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# Effect of Educational Program on the “Quality of Life” of Family Caregivers of Patients Undergoing Hemodialysis



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## ABSTRACT

**Background:** The family caregivers of patients undergoing hemodialysis have a major role in the care of patients at home. The study results indicate that these caregivers face with multiple problems regarding responsibilities and issues arising from the care and treatment of the patients. These issues decrease their quality of lives. However, these caregivers are mostly neglected and no studies are available on the effectiveness of educational program on their quality of lives. Therefore, this study aimed to examine the effects of educational program on the quality of life of family caregivers of patients undergoing hemodialysis.

**Methods:** This research was a randomized controlled clinical trial, conducted on 76 family caregivers of patients undergoing hemodialysis referred to Shahid Hasheminejad, a medical and educational center in Tehran, Iran. The subjects were equally allocated into 2 groups of 38 patients. The caregivers of the patients who referred in even or odd days of the week were randomly assigned into the intervention and control groups, respectively. The intervention group received 4 training sessions on home care training program during 2 weeks, but the control group just received the routine training at the center. Both groups answered demographic information and “quality of life” (SF-36) questionnaires before and 6 weeks after the intervention. Then, the obtained data were analyzed in SPSS, 21. Descriptive statistics, the Chi-square and Fisher exact tests, as well as independent samples t-test, t-couple, and Mann-Whitney U test were used to analyze the data.

**Results:** The majority of caregivers (54%) were in the age range of 35-55 years. About 68.4% were female and 70% were married. No significant difference was found between the baseline mean scores of “quality of life” of the intervention and the control groups (45.95±14.94 vs. 45.08±11.02, P=0.775). However, the mean scores of quality of life of the intervention group increased at the end of the study and the 2 groups were significantly different in this regard (63.51±11.55 vs. 41.74±10.51, P<0.001).

**Conclusion:** The current study showed that home care training program can be effective in improving the quality of life and compatibility with the responsibilities of caregivers and change their lifestyle. Therefore, we suggest that managers of educational and medical center encourage their staffs to use such programs for improving the caregivers' health.

### Keywords:

Educational program,  
Quality of life, Family  
caregivers, Hemodialysis  
patients

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## 1. Background

Chronic renal failure (CRF), irreversible loss of kidney function, is one of the common illness that nowadays affected 2% to 3% of world population. More than 10% of Americans are affected by CRF. Thus, its incidence is 336.20 people per one million population in the year in America (United States Renal Data System 2014). The disease is increasing in developing countries so that its prevalence in Iran increased from 238 cases per million people in 2000 to 354 cases per million in 2006 (Aghighi et al. 2009).

The existing treatment methods for patients with CRF comprise hemodialysis, peritoneal dialysis, and kidney transplantation. In Iran, 47.7% all patients with CRF use hemodialysis. In this regard, a total of 25934 patients were under chronic hemodialysis in 2013 (Mousavi et al. 2014; Arefzadeh et al. 2009). Although the widespread availability of hemodialysis save and prolong the lives of thousands of patients with end-stage renal diseases (ESRD); However, these patients suffer from many problems and complications (Bağ & Mollaoglu 2010; Brunner et al. 2010).

ESRD creates significant changes in the lives of patients and their families. Frequent hemodialysis and its associated health problems will deplete the patients' energy (Ayoub & Hijjazi 2013). Patients undergoing hemodialysis suffer a high degree of disability, loss of functions, and dependency to the caregivers. Therefore, they need more support from the others and in this regard, the family of caregivers have the maximum share in the patient care (Belasco et al. 2006; Belasco & Sesso 2002).

Chronic illness of a family member and its economic and psychosocial consequences involve the family and affect their life styles. Studies show that family caregivers of patients with chronic illnesses experience physical and emotional distresses and psychological symptoms such as depression, anxiety, anger, despair, and feelings of guilt and shame (Mollaoglu 2006; Low et al. 2008). Furthermore, having the role of a caregiver in the family (an increasing phenomenon) affects the people's quality of lives and accordingly has become one of the community health problems. Therefore, these family caregivers are at risk of becoming ill and are sometimes called hidden patients (Mollaoglu 2006; Palma et al. 2012).

Caregiver's "quality of life" is a concept that includes health and performance, socio-economic conditions, as well as mental, emotional, and spiritual aspects of the

family (Glozman 2004). Changes in the quality of lives of caregivers are inevitable. These changes are due to the chronic nature of the disease and its long-term treatment, negative experiences, no support from healthcare system, physical and emotional stresses, and devoting the time and energy to provide the home care (Belasco et al. 2006; Keighobadi et al. 2013). Studies have shown that family caregivers have an exclusive role in caring for patients undergoing hemodialysis and their quality of lives decrease in this situation (Alvarez-Ude et al. 2004; Belasco et al. 2006; Shadaifat & Abdul Manaf 2012). Similarly, Habibzadeh et al. (2009) reported the low caregivers' "quality of life" in the all aspects. Regarding the importance of caregivers, identifying, assessing, and promoting factors of their quality of lives can be useful to improve the health of both caregivers and patients (Glozman 2004).

The hemodialysis patients refer to hemodialysis centers only for undergoing hemodialysis and maybe relieving its complications. Therefore, health professionals are responsible for patients' care in these centers.

However, at home, the patient's relatives undertake this role. Thus, they should have sufficient information about patient care and prevention of hemodialysis complications (Isenberg & Trisolini 2008). However, the studies have shown that these caregivers usually lack the information and skills related to patient care; They have no social support as well. With disease progression, patients become more disabled and caregivers are confronted with more complex caring needs. One of these needs is the information about home care of these patients (Hudson et al. 2008; Mollaoglu et al. 2013).

In the study of Isenberg and Trisolini, most of the families of the hemodialysis patients have reported the lack of sufficient information about the disease, control of symptoms, and patient care. They mostly wanted to know about the food and drug management of their patients (Isenberg & Trisolini 2008). In this regard, the research results of Belasco et al. (2006) shows that 70% of hemodialysis patients caregivers are facing with 2 major problems; the caring and treatment problems and conformity with their home caring responsibilities. Also, a review study indicates the necessity of educational interventions to support these caregivers (Tong et al. 2008).

With increase in the patients caring needs, caregivers' quality of lives decrease and they experience the limitations and changes in their lives such as daily activity limitation and impairment in working and familial life which can lead to anger, anxiety, and inability to cope

with their caring roles (Belasco et al. 2006; Aydede et al. 2014). However, the caregivers of hemodialysis patients are mostly neglected and few studies are available on home care training for these caregivers (Mollaoglu et al. 2013; Khorami Markani et al. 2015). Accordingly, this study aimed to examine the effect of educational program on the “quality of life” of family caregivers of patients undergoing hemodialysis.

## 2. Materials & Methods

This study was a controlled clinical trial, conducted on caregivers of hemodialysis patients referred to Shahid Hasheminejad educational and medical center in Tehran, Iran. The study was conducted since February to August 2015.

Inclusion criteria for the caregivers were as follows: Being a patient's first degree relative, having the responsibility for home care of the patient, willingness to participate in the study, being 18 years or older, having writing and reading literacy, lacking any known psychological and neurological disorder, lacking any severe family conflict, not being a healthcare worker. Inclusion criteria for the patients were as follows: Performing regular hemodialysis at least 3 times a week and for 3-4 hours in each session, having no history of kidney transplantation, and having a family caregiver to do home care.

Lack of appropriate cooperation by the caregiver, participation in similar training courses, occurrence of a family crisis (divorce, financial crisis, death of a first degree family member) during the study, subject's decision to withdraw from the study, absence of even one training session, and booking the patient in the kidney transplantation list composed the patient's exclusion criteria.

To determine the required sample size with the confidence level of 95% and the power analysis of 80%, and with assuming effectiveness home care training on the quality of life in family caregivers of patients undergoing hemodialysis and based on similar studies (Bahrami & Farzi 2014; Belgam et al. 2013),  $d$  and  $S$  were estimated as 5 and 7, respectively. By using the following formula.

$$N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \times 2S^2}{d^2}$$

The required sample size for each group was estimated as 32 caregivers and with regard to the possibility of sample decline, 20% was added to the above sample size. Finally, the determined sample size in each group was 38.

In this study, a 2-part instrument was used. The first part was a demographic questionnaire, including questions on the caregiver's and the patient's demographic data such as the caregiver's age, gender, marital status, education level, job, type of family relationship with the patient, financial status, his or her known physical illness, and the size of their family, and also the duration of the patient's disease and using regular hemodialysis, history of kidney transplantation, membership in Dialysis Association, the patient's ability to perform his/her own personal tasks, having an active insurance coverage and the type of insurance coverage. Short-form quality of life (SF-36) questionnaire was used as the second part of the study instrument.

Quality of life (SF-36) questionnaire is a universal standard criteria. Its shortened form contains 36 items divided into 3 levels: 1) questions, 2) eight scales with any combination of 2 to 10 questions as physical health (10), bodily pain (2), general health (6), physical role functioning (4), vitality (3), emotional role functioning (3), social functioning (2), mental health (6), and 3) two summary scales forming physical health components (physical function, bodily pain, general health, physical role functioning) and mental health components (vitality, emotional role functioning, social functioning, mental health).

Each of the questionnaire domains is proportional to the questions, measured with different options, including 2 options questions (yes, no) and 6 options (at all times, often, often, sometimes, sometimes, never). The mean scale is calculated separately and the results of each scale vary from 0 to 100. To calculate the questionnaire scores, total sum obtained from each subscales dividing by 8. The obtained number is between 0-100. The lowest score on this questionnaire is 0 and maximum score is 100. Zero is the worst case and the higher scores reflect the better quality of life (Ware Jr & Sherbourne 1992).

This scale was translated to Farsi by Montazeri et al. (2005) and its validity and reliability were confirmed through content validity and internal consistency method (0.70 to 0.85), also its Cronbach  $\alpha$  has been reported in the range of 0.70 to 0.90. Furthermore, in a preliminary study on the 30 caregivers of patients undergoing hemodialysis, the Cronbach  $\alpha$  was calculated as 0.82. However the data of preliminary study was not used in the final analysis. The content validity of the educational booklet and demographic questionnaire was confirmed by 10 nursing professors of Shahid Beheshti University of Medical Sciences, Tehran, Iran.

After approval of the study, the first researcher referred to Shahid Hasheminejad hemodialysis center. After tak-

ing the permission from director of this center, the study subjects were selected based on the inclusion criteria through file review and interviewing the patients. The researcher introduced herself, explained the study objectives, invited the patients to cooperate and finally enrolled the study patients after taking their informed consent.

Afterward, caregivers of the patients who referred in even or odd days of the week were randomly assigned into the intervention and control groups, respectively. Then, both groups completed the questionnaire of demographic information and quality of life (SF-36) before the intervention. The 38 caregivers in the intervention group were divided into 5 small subgroups of 5 to 8 patients, and each subgroup participated in 4 training sessions on home care training, held twice a week, in 2 consecutive weeks. Each session lasted for about 1 hour in the educational hall of the dialysis center. Each session consisted of a combination of a short PowerPoint facilitated lecture, group discussion, question and answering, and role playing. Also, the phone number of researcher was given to caregivers for consultations to solve the problems and answer the questions.

In the first session, the researcher after introducing herself, explained the training program, purpose of the intervention, importance of their cooperation and participation in all training sessions. Also, she explained about the ESRD, signs and symptoms of disease, etiology, its treatments, and importance of hemodialysis for patients. At the end of the first session, an educational booklet related to the issue was given to all participants to be read and exercised at home. In the second session, the home care training on how to perform and control specific activities such as the personal care for the patient (the food and pharmaceutical regime, bathing, hygiene observance, clothing, physical activities) was explained. In the third session, subjects were trained about weight control, blood pressure, and taking care of vascular access (fistula and catheter).

They were also told the importance of adjusting the hemodialysis sessions and monitoring patient's conditions. Finally, in the fourth session, the subjects were taught about the hemodialysis complications and take appropriate actions with regard to these complications. Then, by sharing the experiences of caregivers about patient care, their problems about the home care were assessed through group discussion and role playing. The control group just have received the routine training at the center. Similar to previous studies (Bahrami & Farzi 2014; Khanjari et al. 2014; Belgcam et al. 2013), 6 weeks after the last educational session, all subjects in the intervention and control groups were again responded to the study instrument. Then, statistical analysis was performed using SPSS ver-

sion 21. Descriptive statistics such as frequencies, percentage, mean and standard deviation were calculated. Also inferential statistics such as the Chi-square test, independent samples t, t-couple, Mann-Whitney and Fisher exact test were used to compare the variables. P-value less than 0.05 was considered significant in all tests.

This study was approved by the Ethics Committee of Iran University of Medical Sciences (grant No. 94-01-28-25834-110422) and was registered at Iranian registry for clinical trial under the registration code IRCT138809032769N1 (available at: <http://www.irct.ir/user.php?lan=fa>). Permissions were also sought from the authorities of the university and the Shahid Hasheminejad hemodialysis center. All participants were briefed about the study objectives and the voluntary nature of their participation. They all signed written informed consents, assured of anonymity and confidentiality of the data and were also reminded that they can withdraw from the study at any time. To observe ethics, the caregivers in the control group were also received the educational booklet after the last assessment.

### 3. Results

The majority of caregivers (77.6%) had no physical disorder. Most of their patients had a low or very low ability to perform their own personal tasks (79%), and they were using regular hemodialysis for more than 2 years (76.35%) with an insurance coverage.

No significant difference was found between the mean age of the intervention and the control groups ( $46.57 \pm 10.82$  vs.  $44.28 \pm 8.52$  y,  $P=0.269$ ). Also the results of Table 1 show that no significant difference was found between the 2 groups with regard to other demographic variables.

No significant difference was found between the baseline mean "quality of life" scores of the 2 groups before the intervention ( $P=0.039$ ). However, the mean "quality of life" score in the intervention group increased at the end of the study and the 2 groups were significantly different in this regard ( $P<0.001$ ). Degree of freedom (df) was different before and after the intervention as one of the subjects in intervention group did not answer a few questions at the baseline assessment, but this subject was not removed from the study (Table 2).

The mean scores of the different domains of "quality of life" were also compared between 2 groups. Before the intervention, no significant difference was observed between them. However, the mean scores of the intervention group increased in all domains (except in physical domain) after the intervention and ( $P\text{-value}<0.001$ ) (Table 3).

**Table 1.** Distribution of demographic variables in 2 groups of caregivers.

Variable	Group		Test result
	Control	Intervention	
<b>Age, year</b>			0.269*
<35	5(13.1)	7(18.4)	
35-45	15(39.5)	8(21.1)	
45-55	12(31.6)	12(31.6)	
>55	6(15.8)	11(28.9)	
<b>Gender</b>			0.99*
Female	26(68.4)	26(68.4)	
Male	12(31.6)	12(31.6)	
<b>Family relationship with patients</b>			0.341**
Child	17(45.9)	19(59.4)	
Spouse	11(29.7)	10(31.2)	
Sister/Brother	3(8.1)	0	
Father/Mother	6(16.2)	3(9.4)	
<b>Marital status</b>			0.132*
Single	6(15.8)	11(28.9)	
Married	27(71.1)	26(68.4)	
Divorced or widowed	5(13.1)	1(2.7)	
<b>Education level</b>			0.858*
Elementary school	4(10.5)	6(15.8)	
Intermediate school	8(21.1)	6(15.8)	
High school	15(39.5)	16(42.1)	
Academic	11(28.9)	10(26.3)	
<b>Job</b>			0.793*
Employed	14(36.9)	13(43.2)	
Unemployed	4(10.5)	6(15.8)	
Homemaker	20(52.6)	19(50)	
<b>Financial status</b>			0.785**
Unfavorable	4(10.5)	6(16.2)	
Relatively food	30(79)	28(75.7)	
Favorable	4(10.5)	3(8.1)	
<b>Duration of hemodialysis</b>			0.528**
Less than 1 month	2(5.2)	2(5.2)	
A few months to 1 year	6(15.8)	8(21.1)	
2 to 4 years	15(39.5)	9(23.7)	
Over 4 years	15(39.5)	19(50)	

Variable	Group		Test result
	Control	Intervention	
<b>Size of family</b>			0.116*
1	6(15.6)	11(28.9)	
2	12(31.6)	17(44.7)	
3	10(26.3)	4(10.5)	
≥4	10(26.3)	6(15.8)	
<b>Type of insurance</b>			0.763*
Social security insurance	24(66.7)	28(73.7)	
General health insurance	12(33.3)	10(26.3)	
<b>Membership in dialysis association</b>			0.086**
Yes	36(94.7)	30(81.1)	
No	2(5.3)	8(18.9)	

\*The Chi-square test was performed.

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\*\*The Fisher exact test was performed.

**Table 2.** Comparison of the mean scores of “quality of life” in the study groups before and after the intervention.

Groups	Control		Intervention		Results of independent t-test
	Mean	SD	Mean	SD	
Quality of life					
Baseline assessment	45.08	11.02	45.95	14.94	t=0.287, df=73, P-value=0.775
At the end of the study	41.74	10.51	63.51	11.55	t=8.596, df=74, P-value<0.001
Test results of the t-couple	t=2.315, df=37 P-value=0.039		t=6.855, df=36, P-value<0.001		

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#### 4. Discussion

The results of studies indicate the necessity to train and support for caregivers of patients undergoing hemodialysis to cope with their caring roles, the new conditions of lives, and reduce the pressure arising from the care and finally to improve their quality of lives (Belasco et al. 2006; Tong et al. 2013; Aydede et al. 2014). Therefore, in this study, for the first time, an educational program was administered to the caregivers that led to the improvement of their quality of life.

The caregiving role can be associated with the feelings of compassionate, love, and intimacy in relationships. It also helps caregivers find a meaning in their lives (Gauth-

ier et al. 2007). However, with the growing number of patients and their caring needs along with the caregivers' lack of knowledge and support, the quality of lives of caregivers can decrease (Alvarez-Ude et al. 2004).

Not surprisingly, the mean score of quality of life among caregivers of patients undergoing hemodialysis was lower than 50 at the start of the current study; that is representative of the low quality of life in these caregivers. Previous studies reported that the care of patients undergoing hemodialysis creates the feeling of pressure and negative effects on caregivers' quality of lives and stated that training and attention to caring needs in these caregivers could have pos-



**Table 3.** Comparison of the mean of different domains of quality of life in the study groups before and after the intervention.

Groups	Baseline assessment			At the end of the study		
	Control	Intervention	Test results	Control	Intervention	Test results
Domains	Mean(SD)	Mean(SD)		Mean(SD)	Mean(SD)	
Physical health	81.7(14.4)	74.7(23.6)	t=1.544, P-value=0.127	76(13.4)	79.3(17.4)	t=0.920, P-value=0.360
Physical role functioning	34.2(29.3)	33.5(35.2)	t=0.087, P-value=0.931	30.9(2.24)	61.2(2.2)	t=5.762, P-value<0.001
Bodily pain	53(18.4)	51.8(22.1)	t=0.269, P-value=0.788	45.2(18.4)	62.1(19)	t=3.917, P-value<0.001
General health	39(10)	43.2(13.6)	t=1.232, P-value=0.222	37.6(9.9)	51(11.9)	t=5.997, P-value<0.001
Vitality	32.6(10.5)	39.8(20.2)	t=1.955, P-value=0.054	26.3(10.9)	56.7(14.8)	t=5.321, P-value<0.001
Social functioning	48.3(8.8)	46.3(19.9)	t=0.559, P-value=0.578	46(11.2)	61.5(15.4)	t=10.154, P value<0.001
Emotional role functioning	25.4(28.4)	31.5(34.1)	t=0.840, P-value=0.404	28.9(20.7)	68.4(26.7)	t=7.181, P-value<0.001
Mental health	45.3(9.5)	46.9(15.2)	t=0.549, P-value=0.585	42.7(10.3)	67.7(13)	t=9.268, P-value<0.001
Physical health components	54.3(13.2)	51.5(16.2)	t=0.802, P-value=0.425	30.5(13.49)	66.0(13.6)	t=5.326 P-value<0.001
Mental health components	35.8(10.9)	40.3(17.1)	t=1.352, P-value=0.181	33.9(9.6)	60.9(12.1)	t=10.763, P-value<0.001

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itive results on their quality of lives (Belasco et al. 2006; Shadaifat & Abdul Manaf 2012).

These caregivers are mostly neglected so that studies showed that these caregivers are often deficient in knowledge and skills related to the patient care. With increase in the patients' caring needs, their quality of life will decrease and they will have problems in the adapting to their caring roles (Aydede et al. 2014; Belasco et al. 2006). Thus, these caregivers need to be trained in their caring roles to

alleviate the problems associated with patient care at home and improve their quality of lives (Belasco & Sesso 2002; Alvarez-Ude et al. 2004).

However, no interventional studies and just a few interventional studies are available to improve their quality of lives. In a study without control group in Turkey, Mollaoglu et al. (2013) investigated the effects of education on caregivers' burden and reported that education was effective in reducing caregivers' burden.

In another study, [Khorami Markani et al. \(2015\)](#) examined the effect of a family centered educational program on home care knowledge of these caregivers and reported its positive effects; however, they have not done any intervention on their quality of lives.

Regarding these results, for the first time we decided to evaluate the effectiveness of educational program on the quality of lives of caregivers for patients undergoing hemodialysis. The present study showed that home care training can improve their quality of lives. So that it increased the mean(SD) of caregivers' quality of lives from 45.9(14.9) to 63.5(11.5). Similar to the present research, several previous studies on caregivers of patients with cerebrovascular accident, cancer, diabetes, cardiac and mental disorders showed that training the caregivers can significantly increase their self-esteem, perceived health and quality of life, and eventually will increase the quality of patients' care ([Oupra et al. 2010](#); [Belgacem et al. 2013](#); [Grey et al. 2011](#); [Etemadifar et al. 2014](#); [Pahlavan-zadeh et al. 2010](#); [Bahrami & Farzi 2014](#)).

Also, the results of current study showed that these caregivers had a lower quality of lives in the domains of emotional role functioning, general health, mental health, and vitality. However, they were better in the physical health domain before the intervention. In this context, the results of a study in Spain showed that quality of lives of caregivers were significantly low in the aspects of social support, emotional, and mental health ([Rivera-Navarro et al. 2009](#)). [Alvarez-Ude et al. \(2004\)](#) also reported the low quality of life in the domains of physical, social, and emotional in the caregivers of patients undergoing hemodialysis. They reported that the caregivers with high burden had a lower "quality of life" scores in the domains of social support and mental health ([Alvarez-Ude et al. 2004](#)).

After the intervention, our results showed the highest increase of the "quality of life" scores in the domains of emotional health, mental health, vitality, and the social function. Similarly, the results of a study on caregivers of women with breast cancer showed that after the administration of the supportive educative program, their quality of lives in physical, emotional and mental domains significantly increased, but not in the social domain ([Bahrami & Farzi 2014](#)). Also in the present study, the caregivers had no consensus over the provided services by the Dialysis Association Society, therefore the lower score of social domain can be related to the insufficient social support of caregivers from the Dialysis Society.

The study of [Tong et al. \(2013\)](#) showed that besides knowledge and skills on coping with caring role, caregiv-

ers of hemodialysis patients need counseling, empathy, and psychological support. The results of previous studies showed that group discussions and sharing experiences among caregivers were effective in providing ways for giving and receiving empathy and psychological support ([Isenberg & Trisolini 2008](#); [Khanjari et al. 2014](#)).

Also in the current study besides group discussion, we used role playing to educate home care, and gave caregivers the researcher's phone number to ask any caring questions. It can be acknowledged that using the different methods of education such as role playing, group discussion, question and answer, and phone consultation was helpful in the better learning and practical application of the learned skills and improving the caregivers' quality of lives.

In conclusion, the current study showed the effectiveness of educational program on the quality of lives of family caregivers of patients undergoing hemodialysis. Presently, few programs are running on educating family caregivers in the health care system of Iran and caregivers of patients undergoing hemodialysis are almost ignored. Authorities and policymakers in the healthcare system are responsible to take strategies to integrate educational programs (such as the program implemented in the current study) into the country's healthcare system. Additionally, the importance of educating and empowering family caregivers should be emphasized in in-service and continuing nursing educations.

This study was conducted only on caregivers of patients in one dialysis center, the small sample size and relatively short time follow-up might also be considered as limitations to generalize the findings of this study. Therefore, replication of similar studies with larger sample sizes and longer periods of follow-up is recommended.

### Conflict of Interests

The authors declared no conflict of interests.

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# Effect of Kangaroo Mother Care on the Self-esteem of Mothers of Preterm Infants Hospitalized in the Neonatal Intensive Care Unit



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## ABSTRACT

**Background:** Preterm newborn birth is usually a challenge for the mother and the family. The mother feels inadequate for the care of her newborn and her self-esteem decreases. In this regard, this study aimed to determine the effect of Kangaroo Mother Care (KMC) on the self-esteem of mothers of preterm newborns.

**Methods:** This quasi-experimental study was conducted on 46 pairs of mothers and newborns admitted to neonatal intensive care unit (NICU) at the Social Security and Shahid Sadoughi hospitals of Yazd City, Iran. We used available sampling; samples were placed in 2 groups of intervention and control. In the intervention group, the mother held the newborn in an upright position at the middle of her chest to establish skin to skin contact. KMC was performed for 30 minutes each day after feeding, for a period of 4 weeks. However, the control group received the regular process of care from NICU. The mothers' self-esteem in both groups before and after KMC was evaluated and compared by Rosenberg questionnaire. Data analysis was performed by using the Fisher exact test, paired t test, and independent t-test.

**Results:** The mean(SD) self-esteem score of the mothers in the intervention group was 25.826(2.480) after the study. However, in the control group, it was 9.609(2.016) ( $P < 0.001$ ). The average self-esteem scores of mothers in both groups showed a significant difference prior to intervention ( $P = 0.014$ ); however, in the control group, it was reduced after performing routine nursing cares. Also a significant difference was observed between the self-esteem of mothers in the intervention group before and after intervention ( $P < 0.001$ ).

**Conclusion:** Kangaroo care increases the self-esteem of preterm infants' mothers. Therefore, we recommended it to be performed for preterm infants.

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## 1. Background

Preterm birth is among the most common issues that lead to the hospitalization of newborns in the neonatal intensive care units (NICUs) (Mirlashari, Rassouli & Gharebagh 2010). On most occasions, hospitalization of preterm newborn is inevitable. Furthermore, a long period hospitalization of newborns in NICU causes family members to experience a sense of loss and disturbance in the emotional relation of the mother with the newborn (Borim Nejad et al. 2011; Gooding 2010). Advances developed in the NICUs have increased the rate of survival for preterm newborns. Despite these advances, the birth of preterm and low weight newborns is the leading cause of death in the first year of life and 85% of newborns' deaths are due to preterm childbirth.

Therefore, attention to the psychological aspects of preterm childbirth and supporting parents seem important (Akbar Begloo, Valizadeh & Asadollahi 2009). Preterm newborns and their mothers are often separated when the child is born and physical contact is delayed (Lee & Bang 2011). This separation generates secretion of hormones in the newborn that affects the child's breathing, heart rate, and body temperature. Also, the birth of such newborns is considered a challenge for the family, especially the mother. Roles, activities, and resourcefulness of the family become imbalanced. Upon the birth of a preterm newborn, the mother feels inadequate for the care of her newborn. Also, the mother's self-esteem (self-trust and content and having positive opinion about one's self) decreases (Moore 2007; Backewell-Sachs & Gennaro 2004).

In the adverse events of life, people with low self-esteem experience more stress than those with high self-esteem. High self-esteem of mothers is also beneficial for their children (Shahedfar et al. 2009). Mothers of preterm babies feel discontent and lack self-trust. Studies have shown that mothers of premature infants are hesitant in seeing, touching, holding, and embracing their newborns, and thus a negative relationship develops between mother and child (Isler 2007).

Mothers with high self-esteem become less depressed and have a positive attitude toward their children and provide mental and emotional support for them. Mothers' low self-esteem is accompanied with maternal stress (Surkan et al. 2008). Also, low self-esteem is one of the effective factors in the development of depression after childbirth (Amankwaa, Pickler & Boonmee 2007). It has been shown that mothers who give birth to preterm infants ex-

perience more anxiety than mothers of healthy infants, and they are exposed to communication and financial problems and family stresses (Carter & Mulder 2007). Women as the principal nucleus in the family (women comprise 51% of the world population) assume basic role in the health of family members and the society at large. Thus, ensuring the mothers' health and happiness is one of the important health issues (Mohammad Yeganeh et al. 2008).

One of the intervention strategies for the care of preterm infants is the Kangaroo care which is recommended to mothers by the therapeutic group (Lightbody 2009; Moore, Anderson & Bergman 2008). According to the guidelines of WHO, in this type of care, the newborn, naked and wearing headwear or socks is placed between the mother's bosoms under her clothing (Blomqvist & Nyqvist 2010). Elements of Kangaroo care include skin to skin contact, emotional, physical and educational support, feeding only through breast, early release from hospital, and follow-up (Vakilian 2012).

Through complicated mechanisms, Kangaroo Mother Care (KMC) in addition to its positive effect on the physical growth of the newborn, occasions the newborn's body to conform to the mother's and develops mother-infant affection (Keshavarz & Bolbol Haghghi 2010a). Moreover, such care is an easy, safe, inexpensive, and reliable method for the newborn and the mother (Arzani et al. 2012). Studies conducted so far in this field have mostly focused on the effect of this type of care on various aspects of the newborn's health; However, a few of those studies have attended to its effect on the mother who is the primary caregiver to her newborn child. Furthermore, in our country no studies have been conducted to determine the effect of this type of intervention on the psychological aspects of mothers of preterm infants. Therefore, the present study was performed with the aim of examining the effect of KMC on the self-esteem of mothers of preterm infants hospitalized in NICUs.

## 2. Materials & Methods

This research is a quasi-experimental study conducted from January 2013 to June 2013 in the NICUs of Shahid Sadooghi and Social Security hospitals in Yazd, Iran. The sample volume was 23 pairs of mothers and newborns for both groups (Lee & Bang 2011). The sample size was calculated

$$n = \frac{2\sigma_a^2(Z_{1-\alpha/2} + Z_{1-\beta})^2}{\delta^2}$$

by reviewing similar studies and the Cochran's formula:

With reliability of %95 and statistical test power of %95. The inclusion criteria of mothers included non-employment in health centers, treatment centers, or rehabilitation centers; no history of mental-psychological illness or addiction; no history of the infants having been hospitalized in ICUs. In case the mothers were reluctant to continue the study, they had the right to leave the study at any time. The exclusion criteria of mothers comprised inability to stay with newborn, admission to study after their preterm babies were admitted to the study, and diagnosed with incurable diseases (such as duodenal atresia). The inclusion criteria for newborns included weight less than 2500 g, gestational age less than 37 weeks, and the lack of a birth defect, being singleton, and non-use of the mechanical ventilator machine. The exclusion criterion for infants was less than 4 weeks their duration of hospitalization.

After obtaining permission from the Ethics Committee of the University of Welfare and Rehabilitation Sciences, the researcher referred to the NICUs of said hospitals and by employing available sampling method selected mothers and newborns who possessed the inclusion criteria. It should be noted that the researcher acted upon sampling only after explaining the objectives of the study to the mothers. Also, mothers expressed their inclination to participants in the study and filled out their informed consent forms.

First, the sampling was made for the intervention group. For the purpose of preventing the exchange of information between the intervention and the control group, a time block was used. In this way, after the samples in the intervention group reached sufficient number, sampling was ceased for 4 weeks until the mothers participating in the intervention group were released. Then, sampling began for mothers in the control group, with the same method. In total, the sampling for the study took 5 and a half months.

Demographic survey questionnaire for mother, infant, and mothers' self-esteem was conducted through interview by the researcher in the sleeping room of mothers, away from the hubbub of the hospital. Prior to intervention, the researcher provided face to face training on KMC to the mothers (for 2 days accompanied with question and answer). Also a color booklet on KMC was prepared by the researcher and delivered to the mothers. Considering the heavy workloads in the morning shifts of the hospital, sampling was conducted in the afternoon after 4 PM.

Then, for 4 weeks the KMC was performed, daily in the afternoons, each day for 30 minutes after breastfeeding and changing diapers, while the mother wearing a gown and sitting on a chair in a comfortable position with an angle of 45 to 60 degrees. The KMC was performed in

this way that the newborn, naked and wearing a head-wear and diaper was placed inside the mother's gown and in direct contact with the mother's chest and abdomen skin (meanwhile, before performing the care, it was requested from the mothers to take a shower). Then, at the end of 4 weeks, the self-esteem questionnaire was filled out through interview by the researcher. Regarding the control group, they only received regular cares according to the hospital's policies. In the control group similar to the intervention group, the questionnaires were filled out under similar conditions before and after the intervention.

Study instruments included the questionnaire on mother's demographic information and general information on the newborn, and also the Rosenberg self-esteem scale (RSES). These questionnaires were filled out through interview with the mothers, and also by referral to the medical history of the mother. RSES was developed in 1965 by Dr Morris Rosenberg. It is a self-esteem measure widely used in social science research. The RSES is designed similar to social survey questionnaires. It is a 10-item Likert-type scale containing 10 general statements answered on a 4-point scale, from "strongly agree" to "agree", "disagree", and "strongly disagree". Five of the items have positively worded statements and 5 have negatively worded ones. The scale measures state self-esteem by asking the respondents to reflect on their current feelings. In this scale, scores were graded from 0 to 3 and the total score of 30 is the highest possible total score. Data were analyzed by using SPSS version 20, through performing independent t-test and paired t-test and the Fisher exact test. P-value less than 0.05 was considered significant.

### 3. Results

In this study, the mean age of the mothers in the intervention group was 26.270 years with a standard deviation of 5.706 and in the control group, it was 28.174 years with a standard deviation of 6.471. Fifteen (65.2%) mothers in the intervention group and 11 (47.8%) members of those in the control group had Caesarian section. Fourteen (60.9%) newborns in the intervention group and 15 (65.2%) in the control group were male. The average gestational age of the newborns in the intervention group was 29.478 weeks with standard deviation of 1.927 and in the control group, it was 28.826 weeks with standard deviation of 1.899.

In the intervention group, the average weight of the newborns at the time of birth was 1221.304 g with standard deviation of 269.832 and in the control group, it was 1096.522 g with standard deviation of 224.481. The samples in both groups, with regard to confounding variables of gender, gestational age, age of the newborn at the start of intervention, weight at the time of birth, type of delivery, mother's

**Table 1.** Comparing the demographic characteristics of mothers of preterm infants hospitalized in the intervention and control groups.

Group Variants	Components	Intervention		Control		Total		P-value
		No.	%	No.	%	No.	%	
Mother's education	Below diploma	8	34.8	12	52.2	20	43.5	0.327
	Diploma	12	52.2	6	26.1	18	39.1	
	Associate degree	1	4.3	2	8.7	3	6.5	
	Bachelor's degree		8.7	3	13	5	10.9	
Mother's occupation	Housewife	23	100	21	91.3	44	95.7	0.489
	Employed	0	0	2	8.7	2	4.3	
Number of abortions	0	17	73.9	16	69.6	33	71.7	0.857
	1	4	17.4	6	26.1	10	21.7	
	2	1	4.3	0	4.3	2	4.3	
	≥3	1	4.3	1	0	1	2.2	
Multigravidas	First child	15	65.2	12	52.2	27	58.7	0.361
	Second child	6	26.1	5	21.7	11	23.9	
	Third child or more	2	8.7	6	26.1	8	17.4	
Deceased child	Yes	3	13	3	13	6	13	1.000
	No	20	87	20	87	40	87	

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**Table 2.** Comparing self-esteem of hospitalized mothers of preterm infants, before and after intervention between 2 groups of intervention and control.

Date Group	Before intervention		After intervention		(P-value) Paired t-test
	Mean	SD	Mean	SD	
Intervention	13.348	1.968	25.826	2.480	<0.001
Control	11.913	1.832	9.609	2.016	<0.001
(P-value) Independent t-test	0.014		<0.001		

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educational level, the parents' occupation, and so on did not have any significant differences (Table 1).

### Test results

The paired t-test showed that the mothers' mean score in the intervention group increased after conclusion of KMC as compared to before its performing ( $P < 0.05$ ). Also, the average self-esteem of mothers in the control group before and after intervention showed a significant statistical difference. With regard to conventional nursing care, after doing the regular nursing care, the self-esteem of mothers reduced as compared to before intervention (Table 2).

Result of independent t test showed that the average score of the mothers' self-esteem in the intervention group after performing the KMC increased as compared to the control group ( $P < 0.05$ ). The average self-esteem

of mothers in the intervention group and the control group before intervention had significant statistical difference ( $P = 0.014$ ) (Table 3).

## 4. Discussion

Present study showed that the average self-esteem of mothers in the intervention group who performed KMC and played an active role in the care of their newborns was higher than the mothers in the control group, i.e. KMC increased the self-esteem of mothers. Jihye L and Kyung Sook (2011) also reached similar conclusions in their own study, stating that after carrying out Kangaroo care, the self-esteem of mothers in the intervention group increased as compared with that in the control group (Lee & Bang 2011). KMC is recommended as a necessary therapeutic method to promote growth and development of preterm infants, especially their brain development (Ludington-



Hoe 2013). Blomqvist and Nyqvist (2010) conducted a study entitled “Swedish mothers’ experience of continuous Kangaroo Mother Care”. This study showed that mothers considered this model of care as appropriate and have a positive opinion about it. They also stated that this type of mother care provided the support and help they needed. By performing this type of care, they felt calm and secure. Moreover, they expressed that they and their spouses would like to continue KMC at home. The results of the present research were in line with the above mentioned study (Blomqvist & Nyqvist 2010).

In the current research, during KMC where the researcher was present, the mothers acknowledged that this method is calming and reduces their stress and increases their independence and effectiveness. Therefore, they welcomed this method, and even they asked several questions from the researcher during the care and received sufficient information on how to continue this method at home.

Mohammadzadeh and colleagues (2011) conducted a study in Mashhad, Iran entitled “Advantages of Kangaroo Mother Care on newborns weighing less than 2000 grams”. In this study, they attended to the self-confidence of mothers and the duration of hospitalization of the newborns in the group receiving conventional care. Results of their study showed that the self-confidence of the intervention group was more than that of the control group, and also a reduction of 10 days was achieved for hospitalization of these newborns. They recommended that KMC be performed in the care of low weight newborns. In fact, parents who spend more time with their newborns, as compared with nurses who have the responsibility to simultaneously care for several newborns, would have more of an occasion to interpret their newborns’ discomfort symptoms and their other needs (Mohammadzadeh et al. 2011).

In a study conducted by Keshavarz and colleagues, the situational anxiety of mothers hospitalized in the Cesarean ward was examined. In the intervention group, skin to skin contact was carried out for 30 minutes. Results of the study showed that the level of mothers’ anxiety was significantly lower than that level in the control group. According to the results of this study, researchers stated that the need to use skin to skin contact between the mother and the newborn in the wards after childbirth, especially after Caesarian section, was obvious (Keshavarz et al. 2011). Results of the present study also were consistent with the above study.

Keshavarz and Bolbol Haghighi evaluated the effect of KMC on the level of pain of mothers who have delivered

their child through Caesarean section. They observed that the level of pain of these mothers after Caesarean section was less than those in the control group (Keshavarz & Bolbol Haghighi 2010b). Considering that most of the studies conducted on KMC were about its effects on the newborns and few studies exist on its effects on mothers, therefore, the results of the present study conformed to the said research.

In conclusion, training and recommending the performance of KMC to mothers, especially those with preterm newborns, can increase mothers’ self-esteem, and consequently it will also be effective in the care of these vulnerable newborns. Because, this type of care does not require any especial costs and equipments, we recommend that responsible authorities provide the conditions, facilities, and supports for mothers and the medical staff of NICUs so that this type of care can be performed.

### Conflict of Interests

The authors declared no conflict of interests.

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# Needle-Stick, Sharp Injuries, and Its Related Factors among Nurses of Imam Reza Hospital, Kermanshah, Iran



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## ABSTRACT

**Background:** Nurses are at risk of injuries caused by sharp instruments in hospitals. The objective of this study was to investigate the frequency of injuries due to sharp instruments and its relevant factors among nurses of Imam Reza Hospital, Kermanshah, Iran.

**Methods:** This descriptive-analytic study was conducted on 258 nurses working at Imam Reza Hospital of Kermanshah, Iran, in 2013. The data collection measure was a researcher-made questionnaire, which its validity and reliability were verified. The obtained data were entered into SPSS, version 16 and were analyzed using the Chi-squared and ANOVA test at the significance level of  $P < 0.05$ .

**Results:** According to the findings, 73.3%(n=191) of nurses were exposed to sharp injuries at workplace. About 41.8% of cases occurred during the first year of nursing. Major injuries were caused by needle-sticks (73.3%) and then IV catheter (42.4%). About 43.5% of the observed injuries occurred while trying to recap the needle-sticks. Also, 38.52% of injured nurses performed the tests after injury screening, while 48.7% did nothing after being injured.

**Conclusion:** With regard to the findings of this study, human and environmental factors are effective on these exposures and environmental factors are much effective than human factors. It seems necessary to train the personnel, observe general precautions, and change wrong behaviors namely needle re-capping.

## Keywords:

Needle stick, Sharps injuries, Nurses, Iran

## 1. Background

**N**urses, physicians, and other healthcare workers are highly exposed to needle-stick and sharp injuries. Such injuries transfer some pathogens such as (human immuno-

deficiency virus) HIV, Hepatitis B virus (HBV), and Hepatitis C virus (HCV) (Meyer, Chuard & Regamey 2005; Moro et al. 2007; Martins et al. 2012). Approximately, 66000 cases of HBV, 1600 cases of HCV, and 1000 cases of HIV might occur worldwide among healthcare work-

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ers through their exposure to needle-sticks (Moro et al. 2007).

HBV is stable in dried blood for at least 7 days and HCV for at least 16 months. Thus, such pathogens can be transferred by sharp injuries (Costigliola et al. 2012). The results of some epidemiological studies show that sharp injuries contamination is prevalent in developing countries. About 600-800 thousands cases of needle-stick injuries occurred among healthcare workers (Siddique et al. 2008; Gholami et al. 2010). It is estimated that infectious diseases due to sharp injuries cost about \$ 1 million per person but the cost of preventing injuries is about \$ 3000 per person (Dement et al. 2004).

Despite much emphasis on the prevention of sharp injuries at work, they are among the potential risks for healthcare workers (Nagao et al. 2007). Annually, 100000 healthcare workers are exposed to contaminated arterial catheters (Moro et al. 2007). All healthcare workers, including physicians, dentists, nurses, lab technicians are exposed to sharp injuries (Alamgir et al. 2008). Among all medical workers in hospitals, nurses are more exposed to HIV, HBV, and HCV due to frequent injections and direct contact with fluids of patients. According to the studies in Europe regarding sharp injuries among healthcare workers, the majority of nurses (91%) are at risk (Ayranci & Kosgeroglu 2004).

Numerous patients, shortage of nursing staffs, and heavy workload are the causes that increase the sharp injury contamination risk among nurses (Perry, Parker & Jagger 2005). Haddadi, Afhami and Karbakhsh (2007) showed that 43.4% of staffs were exposed to HIV, HBV, and HCV one year before the study and nurses were in the majority group (Haddadi, Afhami & Karbakhsh 2007). Bijani, Sotudeh Manesh and Mohammadi (2011) reported that in one year, of 172 nurses working in Boalisina Hospital, 55 nurses were exposed to sharp injuries. The activities most related to sharp injuries include injection, medication, venipuncture, and contact with the fluid of patient (Martins et al. 2012).

Improvement of work condition can reduce the increasing risk of sharp injury among nurses (Clarkes, Sloane & Aiken 2002). In addition, some measurements such as at-service training, work safety, lower work shifts, and no injection during fatigue of staff can reduce sharp injury contamination in hospitals (Trim et al. 2003; Azar-Cavanagh, Burdt & Green-McKenzie 2007; Smith et al. 2006a). As B hepatitis vaccination is the only way to prevent sharp injuries contamination, vaccination of medical group, especially nurses is of great importance

(Bijani, Sotudeh Manesh & Mohammadi 2011). In the study done by Mohammad Nejad et al. (2009) in Imam Khomeini Hospital in Tehran (2009), sharp injuries was 47.05%, 82.4% of nurses vaccinated against hepatitis. After sharp injury, 96.9% of nurses washed their hands and 12.5% took drug against HIV.

Hospital accidents are of great importance due to their great life, financial, and social damages. The first step to improve preventive measurements is recognition of effective factors on their occurrence. As the sharp injury risk is common among nurses, determining frequency and the causes of sharp injuries can lead to taking measures to reduce contamination risk. The objective of the study was to determine the frequency of sharp injuries and relevant factors among nurses in Imam Reza Hospital in Kermanshah, Iran, in 2012 and evaluate their performance during these injuries.

## 2. Materials & Methods

The study method was a descriptive-analytic and cross sectional design. It was conducted in Imam Reza Hospital affiliated to University of Kermanshah Medical Sciences, Kermanshah, Iran, in 2012. The researchers referred to all clinical units of Imam Reza Hospital as the greatest health educational center in the west of Iran. A total of 258 nurses were chosen as study sample. For data collection, a researcher-made questionnaire in 3 parts was designed. The first part consisted of 9 items on demographic data, the second part with 15 items on exposure to sharp injury, and the third part with 7 items about risky factors. The questionnaire validity was verified by content validity through the evaluation of texts and approval of experts. Its reliability was 76.8% by test-retest method after completing the questionnaires by 16 nurses.

In this study, some personal questions were asked, so some subjects may not respond to some questions. To solve this problem, the subjects were offered required explanations and assured that the information was confidential and there was no abuse of their responses. The inclusion criteria were working in Imam Reza Hospital during the study. The exclusion criteria comprised not responding the questions or delivering incomplete questionnaires. The data entered into SPSS, version 16 and were analyzed using the Chi-square and ANOVA test at the significance level of  $P < 0.05$ .

## 3. Results

The results showed that of 258 participants, 203(78.4%) were females and 56(21.6%) were males. The mean(SD)

**Table 1.** Relationship between demographic variables and needle-stick or other sharp injuries among nurses.

Effective factors on injuries		Injured n (%) or M (SD)	Non-injured n (%) or M (SD)	Total	P-value
Age		32.42(6.09)	32.31(6.07)	31.99±6.05	0.614
Gender	Female	156(76.8)	47(23.2)	203(100)	0.025
	Male	35(62.5)	21(37.5)	5(100)	
Marital status	Single	80(74.8)	27(25.2)	107(100)	0.434
	Married	111(73)	41(27)	152(100)	
Degree	Associate	0(0)	2(100)	2(100)	0.057
	BSc	181(75.5)	62(25.5)	243(100)	
	MSc	10(71.4)	4(28.6)	14(100)	
Work place ward	Internal	57(73.1)	21(26.9)	78(100)	0.141
	Surgery	47(85.5)	8(14.5)	55(100)	
	ICU	60(68.2)	28(31.8)	88(100)	
	Emergency and operation	27(71.1)	11(28.9)	38(100)	
Position	Head nurse	9(69.2)	4(30.8)	13(100)	0.103
	Staff nurse	7(50)	7(50)	14(100)	
	Nurse	175(75.4)	57(24.6)	232(100)	
Clinical experience		8.41(6.09)	32.42(6.49)	32.42(6.09)	0.874

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**Table 2.** Relative and absolute frequency distribution of samples based on the causes of not reporting injury to supervisor or infection control expert.

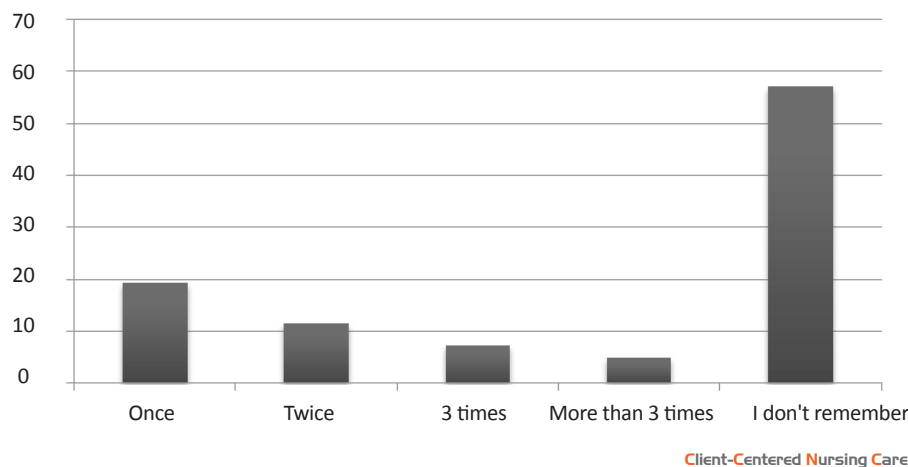
Statistical index	Causes of not reporting injury	F	
		n	%
	I was not aware of reporting method.	6	7.5
	I didn't know to whom I report?	8	10
	I was not aware of the significance of reporting.	8	10
	I was not sure about the injury significance.	21	26.3
	I had no time to follow the injury.	25	31.3
	I didn't think, serious risk exists.	31	38.8
	There was no person or place to report.	9	11.3
	Reporting was useless.	17	21.3

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**Table 3.** Relative and absolute frequency distribution of subjects in terms of injury factor.

Statistical index	Injury factor	F	
		n	%
	Needle-stick	140	73.3
	Angiocatheter	81	42.4
	Blade	9	4.7
	Stitch needle	15	7.9
	Others	5	2.6

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**Figure 1.** Relative frequency distribution of subjects in terms of frequency of sharp injuries in the past year of study.

age of participants was 32.31, their mean(SD) clinical work experience was 8.45(5.79) years, and mean(SD) extra work was 82.47(48.42) hours in month. The majority of subjects were married (58.7%), had BA degree (93.8%), working in ICU (34%), with rotational shift (78.4%) (Table 1).

The majority of subjects (73.3%) were exposed to sharp injuries at work place. About 64%(n=166) of injuries occurred in the recent year, of which 19.3% experienced at least one exposure to sharp injuries at work place in the last year (Figure 1). The results showed that 62.2% of samples mentioned their first action after sharp injuries as “pressing the wound site”. About half of the subjects (48.7%) did nothing after sharp injuries at work place.

Regarding the relationship between demographic factors and injuries, there was only a significant association between the sharp injuries and gender ( $P=0.025$ ) and the number of injuries was higher among female nurses. In this study, it was shown that 43% of subjects did not report the sharp injuries to the supervisor or infection control staff. They stated the major cause of no report as “I didn’t think I was seriously in danger” (38.8%) (Table 2). In this study, nurses stated the major causes of injuries as needle-stick (73.3%) and then angiocatheter (42.4%) (Table 3).

#### 4. Discussion

The results of the present study showed that frequency of needle-stick and sharp injuries was 73.3%(n=191) among nurses of Imam Reza Hospital. Of which, 64%(n=166) occurred in the recent year. Frequency of these injuries was reported different in similar studies in Iran and

other countries. In the study of [Mohammad Nejad et al. \(2009\)](#) on nurses of Imam Khomeini Hospital in Tehran, 47.5%(n=32) of nurses were exposed to sharp injuries during their activities. In the study of [Nasiri et al. \(2005\)](#), 76.7% of healthcare workers were exposed to sharp injuries in the past year. In the study of [Bijani, Sotudeh Manesh and Mohammadi \(2011\)](#) on 172 nurses in Boalishina Hospital of Qazvin, the results showed that 32%(n=55) of them were exposed to sharp injuries in the past one year. In the study of [Ayranci and Kosgeroglu \(2004\)](#), 62.9% of nurses had reported sharp injuries at least once. According to a study by [Park et al. \(2008\)](#), nurses had experienced most of the injuries after physicians.

Nurses are exposed mostly to sharp injuries due to spending much time with patients, injection and invasive intervention for patients. In addition, extra work and frequent shifts can increase injury and based on complications of these injuries, training should be given to nurses to reduce these damages.

The present study showed that the mean(SD) age of the nurses was 32.31(6.07) years and 42.1% of them had clinical experience of 5-9 years. Also, the mean(SD) clinical experience of the subjects was 8.45(5.79) years. In similar studies, sharp injuries were prevalent among young and low experienced forces ([Haddadi, Afhami & Karbakhsh 2007](#); [Bijani, Sotudeh Manesh & Mohammadi 2011](#)). Presumably, giving clinical responsibilities to young staff and managerial positions to experienced personnel (and with fewer contacts with patients) are the causes of high prevalence of sharp injuries among young forces. This study showed that sharp injuries were higher among female nurses ( $P=0.025$ ). In other studies, there

was no significant association between injury and gender (Haddadi, Afhami & Karbakhsh 2007; Smith et al. 2006b; Bijani, Sotudeh Manesh & Mohammadi 2011). The causes of injuries in female forces are due to their lower physical ability, fatigue, anxiety, stress of work, and loss of concentration.

About 62.2% of subjects mentioned their first action after sharp injuries at work place as “pressing the wound site”. About half of the subjects (48.7%) performed no action after sharp injuries. The results of studies showed that pressing wound site to take out blood had no effect on infection (Koohestani, Baghcheghi & Rezayee et al. 2010). Thus, other methods as washing hands and prophylaxis treatments should be done to reduce contamination.

The present study showed that more than half of the subjects (57%) reported the injury to a supervisor or infection control staff and this was consistent with the results of Bijani, Sotudeh Manesh and Mohammadi (2011) study in Qazvin (60%). In the studies of Smith et al. (2006b) and Martins et al. (2012), a few staffs did not report sharp injuries because of unawareness, insignificance of injury cases, or the fear of being accused of having no clinical skill. In our study, many staffs reported injury cases due to the high cause of informing authorities, holding at-service training, and preventive or prophylaxis treatments.

In this study, the most important causes of not reporting were lack of risk perception (38.8%), no time for follow up (31.3%), not sure of injury significance (26.3%), and useless reporting (21.3%). In the studies done by Mohammad Nejad et al. (2009) and Azadi and Anoosheh (2007), the most important causes of lack of report were dissatisfaction with follow up, lack of knowledge of reporting process, lack of risk perception, and much work. This problem can be solved by training healthcare workers regarding correct reporting process and explanation of special importance of diagnosis and treatment.

In the present study, most of the injuries occurred during venipuncture (45%) and needle recapping (43.5%). The highest injury was due to needle stick (73.3%) and then angiocatheter (42.4%). These findings are consistent with the results of similar studies. In the study of Gholami et al. (2010), the major injuries was due to needle-stick (47.3%) and angiocatheter (19.9%). In the study of Vahedi et al. (2006), needle-stick created 43.7% and angiocatheter 35.3% of injuries. According to the study of Mohammad Nejad et al. (2009), the most common cause of injury was needle recapping (46.9%).

As nurses have much work in hospitals such as serum administration, antibiotic therapy, and intravenous treatments; This group is highly exposed to needle-stick injury. Also, high work load and resulting fatigue in work shifts can increase risk of injuries. In this study, only 38.2% of injured nurses performed the appropriate tests such as HBS Ag, HIV Ab, and HCV Ab, also 12.6% mentioned counselling with physicians, 8.9% received B hepatitis vaccination, 1.8% hyperimmunoglobulin, and 1% anti-HIV medication. Finally, about 48.7% did not perform any action.

The results showed that performance of majority of the nurses was not suitable regarding the first action after needle-stick injury. The first step was washing the hands with soap and water and normal saline in cases of mucosal contact with the patients. The studies show that pressing wound for bleeding does not decrease disease transmission risk and it also contaminates the environment (Sepkowitz 2000). Unfortunately, the results of study showed that in 47.8% of needle-stick injuries, nurses failed to do any action such as washing the wound site and following up sending tests to the patient. The educational and learning strategies should be changed in this regard. Raising awareness about the risk of needle-stick injury and contact with mucous can reduce the number of injuries and increase reporting cases.

In conclusion, the results of the present study showed that different factors were involved in sharp injuries and the most important factors included high work load, hastening, carelessness with needle-stick and sharp objects, as well as crowded environment. Thus, different human and environmental factors are implicated in these injuries and the share of environmental factors is higher. The prevention of this health risk should be on priority for authorities.

### Conflict of Interests

The authors declared no conflict of interests.

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# Consequences of Stigma in the Life of People with Mental Disorders: A Qualitative Research



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## ABSTRACT

**Background:** The stigma of mental disorder has destructive impacts on emotions, feelings, personal relationships, parenting, education, occupation, and house management of people with mental disorders. Understanding and awareness of the stigma consequences are important for the establishment and development of constructive relationships with people suffering from mental disorders as well as their care and treatment. This qualitative research aimed to explain the attitudes of people with mental disorder, the treatment team, and the patients' families towards the consequences of stigma in the life of people with mental disorder.

**Methods:** This study was conducted using a qualitative approach and content analysis method. Sixteen people (patients with mental disorder, their family members, psychiatrist, psychiatric nurse, social worker, legal expert) were selected from 3 psychiatric centers in Tehran by using targeted sampling method and were interviewed using semi-structured interviews until the data were saturated.

**Results:** Content analysis of the interviews showed that people with mental disorder experience the consequences of stigma as fear of stigma, self-blame, searching for a cause for the disorder, denial, avoiding psychiatric treatment, rejection, discrimination, and relapse.

**Conclusion:** The findings of this research can help the psychiatric team to make effective and targeted treatment decisions. Performing interventions to reduce stigma of mental disorder in society seems to be necessary.

### Keywords:

Qualitative research,  
Social stigma, Person  
with mental disorder

## 1. Background

**M**ental disorders affect a large number of people. Among 10 major causes of disability, 5 are related to psychiatric disorders (World Health Organization 2001) that are considerably prevalent.

Mental disorders affect approximately 30% of Americans annually (Hertling & Kessler 2006; Riddell & Haddian 2000). One out of 5 Americans suffers from some kind of mental disorders (World Health Organization 2002). In Iran, the prevalence of mental disorders is estimated to be 17.1% and is higher among middle-aged people (compared to other age groups), divorcees (compared to

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married and single people), urban residents, the illiterate, housewives, and the unemployed (Noorbala et al. 2011).

Stigma is a universal and complex phenomenon (Larsen & Lubkin 2009) that affects the psychosocial aspects of patient's life (Dwivedi 2008). Stigma is also related to social background and expresses in relationships. Therefore, stigma is considered a social construct through which society labels the patients and their families (Major & O'Brien 2005). This social construct distinguishes the individual and places him or her in a lower group than others (Pinfold et al. 2003). Although stigma has a wide range of aspects, its psychological consequences are more severe and difficult to deal with (Nguma 2010).

Stigma and its consequences for people with mental disorder create a special condition for them and can be considered a major concern of those with mental disorders (Dwivedi 2008; Major & O'Brien 2005; Pinfold et al. 2003; Nguma 2010). Thus, in people with mental disorder, stigma is a common and widespread phenomenon (Mak et al. 2007; Smith 2002; Crisp et al. 2000; Corrigan, Kerr & Knudsen 2005) that prevents people in society from having professional cooperation with people with mental disorders. They are even reluctant to rent their houses to these people or live together with them (Rusch, Angermeyer & Corrigan 2005; Corrigan et al. 2003).

Psychiatric nurses are members of the psychiatric team and play a significant role in giving psychological support to patients (Rusch, Angermeyer & Corrigan 2005). In fact, they not only take care of physical needs of the patients, but also help patients considerably with their confusions and psychological disorders. Psychiatric nursing stresses the establishment and development of "relationship therapy" (Corrigan et al. 2003). Relationship therapy is, in fact, a relationship between the patient and the nurse with the purpose of gaining information, understanding the patient's problems, and taking therapeutic measures. Furthermore, its main objective is to provide comfort and promote patients' feelings such as trust, confidence, and safety (Feldman & Crandall 2007).

Participants in this study considered the main cause of the "relapse" as discarding the psychiatric treatment due to the fear of stigma. In line with these findings, (Corrigan, Kerr & Knudsen 2005) mentioned 2 factors that decrease the effectiveness of psychiatric treatment in patients and consequently, relapse of the symptoms. First, refusing to follow up on the psychiatric treatment due to the fear of stigma and second, the "why try effect", which occurs when patients accept and internalize cliché beliefs and prejudices

of society about mental patients. Therefore, they disregard themselves as competent and efficient individuals and do not try to treat themselves.

In general, the findings of this study showed that while facing stigma, people with mental disorders experience mental struggles and emotional reactions such as fear, anxiety, low self-confidence, and the feeling of rejection, which direct their individual and social behaviors. These conditions can affect the process of treatment and care. It is important for the members of the psychiatric team, including psychiatric nurses, to understand these conditions and issues and to make effective and targeted therapeutic decisions based on the patients' needs. People with mental disorders face 2 problems; first, the direct effects of cognitive, emotional, and behavioral problems, which restrict the abilities and effective performance of the patient and second, social rejection, intrapersonal dissociation, and identity fracture, which are caused by the stigma of mental disorder (Feldman & Crandall 2007).

Stigma is a set of negative attitudes, beliefs, thought, and behaviors that lead to fear, rejecting others' favors, avoidance, and prejudice. These are serious problems and obstacles for patients with mental disorders to achieve life goals (Pinto-Foltz & Logston 2009). Patients with mental disorders experience 3 kinds of stigma; 1) emotional stigma or self-stigma, that is, the patient feels inadequate and defective; 2) stigma by family members who reject the patient; and 3) stigma by society which ends in discrimination between apparently healthy individuals and mental patients who are not fully accepted by the society.

Stigmatizing reduces self-confidence and leads to embarrassment and refusing to ask others for help and leads to social isolation (Shahveyis et al. 2007). In their social activities, people experiences discrimination due to stigma of mental disorder (Ahmadvand et al. 2010). Therefore, to avoid rejection and discrimination, these people may limit their social relationships to individuals who are either stigmatized like themselves or are aware of their being stigmatized and have accepted the conditions of their disorders (Tavakoli et al. 2006).

The pattern of stigma and discrimination differs in various countries depending on the culture, beliefs about mental disorders, and conceptualization (Knifton et al. 2010). In 2012, a research was conducted in Netherlands by Switaj et al. to study the frequency, types, and sources of stigma and discrimination in 422 patients with mental disorders. The results showed that individuals experience stigma on a daily basis and frequently at the workplace and in their interpersonal relationships. They

considered their colleagues, families, and society as the source of stigma (Switaj et al. 2012).

Lundberg et al. (2007) conducted a research on 200 mental patients to study the prevalence of rejection, discrimination, and humiliation. The results showed that people with mental disorder who had a better performance in society, had experienced lower levels of discrimination and humiliation and there was a relationship between the experience of rejection and performance, number of hospitalizations and contacting social services agencies (Lundberg et al. 2007).

In Iran, Sadeghi et al. (2003), in a cross-sectional and comparative study, compared the effects of stigma of mental disorder among 3 groups of families of schizophrenic, bipolar, and depressed patients. The data were collected using 34-item self-administered questionnaires. The findings of this research indicated that a considerable percentage of families of the patients participating in the study had been humiliated or discriminated as a result of stigma and also a feeling of shame due to reported mental disorder by most families (Sadeghi, Kaviani & Rezai 2003). In a similar study, Shahveisi et al. (2007) examined the effects of stigma of mental disorder in 2 groups of families of patients with schizophrenia and major depressive disorder without psychotic features and obtained similar results (Shahveyis et al. 2007).

Because of sociocultural differences between Iran and other countries and few studies conducted on the stigma of mental disorder, qualitative studies are required to explain the profound concepts in this field. Using qualitative research is a step towards meeting the need for interdisciplinary research on mental disorders. These studies help understand human phenomena with an emphasis on the social context (Parvizy, Ahmadi & Pourasadi 2011). In Iran, no qualitative research has ever conducted on the consequences of stigma in the life of people with mental disorder. Thus, this research sought to explain the attitudes of people with mental disorder, the treatment team, and the patients' families towards the consequences of stigma in the life of people with mental disorder.

## 2. Materials & Methods

This study was a qualitative content analysis conducted for 11 months. Participants were selected from 3 active psychiatric centers in Tehran, Iran, namely, Razi Educational Treatment Psychotherapy Center, Sina Consultation and Psychological Rehabilitation Center, and Aftab Society. The participants included 8 patients with mental disorder diagnosed by 2 psychiatrists and aware of their disorder, 5 members of

the treatment team (psychiatrist, psychiatric nurse, nurse, social worker, and an occupational therapist), a legal expert, and 2 family members and relatives of the patients who had sufficient experience with the stigma of mental disorder and volunteered to participate in the interviews.

Sampling method was purposive sampling and the data collection tool was semi-structured interview. Prior to each interview, the participants studied the written consent forms and then signed them. The questionnaire related to personal information of the participants (such as age, sex, occupation, and education) was separately completed. Then, general and open questions were asked and this process continued until the data were saturated. Participants were asked guiding questions for starting the conversation such as: "What comes to your mind first when you think of mental disorders?" or "How much does society care for people with mental disorder?" The verbal communications of the participants were recorded on tape and transcribed at the first opportunity along with nonverbal communications and were simultaneously codified and analyzed as much as possible.

To make the data acceptable and objective, the following methods were used: constant study and observation, spending sufficient time, good communications, using combined research methods (spatial and temporal methods), revisions by supervisors, and review of the manuscripts by participants.

Moral considerations were observed by obtaining written consent from participants as well as taking permission for recording their voice, ensuring confidentiality of their information, their right to withdraw from the research at any time, acquiring introduction letters, and following necessary legal procedures.

Analysis of qualitative content is one of the qualitative research methods. A method which, for over half a century, has simply maintained a combination of coding and qualitative research and has been able to bridge the gap between qualitative and quantitative research. Qualitative content analysis is a suitable method for investigating human phenomena and clarifying the meaning behind them. First, to understand the real meaning behind the interview manuscripts, the transcripts were studied carefully. Then, the collected data were analyzed into meaningful units or related statements and were compressed as much as possible. This process gradually became more and more abstract and continued until the main themes emerged (Graneim & Lundman 2004).

## 3. Results

Participants had the following demographic characteristics (Table 1). The following codes were obtained from

**Table 1.** Demographic characteristics of participants.

Variable	Characteristics	No.	%
Sex	Male	11	68.75
	Female	5	31.25
Age, y	22-37	7	43.75
	38-53	8	50
	54-69	1	6.25
Marital status	Married	7	43.75
	Single	9	56.25
Educational degree	Specialist	1	6.25
	MS	2	12.5
	BS	4	25
	Student	1	6.25
	Diploma	4	25
	Below diploma	4	25
Occupation	Psychiatrist	1	6.25
	Psychiatric nurse	1	6.25
	Nurse	1	6.25
	Occupational therapist	1	6.25
	Social worker	1	6.25
	Legal expert	1	6.25
	Student	1	6.25
	Unemployed patients	8	6.25
			50
Total	Participants	16	100

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analysis of the participants' opinions regarding the consequences of stigma in the life of the patients:

1. Fear of stigma
2. Self-blame
3. Searching for a cause of the disorder
4. Denial
5. Avoiding psychiatric treatment
6. Rejection and discrimination against the patient
7. Discriminatory treatment of the patient
8. Relapse of the disorder

### Fear of stigma

According to most participants, patients with mental disorders are afraid of speaking about their disorder to others. According to a patient, fear is a feeling that a patient has about society's change of attitude towards a mental patient. "... I fear people may change their behavior when I tell them that I am sick, that I am a mental patient... or if they find out that I have been hospitalized in a psychiatric hospital" (codes 641, 634, 633, 59 and 652).

### Searching for a cause of the disorder

According to the participants, sometimes people with mental disorders who experience stigma, try to find a cause for their disorder and ascribe their disorder to uncontrollable external factors that cause less stigma. In this regard, a legal expert stated: "[the patient] believes that his behavior is influenced by the behavior of the people around him. He even ascribes his behavior to social harms. He says that social pressures have put me in this situation..., My unemployment made me sick... Sometimes he blames his wife; he says my wife caused this. She put so much pressure on me that made me sick..., My brother caused this..., My colleagues made me sick..., I was healthy" (code 777).

Some other causes were "the will of God", "genetic factors", "romantic failure", and "fate and predestination" (codes 446, 301, 777, 54, and 554).

### Denial

Most of the participants believed that hiding the disorder and history of hospitalization is one of the strategies that patients choose while facing stigma. "... I hide my disorder... For example, I fear people might change their behavior when I tell them that I am sick, that I am a mental patient..., or if they find out that I have been

hospitalized in a mental hospital... they wonder why I have been in a mental hospital for 3 years and conclude that my disorder is chronic and that they cannot work with me. It is like an automatic signal that warns them to end their relationship with me”, said one of the mental patients (codes 620, 630, and 631).

“... Because of shame, all mental patients avoid other people so that no one finds out that they take medication for their mental disorder...”, said a person who had been a mental patient for 15 years (code 805).

Participants also spoke of the stigma of “hospitalization”. Therefore, they mentioned “hiding the fact that they have been hospitalized” as a way to avoid stigma, which is used by the patient and his or her relatives. A person with mental disorder spoke of hiding his disorder to find a low job: “... I will go to a service company to get a job. I think I can do those kind of jobs... I will say I have no history of mental disorder or hospitalization...” (code 806).

### Avoiding psychiatric treatment

According to most participants, visiting a psychiatric center for treatment is itself considered being stigmatized. Therefore, to avoid the stigma of mental disorder, both patients and their families avoid visiting psychiatrists or psychologists.

“When you offer families to give them consultation or if you say that it is okay for them to visit a psychiatrist, most of them get upset and may take it personally. It is mostly due to the stigma of mental disorder, because they fear they might be labeled”, stated a social worker (code 247).

A psychiatric nurse believed that this is due to stigma. “Stigma makes people avoid treatment. they fear the medication that is prescribed. They think to themselves that if they take the medication, people will think that I am a mental patient or they say to themselves or they think they are not mentally sick to need to take medication”, she said (codes 299, 294, and 300).

### Rejection and discrimination against the person with mental disorder

Most of the participants believed that “rejection” from society and sometimes even family is one of the consequences of the stigma of mental disorder. Father of a mental patient had a similar opinion. “Our society considers mental disorder as an abnormal phenomenon. Our culture had not accepted mental disorder yet”, he said (code 567).

Fear of rejection has led to hiding the patient from friends and relatives, reducing face-to-face or telephone

contacts with the patient, ignoring the patient and refusing to pay a visit to him at the hospital or the patient not being released from hospital.

“Rejection leads to isolation; Isolation leads to losing social status, which itself leads to decreased financial security. These are interconnected links”, a nurse said (code 408).

Another person stated: “No one gets close to these patients. People do not communicate with them. They are not aware of their positive characteristics” (code 682).

Discrimination (by family and society) against the person with mental disorder was frequently emphasized by the participants. Discrimination is observed in the form of lack of access to proper jobs, unsuccessful marriages, lack of good relationships with people, and deprivation from the basic rights. A social worker spoke of violation of mental patients’ rights in society: “I say these patients need more support. Can you believe that Mental Health Act has not been approved yet?” (codes 188-189).

A legal expert explained that, sometimes, when a law enforcement agency decrees that a patient should be under quarantine, the patient experiences stigma and is rejected by society. “A soon as he is put under quarantine and loses his guardianship, he is rejected by others who want to get rid of him. As they say, they isolate him. He is rejected by his family. No one marries his daughters or sons. No one travels with him or visits him. People reject him because they do not want to be disturbed. This is a violation of mental patients’ rights”, he said (code 767).

### Relapse of the disorder

The stigma of mental disorder prevents the individual from seeking and pursuing treatment. This situation leads to further social isolation. In this regard, a social worker stated: “... when they are isolated, they get cut off from the world, like a deserted island, they mind their own business... and this is a destructive factor which impedes treatment. When a person becomes more isolated, he loses his contact with others, the symptoms relapse and treatment is prolonged” (code 175). A person with mental disorder also considered lack of acceptance of a mental patient in society as a factor which deteriorates his condition. “A mental patient is not accepted by society and this deteriorates his condition,” he said (code 812).

## 4. Discussion

Based on the findings of the present research, stigma leads to negative effects, consequences, and unpleasant

experiences and sheds a dark shadow over the life of the people with mental disorders. Various studies indicate that different mental disorders lead to their specific stigma such as being dangerous, incurability, being blamed, and social distance (Knifton et al. 2010). Also, there is an association between negative symptoms of the disorder and its distance from society. These weak social skills and negative symptoms of the disorder cause stigma (Corrigan et al. 2003).

Based on the findings of this study, people with mental disorders are even stigmatized and rejected by their close relatives. The stigma of mental disorder can result in family instability, social rejection, and discrimination (Feldman & Crandall 2007). This condition is rooted in the culture of the society and negative attitudes towards mental patients.

Knifton believed that the pattern of stigma and discrimination is different in various countries depending on the culture, beliefs about mental disorders conceptualization (Knifton et al. 2010). Furthermore, cultural characteristics have a close association with mental disorders, seeking treatment, incidence of the disorders, their symptoms, and stigma (Tavakoli et al. 2006).

Patients with mental disorder are faced with 2 challenges. On the one hand, they have to deal with the conditions and disabilities caused by the disorder. On the other hand, the challenges of stigma are caused by misunderstandings about the disorders, which affects mental patients that determine the quality of their lives such as job opportunities (Corrigan et al. 2003). In this regard, delivering educational programs provided by the media with the aim of proper understanding of mental disorders can play a significant role in building culture and preventing mental patients' rejection.

People with mental disorders in this study spoke of discriminatory treatment of family and society. Studies show that most mental patients experience discriminatory behaviors and more than half of the people with severe mental disorders have reported the experience of discriminatory behaviors (Tavakoli et al. 2006). As a result of discrimination, which originates from misunderstanding of the patients, people with mental disorder experience further social isolation, which is itself the cause of other problems such as unemployment, lack of access to social facilities, healthcare and insurance problems (Sadeghy, Kaviani & Rezai 2003).

As a result of stigma, these patients lose their jobs and chances of marriage, and are even deprived of their most basic rights in life. McSwine believed that the reason

for this discrimination is the stigma of mental disorder, which is observed in social rules, medical insurance and policies related to mental patients, including allocation of funds to mental health issues (Shahveyis et al. 2007). However, according to the declaration of the World Federation of Mental Health, all mental patients must be treated like other patients and based on the same ethical and professional principles (Hojatiabed et al. 2010).

It seems that civil law is in favor of discrimination against these patients. By revising the law and observing ethical principles and religious teachings, which emphasize dignifying human beings and with the help of specialists in the field of psychiatry as well as approval of the Mental Health Act by the Islamic Consultative Assembly, major steps can be taken to preserve the dignity of people with mental disorder.

Participants in this study consider the main reason for the relapse of the disorder is avoiding psychiatric treatment due to fear of stigma. Pinto-Foltz and Logston (2009) reported that the use of mental health services and treatment of mental disorders was largely associated with stigma (Riddell & Haddian 2000). In line with these findings, Corrigan, Kerr and Knudsen (2005) believed that 2 factors reduced the effects of psychiatric treatment and consequently, led to lack of improvement of the patient. First, avoiding psychiatric treatment due to fear of stigma and second, the "why try effect", which occurs when patients accept and internalize cliché beliefs and prejudices of society about mental patients, and thus, disregard themselves as competent and efficient individuals and do not try to treat themselves (Tavakoli et al. 2006).

Thus, negative consequences of lack of diagnosis or treatment and management of the mental disorder lead to the relapse of the disorder, family instability, lack of work efficiency, and negative social effects (Hertling & Kessler 2006). In all the groups that were examined in terms of stigma, it was found that stigma has harmful effects on the mental patients; for instance, negative attitudes among personnel and psychiatrists towards mental patients decreases the use of healthcare services, which intensifies the symptoms of the disorder (Knifton et al. 2010). Thus, the relationships between the stigma of mental disorder and its effects on the personal and social life of the patients as well as the symptoms of the disorder can be imagined as the interconnected links in a chain, where any change in one link affects the whole chain.

One of the limitations of this research was obtaining non-homogeneous samples (in terms of age, sex, social status, etc.) in accordance with the inclusion criteria of

the research. Finding people who both have the experience of mental disorder and be willing to share their experience was difficult and time-consuming.

In conclusion, stigma in people with mental disorder has serious consequences which affect various aspects of their personal and family life. The damages and consequences of stigma are sometimes serious and irreparable. Education, social awareness and individual, family and social support for the patients and their families as well as public education can help reduce the stigma and its negative effects.

Functional research can be conducted to develop and implement strategies for removing the stigma of mental disorder in society. Also, identifying the effects of public interventions, education through media, involvement of family members and establishing self-help groups as well as support groups for identifying the problems caused by stigma and reducing stigma and its consequences seem to be helpful.

### Conflict of Interests

The authors declared no conflict of interests.

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# The Effect of Teaching Critical Thinking Skills on the Decision Making Style of Nursing Managers



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## ABSTRACT

**Background:** One of the main goals of nursing education is training them to provide proper medical services to patients as well as healthy people in the community and health centers using their knowledge and specific skills. This service requires nurses' critical thinking and effective learning. The purpose of this study was to determine the impact of critical thinking skills on decision making styles of nursing management.

**Methods:** This interventional study is of semi-experimental kind and conducted on 60 nursing managers (30 in each group of the samples). In the beginning of the study, California questionnaire of critical thinking scale was completed by the participants. The intervention group received critical thinking skills training for 8 sessions (4 theoretical sessions and 4 practical sessions). A week after the end of the last training session, the same questionnaires were completed by the participants.

**Results:** Prior to conducting the study, 2 groups were not significantly different regarding demographic variables. The mean score of critical thinking and decision making style of the control group was the same before and after intervention, but in the intervention group, the mean score increased.

**Conclusion:** Teaching critical thinking skills increases the level of critical thinking and the use of rational decision making style by nurses. Nurses' cognitive ability, especially their ability to process information and make decisions, is a major component of their performance and requires possession of critical thinking. Thus, universities of medical sciences are suggested to provide necessary support to allow the development of professional competencies, decision making, problem-solving, and self-sufficiency skills, which are influenced by the ability for critical thinking.

### Keywords:

Critical thinking,  
Decision making style,  
Nurse administrator

## 1. Background

The English word "critical thinking" is derived from the Greek word "critidos" meaning "question", which indicates the ability to ana-

lyze. Halpern considers critical thinking to be the proper use of cognitive skills that increase the possibility of achieving suitable results (Halpern, Roediger & Sternberg 2007). Levy considers critical thinking a systematic and active cognitive strategy, which is necessary for examining, studying,

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and understanding issues, solving problems, and decision making based on accurate reasons and valid evidence (Mazloomi, Naderian & Nahangi 2012). People must have the ability to analyze, assess, and judge the conditions of their lives in order to make important decisions. Critical thinking ability and skill allows the person to process the surrounding information, infer objectively, assess problems concretely, and make conclusions based on various types of information (Hosseini & Hosseini 2011; Neyestani & Emamverdi 2011).

In the discipline of nursing, critical thinking; as a vital component of performance, communication, problem-solving, and theoretical and conceptual understanding of task; constitutes the basic knowledge of this science. Accordingly, the professional nurses are expected to exhibit this type of thinking, which is considered a fundamental component of training, in the clinical environment (Nafeei 2007).

Nowadays, in the field of medical healthcare, nurses are facing with increasingly complex problems, which making decisions about them requires their critical thinking. Critical thinking increases the decision making ability of the nurses regarding the identification of patient's needs and the choice of the best nursing procedures (Sarhanghi et al. 2010). In other words, decision making always includes assessment and selection of one solution out of multiple solutions, each of them seems to be appropriate under certain circumstances (Alwani 2006).

There are 5 styles of decision-making, i.e. rational, intuitive, dependent, spontaneous, and avoidant styles. In the rational decision making style, a person is aware of all the solutions and knows the outcome of each decision and can arrange and organize the results of decision making in terms of priority (maximum benefit). Intuitive decision making style is the process of subconscious decision making, which is the result of gathered experiences. In the dependent decision making style, decision maker relies on the beliefs of others and has a passive role. Spontaneous decision making style suggests urgent conditions under which a person makes an immediate decision within minimum time without premeditation. In the avoidant decision making process, decision maker tends to avoid making any decisions as much as possible (Hadizadeh Moghaddam & Tehrani 2009).

Marilan in his definition of critical thinking in nursing wrote: "Critical thinking is a rational and inferential thinking about nursing problems (nursing diagnosis) with more than one solution". It helps us make proper decisions under conditions where our belief and performance are different. He believed that critical thinking helps nurses make right decisions

and judgments about the problems and issues related to the patients (Babamohammadi & Khalili 2004).

Critical thinking enables nurses to assess necessary information in critical conditions and differentiate between problems that require immediate measures and those do not, and by considering the possible results of each measure, make right decisions (Eslami Akbar & Moarefi 2010).

Nurses are important members of the healthcare system. Their knowledge, and skills can play a significant role in providing proper service to the patients (Alimohammadi & Dadkhah 2005).

Teaching medical and paramedical disciplines is one of the areas in which the authorities try hard to improve its quality. Furthermore, they consider critical thinking skills necessary to understand the disciplines of medical sciences (Gharib et al. 2009).

Today, many authors have stressed the nurses' need for critical thinking to use appropriate information and skilled decisions in providing care to patients. They believe that learning critical thinking skills is essential in making decisions for the nurses and their future profession (Lotfi, Hasankhani & Mokhtari 2010).

Critical thinking is so important that American Nurses Association considers it a compulsory criterion for faculties of nursing to grant degrees (Akhondzadeh, Ahmari Tehran & Abedini 2011).

The nurses' ability of critical thinking can directly affect patient's safety. Nurses should be able to detect changes in the patient's condition and carry out nursing interventions, anticipate, and precede the orders. This function requires the ability to think critically, solve problems, and communicate effectively (Fero et al. 2009).

Research has shown that about 4%-16.6% of patients admitted to hospitals in America, Australia, and Britain are permanently disabled or die due to errors of nurses and healthcare personnel, resulting from lack of appropriate decisions. However, a significant percentage of these damages are preventable (Paryad et al. 2011).

In the study by Javadi et al. aimed at determining the relationship between critical thinking and clinical decision of senior students of nursing at the School of Nursing and Midwifery, Guilan University of Medical Sciences, it was found that the majority of research participants (86%) had poor critical thinking (Paryad et al. 2011). The studies also showed that the majority of students (70%) had sys-

tematic analytical decision-making, 30% had analytical-intuitive decision making, and none of them had intuitive-interpretive decision making.

The results of a quasi-experimental pretest/posttest study conducted by Moattari et al. (2002) in Tabriz entitled “The Impact of Rethinking on Critical Thinking Skills of Nursing Students” show that the experimental group achieved a significant positive change in the field of inductive reasoning and total score of California critical thinking skills compared to before the intervention. Also, the difference of the means of both groups before and after the intervention using t-test confirmed an increase in the scores of the experimental group as compared to the control group ( $P=0.03$ ) (Moattari et al. 2002).

## 2. Materials & Methods

This study is a quasi-experimental intervention. The main hypothesis of the research was that teaching critical thinking skills increases the use of rational decision-making style by nurse managers. The research population consisted of Mofarah Hospital nursing managers. After obtaining permission from Tehran University of Welfare and Rehabilitation Sciences and obtaining informed consents from the participants, the study sample were selected using census method. The sample size in each group was 30 ( $n=60$ ). The inclusion criteria were having undergraduate or graduate degree in nursing, working in organizational posts as matron, supervisor, head nurse, or shift supervisor, willing to participate, and being physically and mentally prepared to answer the questions. Exclusion criteria consisted of retirement during the intervention, change of the workplace, withdrawal of the subjects from the study, incomplete response to questionnaires, or returning them during the study.

Each subject was randomly assigned into 2 groups of control and intervention using simple random sampling method. Setting of the study was Mofarah Hospital in Tehran. All participants were allowed to leave the study at any stage. By assigning a code to each participant, anonymity was taken into consideration. The intervention group received critical thinking skills training for 8 sessions (4 theoretical sessions and 4 practical sessions).

In the first 4 sessions, the theoretical foundation (extracted from books and databases) was taught to participants. It comprised generalities, definitions and concepts, principles and skills of critical thinking, objectives, features and indicators, its importance, advantages, and applications of these skills, obstacles and challenges and the strategies to achieve these skills and how to promote them. Presentation of theoretical material was in the lecture format, using

educational tools, and question and answer sessions. At the end of the session, the participants were asked to list 5 issues that required decision making for the next session.

In the fifth session, after group study and scoring the participants, the most important problem was selected and clarified. At the end of the session, participants were divided into 6 groups of 5 and were asked to gather information for the next session and analyze the problem and list its causes. In the sixth session, after the presentation of the causes, through group discussion, the most important cause was chosen and the participants were asked to consider the limitations, resources, time, and executive facilities to determine 3 solutions. In the seventh session, after assessment of the advantages and disadvantages of solutions, the best solution was selected. Selected solution was practically used for 2 weeks in units. In the eighth session, performance was evaluated using a checklist. Finally, a week after the intervention, posttest was taken from both groups.

Data were collected using 1) A demographic information questionnaire, 2) The standard California Questionnaire of Critical Thinking Skills Test; Form B (CCTSD), and 3) General decision-making styles questionnaire before and after intervention. All questionnaires were completed by participants in the research. To assess the critical thinking skills, CCTSD was used. This test includes 34 multiple choice questions and 5 subtests of analysis, inference, evaluation, inductive reasoning, and deductive reasoning. It takes 45 minutes to answer the questionnaire. One point is awarded for each correct answer.

Test respondents can receive a score between 0 and 34. Score 16 or higher indicates strong critical thinking and lower than that indicates poor critical thinking. Decision making style questionnaire is a self-report tool which has 25 statements. The subject should express his or her agreement or disagreement with any of the statements using a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). By comparing the scores of the subject in the subscales of diverse styles, his or her main style is identified. The subscale that has the highest score is the dominant style of the participant in decision-making. To obtain the score of each subscale, it is enough to add up the scores of all the statements related to that subscale.

### Statements related to each subscale are as follows

- Avoidant style: 6, 14, 19, 21, and 23;
- Spontaneous style: 8, 9, 15, 20, and 24;
- Dependent style: 2, 5, 10, and 22;

- Intuitive style: 1, 3, 12, 16, and 17;
- Rational style: 4, 7, 11, 13, and 25.

CCTSD has strong content validity because it has been presented based on the definition of critical thinking and developed by American Association of Philosophy and the University of California. Facione and Facione have reported the reliability of this test between 78.0 and 80.0 by using the Kuder-Richardson Formula 20. Khalili has also reported the reliability of CCTSD as 62.0.

Formal and content validity of this questionnaire was examined by the faculty of Social Welfare and Rehabilitation Sciences and Tarbiat Modarres universities, Tehran, Iran. After making the necessary changes, the questionnaire was distributed among 20 nurses to determine the reliability of the questionnaire. As a result, the Cronbach Coefficient  $\alpha$  was calculated as 63.0.

Statistical analysis was performed using SPSS-16. Indices such as frequency, mean and standard deviation were calculated regarding descriptive statistics. Owing to census sampling, the means and their differences were used to compare the intervention and control groups.

### 3. Results

Sixty nurses working at Mofarah Hospital were randomly assigned to the intervention and control group. In this study, there was no drop in subjects. The mean (SD) age of the intervention and control group were 37.60 (6.27) and 38.30 (6.99) years, respectively (Table 1). In the intervention group, 80%(n=24) of the participants were female and 20%(n=6) were male and in the control group,

76.6%(n=23) were female and 23.3%(n=7) were male. The Chi-square test for both groups showed that there was not a significant difference between 2 groups regarding demographic characteristics.

The results showed no relationship between age and style of decision-making, nor between age and critical thinking. There is also no difference between 2 sexes with regard to the style of decision making and critical thinking (Table 7). Comparison of the 2 groups of holders of bachelors and masters degrees with regard to the style of decision making and critical thinking showed no difference (Table 6); however, people with master’s degree have a higher critical thinking skills. Comparison of the style of decision making and critical thinking in groups with different work experience showed that only decision making style was associated with work experience and those who had work experience of 6-10 years had a higher score of rational decision making style (Table 4, 5).

The results showed that the difference between the mean score of rational decision making style in the intervention group increased by 3.1 (Table 2) while in the control group it increased by 0.5 (Table 3) that reflects the positive impact of training. The results showed that the mean score of critical thinking in the intervention group increased by 4.03 after the intervention which is due to the training (Table 4).

### 4. Discussion

In the present research, the impact of critical thinking skills on decision making styles of nursing managers at Mofarah Hospital was studied. The results showed that this training leads to increased use of rational decision making style as well as higher critical thinking score. In Zahednejad

**Table 1.** Comparison of age between 2 groups.

	Group	Mean	SD
Age, Y	Intervention	37.60	6.27
	Control	38.50	6.99

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**Table 2.** Comparison of the mean and difference of decision making style scores in the intervention group before and after intervention.

Decision making style	Mean score before intervention	Mean score after intervention	Difference
Avoidant	12.46	10.53	-1.93
Spontaneous	11.06	10.40	-0.66
Dependent	15.50	17.20	1.17
Intuitive	18.35	15.63	-2.99
Rational	19.10	22.20	3.1

Client-Centered Nursing Care

**Table 3.** Comparison of the mean and difference of decision making style scores in the control group before and after intervention.

Decision making style	Mean score before intervention	Mean score after intervention	Difference
Avoidant	10.30	10.13	-0.17
Spontaneous	10.93	11.66	0.73
Dependent	14.23	16.70	2.47
Intuitive	17.56	16.10	-1.46
Rational	18.60	19.10	0.5

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**Table 4.** Comparison of the mean and difference of critical thinking scores in the intervention group before and after intervention.

Aspects of critical thinking	Mean score before intervention	Mean score after intervention	Difference
Analysis	2.66	3.76	1.1
Evaluative	5.03	5.60	0.57
Inference	4.10	4.70	0.6
inductive reasoning	6.06	7.33	1.27
deductive reasoning	4.73	5.23	0.5
Total score	22.60	26.63	4.03

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**Table 5.** Comparison of the mean and difference of the mean scores of critical thinking in the control group before and after intervention.

Aspects of critical thinking	Mean score before intervention	Mean score after intervention	Difference
Analysis	3.03	2.70	0.33
Evaluative	4.33	5	0.67
Inference	2.93	3.73	0.8
inductive reasoning	5.83	5.80	-0.03
deductive reasoning	3.60	4.50	0.9
Total score	19.73	21.73	2

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**Table 6.** Comparison of the mean and difference in the score of decision-making style between the two groups of bachelor's degree and master's degree.

Variable	Degree	Mean	Difference of the two means
Avoidant style	BS	11.61	1.74
	MS	9.87	
Spontaneous style	BS	10.82	1.3
	MS	12.12	
Dependent style	BS	15.03	1.28
	MS	13.75	
Intuitive style	BS	18.25	1.50
	MS	16.75	
Rational style	BS	18.90	0.40
	MS	18.50	
Critical thinking	BS	20.40	5.72
	MS	26.12	

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**Table 7.** Correlation of the age and style of decision making and critical thinking.

	Age	Avoidant style	Spontaneous style	Dependent style	Intuitive style	Rational style
Avoidant style	0.03					
Spontaneous style	0.03	0.29				
Dependent style	0.07	0.43	0.14			
Intuitive style	0.12	0.16	0.26	0.001		
Rational style	0.08	-0.04	-0.04	-0.05	0.06	
Critical thinking	0.09	0.15	0.01	0.03	0.02	-0.02

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study, the impact of an active training method on critical thinking of nursing students in Lorestan Province, Iran was studied that led to an increase in their critical thinking score, which is consistent with the results of the present research.

Paryad et al. (2011) conducted a descriptive-correlational study entitled “The Relationship between Critical Thinking and Clinical Decision of Students of Nursing at Guilan University of Medical Sciences”, on 50 senior nursing students. The results showed that the majority of the studied subjects (64%) had an average score (first through seventh semester) of 14-17 and work experience. The majority of students (90%) had no experience of encounter with patients who had undergone Billroth 2 surgery in family and had the experience of encounter with patients during internship (90%). Regarding critical thinking score, the majority of subjects (86%) had weak critical thinking.

Regarding the scores of the subjects for the components of critical thinking, the results showed that the highest mean score of subjects belonged to deductive reasoning, and then to inductive reasoning, evaluation, inference, and analysis. In addition, results of the research regarding clinical decision making score showed that the majority of the subjects (88%) had a proper decision making. Results of the research regarding the relationship between demographic characteristics and critical thinking score indicated that there was only a significant relationship between the critical thinking score and the mean average of previous semesters ( $P=0.001$ ).

In addition, results showed no significant relationship between critical thinking score and clinical decision making. However, in the present study there was a relationship between critical thinking score and decision making style.

In conclusion, results of the research indicated that the score of rational decision making style increased in the posttest. Therefore, teaching critical thinking skills increases the use of rational decision making style by the nursing managers. Nurses' cognitive ability, especially their ability to process information and make decisions, is a major

component of their performance and requires possession of critical thinking. Thus, universities of medical sciences must provide necessary support in order to allow the development of professional competencies, and decision making, problem-solving, and self-sufficiency skills, which are influenced by the ability for critical thinking. Because, this issue is important for nurses to provide necessary support and decision making, problem-solving managers. Nurses recommended in this regard and the effective factors and strategies for improving critical thinking and directing nurses towards rational decision making must be investigated.

### Conflict of Interests

The authors declared no conflict of interests.

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# The Effect of Swedish Massage on Relieving Fatigue of Children with Acute Lymphoblastic Leukemia Undergoing Chemotherapy



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## ABSTRACT

**Background:** Fatigue is the most annoying side effect of cancer treatment in children who experience it from the time of diagnosis till conclusion of therapy. About 75% to 90% of children undergoing chemotherapy suffer from this complication. To relieve this problem, massage therapy is recommended which is the most widely applied adjuvant therapy. The purpose of this study was to determine the effect of Swedish massage on fatigue relieve in children aged 7-12 years suffering from acute lymphoblastic leukemia (ALL) who are undergoing chemotherapy at the Children's Medical Center of Tehran, Iran.

**Methods:** In this clinical trial, 50 children with ALL undergoing chemotherapy were assigned into 2 groups of intervention and control. First, the severity of fatigue in both groups was measured employing a child fatigue scale questionnaire. Then, in the intervention group, the Swedish massage with the effleurage technique was applied by the child's mother daily for 4 weeks. The fatigue in both groups was measured at the end of each week. The obtained data were analyzed, using descriptive and inferential statistics (repeated measures analysis).

**Results:** Indicated a significant difference in total score of quality of life and the mean score of fatigue between two groups after intervention ( $P < 0.001$ ). The mean score of fatigue intensity and total score of quality of life, had significant decrease in experimental group than control group after intervention.

**Conclusion:** Considering the results of this study, applying the Swedish massage by the mother as a supplemental and non-invasive intervention can be effective in reducing fatigue in children suffering from ALL who are undergoing chemotherapy.

## 1. Background

A

cute lymphoblastic leukemia (ALL) is the most common malignancy in children (Behrman, Kliegman & Jenson 2011) and ac-

counts for approximately 40% of all cases of malignant cancers in children under the age of 15 (Hockenberry, Wilson & Wong 2011). In leukemia, chemotherapy is considered the treatment of choice. It is widely used in children's cancers because children tolerate better the acute side effects of

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chemotherapy. Also, malignant illnesses in children respond better to chemotherapy as compared with adults (Besharat & Firoozi 2011).

Chemotherapy is an important treatment method, however, it causes serious side effects and in the meantime increases the costs of child's hospitalization (Perdikaris & Papadatou 2008). Fatigue is the most bothersome side effect of cancer treatment in children who experience it from the time of diagnosis till conclusion of therapy (Colling, Macdonald & Walton 2012). About 75% to 90% of children undergoing chemotherapy suffer from this side effect (De Nijis, Ros & Gripdonck 2008). Fatigue is fundamentally different from daily tiredness which is short term and is relieved by resting (Perdikaris et al. 2009). Cancer-related fatigue is severe and irritating and is not relieved by rest. It manifests itself with chronic exhaustion and reduction in physical and mental functions (Erikson et al. 2012).

Fatigue is a mental phenomenon (Chandwani et al. 2012) with multidimensional effects on child's functions, daily chores, social life, mental abilities, emotional state, and appetite. Therefore, its control and relieve is difficult (Falkenstein et al. 2011). New studies demonstrate that these patients repeatedly seek interventions (apart from medical clinics) to overcome medical complications. These interventions are called complementary or alternative medicine (Haun, Graham-Pole & Shortley 2009).

Massage therapy is the most widely used therapy in complementary medicine (Reif et al. 2013). It is easy to execute, risk free, non-invasive, and relatively inexpensive which makes it the most common treatment used in nursing (Yilmaz 2012). Also, it is the most common and widely used treatments for children suffering from cancer and among 5 most preferred therapies (Spichiger 2011). Massage therapy is mostly used to overcome the side effects of anti-cancer drugs, such as pain, nausea, and fatigue, as well as to improve the child's quality of life during the treatment (Adhami & Sadraee 2007). Swedish massage or classic massage has been the most common type of massage in the West and is considered the heart of educational programs on massage therapy (Batalha & Mota 2013).

## 2. Materials & Methods

This study is a clinical trial evaluated and compared 50 children aged 7-12 years suffering from ALL undergoing chemotherapy at Children's Medical Center of Tehran, Iran. First, all children with ALL who referred to the center were identified. Then, the severity of children's fatigue was measured through child fatigue scale questionnaire (CFS), and patients who received a score of 25 or higher were admitted

to the study and were randomly placed in 2 groups of intervention and control.

The children should have undergone at least 2 periods of chemotherapy in a 4–8 week cycle. The first session of massage therapy was carried out by the mother at the clinic under the supervision of the researcher, and was continued later at home, once a day for 20 minutes, for 4 weeks. Twenty minutes of Swedish massage, including massage of the back, arms and face was applied to the child by the mother who had received required training from the researcher whose scientific competence had been approved by professors and masters of the art of massage. Prior to the massage of any part of the child's body, the massage oil was applied and rubbed on the child's body. Next, the Swedish massage with effleurage technique was applied in the following way.

First, the child lies face down on a firm mattress and a soft padding is placed under the belly and knees of the child. In the beginning, the back is massaged from above the hips to the shoulders for 5 minutes. Then, standing on the right side of the child, the right leg from the ankle to the upper thigh is massaged for 3 minutes and then the left leg in the same way. Afterwards, the right arm from the wrist to the upper arm is massaged for 3 minutes. Then, standing on the left side of the child, the left arm is massaged, and finally, the child lies down on his back, and the mother massages the child's face for 3 minutes. During the massage, the palms of both hands slides on the surface of the skin without moving the deep muscles.

Throughout the massage, the child should feel a continuous, proportional, and uniform motion. The pressing of the hand during the massage should increase a little when massaging from a down point upwards. Also, when the hand returns back to the starting point, the pressing of the hand should decrease (the rubbing motion should always be from down towards the heart, upper thighs, and back of the child).

When massaging a location, the mother should keep the contact of her hand with the child's body because disruption of contact results in loss of child's trust and calmness. Also, quick, irregular and sudden motions must be avoided. These types of motions will cause cluttering of the child's nerves. The entire palm of mother's hands (and not only the fingertips) should be applied during the massage, and in this way more areas of the child's body receives the therapy. When the location of the massage is a small area of the body such as the face, the plump surface of the fingers and the thumb are used. During the massage, a very brief conversation is exchanged with the child and no type of music is played. The control group received the conventional cares and treatments but filled out the questionnaires at determined dates.

At the end of each week, fatigue was measured in both groups with the questionnaire on the child fatigue scale (CFS). The CFS questionnaire is used to examine changes in the fatigue of children aged 7-12 years suffering from cancer during the treatment period. This questionnaire was constructed in 1989 by pediatric expert Dr. Marilyn Hockenberry and contains 14 questions. In 2010, it was modified and changed by Hinds and colleagues, and its questions were reduced to 10 items. Furthermore, the validity of its items was assessed on 122 children between the ages of 7-12 who received anti-cancer treatment in 2011 by Khosravi through the content validity method (Khosravi 2012).

The Cronbach  $\alpha$  was used to measure its durability, and the Cronbach  $\alpha$  coefficient was calculated as 0.8. This questionnaire includes 10 items and each item is scored based on a 5-point Likert-type scale from "not at all" to "very much". The frequency of the scores was classified from 0 to 10 and their severity from 10 to 50. Higher scores indicate the higher severity of fatigue experienced by the child. In this study, the ranges of scores were classified as 10–23, 24–36, and 37–50.

Filling out the form would not take more than 5 minutes. During the intervention, the researcher contacted the child's home every other day to be ensured of carrying out exercises and answering any questions raised by the mother or the child. After data collection, SPSS version 16 was used to analysis data through descriptive statistics and analytical statistics methods. The repeated measures analysis was used to test the difference between the mean scores of fatigue severity. Repeated measures include the measures of a particular variable for each observation in several different situations. This measure is the extended mode of paired comparison test, in which a group is compared in several situations. The Ethics Committee of the university approved this research. Also, the study procedure was explained to the patients and their informed consents were taken and the confidentiality of their collected information was observed.

### 3. Results

Based on the results, the highest age frequency of studied children was 9 (40%) years in the control group and 12 (24%) years in the intervention group. About 64% of partici-

pants were male. Most participants in the study groups were the first born in their family (64% in the control group and 60% in the intervention group). Mothers of the most participants in both groups were high school graduates (44% in the control group and 52% in the intervention group) and housewives (80% in the control group and 88% in the intervention group). Fathers of most participants were high school graduates (48% in the control group and 44% in the intervention group) and were self-employed (52% in the control group and 76% in the intervention group). In general, the following results were found by performing repeated measures between 2 groups (Table 1).

- A significant statistical difference was observed between the pretest scores and the end of the first week scores ( $P<0.001$ ).
- No significant statistical difference was observed between the end of the first week and the end of the second week scores ( $P=114$ ).
- A significant statistical difference was observed between the end of the second week and the end of the third week scores ( $P<0.009$ ).
- A significant statistical difference was observed between the end of the third week and the end of the fourth week scores ( $P<0.039$ ).

Analysis of repeated measures data did not show significant statistical difference between the end of the first week and the end of the second week scores. This finding can be explained by the fact that fatigue reaches its highest point during the week after chemotherapy, and during that week massage therapy was not able to be effective. However, by continuing the massage for the subsequent weeks, fatigue gradually reduced. Our findings also showed that after intervention, the mean fatigue score in the intervention group showed significant reduction, while in the control group it increased ( $P<0.001$ ).

### 4. Discussion

Findings of the present study showed that after performing the Swedish massage, the severity of fatigue reduced in the intervention group, while in the control group it increased.

**Table 1.** Mean and standard deviation of fatigue pretest and posttest scores.

Group	Variable	No.	Pretest		Posttest	
			Mean	SD	Mean	SD
Intervention	Fatigue	25	29.40	3.66	21.48	3.88
Control	Fatigue	25	25.96	0.840	28.48	3.02

**Table 2.** Mean and standard deviation of fatigue test at the end of the first, second, and third week of intervention.

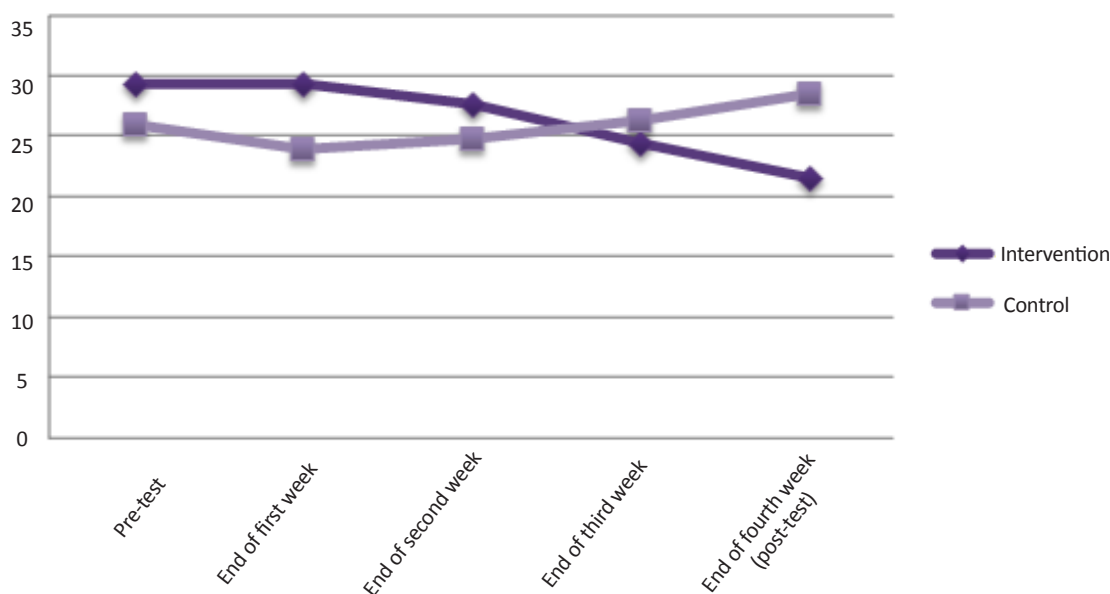
Group	Variable	No.	End of the first week		End of the second week		End of the third week	
			Mean	SD	Mean	SD	Mean	SD
Intervention	Fatigue	25	29.36	4.15	27.60	4.31	24.48	3.62
Control	Fatigue	25	23.84	2.44	24.68	3.22	26.20	3.13

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**Table 3.** Comparing the changes in severity of fatigue from before the intervention.

Fatigue source	Total squares	df	Mean square	F	P-value
Pretest until the end of first week	58.32	1	58.32	12.86	0.001
End of the first week till the end of the second week	10.58	1	10.58	2.59	0.114
End of the second week till the end of the third week	32.00	1	32.00	7.49	0.009
End of the third week till the end of the fourth week	6.48	1	6.48	4.50	0.039

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**Figure 1.** Comparison of fatigue severity between 2 groups of intervention and control, before intervention and at the end of the first, second, and third week after intervention.

Our findings are consistent with the results of the following studies. In the study conducted by Karagozoglu and Kahve in 2013, the effect of back massage on fatigue and anxiety of patients with cancer under chemotherapy were assessed in a hospital in Turkey. Result of the present study with regard to reduction of fatigue is consistent with Karagozoglu research, and this consistency is likely due to the similarity of the massage received (Swedish massage) by the patients. However, samples in their research

comprised individuals aged 41-60 years who were suffering from various forms of cancer and receiving only back massage by their nurses (Karagozoglu & Kahve 2013).

The study conducted by Khosravi in 2011 entitled “Examining the effect of Acupressure on Nausea, Vomiting, and Fatigue in School Age Children Suffering from Acute Lymphoblastic Leukemia Who are Undergoing Chemotherapy” was similar to our present study in terms of the study popula-

tion and instrument. Khosravi and colleagues concluded that a significant statistical difference was not observed immediately after intervention between the 2 groups of intervention and placebo, with regard to the severity of the fatigue. Such findings could likely be due to the fact that fatigue, like pain cannot be relieved or reduced quickly. Furthermore, fatigue during hospitalization days tends to increase, and its effect is multidimensional and affects patient's functions, daily chores, social life, mental abilities, emotional status, and appetite. Therefore, correct scheduling can be of utmost importance in determining the effect of complementary treatments (Khosravi 2012).

Likewise, Zick and colleagues (2011) conducted a study to examine the correct scheduling on the effectiveness of acupressure on fatigue. Their results showed that timely start of applying acupressure contributed significantly on its results on patients with cancer and concluded related treatments. According to the research, for achieving the highest effect of acupressure on the fatigue in participants, it is necessary to carry out 21 to 49 sessions of acupressure during a 7-week period, 3 times a week, on a daily basis. In fact, results of studies show that the more the number of acupressure sessions, the less becomes the fatigue. As regards the scheduling and timing, the Swedish massage was applied for 4 weeks and 20 minutes a day in our study, which was similar to the study of Zick and colleagues (Zick et al. 2011).

In view of the findings of the present study, we recommend that in addition to methods carried out in this study, the effectiveness of the Swedish massage and other techniques and methods of complementary medicine be studied and compared for reducing fatigue in children suffering from various types of malignancies. We hope that nurses teach this simple, inexpensive, and complication-free method to mothers of children with cancer.

### Conflict of Interests

The authors declared no conflict of interests.

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# Effect of Benson Relaxation on Fatigue of Nurses Working in Intensive Care Units



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## ABSTRACT

**Background:** Fatigue is one of the important factors in nursing performance because it affects the quality of care provided to the patients. In this regard, some complementary interventions such as Benson relaxation techniques may relieve fatigue. This study aimed to evaluate the effect of Benson relaxation on fatigue of nurses working in intensive care units.

**Methods:** This is an experimental study (pretest-posttest randomized with control group) conducted on 63 nurses working in intensive care units of Shahid Rajaei Cardiovascular, Medical and Research Center in Tehran, Iran. Participants were selected by stratified sampling based on wards and were randomly allocated in the intervention and control groups. Benson relaxation method was performed by nurses in the intervention group for 20 minutes twice a day with at least 6 hours interval between 2 sessions. The relaxation therapy was scheduled for 2 weeks. The data were collected via demographic and fatigue questionnaires. After data collection, the Chi-square test, independent t-test, Fisher exact test, and analysis of variance with repeated measures were performed by SPSS, version 21.

**Results:** The results showed that the mean(SD) of fatigue score in the intervention group before, 1, and 2 weeks after intervention were 4.73(0.97), 4.58(0.94), and 4.38(0.85), respectively. Two groups had significant differences in terms of fatigue as the mean fatigue score of the control group increased over time compared to that of the intervention group ( $P=0.002$ ). Also, there was a significant difference (it decreased) between the mean fatigue score of the nurses before the intervention and 2 weeks after the intervention. However, the mean of fatigue in the control group increased over time.

**Conclusion:** Implementation of Benson relaxation was associated with decreased fatigue of nurses in intensive care units. Therefore, we suggest that managers and authorities of health centers consider Benson relaxation method a part of fatigue reduction plans for nurses.

### Keywords:

Relaxation, Nurse,  
Fatigue

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## T 1. Background

Today, human resources, the most valuable capital in the organizations, encounter with many problems at work places. Organizational psychologists and management experts mostly focus on factors effective on increasing or decreasing human efficiency. They attempt to identify these factors, and use strategies to strengthen positive factors and weaken negative factors. Nurses with their crucial role in health service system can play important role on improving health care issues (Samadpour 2009). Thus, dealing with the problems affecting performance and productivity of nurses is of great importance (Salamzadeh, Mansori & Farid 2008).

Due to special nature of nursing profession in dealing with patients' pain, complications, and death on one hand and its rotational work shifts on the other hand, mental and physical health of nurses are at risk. All these factors can create physical and emotional problems such as depression, hopelessness, chronic fatigue, and low energy (Morse et al. 2012). Results of Senjeri et al. (2009) study showed that fatigue was one of the most common problems reported by nurses. Fatigue was associated with job injuries and highest fatigue was reported due to rotational shifts and these people had the highest reported chronic fatigue. Fatigue can lead to unsuitable behavior, provocation, avoiding work, pain, and lack of concentration (Adriaenssens et al. 2012), also indifference to patient, low self-confidence, job dissatisfaction, and intention to leave (Kuerer et al. 2007). The nurses with physical, mental, and emotional fatigue cannot take care of the patients properly. They feel incompetent in handling the patients and this leads to low self-confidence and failure (Yaghoobinia et al. 2005).

Intensive care units (ICUs) create much tension compared to other wards. These tensions can affect the staffs' mental health and performance in these wards (Norian, Parvin & Mehrabi 2010). According to Gholipour Baradari et al. (2012), fatigue like tension and anxiety was effective on the patient's safety. This shows the significance of dealing with this issue and taking suitable measures to reduce it (Raftopoulos, Charalambous & Talias 2012).

The significance of nurse fatigue lies in its harmful consequences. For example, many studies have shown that a strong association exists between nurse fatigue and making mistakes (Saremi & Falah 2013). Evaluation of tension, anxiety, and fatigue among nurses has shown that some of their causes can be controlled by health authorities and managers. However, some factors cannot be changed due to their nature (i.e. working with patients). Thus, fatigue can be reduced by emotional-oriented adjustment techniques as relaxation tech-

nique, music therapy, respiratory exercises, etc. And, some adjustments can be done in a person to relieve these tensions (Shahsavari et al. 2008; Hosseini et al. 2011; Memarian 2011).

Various techniques have been mentioned in different studies to prevent fatigue. Concentration method is an effective method to reduce fatigue and tension (Smeltzer et al. 2010). Another method is Benson relaxation. Introduced by Herbert Benson (1970), it is an easy method to teach to others (Monahan et al. 2007). In his study regarding various tension elimination techniques, 4 components are basic to all techniques of concentrative meditation: A quiet environment, a mental device, a passive attitude, and a comfortable position (Benson, Kotch & Crass 1997). Benson relaxation with its great advantages and easy implementation has no adverse effects and people can use it independently. The results of Shahriari et al. (2012) study showed that relaxation was effective on reducing depression, anxiety, and tension of mothers with mentally-retarded daughters. This method was already used in the reduction of fatigue of patients with chronic illnesses (Basiri Moghadam et al. 2013; Kushan et al. 2013). Regarding the Benson relaxation benefits and the significance of nurses' fatigue reduction, this study aimed to determine the effect of Benson relaxation on the fatigue of nurses working in ICUs.

## 2. Materials & Methods

This is an experimental study (pretest-posttest randomized control group). Stratified samples were selected based on wards and study samples were randomly allocated to the intervention and control groups. The inclusion criteria were as follows: being unfamiliar with the methods of muscular relaxation, having no thyroid dysfunction or mental disease, including anxiety, not taking any anxiety drugs, having a full time job in ICU with at least 6 months of experience. Exclusion criteria were as follows: Experiencing a tension event (e.g. losing one of the relatives) during the study based on one's report, being absent in educational sessions and not using correct method of Benson relaxation at home (i.e. less than 10 sessions per week) (registration in self-reporting checklists). To determine sample size, confidence interval was set at %95 and the intervention power 84%. Because the effect of Benson relaxation on anxiety and fatigue of ICU nurses with control group has a difference of at least 7( $d=7$ ), it is statistically significant. The number of samples is calculated by the following formula.

$$n = \frac{[(Z_{1-\alpha/2} + Z_{1-\beta})^2 \times 2s^2]}{d^2}$$



Also, based on the study of Hassan Pordehkordi et al. (2009) and assuming 10% sample loss in each group, 35 people should be selected for each group. Thus, the total sample size was determined as 70. In the study period, 7 nurses were excluded from study due to lack of doing relaxation based on practical definition or their incomplete questionnaires. At the end of study, 31 nurses were in intervention group and 32 in the control group.

The study instruments included demographic questionnaire and of fatigue visual evaluation questionnaire. The demographic questionnaire comprised questions about age, gender, marital status, number of children, education, work shift, work experience, working in other therapy centers, income adequacy, working hours per week, sport, and background disease. For data collection of fatigue severity, fatigue severity scale (FSS) was applied. This scale evaluates subject's fatigue in the past 7 days and consisted of 9 items. Each item was scored from 1 to 7 and Nurses mark them to show their fatigue. Mean score of 9 items was considered as fatigue level and the highest mean showed higher fatigue level. The minimum score was 1 and maximum 7. The mean score of equal or higher than 5 was classified as severe fatigue (Valko et al. 2008; Johansson et al. 2014). The validity and reliability of this scale were verified by Valko et al. (2008) and Troy and Dagle (2003).

In the study by Salehpour et al. entitled "Psychometric features of fatigue severity scale in the patients with sclerosis", it was shown that Persian version of FSS had satisfactory psychometric features and can be applied in clinical and study situations (Salehpour et al. 2012). To evaluate content validity, the questionnaire was given to 10 lecturers of Nursing and Midwifery School of Iran University of Medical Sciences. Based on their opinion, necessary changes were made in the questionnaire. To determine reliability, the questionnaire was given to 10 nurses in the ICU. The data were investigated and internal consistency of instrument was computed and its Cronbach  $\alpha$  was 0.96. According, the data of 10 participants in the main part of study were not considered.

This study was supported by the Ethics Committee (IUMS.REC.1394.9211449209) of Deputy of Research and Technology of Iran University of Medical Sciences. After taking permission for the study, the researcher referred to ICU of Shahid Rajai Cardiovascular, Medical and Research Center and explained the purpose of the study to the nurses and took their consent. Then, the study subjects were selected and randomly allocated in the control and intervention groups.

Before intervention, demographic form and FSS were given to nurses of both groups at the early morning shift. In intervention group, after the end of work shift, Benson relaxation method was completely explained in a theoretical session to the nurses, also Benson relaxation stages were provided in a pamphlet and were given to nurses. Then, 2 days later in a practical session, the recorded instruction of Benson relaxation was given via headphone to the nurses and they were asked to perform it according to the instructions. Furthermore, their questions regarding Benson relaxation method were answered.

The Benson relaxation can eliminate errant stress responses. It starts with saying a relaxing word (e.g. God) and continues with deep and regular breathing. The subjects would deeply inhale through the nose, exhale through the mouth, and repeat the desired word in their minds. Simultaneously, they relax their muscles from the fingertips upward until the complete relaxation of all the muscles in the body. This state was maintained for 20 minutes. Then, the subjects open their eyes. The stages were followed carefully during this activity by an audio file. This instruction audio file took 20 minutes and there was no need to set the time by the clock.

After educational sessions and assurance of subjects' learning, they perform relaxation exercises 2 times a day (morning and afternoon and each session for 20 minutes with an interval of at least 6 hours) for 2 weeks. The daily form was given to the intervention group to register their following course of Benson relaxation at home and in case of missing the relaxation at home was investigated by this form. The researcher also called participants 2 times a week to promote, support, and evaluate study units regarding their progression in relaxation method. The control group did not receive Benson relaxation method.

One or 2 weeks after starting Benson relaxation method, FSS questionnaire was given to nurses of 2 groups in the early morning shift. All data were analyzed using Statistical Package for the Social Sciences (version 21, SPSS Inc, Chicago, IL). In this regard, independent t test was used to compare mean fatigue score between intervention and control groups in each time period (before intervention, 1 week after intervention, and 2 weeks after intervention) and also to evaluate their age and work experience.

The Fisher exact test was used to compare 2 groups in terms of gender, marital status, and education, and the Chi-square test was used to compare work shift and income adequacy. Finally, Repeated Measure Analysis Variance test was used to compare participants' fatigue

scores in the study period. A significance level of 0.05 was set for tests of hypothesis.

### 3. Results

Based on the demographic findings, ages of most participants ranged between 26 and 35 years. Most of them (84%) were women, 63% married and most of them (92%) had Bachelor of Science in Nursing, and 63% had rotational shift. Also, most of them (50%) had a work experience of 5 years or less. In terms of income adequacy, they stated that their income was somewhat adequate. Both groups were statistically similar in all mentioned items except age and work experience (Table 1). However, the results showed that these 2 variables had no

significant association with fatigue variable. Thus, age and work experience were not confounding variables.

The findings showed that mean score of fatigue in the control group before intervention was 4.72(0.82). It was 4.79(0.86) at the end of the first week after intervention and increased to 5.02(0.75) at the end of the second week after the start of intervention. The mean score of fatigue in intervention group before the intervention was 4.73(0.97). It changed to 4.58(0.94) at the end of the first week after intervention and decreased to 4.38(0.85) at the end of the second week after intervention.

**Table 1.** Demographic characteristics of the intervention and control groups (n=63).

Variables	Groups	Control		Benson relaxation		P-value
		Mean(SD)	No. (%)	Mean(SD)	No. (%)	
Age, y		36.75(7.10)		32.97(5.27)		0.020
Gender	Female		28(87.5)		25(80.6)	0.509
	Male		4(12.5)		6(19.4)	
Marital status	Married		21(65.6)		12(38.7)	0.408
	Single		10(31.3)		19(61.3)	
	Divorced		1(3.1)		0	
Education	BA		30(93.8)		28(90.3)	0.672
	MA		2(6.3)		3(9.7)	
Work experience	5 years and less		13(40.6)		19(61.3)	0.007
	10–6		7(21.9)		8(25.8)	
	15–11		6(18.8)		4(12.9)	
	Above 16		6(18.8)		0	
Work shift	Fixed		13(40.6)		10(32.3)	0.490
	Rotational		19(59.4)		21(67.7)	
Income adequacy	Adequate		7(21.9)		5(16.1)	0.838
	To some extent		10(40.6)		14(45.2)	
	Adequate		12(37.5)		12(38.7)	
	Inadequate					

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**Table 2.** Comparing the mean fatigue scores of control and intervention groups before, 1, and 2 weeks after Intervention (n=63).

Stage	Group	Control Mean(SD)	Intervention Mean(SD)	The results of independent t-test and P-value
Before intervention		4.72(0.82)	4.73(0.97)	t=-0.056 df=61 P=0.95
One week after intervention		4.86(4.79)	4.58(0.94)	t=0.96 df=61 P=0.33
Two weeks after intervention		5.02(0.75)	4.38(0.85)	t=3.206 df=61 P=0.002
Repeated measure analysis variance test		F=11.233 df=61 P-value<0.001	F=6.387 df=61 P-value=0.003	

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There was no significant difference between intervention and control groups with regard to mean fatigue scores before the intervention ( $P=0.95$ ). This difference was not significant after the first week ( $P=0.33$ ) too. However, it got significant at the end of the second week ( $P=0.002$ ). In other words, the mean score of fatigue among nurses in intervention group at the end of second week was lower than that of nurses in the control group (Table 2).

#### 4. Discussion

The present study aimed to determine the effect of Benson relaxation method on anxiety and fatigue of nurses working in ICUs. By improving automatic nervous system and relaxing muscles, Benson relaxation promotes the individual and social performance and also improves positive feeling in a person (Komjathy 2015). The findings of the present study showed that intervention and control groups were similar in terms of fatigue scores before intervention. In other words, the mean scores of fatigue in both groups was about 4.7. With regard to fatigue scale, the score 5 or more than 5 was considered severe fatigue, so mean score of 4.7 showed high fatigue among nurses of both groups before intervention. In the study by Behboudi et al. (2014) evaluating the effect of aerobic sport of stretching on fatigue severity of nurses in Neonatal ICUs, fatigue severity mean before sport activities was 6.45 (severe). In the study by Meadors and Lamson (2008), 38% of nurses were exposed to average fatigue and 39% to severe fatigue. In the study by Delpasand et al. (2011) evaluating the relationship between emotional intelligence and job burnout of ICU nurses, job burnout was high in terms of emotional fatigue.

The results of the mentioned studies were consistent with the result of the present study. In the intervention group, nurses had low fatigue in the first and second weeks. In addition, fatigue decreasing trend was found after Benson relaxation for 2 weeks compared to the previous state and one week after intervention. At the end of the first week and after Benson relaxation method, the mean fatigue scores of nurses decreased compared to the state before intervention. Again at the end of the second week, after Benson relaxation method, the mean fatigue score of nurses was lower compared to the end of the first week. The findings of the present study showed that compared to control group, Benson relaxation method had positive effect on fatigue of ICU nurses and reduce their fatigue. However, a review of literature shows the lack of study regarding the effect of Benson relaxation on fatigue of nurses, and some researchers dealt with the effect of other relaxation techniques on fatigue.

In the research of Behboudi et al. (2014), the study participants performed stretching exercises at the end of work shift for 10-15 minutes for 8 weeks. The fatigue score of nurses at the end of fourth week reduced compared to before intervention. Also, fatigue score at the end of the eighth week reduced compared to the end of the fourth week. In the study of Chen, Fang and Fang (2015), the effect of aromatherapy on improving job tension signs in nurses was evaluated. In this study, nurses of intervention and control (placebo) groups had small bottles hanging in the shift for 4 days. All job burnout signs, including fatigue of nurses reduced after aromatherapy.

Although no study has been performed with regard to the effect of Benson relaxation on fatigue of nurses or healthy people, some studies were conducted on the effect of relaxation methods on fatigue of patients. Basiri Moghadam et al. (2013) evaluated the effect of muscular progressive relaxation method on the fatigue of patients undergoing hemodialysis. In this study, muscular progressive relaxation method reduced fatigue level of the patients.

In the study done by Kushan et al. (2013), the effect of Benson relaxation method was evaluated on the fatigue of patients undergoing hemodialysis. It was found that Benson relaxation method reduced fatigue of patients in the intervention group.

Based on the results of the present study, Benson relaxation method as an intervention or a technique of complementary medicine in ICU nurses can significantly reduce fatigue. The results showed that long-term practice of Benson relaxation method reduced fatigue level of intervention group and had better effect on fatigue reduction. The nurses can be trained on doing Benson relaxation at home or at the end of work shifts. Managers and authorities of health centers are recommended to provide facilities in their centers with the aim of training these methods and create the conditions after work shift for healthcare workers namely ICU nurses.

According to the results, ICU nurses had high anxiety and fatigue. Thus, educational workshops of these non-medication methods were of great importance to train the nurses in ICU wards. As one of the study inclusion criteria was working as a nurse in ICU, we suggest to perform a similar study to evaluate the effect of Benson relaxation on the fatigue of nurses of other wards. Because many factors are effective on fatigue of ICU nurses, we suggest to determine other strategies to alleviate the fatigue. We also suggest that in further studies, the effect of this method be evaluated in the long-term.

One of the limitations of study was probable miss of doing relaxation method at home by nurses or their false report. In this regard, we tried to motivate their interest and take the participants' consent. As the exclusion criterion was performing the method less than 10 times in a week, the nurses' consent was taken before performing the method. Other limitations of study were contamination of control group's information. Because the learning of method was time consuming and practical exercise was required, pollution probability was low. Also, random group was preferred to control the group with regard to avoiding of data transmission. Because of self-report in data collection method and intervention nature, study blinding was not possible.

### Conflict of Interest

The authors declared no conflict of interests.

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