obstetric complications are
dramatically increased in cesarean section (7) so that maternal mortality and disability rates increase 2-7 and 5-10 times of vaginal delivery, respectively (8). Cesarean section has more intense complications such as the risk of anesthesia, high blood loss, postoperative infection and thromboembolism compared with the vaginal delivery (9). In addition, it should be noted that cesarean section may be associated with neonatal complications such as premature birth (due to incorrect estimation of gestational age) and neonatal respiratory distress (10). However, in recent years with the development of antibiotics, anesthesia and prevention of thrombosis, cesarean delivery has become safer, but it is not still quite safe and reported that the risk of complications in a selective cesarean without an emergency reason is almost three times of vaginal delivery (11).

In the recent years, according to demographic and fertility regulatory policies, Iran's policy has changed to population growth and increasing fertility. The increased rate of cesarean from one side and demographic policies changes on the other side required that special measures be taken to control the rate of cesarean section. According to the above mentioned, it can be concluded that the economic load and cesarean disease burden on the society is much higher than in normal vaginal delivery. Because the main purpose of cesarean is to protect the health of mother and baby and it is the best choice only in situation where some problems exist for mother and baby. So the objective of this study is to evaluate the cesarean rate and its reasons in Bandar Abbas city.

2. Material and Methods
The present study was conducted as a descriptive cross-sectional one. The research population included all deliveries from April to August of 2015 in Shariati Hospital of Bandar Abbas. After getting permissions to start working from the research deputy of Hormozgan University of Medical Sciences, the medical records of all deliveries in this period were studied. Data collecting tools was a questionnaire that data were gathered through studying cases to record demographic data and causes of cesarean section. The questionnaire include some variables such as age, family relationship, education and number of previous pregnancies and deliveries, gestational age at delivery, the manner and cause of delivery. Unclear cases that type of delivery was not recorded were excluded from the study. After completing the questionnaires, data were entered to SPSS software version 22 and analyzed using the descriptive statistic methods and Chi-square test. p<0.05 was considered as the significance level in all cases.

3. Results
In this study, the average age of the sample was 27.04±4.71 and the highest rate was seen in the age group of 26-30 years (30%). 64.5 and 35.5 percent of cases lived in urban and rural regions, respectively. In terms of education, 6.2% of women were illiterate, 85.4 had high school diploma or under diploma and 8.4% had university education. Gestation ages of 18.3%, 74.7% and 7% of women were below 37 weeks, between37-40 weeks and more than 40 weeks, respectively. 33.2% of cases were related to the first pregnancy and the rest to the second and higher. 89.1% of women had no maternal risks while 10.8%, 1.1%, 4.9%, 1.8%, 0.7%, 0.6%, 0.7% and 1% of women had risks such as chronic hypertension, pre-eclampsia, gestational diabetes, twin, heart disease, anemia and others, respectively. No intervention was conducted in 75.3% while the interventions such as episiotomy, induction and strengthen labor, use of vacuum and … was done. Table 1 shows the situation of demographic and obstetric variables in the studied women based on the delivery type.

According to the results, 1785 premature births has been reported in Shariati Hospital of Bandar Abbas from April to August of 2015 that 50.1% of deliveries were carried out by cesarean section and 49.9% by vaginal delivery (Chart 1). The most common recorded cause for cesarean by the doctor was repeated cesarean (51.73%) and other reasons such as fetal distress, disproportion of fetal head to mother's pelvis, abnormal presentation, the lack of progress in delivery and pre-eclampsia were the next (table 2).
4. Discussion

According to the results of the present study, 50.1% (895 deliveries) of 1785 deliveries in Shariati Educational and Treatment Center of Bandar Abbas from April to August 2015 was carried out by cesarean method which was a high rate compared to the global one (10-15%). Most women with cesarean section were women with first and second pregnancy, the age group of 25-30 years who lived in urban regions. According to the present study, this rate of cesarean is higher compared with Arabic countries (12), countries of Southeast Asia (13), Taiwan (14), Saudi Arabia (15) and Iran (5). Kashani Zadeh and Mosadegh Rad's study (16, 17) in Baqiatallah Hospital in Tehran and university hospitals of Isfahan, estimated the cesarean rate as 71.2% and 53.4%, respectively. A study conducted by Reza Soltani et al, has reported this rate as 63.3 in the hospitals in Rasht (18). A 2003 study by Mobaraki et al showed the prevalence rate of 22.06% in Yasuj (18). Also, Dubson's study showed that one of each 5 pregnant women in Ireland and England (21.5%) had a cesarean section while this rate was 4% in thirty years ago (19). The main reasons of cesarean are uterine dystocia and fetal distress (20) but in the present study, repeated cesarean (51.73%) and fetal distress (24.92%) were the first and second leading cause of cesarean. Repeated cesarean was reported as the most common cause of cesarean in Kashani Zadeh's study (41.2%) (16) and Mobaraki's study (23.69%) (19). A study conducted by Asnafi et al, reported fetal distress (30.8%) and repeated cesarean (19.4%) as the most common cause of cesarean in their study in Shahid Yahyanejad Hospitals of Babol (13). This finding is similar to the results of Reza Soltani et al's study which the most common cause of cesarean were fetal distress (42.7%) and repeated cesarean (20.3%), respectively.

According to the results of the present study, the most important reason of cesarean was repeated cesarean which is similar to many studies conducted around the world (19). A study conducted by Fastin et al that showed the most important reason was the previous cesarean only in Philippines (21) but in Malaysia and Indonesia and then Thailand, it was abnormal position of head and mismatch of head and hip, respectively. Also in Vahid Dastjerdi's study (22), Judati and Yavari Kia's study (23), the lack of progress in delivery has been mentioned as the most common cause of cesarean. A study conducted by Goharian et al in Markazi province, disproportion of head and hip was obtained as the most common cause of cesarean (24). In a study conducted in Yazd in 1991-1995, hard labor is mentioned (25). A retrospective study conducted by Mosadegh Rad that showed dystocia or lack of progress in delivery were the most common causes of cesarean (17). Also an another study on 6394 deliveries in all hospitals of Tehran, repeated cesarean, disproportion of fetal head and mother's pelvis, lack of progress in delivery, fetal distress, selective delivery, abnormal fetal position and mother's bleeding were the most common causes of cesarean (26). In this research, repeated cesarean is the most important reason which can cause the high rate of cesarean in the region. On the other hand, Specialists Association of America know vaginal delivery safe after cesarean and recommend it. So, it can be expected to reduce the high rate of cesarean in the country and the region with public education to promote natural childbirth. In this study, the most frequency was for 25-30 years old group which was consistent with the results of other's studies (16, 27). On the other hand, one of the indications of cesarean in this center was tubal ligation. The studies show that tubal ligation is not an indication for cesarean section and it is better to be done after the normal delivery (19). In other words, tubal ligation is not a decisive criterion for cesarean delivery. It was observed that 67.04% of women with cesarean were pregnant for the first or second time. This finding was consistent with Mobaraki's study (19). During the last two decades in Iran, parents tend to have one and maximum two children and consider cesarean as a safe and painless way for themselves and their children. In the present study, generally most women who had cesarean lived in cities. This finding may be due to greater access of urban women
to the health care centers (12). Also in the most conducted studies, the same results with this study were obtained (12, 28, 29, 30). This study demonstrated that 20.88% of newborns delivered by cesarean was preterm. In study of Roozbeh et al. the prevalence of preterm delivery in hormozgan province was reported, 5.5% (31), that have difference with this study. This difference is due to the large number of sample size in study of Roozbeh and et.al. Given that the cesarean section is related to respiratory morbidity and neonatal mortality, special attention to preterm infants is necessary after cesarean (32). The prevalence of cesarean in Bandar Abbas is higher than many countries of the world and some cities and provinces in the country. Also, cesarean has much risks and complications for mother and baby like any other surgical procedures. In addition, the results of this study can be considered by the planners and authorities to do effective measures to reduce unnecessary cesarean rates. Some recommended solutions include: culture making about vaginal delivery, providing the possibility of vaginal delivery after previous cesarean, raising the awareness of physicians and midwives regarding extension services for low-pain and painless deliveries through training for childbirth and improving skills of operating personnel of delivery and more acute supervision on hospitals and treatment centers for cesarean selection based on the documented and scientific standards. Also, health workers can increase the health level of mothers and babies and reduce cesarean rate by promoting awareness of pregnant women through childbirth preparation classes about the possible side effects of cesarean for mother and baby as well as on time diagnosis and treatment of abnormal cases in pregnancy. Incomplete and unavailability of certain information including occupation, education, average income and place of residence at the time of data collecting were of limitations of this study. It is recommended to conduct another wide study regarding cesarean causes in other education and private centers of Hormozgan Province to access more accurate results.

5. Conclusion
Findings show that the frequency of cesarean had been high by the world standards in this city. Thus, considering the increasing rate of cesarean and its possible adverse consequences in mother and baby as well as its high cost, it seems that determining the common causes of cesarean can lead to develop solutions and strategies from the authorities to reduce the amount of unnecessary cesarean sections.

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Conflict of Interest:
There is no conflict of interest to be declared.

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All of authors contributed to this project and article equally. All authors read and approved the final manuscript.

References
The effect of self-management education on health-related quality of life of patients with chronic obstructive pulmonary disease

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Background and objective: With respect to incurability of chronic obstructive pulmonary disease (COPD), treatment programs mostly focus on self-management of its symptoms and that's impact on health-related quality of life these patients. This study was attempted to determine the effect of self-management education on health-related quality of life of patients suffer from COPD.

Method: This quasi-experimental study was conducted on 100 patients with COPD. The patients were selected using convenience sampling and then were categorized continuously into two groups of control and intervention. Both groups received usual care. Face-to-face self-management education was provided to the intervention group. Using St. George's Respiratory Questionnaire (SGRQ), patients were evaluated in terms of health-related quality of life.
life before the study and 3 months following the education. Data analysis was performed using SPSS and running tests of chi-square, Fisher, and independent t.

**Results:** Mean difference score between two groups were different significantly in terms of symptom, impact, and the total health-related quality of life scores(respectively p=0/047,p=0/003,p=0/017); whereas, no significant difference was observed regarding mean changes in the activity domain score(p=0/298).

**Conclusion:** Considering our findings, individual self-management education can improve health-related quality of life of patients with COPD. Therefore, this method is recommended for improving the health-related quality of life of these patients.

**Keyword:** Self-management _ Education_ Health-related quality of life_ Chronic Obstructive Pulmonary Disease

**Introduction:**

Chronic obstructive pulmonary disease (COPD) is one of the most common chronic diseases and a leading cause of death around the world. According to the World Health Organization (WHO), more than 210 million people worldwide suffer from this disease[1]. Global Burden of Disease (GBD) introduces COPD as the sixth leading cause of death in 1990. The recent update of the GBD attributed 2.7 million deaths to COPD in 2000, making COPD the fourth leading cause of death worldwide. Based upon the GBD data, mortality due to COPD will increase in 2020 and consequently COPD by then will be the third major cause of death[2]. Considering that COPD patients suffer from progressive disability rather than immediate death, mortality rates cannot provide a comprehensive picture of this disease burden[3]. COPD disables patients, reduces productivity, and brings about premature deaths and in general results in great economic burden on the society as well as the health system[4]. COPD is estimated to affect 10% of Iranian population[5]. COPD is a preventable and controllable disease characterized by persistent airflow restriction that is usually progressive and associated with an increased chronic inflammatory response in the airways and the lung to noxious particles or gases. COPD occurs in large airways, small airways, and lung parenchyma. Main features of this disease involves irreversible airflow obstruction, destruction of the gas-exchanging tissues of the lungs (emphysema), narrowing of small airways, and productive cough (bronchitis)[6]. With the progression of the disease, patients will experience activity intolerance, sleep disorders, mental disorders, social activities limitation, and social isolation[7]. Current treatments only delay the progression of the disease. As a result, patients should keep on their lives while they are suffering physically, mentally, and socially[8]. Even with the best treatment available, the lung function will be deteriorated over time. Therefore, maintaining and improving the health-related quality of life is a key objective of treatment in COPD[9]. Mostly, self-management programs for this disease focus on its symptoms and its impact on patient health-related quality of life[10]. Self-management education addresses any patient education that covers disease-related skills and focuses on disease control through behavioral change[11]. Because COPD is not treatable, self-management and behavior modification can prevent the deterioration of the health status of COPD patients [12]. Engaging in self-management education contribute patients to control their symptoms, slow its progression, and improve their health-related quality of life [13]. Thus,
concerning low health-related quality of life in COPD patients, the effectiveness of self-management education in promotion of health-related quality of life, and lack of research in this field in our country, we decided to explore the effect of self-management education on health-related quality of life in COPD patients in order to achieve an appropriate treatment to enhance health-related quality of life in COPD patients.

Method:
In this non-randomized controlled trial, the patients were selected using convenience sampling during 2016. In this regard, the researcher selected 100 COPD patients from Ayatollah Kashani and Hajar hospitals, Shahrekord, Iran. Based on the study criteria, patients were categorized in two groups of control and intervention group in each group. Inclusion criteria were as follows: aged 40 to 75 years old, being in the stages of 2 or 3 of the disease (verified by a doctor), the confirmation of their disease by the study physician, do not participate in previous self-management programs for COPD, do not have known mental illness, do not have pulmonary tuberculosis, cancer, active, and severe neurological problems, do not have hearing problems, do not have problems disturbing relationship, have the ability to understand and speak Farsi, have the ability to read or write in Persian (or the patient’s attendant), and have the physical ability to do interview and fill out the questionnaire. Patients were excluded if they were at stage 4 of the disease, expired, did not attend in one of the education session, were reluctant to continue the study, and if they suffered from asthma, bronchiectasis, pulmonary tuberculosis, pneumoconiosis, or acute congestive heart failure. In the first step, the intervention and control groups were determined randomly by drawing lots. Afterwards, the selected samples were categorized continuously in these groups in a way that the first 50 patients were grouped in the control group and then the second 50 patients were assigned to intervention group. The sample size was determined 50 in each group. Data were collected using demographic and St. George’s Respiratory Questionnaire (SGRQ). SGRQ is one of the most common indexes used to evaluate health-related quality of life in COPD patients. This questionnaire contains 50 questions in three sections, including symptoms, activity, and impact domains. The first part (symptoms) measures pulmonary problems in terms of frequency and intensity; the second part (activity) addresses those activities that limit in COPD patient’s; and the third part (impact) includes the effects of the disease on social and mental functioning of the patient. This questionnaire is scored from 0 to 100 in a way that zero indicates perfect health and higher scores indicate lower health-related quality of life. Initially, both groups completed the questionnaires and received the usual care. Each patient in the intervention group received face to face education during four sessions. At the end of education sessions, an educational manual, including all the presented trainings in four sessions were given to the patients of the intervention group. Educational content addresses self-management education for COPD patients involving basic information about COPD, choosing a healthy lifestyle, quitting smoking, nutrition and physical activity, effective techniques for breathing and cough, medication, inhaler techniques, energy conservation during daily activities, prevention and management of the disease exacerbations, and the understanding and use of action plan during exacerbation of COPD. SGRQ was recompleted by patients three months following the intervention and then it was compared with prior questionnaire. Data were analyzed using SPSS (version 24), running tests of chi-square, Fisher and independent t, and considering
95% confidence intervals. At the end of the study, the educational manual was also provided to control group members.

Results:

In this study, 100 patients were recruited and categorized into two groups of 50, including control and treatment one. However, in the following 5 patients were lost (2 from control group 3 from intervention group) since they did not participate in the education sessions completely or they were reluctant to continue the study. Mostly, the patients in both groups were male; that is, 72.9% of control group and 68.1% of the intervention group. Two groups were homogenous in terms of demographic variables. According to Table 2, no significant difference existed between groups concerning the total health-related quality of life scores before the intervention. Three months following the intervention, no significant difference was seen either between groups with respect to overall health-related quality of life scores. By examining changes in scores of different domains, a significant difference was found between two groups concerning the mean of changes in symptoms, impact, and health-related quality of life level before and three months following the intervention. However, no significant difference was observed in terms of domain of activity mean changes.
Table 1- Compares the demographic characteristics of the participants at baseline

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control group Amount (Percentage)</th>
<th>Intervention Group Amount (Percentage)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Mean</strong></td>
<td>62/29±7/07</td>
<td>62/57±7/86</td>
<td>0/845</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>35 (72/9)</td>
<td>32 (68/1)</td>
<td>0/606</td>
</tr>
<tr>
<td>Female</td>
<td>13 (27/1)</td>
<td>15 (31/9)</td>
<td></td>
</tr>
<tr>
<td><strong>Marriage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1 (2/1)</td>
<td>1 (2/1)</td>
<td>0/874</td>
</tr>
<tr>
<td>Married</td>
<td>41 (85/4)</td>
<td>38 (80/9)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>2 (4/2)</td>
<td>3 (6/4)</td>
<td></td>
</tr>
<tr>
<td>Widow</td>
<td>4 (8/3)</td>
<td>5 (10/6)</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>27 (56/3)</td>
<td>24 (51/1)</td>
<td>0/702</td>
</tr>
<tr>
<td>School</td>
<td>14 (29/2)</td>
<td>12 (25/5)</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>6 (12/5)</td>
<td>8 (17/0)</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>1 (2/1)</td>
<td>3 (6/4)</td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficient</td>
<td>12 (25/0)</td>
<td>9 (19/1)</td>
<td>0/594</td>
</tr>
<tr>
<td>Quite Enough</td>
<td>23 (47/9)</td>
<td>21 (44/7)</td>
<td></td>
</tr>
<tr>
<td>Not Enough</td>
<td>13 (27/1)</td>
<td>17 (36/2)</td>
<td></td>
</tr>
<tr>
<td><strong>Job</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>11 (22/9)</td>
<td>14 (29/8)</td>
<td>0/804</td>
</tr>
<tr>
<td>Employed</td>
<td>8 (16/7)</td>
<td>7 (14/9)</td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>12 (25/0)</td>
<td>13 (27/7)</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>17 (35/4)</td>
<td>13 (27/7)</td>
<td></td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin</td>
<td>1 (2/1)</td>
<td>2 (4/3)</td>
<td>0/592</td>
</tr>
<tr>
<td>Normal</td>
<td>28 (58/3)</td>
<td>21 (44/7)</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>13 (27/1)</td>
<td>15 (31/9)</td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>6 (12/5)</td>
<td>9 (19/1)</td>
<td></td>
</tr>
<tr>
<td><strong>History</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 1 year</td>
<td>6 (12/5)</td>
<td>8 (17/0)</td>
<td>0/727</td>
</tr>
<tr>
<td>1-5 year</td>
<td>16 (33/3)</td>
<td>17 (36/2)</td>
<td></td>
</tr>
<tr>
<td>Over 5 year</td>
<td>26 (54/2)</td>
<td>22 (46/8)</td>
<td></td>
</tr>
<tr>
<td><strong>Comorbidity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34 (70/8)</td>
<td>30 (63/8)</td>
<td>0/467</td>
</tr>
<tr>
<td>No</td>
<td>14 (29/2)</td>
<td>17 (36/2)</td>
<td></td>
</tr>
<tr>
<td><strong>Stage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Gold Classification)</td>
<td>2</td>
<td>22 (45/8)</td>
<td>24 (51/1)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>26 (54/2)</td>
<td>23 (48/9)</td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>13 (27/1)</td>
<td>13 (27/7)</td>
<td>0/982</td>
</tr>
<tr>
<td>Current</td>
<td>11 (22/9)</td>
<td>10 (21/3)</td>
<td></td>
</tr>
<tr>
<td>Leave</td>
<td>24 (50/0)</td>
<td>24 (51/1)</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

This study compared the effect of self-management education on health-related quality of life in patients with COPD. The results of the current study showed that self-management education can improve the domains of symptoms, impact, and the total level of health-related quality of life; however, it did not have any significant effect on activity domain. In line with this study, Khdour et al., investigated the effect of disease and medicine management program, focusing on self-management in patients with chronic obstructive pulmonary disease and revealed that self-management program can improve domains of symptoms, impact, and health-related quality of life in these patients 6 month following the intervention; nevertheless, it did not have any impact on activity domain[14]. A meta-analysis was performed using 15 related articles by Cannon et al., who explored the impact of self-management in randomized clinical trials and its effects on health outcomes in patients with COPD. The results of this meta-analysis showed a significant improvement of scores in all domains of SGRQ [15]. The comparison of different aspects of SGRQ demonstrated that the mean changes of all its domains of our research were located in 95% confidence interval in the above mentioned meta-analysis. Zwerink et al., systematically reviewed the influence of self-management on health outcomes and the reduction of health services consumption by analyzing 10 related

Table 2 - Comparison St. George's scores in the control group and the Intervention Group

<table>
<thead>
<tr>
<th></th>
<th>St. George's questionnaire</th>
<th>Control Mean ± SD</th>
<th>Individual Education Mean ± SD</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom Score</td>
<td>45/40 ± 17/81</td>
<td>48/46 ± 15/04</td>
<td>0/368</td>
<td></td>
</tr>
<tr>
<td>Activity Score</td>
<td>51/74 ± 17/41</td>
<td>54/60 ± 14/82</td>
<td>0/391</td>
<td></td>
</tr>
<tr>
<td>Impact Score</td>
<td>37/19 ± 16/07</td>
<td>38/42 ± 14/35</td>
<td>0/694</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>43/08 ± 16/22</td>
<td>45/08 ± 14/09</td>
<td>0/522</td>
<td></td>
</tr>
<tr>
<td>Three Month After Intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom Score</td>
<td>45/88 ± 17/27</td>
<td>45/70 ± 15/34</td>
<td>0/975</td>
<td></td>
</tr>
<tr>
<td>Activity Score</td>
<td>50/76 ± 15/67</td>
<td>51/86 ± 16/36</td>
<td>0/738</td>
<td></td>
</tr>
<tr>
<td>Impact Score</td>
<td>38/61 ± 15/60</td>
<td>34/51 ± 14/00</td>
<td>0/181</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>43/61 ± 15/06</td>
<td>41/78 ± 14/28</td>
<td>0/546</td>
<td></td>
</tr>
<tr>
<td>Mean Difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom Score</td>
<td>0/47 ± 8/73</td>
<td>-2/76 ± 6/82</td>
<td>0/047</td>
<td></td>
</tr>
<tr>
<td>Activity Score</td>
<td>-0/97 ± 7/67</td>
<td>-2/73 ± 8/71</td>
<td>0/298</td>
<td></td>
</tr>
<tr>
<td>Impact Score</td>
<td>1/42 ± 9/53</td>
<td>-3/91 ± 7/25</td>
<td>0/003</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>0/53 ± 8/18</td>
<td>-3/30 ± 7/16</td>
<td>0/017</td>
<td></td>
</tr>
</tbody>
</table>
articles. They demonstrated that self-management interventions are associated with improved health-related quality of life in all dimensions measured by SGRQ[15]. Although two aforementioned studies depicted the improvements in all aspects quality of life following self-management interventions, the present study did not find any significant improvement in activity domain. This discrepancy can be attributed to differences in the study population, education skill, and time for re-measuring of outcomes.

Acknowledgements

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Reference :


The relationship between demographic and psychological dimensions of nursing staff with infection control standards in hospitals affiliated to Mazandaran University of Medical Sciences

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Abstract
The main objective of this research is to determine the relationship Demographic dimensions and Psychological dimensions of nursing Employees with infection control standards in hospitals affiliated to Mazandaran University of Medical Sciences in the year is 95. The present study is a descriptive correlational research. In this research for data's collection from standard questionnaires were used. The statistical population included nurses working in all units (except NICU) Imam Sajjad (AS) of Ramsar and Shahid Rajaee Tonekabon Hospitals Affiliated to Mazandaran University of Medical Sciences. In this research is census sampling method and sample size of 400 peoples were chosen that after data collection only 281 questionnaires were analyzed. For analyzing the data, the correlation Chi Eta, Spearman and Pearson have been used. The findings show that there are not significant relationship between demographic dimensions and infection control standards. But between psychological dimensions, except neuroticism, there are significant relationship between extraversion, flexibility, adaptability, responsibility, attitude and infection control standards. Finally results of the how the distribution attitude towards infection control standards showed that most nurses have positive attitude.

Keywords: Nosocomial infection, Infection control standards, Demographic dimensions, Psychological dimensions.

1. Introduction
One of the most important of issues that has always been considered by human is to maintain health and resolution of pain and suffering of diseases (Delshad et al, 2014). In this regard, hospitals are high-risk environments in creation of infection (Brock et al., 2012). Nosocomial infections simultaneous with the development of hospitals are always one of the major health infections that by increasing the patient hospitalization in the hospital mortality rate caused by infections increases. As a result, it increases nosocomial infections (Bijari et al., 2014). A number of nosocomial infections are created through infected patients, visitors or staff. Healthy carriers also acquire pathogens from infected patients from different way such as sitting hands before and after contact with patient, inappropriate and unsuitable disinfection method during treatment inappropriate separation method (Cheng et al., 2014). In fact, nosocomial infections can appear during patient
hospitalization in hospital or after discharge from hospital (Abdollahi et al., 2013). Since treatment of nosocomial infection imposes high cost for health unit of the country, it seems that the implementation of control infection program and small but effective change in the performance of the health unit staff to control nosocomial could be cost-effective and useful from the health economy perspective (Cheng et al., 2001). In this regard, the fixed nurses of hospital units play an important role in reducing the risk of nosocomial infections by applying strategies such as hand washing, ensured implementation of prescribed medical prescriptions, especially antibiotics, performing the procedures that reduce the risk of infection related with patient care items can be effective steps in controlling nosocomial infections (Blue et al., 2011). With the observance of such professional principles of fixed nurses, they become practical model of students that these students affected by them in the beginning of their nursing profession (Blot et al., 2001). However, it seems that in addition to the training of nursing personnel, more emphasis should be put during the study on the teaching topics related to nosocomial infections principles (O'Hara et al., 1974).

In this study, we aim to examine the direct effect of demographic dimensions (gender, marital status, education level, age, monthly income, work experience) of nurses in infection control standards in hospitals. Based on what was said above, it should be noted that in developing countries, high displacement of infected needles, high injections for patients, lack of safety syringes and containers for sharp objects, manpower shortage, high workload, fatigue and occupational stresses increase risk of contact with blood-borne pathogens. Habits related with working carelessly and unsafe conditions are usually the result of lack of knowledge of doing the work, and job training with an emphasis on safety dimensions has great contribution to the knowledge, attitude and performance of employees (the Golafooz et al., 2011). Therefore, without doubt, the most effective, the lowest cost, and most desirable method to fight against infection at any time and place is to prevent its incidence. Observing standard precautions is very important in preventing the spread of infection. Given what was said above and as previous studies have examined the effects of only two variables of demographic variables on infection control standards, this study not only analyses attitude dimensions and personality traits, but also it analyses larger dimensions of demographic variables. Therefore, the main question of the study is what type of relationship is between demographic and psychological dimensions of nursing employees with infection control standards in hospitals affiliated to Mazandaran University of Medical Sciences.

2. Materials and methods

2-1. Nosocomial infection

Nosocomial infections are one of the major medical problems in the present century (Aladin et al., 2012). Nosocomial infection is an infection created on limited or released base as result of pathogenic reactions associated with infectious agents or it toxins in hospital (Ghanbari et al., 2013). In relation to transmitting ways of infectious agents, dust and droplets in the air, water and food are the ways of transmission of infectious agents to hospitalized person. However, the most important and most common way of transmission of infectious agents and creation of nosocomial infections is direct contact of contaminated hands of employees from other patient or his/her hand to hospitalized person. During providing of different types of medical cares, like venipuncture, blood sampling, the urinary tract intubation, endotracheal intubation, infectious agents were transmitted from hospital staff to hand the hospitalized person. Therefore, linen, clothing, medication and especially food and water and polluted air although are important ways of transmission of nosocomial infections and in many cases they can cause the epidemiology of infectious diseases in hospitals, they are not the most important and the most common way of transmission of nosocomial infections (Morsali et al., 2007).

2-2. Nosocomial infections control program
In fact, hospital infections control program and the establishment of surveillance systems in some countries have a long history, for example, in United States, the information about these infections are collected, analyzed and published over 41 years.

Investigation and control of hospital infections have no long history in Iran (Bijari et al., 2014). In this regard, in order to establish a surveillance system for hospital infections by disease management center, it has been specified that diagnosing diseases and nosocomial infections in the country to be conducted based on standards. It has also been specified that respiratory, urinary tract, blood, and surgery infections to be diagnosed and reported at the first stage (Vafaei et al., 2012). In fact, the successful control of nosocomial infections requires appropriate preventive measures through the application of the principles of infection control by the employees of the hospital. Accordingly, additional costs are avoided and health of patient are not endangered (Alaeddini et al., 2012). In the meantime, a third of these infections are predictable because the most important way of transmission of these infections is staff hands that it could be prevented by observing hand hygiene and washing by them.

The high cost of treatment, the large number of patients and increasing number of infections lead to development of standard precaution principles, since these principles are basic scale in controlling the nosocomial infections.

2-3. Demographic dimensions

Nurses’ demographic and individual variables can be effective in control and prevention of nosocomial infections. For example, some studies have shown that nurses feel that they have appropriate control on events by increasing their service years, and they have higher decision-making power when needed. In other words, they think that in light of their work experience and using their experience, they can better adapt themselves with various situations and they will fell higher sense of capability (Alaeddini et al., 2012). Additionally, research results showed that there are differences in general observing the precautions in terms of gender, work experience, age group, participation in training session, and availability of facilities and equipment (Parsaei et al, 2012). Considering the effect of nurses’ gender on their capability in confronting with occupational consequences, some results have shown that competency and self-esteem of males are higher than females (Barati et al, 2014).

2-4. Psychological dimensions

In addition to demographic variables, investigating psychological dimensions and internal capabilities of people in line with observing the health behaviors can play important role in needs assessment and providing educational interventions (Ghanbari et al 2014). In this regard, some studies have shown that nurses’ attitude to control nosocomial infections was 24.7% in other studies, 96.6% of the participants had positive attitude toward infection control.

In addition to attitude, research has shown that wide range of personality characteristics is effective in unsafe behaviors in all unsafe jobs (Samavatian et al, 2010). Personality traits are characteristics and attributes appearing in different positions and they have relative stability, different from person to person, and they can be measured. Among the many tests to assess personality traits, Neo test is one of the most valid tests confirmed by many experts and it has been used in many medical studies. In this test, personality traits are classified in five areas including extroversion, neuroticism, flexibility, adaptability and accountability (Rahim and Asadi, 2012).

2-5. Methodology

Method of study

This study is a descriptive correlational study. The variables used in this study included demographic and
psychological dimensions (independent variables) and infection control standards (the dependent variable) in all nurses with bachelor and higher education level working at all departments (except NICU) in Ramsar and Tonekabon hospitals.

Population and sample

As in the current study, Population of this study included all nursing staff working in all departments (except NICU) of Imam Sajjad Hospital at Ramsar and Shahid Rajaei Hospital at Tonekabon city affiliated to Mazandaran University of Medical Sciences. As demographic and psychological dimensions of all nursing staff at Ramsar and Tonekabon hospitals are assessed by infection control standards and it include all subjects, census sampling was used in this study and sample of study was determined to be 400. In this study, nurses working in all departments (except NICU) of Imam Sajjad Hospital of Ramsar and Shahid Rajaei Hospital of Tonekabon were selecte.

Data collection

Under the guidance of professor, samples will be collected within 3 months. Data collection tool in this study included three-part questionnaire contained demographic traits with dimensions of (gender, marital status, education level, age, monthly income, work experience) and they will be assessed by demographic information recording form.

Additionally, we will assess the psychological characteristics with two dimensions of personality and attitude. We will assess the personality characteristics with five dimension of (extraversion, neuroticism, flexibility, adaptability, accountability) through NEO questionnaire designed by Costa and McCrae (1989) by five-point Likert scale (strongly disagree, disagree, no idea, agree and strongly agree) with the scores of (1, 2, 3, 4, 5) and the 60 questions (16 questions on extraversion), (neuroticism with 14 questions), (flexibility with 12 questions), (adaptability with 2 questions), (accountability with 12 questions), and attitude through questionnaires designed by Ghafuri et al in 2013 with binary Likert scale (yes or no) with scores of 1 and 2 by 10 questions. We also assess infection control standards through a questionnaire designed by Yaghubi et al in 2013 with with a five-point Likert scale (strongly disagree, disagree, no idea, agree and strongly agree) with scores of (1, 2, 3, 4, 5) with 30 questions that is 100 questions in total.

Demographic information questionnaire was developed already by Yaghubi et al in a study to investigate the effect of these variables on the standards of infection control in hospitals. They obtained validity of the questionnaire through the content validity and they used test-retest to examine the reliability of the questionnaire. They found correlation coefficient of the questionnaire 98% (Yaghubi et al., 2013). NEO personality questionnaire was implemented by McCrae and Costa on 208 American students within three months that its reliability coefficients was obtained between 0.75 and 0.83. Long-term validity of the questionnaire were evaluated (McCrae and Costa, 1989). Attitude Questionnaires was examined by Ghafuri et al, and its reliability was obtained through content validity and its reliability was calculated to be 99% through Cronbach's alpha coefficient (Ghafuri et al., 2013). Questionnaire of infection control standards was examined by Yaghubi et al. they used test-retest to examine its reliability (correlation coefficient 96%), and they used content validity to examine its validity (Yaghubi et al., 2013).

Data analysis

For analyzing the data, SPSS 20 software was used and data were analyzed using independent t-test, ANOVA, Pearson and Spearman correlation tests.

3. Research findings
In this study, Kolmogorov-Smirnov was used to test for normality assumption of data. According to results of this test, significance level of test for variables of extraversion, neuroticism and infection control standards is greater than 0.05. As a result, these variables are normally distributed, but the significance level for the variables of flexibility, adaptability, accountability and attitude is smaller than 0.05. Therefore, these variables were not normally distributed. According to results of the current study, to use appropriate test to respond research questions, parametric test (Pearson correlation) was used for variables that are distributed normally, while non-parametric test (Spearman correlation) is used to variables that have non-normal distribution. In addition, to examine the relationship between demographic variables and infection control standards, independent t-test and ANOVA tests were used.

3-1. Research questions analysis

In this section, we state and investigate the research questions.

1. Is there relationship between gender of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between gender of staff and infection control standards, independent t-test was used. The results of this test are presented in the table below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>n</th>
<th>mean</th>
<th>SD</th>
<th>T statistic value</th>
<th>df</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control</td>
<td>Male</td>
<td>18</td>
<td>69/29</td>
<td>19/80</td>
<td>0/671</td>
<td>279</td>
<td>0/079</td>
<td>It is equal</td>
</tr>
<tr>
<td>standards</td>
<td>Female</td>
<td>263</td>
<td>61/60</td>
<td>18/854</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and gender of staff at level of 0.95. In other words, compliance with infection control standards is equal between male and female staff.

2. Is there relationship between marital status of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between marital status of nursing staff and infection control standards, independent t-test was used. The results of this test are presented in the table below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Marital status</th>
<th>n</th>
<th>mean</th>
<th>SD</th>
<th>T statistic value</th>
<th>df</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control</td>
<td>single</td>
<td>58</td>
<td>62</td>
<td>18/80</td>
<td>-0/072</td>
<td>279</td>
<td>0/942</td>
<td>It is equal</td>
</tr>
<tr>
<td>standards</td>
<td>married</td>
<td>196</td>
<td>62/17</td>
<td>19/120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and marital status of
Staff at level of 0.95. In other words, compliance with infection control standards is equal between married and single staff.

3. Is there relationship between education level of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between education level of nursing staff and infection control standards, independent t-test was used. The results of this test are presented in the table below.

Table 3. Independent test results in relation to infection control standards according to education level

<table>
<thead>
<tr>
<th>Variable</th>
<th>Education level</th>
<th>n</th>
<th>mean</th>
<th>SD</th>
<th>statistic value</th>
<th>df</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control standards</td>
<td>undergraduate</td>
<td>271</td>
<td>62/19</td>
<td>19/122</td>
<td>0/292</td>
<td>279</td>
<td>0/771</td>
<td>It is equal</td>
</tr>
<tr>
<td></td>
<td>Graduate and higher</td>
<td>10</td>
<td>60/40</td>
<td>15/714</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and education level of staff at level of 0.95. In other words, compliance with infection control standards is equal between staff with undergraduate staff with graduate and higher level of education.

4. Is there relationship between age of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between age of nursing staff and infection control standards, ANOVA was used. The results of this test are presented in the table below.

Table 4. ANOVA test results in relation to infection control standards according to age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean of squares</th>
<th>F statistic value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control standards</td>
<td>intergroup</td>
<td>1306/385</td>
<td>3</td>
<td>435/462</td>
<td>1/210</td>
<td>0/306</td>
</tr>
<tr>
<td></td>
<td>intragroup</td>
<td>99668/255</td>
<td>277</td>
<td>359/813</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and ages of staff at 95% confidence level.

5. Is there relationship between monthly income of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between monthly income of nursing staff and infection control standards, ANOVA t-test was used. The results of this test are presented in the table below.

S733-18
Table 5. ANOVA test results in relation to infection control standards according to monthly income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean of squares</th>
<th>F statistic value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control</td>
<td>intergroup</td>
<td>2345/992</td>
<td>3</td>
<td>781/997</td>
<td>2/196</td>
<td>0/089</td>
</tr>
<tr>
<td>standards</td>
<td>intragroup</td>
<td>98628/649</td>
<td>277</td>
<td>356/060</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and monthly income of staff at 95% confidence level.

6- Is there relationship between work experience of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

To examine the relationship between work experience of nursing staff and infection control standards, ANOVA t-test was used. The results of this test are presented in the table below.

Table 6. ANOVA test results in relation to infection control standards according to work experience

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean of squares</th>
<th>F statistic value</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>infection control</td>
<td>intergroup</td>
<td>1053/188</td>
<td>2</td>
<td>526/594</td>
<td>1/465</td>
<td>0/233</td>
</tr>
<tr>
<td>standards</td>
<td>intragroup</td>
<td>99921/453</td>
<td>278</td>
<td>359/430</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the table above, significant level of test for variable of infection control standards is greater than 0.05. It means that there is no significant difference between infection control standards and different work experience of staff at 95% confidence level.

7- Is there relationship between work experience of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

Table 7. Pearson correlation coefficient results between infection control standards and extroversion

<table>
<thead>
<tr>
<th>Sample number</th>
<th>Correlation value</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>281</td>
<td>0/294</td>
<td>0/000</td>
<td>There is significant relationship</td>
</tr>
</tbody>
</table>

According to the table above, the correlation coefficient between extroversion and infection control standard is greater than 0.294 and its significance level is 0.000 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and extroversion at the 95% confidence level.

8- Is there relationship between neuroticism of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?
According to the table above, the correlation coefficient between neuroticism and infection control standard is greater than 0.094 and its significance level is 0.116 and higher than 0.05. Therefore, it can be said that there is no significant relationship between infection control standards and neuroticism at the 95% confidence level.

9- Is there relationship between flexibility of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

According to the table above, the correlation coefficient between flexibility and infection control standard is greater than 0.312 and its significance level is 0.000 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and flexibility at the 95% confidence level.

10- Is there relationship between adaptability of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

According to the table above, the correlation coefficient between adaptability and infection control standard is greater than 0.295 and its significance level is 0.000 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and adaptability at the 95% confidence level.

11- Is there relationship between accountability of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

According to the table above, the correlation coefficient between accountability and infection control standard is greater than 0.396 and its significance level is 0.000 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and accountability at the 95% confidence level.
greater than 0.396 and its significance level is 0.000 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and accountability at the 95% confidence level.

12- Is there relationship between attitude of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?

Table 12. Spearman correlation coefficient results between infection control standards and attitude

<table>
<thead>
<tr>
<th>Sample number</th>
<th>Correlation value</th>
<th>Significance level</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>281</td>
<td>0/023</td>
<td>0/001</td>
<td>There is significant relationship</td>
</tr>
</tbody>
</table>

According to the table above, the correlation coefficient between attitude and infection control standard is greater than 0.203 and its significance level is 0.001 and lower than 0.05. Therefore, it can be said that there is significant relationship between infection control standards and attitude at the 95% confidence level.

Ultimately, to examine the attitude of nursing staff toward infection control standards in Imam Sajjad Hospital of Ramsar and Shahid Rajaei Hospital of Tonekabon, we examined the frequency distribution of responses shown in Table (22). As yes and no options with scores of 1 and 2 were determined for responses according to standard questionnaire, yes responses were considered as positive attitude and no responses were considered as negative attitude.

Table 13. Frequency distribution of attitude of subjects of the study toward Imam Sajjad Hospital of Ramsar and Shahid Rajaei Hospital of Tonekabon

<table>
<thead>
<tr>
<th>Attitude questions</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you believe contamination of ground or table beside the patient bed is directly related to an increased risk of infection?</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>Do you believe that hospital's infection control committee in hospital do their tasks rightly?</td>
<td>76/5</td>
<td>23/5</td>
</tr>
<tr>
<td>Do you believe allocation of patients’ visiting each day in any way?</td>
<td>64/1</td>
<td>35/9</td>
</tr>
<tr>
<td>Do you believe monitoring the staff carriers among personnel?</td>
<td>83/6</td>
<td>16/4</td>
</tr>
<tr>
<td>Do you believe that ECG electrodes should be disinfected after using?</td>
<td>87/9</td>
<td>12/1</td>
</tr>
<tr>
<td>Do you believe that the PPD test is essential in initial assessment of all personnel?</td>
<td>81/9</td>
<td>18/1</td>
</tr>
<tr>
<td>Do you believe the H1N1 flu vaccine?</td>
<td>74/4</td>
<td>25/6</td>
</tr>
<tr>
<td>Do you believe that a vaccine against hepatitis A should be used for personnel normally?</td>
<td>83/3</td>
<td>16/7</td>
</tr>
<tr>
<td>Do you believe that HIV testing should be recommended for all personnel?</td>
<td>86/1</td>
<td>13/9</td>
</tr>
</tbody>
</table>

As table above shows, by calculating the mean of frequency percentages of the yes and no responses, we conclude that 82.86% of the respondents have positive attitude and 17.14% of them have negative attitude.
toward infection control standards.

**Discussion and conclusion**

Considering the first question of the study (Is there relationship between gender of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it can be concluded that compliance with infection control standards is equal between male and female staff. This research results are in contrast with results of study conducted by Parsaei et al (2013), which showed observing of comprehensive precautions is higher in females compared to males. They are also in contrast with results of study conducted by Yaghubi, Seyed Sharifi and Abbaspour (2012), which showed there is significant difference between males and females in terms of preventing nosocomial infections. Additionally, they are not in line with results of study conducted by Al Yusef in 2014 who showed there is significant difference between Male and female nursing students in control of infection and prevention instructions. However, they are in line with a study conducted by Ehsani et al in 2013, which showed there is no significant difference between males and males in observing the infection control standards.

Considering the second question of the study (Is there relationship between marital status of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it can be concluded that compliance with infection control standards is equal between married and single staff. This result is in contrast with result of study conducted by Fashafesheh et al who showed in 2015 there is significant difference between marital status of male and female nurses considering the infection control standards. Considering the third question of the study (Is there relationship between education level of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it can be concluded that compliance with infection control standards is equal between staff with undergraduate staff with graduate and higher level of education. This result is in contrast with result of the study conducted by Fashafesheh et al in 2015, which showed there is significant difference between educational level of male and female nurses in observing infection control standards. It is also in contrast with result of study conducted by Al-Khavaldeh, Al-husami, and Daravad in 2015, which showed significant relationship between nurses’ level of education and observing infection control standards, including hand washing.

Considering the fourth question of the study (Is there relationship between age of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it could be concluded that there is no significant difference between infection control standards and ages of staff. This result is in contrast with result of the study conducted by Fashafesheh et al in 2015, which showed there is significant difference between age of male and female nurses in observing infection control standards. It is also in contrast with result of study conducted by Al-Khavaldeh, Al-husami, and Daravad in 2015, which showed significant relationship between nurses’ age and observing infection control standards, including hand washing.

Considering the fifth question of the study (Is there relationship between monthly income of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it could be concluded that there is no significant difference between infection control standards and monthly income of staff. This result is in contrast with result of study conducted by Jeolang, Maytona and Liping in 2013, which showed that as nurses’ income increase, the rate of observing the infection control measures would also increase.

Considering the sixth question of the study (Is there relationship between work experience of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it could be concluded that there is no significant difference between infection control standards and different work experience of staff at 95% confidence level. This study in in contrast with result of study conducted by Parsaei
et al (2012) who showed the differences in observing the comprehensive precautions in terms of work experience was significant. Considering the seventh question of the study (Is there relationship between work experience of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards), results indicated that there is significant relationship between infection control standards and extroversion. Therefore, it could be concluded that as nurses have are energetic, sociable, courageous, active, thrill seeking with high enthusiasm, self-confident and positive emotions, they would observe infection control standards greatly. This result is in line with results of study conducted by Samavatian, Kamkar, and Negahban (2010), which showed there is significant relationship between extroversion and observing safety cases. However, it was not in line with result of studies conducted by Yuchu et al (2016) who showed there was no significant relationship between extroversion and observing safety cases.

Considering the eighth equation of the study (Is there relationship between neuroticism of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), research results indicated there is no correlation between neuroticism characteristics of subjects and observing the infection control standards. This result is in line with study conducted by Yuchu et al (2016) who showed that there is no significant difference between neuroticism and observing safety cases. However, it is in contrast with results of the study conducted by Samavatian, Kamkar, Negahban (2010) who showed there is significant difference between neuroticism and observing the safety cases.

Considering the ninth question of the study (Is there relationship between flexibility of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), results showed that there is significant difference between flexibility and infection control standards. In fact, this dimension shows the interest of people toward novelty and acquiring new experiences. This group of people has characteristics such as high imagination, interest in artistic effects, prying into others’ ideas, new ideas, open emotions, and they are action-oriented people. In addition, nurses with such characteristics observe infection control standards more than nurses who are lack of such characteristics. This result is in contrast with results of study conducted by Samavatian, Kamkar, and Negahban (2010) who showed there is significant relationship between flexibility of staff and observing safety cases. However, it is in line with result of study conducted by Yuchu et al (2016) who showed there is significant relationship between flexibility and observing the safety cases.

Considering the tenth question of the study (Is there relationship between adaptability of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), it could be concluded that there is significant relationship between infection control standards and adaptability. This group of people has characteristics such as adaptability, reliability, honesty, altruism, compassionate, and kindness, selflessness, humbleness, and good-heartedness. Adaptable people are usually directing and guiding teams. As this group of people is looking for creation of adaptability with others, they usually avoid of disputing with others. According what was said, nurses with such characteristics could observe infection control standards more than others. This result is in line with results of study conducted by Samavatian, Kamkar, and Negahban (2010), which showed there is significant relationship between adaptability of staff and observing safety cases. In addition, it is in line with result of study conducted by Yuchu et al (2016) who showed there is significant relationship between adaptability and observing the safety cases.

Considering the eleventh question of the study (Is there relationship between accountability of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards?), results indicated that there is significant relationship between infection control standards and accountability.
People who have accountability characteristics are usually people with high conscientious, competent, disciplined, conscientious, goal-oriented, punctual, and reliable people. Accountability is in fact considered important in many organization situations and it is an appropriate indicator to predict performance in many jobs, since tendency of these people to achieve success is high. Additionally, by increasing the accountability of nurses, their observing the infection control standards would increase. This result is in line with a study conducted by Yuchu et al (2016) who showed there is significant relationship between accountability and observing the safety cases. It is also in line with a study conducted by Samavatian, Kamkar, and Negahban (2010), which showed there is significant relationship between accountability of the staff and observing the safety cases. In fact, they showed that the person who is accountable emphasizes on adequacy, conscientiousness and perseverance. Such person creates positive feeling toward observing the organizational norms and values accepted collectively. It also creates a motivation in the person to observe the recommendations of the organization by his perseverance.

Considering the twelfth question of the study (Is there relationship between attitude of nursing staff in hospitals affiliated to Mazandaran University of Medical Sciences in 2016 and infection control standards), results indicated that there is significant relationship between these two variables. In addition, the mean of frequency percentage of the responses indicated that 82.86% of the respondents had positive attitude toward infection control standards. Therefore, we concluded that in most cases the attitude toward observing the infection control standards in two hospitals is positive. Various studies have been conducted in this regard, for example, Al-Khavaldeh, Al-husami, and Daravd in 2015 who showed significant relationship between Jordan state students’ attitude and observing the hand washing. In addition, Al Yusef conducted a study in 2014 in which he showed that there is significant difference between nursing students’ attitude and preventive instruction and infection control. In addition, considering nurses’ attitudes toward infection control standards, Syed Abu Salam et al (2015) showed that 96.6 percent of nurses in the health centers in Egypt had positive attitude towards the control of infection. Additionally, Giolaylet and Tyraneh in 2014 showed that 197 employees of health care departments (nine public hospitals and six private hospitals in Ethiopia) had a positive attitude and 157 of them had negative attitude toward to prevent infection. However, Yaghubi, Seyed Sharifi, and Abbaspour (2012) in a study evaluated the attitude of nurses working in intensive care departments of the North Khorasan Province on infection control standards showed that most of them had negative attitude toward items investigated. In contrast, results of the Ghafouri et al (2013) showed that 58.02% of the public hospitals staff (Imam Ali, Imam Reza, and Bentol Hoda hospitals) of the Bojnurd city had positive attitude and 41.98% of them had negative attitude toward infection control standards. It indicates moderate attitude of the personnel to observing the infection control standards.

Applied recommendations

Results of the present investigation showed that among the five personality characteristics, significant correlation was found only among flexibility, adaptability, accountability, and infection control standards. Therefore, it is recommended that the necessary trainings to be provided on these characteristics to nursing staff, because as long as that nurses are unaware of the concept and meaning of the psychological characteristics, they cannot be effective person. In fact, extraverts are associated with traits such as being energetic, assertiveness, activeness, gregariousness, positive emotions, optimism, and acceptance of greater risk.

Flexible people are curious on both inner world and the outer world and their life is rich in terms of experience. They are willing to accept new ideas and unconventional values and they experience positive and negative deeper and more than inflexible people. Men and women who score low on the flexibility, they tend to show
conventional behavior and keep their view. This people prefer familiar news things and their emotional responses are very limited. People with adaptability characteristics are essentially altruistic, sympathetic with others, and eager to help them. He believes that others have the same relationship with him. In contrast, such inadaptable person is self-centered, suspects the intention of others, and he prefers competition to cooperation.

Behavioral dimension represent the level that people observe the specified safety standards, pay attention to safety precautions, and use facilities and equipment provided for their health in their workplace. Therefore, considering the relationship between accountability and observing the infection control standards, it can be said that accountability represents responsibility of people against facilities and equipment of the organization and occupational responsibilities that they are undertaking in the organization. The person who is accountable is feeling sense of responsibility not only for organization facilities and equipment, but also for patients hospitalized and they do their best in this regard. In short, two major characteristics of ability to control impulses and tendencies and applying the plan in the behavior should be considered to achieve the objectives in the accountability indicator. After training on these four personality characteristics, it should be attempted that the nurses with such characteristics to be identified. Considering the number of people who do not use this characteristic, promoting this characteristic leads to observing the standards.

The results of the present investigation showed significant relationship between attitude and infection control standards and as attitude of the majority of the nurses towards the observance of these standards have been positive and e few of them have negative attitude in this regard. As majority of people have positive attitude toward observing these standards leading to reduced mortality rates, failure of surgery, organ transplant rejection, failure of chemotherapy, and reduce costs imposed on patients and reduced mental and emotional stress in medical care of the hospitals, it is recommended that hospital authorities to pay attention to following cases in order to increase the positive attitude to observing the infection control standards:

Continuing training courses to be hold for nurses in order to strengthen the positive attitude of the nurses and to modify some wrong performances a result of wrong beliefs.

Considering the importance of the infection control and its risk for patients’ health, it is recommended that educational programs content to be developed for staff based on WHO standards so that mortality rate of patients caused by nosocomial infections to be reduced and personnel of the hospital to be aware of the most modern infection control methods.

It needs further reflection considering the fact that lower number of nurses believes washing the hands is not the best way to control infection in hospital, contaminated ground and table beside the patient bed have no direct relationship with the increased risk of infection, Infection Control Committee does not perform its task properly, there is no need to monitor staff carriers among the personnel, there is no need to allocate time to meet patients, there is no need to disinfect ECG electrodes after using them, there is no need for H1N1 flu vaccine, lack of performing the hepatitis for personnel normally, and lack of HIV testing for all personnel.

**Reference**


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