

Original Article

The effect of planned family presence on the family's anxiety at the patient's bedside in burn intensive care unit

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Abstract

Context: The lengthy process of treatment in burns units requires the patient to be hospitalized in the intensive care unit (ICU) for a few days up to several months.

Aims: The present study was conducted to investigate the effect of planned family presence at the patient's bedside in BICU on the family's anxiety.

Setting and Design: The present randomized controlled clinical trial was conducted on the family members of patients hospitalized in the BICU in Sari from March to May 2016.

Materials and Methods: Selected through nonrandom sampling and randomly divided into a control and an intervention group ($n = 30$ per group). In the intervention group, one patient family member visited the patient for an hour each day from the 4th to the 8th day of admission. The control group received only the routine services of the unit, which meant keeping out all family members from the BICU.

Statistical Analysis Used: The Spielberger State-Trait Anxiety questionnaire was filled out in both groups on days 3 and 8 after the intervention. The data analysis were performed using SPSS version 21 (IBM).

Results: Comparing the means of the two groups after the intervention using the independent t -test showed a statistically significant difference ($t = 1.51$, $P < 0.001$).

Conclusion: The regular planned presence of family members at the patient's bedside in the BICU can effectively reduce anxiety in the family members and thus improve the care procedure.

Keywords: Anxiety, Burns, Critical care, Family presence

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INTRODUCTION

Burn injuries are the worst tragedies that can happen to someone in the modern society and are associated with physiological and psychological problems.^[1] The treatment process in burns units is lengthy, and family members waiting behind closed doors to get information on their patient experience severe psychological stress and face restrictions for visiting their patient at his bedside.^[2]

Admission to an intensive care unit (ICU) creates physical and psychological barriers to the patient-family relationship. Conventionally, in an ICU, the family is kept away from their patient;^[3] this situation can increase the family's sorrow and grief and reduce their hope and capabilities. The stressful environment of the ICU and the complicated technology and equipment^[4] add to the families' mental pressure and stress. Due to the severe fear and anxiety that they experience, family members may ignore their own basic needs and care only for their patient and his issues.^[2] Anxiety can affect decision-making and be transmitted like a contagious disease from the family members to the patient, the nurses, and the staff and vice versa and thus disrupt the staff-family relationship. If anxiety is transmitted to the patient, it will cause fear, sleep deprivation, powerlessness, noncompliance, poor psychological coping, delayed stress response to burn injury, patient dissatisfaction, loss of appetite, malnutrition, immune deficiency, susceptibility to infections, delayed wound healing, delayed recovery, prolonged hospitalization, and increased costs.^[5] It can also reduce physical and mental faculties in the family members and cause many physical and psychological problems.

Monitoring the environment and minimizing its stress through providing social support is one of the nursing skills required in the ICU. Social support includes financial and spiritual support. The role played by the family members^[2] and friends of the patient are one of the key components of social support.^[1] The presence of the family has a positive impact on the process of treatment and recovery, the patients' comfort, and their relationship to others. Several studies have shown that obtaining information and being physically close to the patient are major needs of these families.^[3] Any intervention that reduces the impact of the family's tension will therefore directly benefit the patients well, since reducing the family's stress leads to the better care and emotional support of the patient by the family and consequently reduces the risk of complications such as ICU psychosis.^[6] According to one study, an open visiting policy leads to a significant reduction in the patient's pain anxiety,^[7] cardiac complications, mortality rate, and cortisol and thyroid stimulating hormone levels (the hormones

involved in the stress response) and is not associated with an increase in infectious complications.^[8] Another study showed that parental participation in providing preoperative care prepares the children psychologically and reduces their anxiety.^[9] According to studies, family members, health-care staff,^[10] and patients are all in favor of the involvement of families in health-care provision.^[11]

Supporting the patients' family can be effective in their recovery. Improving the quality of care in the ICU requires an assessment of family satisfaction.^[1] The recent decade has witnessed an increase in the number of studies on family satisfaction in the ICU, and the care approach has also shifted toward patient-centered and family-centered care.^[2] Satisfaction with the care provided is one of the key dimensions of the quality of care. Most patients prefer to have their families involved in the decisions made about their care.^[12] Despite the increase in the attention to patients, the needs of the family members of patients are still unmet in this area. Studies show that failure to meet these needs is a global issue.^[2]

A clinical trial in France showed that improving relationships with family members and supporting them in the ICU can lead to a significant reduction in depression, anxiety, and posttraumatic stress disorder.^[13] Despite the sufficient evidence on the effectiveness of implementing an open visiting policy in the ICU and the evident need of the modern educated family for obtaining information and active participation in decision-making, the presence of families in ICUs is still controversial. Several reasons restrict the presence of the family at the patient's bedside, including increased physical stress, threatened safety,^[14] and the risk of infection and related mortality.^[15,16] Some researchers suggest that family-centered instead of patient-centered policies constitute an important dimension of the quality of health care.^[12] Open visiting policies do not harm the patients; instead, they build a support system for the patient and help shape family environments.^[4]

Considering the existing controversies and the fact that, according to available databases, no research has yet been published on the effect of family participation in the burn intensive care unit (BICU) on the family's anxiety in Iran, investigating families' anxiety with the conditions governing BICUs appears essential. This research, therefore, explores the effectiveness of planned family presence at the patient's bedside in BICUs on the family's anxiety in an attempt to help alleviate the pain experienced by patients and their families. The objective of the present research is to analyze the effect of planned family presence at the patient's bedside in BICUs on the family's anxiety.

MATERIALS AND METHODS

The present study is a randomized controlled clinical trial pretest-posttest design and with an equivalent control group. The researcher selected 60 relatives of patients who had with burn injuries based on the study inclusion criteria and from the list of admitted patients using sequential sampling over a 3-month from March to May 2016. The research randomly divided the samples into two groups of 30 and obtained written informed consent from them after explaining the study objectives and ensuring them of the confidentiality of their data and their right to withdraw from the study at any time and then proceeded to fill out the demographic and clinical information. The inclusion criteria consisted of being the relative of a patient who is an 18-year-old and older, conscious, experiencing a unintentional burn injury and able to talk and establish effective communication and who has been admitted for at least 48 h from admission.^[17] Exclusion criteria for the relatives consisted of having a history of neurological disorders, cognitive-mental disabilities, and hearing and visual impairments^[18] and failure to observe the ward regulations and nonadherence to infection control precautions. The exclusion criteria for the patients consisted of the emergence of respiratory distress, intubation, and changes in wound color indicative of infection, being transferred to other wards, discharge, or death. The researcher had the general health questionnaire (GHQ) filled out for the patients before entering the study and ensured their lack of severe psychological problems. On the 3rd day, the demographic and clinical questionnaire and the Spielberger State-Trait Anxiety questionnaire (STAI) were filled out for the patient relatives. STAI was filled out in both groups by relatives (preferably blood relatives) on the 3rd day of admission and before entering the unit. The required training was then provided by the researcher after the necessary arrangements were made with the physicians, ward manager, and shift staff. This training included briefing on the health status of the patients, the ward regulations, how to treat open wounds, standard precautions for infection control and hand hygiene, especially washing the hands (since hands are a carrier of microorganisms) with soap and water or a disinfectant such as alcohol as a simple and key method for controlling nosocomial infections and preventing the spread of antimicrobial resistance. They were also briefed on the conditions for entering the ICU and staying at the patient's bedside, not touching the patients' connection to devices and participating in feeding the patient as a primary care measure. In the intervention group, one patient family member visited the patient for an hour each day from the 4th day of admission (for a total of 5 days), before the dressing change. Moreover,

they participated in primary care such as feeding, change of position. The control group received only the routine services of the unit, which meant keeping out all family members from the BICU. At the end of the 8th day of the intervention,^[19] the STAI was once again filled out in both groups by the patient relatives.

$$n = \frac{\left[Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right]^2 \left[\sigma_1^2 + \sigma_2^2 \right]}{(\mu_1 - \mu_2)^2}$$

Ethical considerations

This study was approved by the Ethical Committee of Mazandaran Medical Science University in Sari, Iran. The funds and equipment of the project were provided by the research deputy of Mazandaran University of Medical Sciences. The family members of patients were informed verbally and in writing about the purpose of the study. In this study, the family members of patients have the right to decide about participating in the study. The data were treated confidentially. The data have been gathered by three questionnaires: the demographic and clinical information (the patients and family members of patients): the demographic and clinical questionnaire inquired about the patients' age, gender, marital status, level of education, occupation, place of residence, areas affected by the burn, burn percentage and history of burn-related hospitalization and about the relatives' age, relation to the patient, marital status, occupation, and level of education. The 28-item GHQ developed by Goldberg and Hillier (1979) has four subscales of seven items each. The subscales and their items are somatic symptoms (items 1–7), anxiety and insomnia (items 8–14), social dysfunction,^[15-21] and severe depression.^[22-26] To score the items, a score of 0 is given for choosing option one, 1 for option two, 2 for option three, and 3 for option four. A score above 6 in each of the subscales and an overall score above 22 are indicative of disease symptoms.^[20]

The STAI contains 40 items and has been adapted for use in the Iranian population. Its reliability and validity have been confirmed in several studies. Rabie *et al.* and Rouhi *et al.* calculated its reliability as 0.89 and 0.9, respectively. This questionnaire has two sections: a section on state anxiety and another one on trait anxiety. The state anxiety subscale includes 20 items that evaluate personal feelings at the time of answering the questions. The trait anxiety subscale also includes 20 items that evaluate the respondent's general feelings. Responses are rated on a Likert scale from 1 to 4, with the options being not at all (1 point), mildly (2 points), moderately (3 points), and severely (4 points). Some items are reverse scored (items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20).

in the state anxiety subscale and items 21, 23, 26, 27, 30, 33, 34, 36, and 39 in the trait anxiety subscale). The total score of each subscale is calculated by adding the score of the 20 items and ranges from 20 to 80. The rating criteria for the state anxiety subscale classify scores of 20–31 as indicative of mild anxiety, 32–42 as moderate anxiety, 43–53 as higher than moderate anxiety, 54–64 as relatively severe anxiety, 65–75 as severe anxiety, and 76 and over as extremely severe anxiety. For trait anxiety, scores of 20–31 are taken as indicative of mild anxiety, 32–42 as moderate anxiety, 43–52 as higher than moderate anxiety, 53–62 as relatively severe anxiety, 63–72 as severe anxiety, and 72 and over as extremely severe anxiety.^[21] In this study, a “patient relative” is defined as someone who is legally, biologically (blood relative) or emotionally related to the patient.^[1]

RESULTS

The Shapiro–Wilk test showed that the data are normal. Therefore, normal samples were used for analysis. The mean age of the patients was 38.07 ± 13.01 in the control group and 36.17 ± 10.89 in the intervention group. The mean age of the family members of the patients was 35.93 ± 8.91 in the control group and 34.60 ± 10.64 in the intervention group ($P = 0.6$). Therefore, the two groups were not significantly different. The burn percentage was 34.7 ± 9.15 in the intervention group and 29.17 ± 17.05 in the control group, suggesting the lack of statistically significant differences as per the independent *t*-test ($P = 0.09$). The most frequent cause of burns was heat in both groups. The mean GHQ score was 11.66 ± 2.22 in the intervention group and 8.70 ± 2.42 in the control group, which did not indicate disease symptoms. The two groups were not significantly different in terms of variables including gender, type of burn, marital status, and place of residence ($P > 0.05$) [Table 1].

The mean age of the family members of the patients was 35.93 ± 8.91 in the control group and 34.60 ± 10.64 in the intervention group. Therefore, the two groups were not significantly different. The two groups were not significantly different in terms of variables including the occupation, gender, marital status, place of residence, in their family members ($P > 0.05$) [Table 2].

Mean anxiety score in the patient relatives was 83.96 ± 10.36 in the control group and 87.56 ± 7.82 in the intervention group. Therefore, the two groups were not significantly different. However, the end of the intervention, both groups had changed. The two groups were significantly different in Trait-State anxiety score in the patient relatives before and after the intervention. The results showed that anxiety was reduced in the intervention group [Table 3].

Table 1: The frequency distribution of the demographic variables in the patients

Variable	Frequency (%)		P
	Control	Intervention	
Gender			
Male	21 (70)	21 (70)	$P=1, \chi^2=0$
Female	9 (30)	9 (30)	
Place of resident			
Local	22 (73.3)	16 (53.3)	$P=0.18, \chi^2=2.58$
Nonlocal	8 (26.7)	14 (46.7)	
Marital status			
Married	24 (80)	22 (73.3)	$P=0.49, \chi^2=2.42$
Divorced	0 (0)	1 (3.3)	
Single	5 (16.7)	7 (23.3)	
Widowed	1 (3.3)	0	
Type of burn			
Heat	24 (80)	27 (90)	$P=0.20, \chi^2=3.17$
Chemical	1 (3.3)	2 (6.7)	
Electrical	5 (16.7)	1 (3.3)	

Table 2: The frequency distribution of the demographic variables in the family members

Variable	Frequency (%)		P
	Control	Intervention	
Gender			
Male	11 (36.7)	11 (36.7)	$P=1, \chi^2=0$
Female	19 (63.3)	19 (63.3)	
Place of resident			
Local	21 (70)	16 (53.3)	$P=0.28, \chi^2=1.76$
Nonlocal	9 (30)	14 (46.7)	
Marital status			
Married	29 (90)	25 (83.3)	$P=0.11, \chi^2=4.29$
Divorced	0	0	
Single	0	4 (13.3)	
Widowed	1 (3.3)	1 (3.3)	

The pre- and post-intervention effect size in the control group and also in the intervention group was more than 0.8, which indicates a large effect size. In addition, the effect size of the two groups in postintervention was more than 0.8 that signifies large effect size. Test power in the postintervention between the intervention and control groups with the two-tail direction was estimated as 100%. Of course, it is logical since the difference is very large. Test power in the preintervention between the intervention and control groups with two-tail direction was 81% and control group test power in comparison the pre- and post-intervention, was estimated 100%.^[5]

DISCUSSION

Comparing the changes in the mean anxiety scores in the intervention and control groups before and after the intervention showed a postintervention reduction in the mean anxiety score in the intervention group. Even though before the intervention, their anxiety levels were high, participating in the patients' family in the daily care of the patient reduced their anxiety significantly. These results

Table 3: Comparing the Trait-State anxiety score in the patient relatives in the intervention and control groups before and after the intervention

Variable	Mean±SD		t	P
	Control	Intervention		
Trait anxiety score before the intervention	38.90±6.16	37.13±1.65	1.51	>0.001
Trait anxiety score after the intervention	44.90±5.54	26.10±2.50	16.91	<0.001
State anxiety score before the intervention	45.06±5.60	50.43±7.50	3.13	>0.001
State anxiety score after the intervention	62.78±5.41	33.53±4.17	23.40	<0.001

SD: Standard deviation

are consistent with the results obtained by Pochard *et al.* in France^[22] and Lee and Lau in China.^[23]

Fumis *et al.* in Brazil also showed high levels of anxiety in the patients and their family members 48 h after the patient's hospitalization in the ICU. The level of anxiety was measured at the time of discharge and 30 and 90 days afterward. The measurements showed that the level of anxiety was high in the patients and their family members throughout the study, but reduced in the patients and remained consistent in the family members after the patient's discharge.^[24] The difference between the present findings and Renato's findings can be attributed to the different ICU visiting policies, which comprised of an open policy in Brazil; as a result, the impact of visiting was not evaluated as a main independent variable on anxiety. Nevertheless, Renato's study also confirmed the presence of high levels of anxiety in the family members of ICU patients.

The present findings are also consistent with the results obtained by Garrouste-Orgeas *et al.* in France province on the opinions of families, staff, and patients about family participation in care in intensive care units. The level of anxiety was severe in the family members of patients hospitalized in the ICU,^[11] which could be due to the patients' serious life-threatening disease and the advanced equipment and technology in the health-care settings and intensive care units.

In line with the present findings, another study conducted to evaluate the impact of family training programs in proportion to the needs of patient family members also reported a reduction in the level of anxiety in family members following hospital visits and close contact with their patients.

The present study showed that the level of anxiety in the family members did not increase by seeing other patients after they entered the unit, and at the end of the intervention. According to some studies, seeing other critically ill patients in the ICU is a distinct stressor for family members with patients hospitalized in these units;^[25] however, this assumption is inconsistent with the present findings. This difference may be attributed to the patients'

hospitalization in private rooms in the present study but not in others, so that, in those studies, family members had to see other patients on their way to visit their own patient.

Another study entitled "Passive decision-making preference is associated with anxiety and depression in relatives of patients in the intensive care unit" showed that the participation of family members in making decisions for their patients in the ICU can cause themselves anxiety and depression.^[26] However, these findings are inconsistent with the results of the present study. A possible explanation for this finding might be that the family members had little information about the disease and feared making important medical decisions for the patient and the outcomes of their decision.

Nevertheless, the family members of the patients in the present study received training and information before the intervention and were in the ICU merely for visiting their patient and performing simple tasks such as feeding the patient, and both the family members and the health-care team were ensured that their presence was not dangerous for the patient. In line with the present findings, another study conducted to determine the environmental and psychological factors affecting anxiety in family members of ICU patients also showed that visiting their patient from behind windows and having no face-to-face visits contributed to anxiety in the family members.^[26] Taking account of these factors and having a family-centered approach to health care appear to be able to significantly reduce anxiety in the family members of patients.

CONCLUSION

According to the present findings, the daily presence of a relative at the patient's bedside in the BICU can have a relaxing effect on the patient's family. In the present study, however, the family members of patients with burn injuries paid regular planned visits to their patient after they were adequately trained on how to behave at a BICU and about infection control precautions and based on their patients' conditions.

The present study was carried out at a burn center. Due to the cultural and geographical differences, it is recommended that other burn centers be used. The findings suggest that

this method can reduce anxiety in the family members more effectively. In view of studies conducted over the past decade, it appears that the traditional belief that patient visits should be restricted in the ICU is no longer justified and needs to be revised.

It is therefore recommended that nursing managers and hospital officials provide family communication skills training support their clinical nurses and develop clear protocols for patient visits so as to help reduce anxiety in the family members of patients and subsequently eliminate the patients' anxiety and accelerate their recovery.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

All authors contributed equally to the writing of the scientific proposal, data collection, and manuscript drafting. The final manuscript was reviewed and approved by all the authors.

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REFERENCES

- Bishop SM, Walker MD, Spivak IM. Family presence in the adult burn intensive care unit during dressing changes. *Crit Care Nurse* 2013;33:14-24.
- Bäckström J, Oster C, Gerdin B, Ekselius L, Willebrand M. Health-related quality of life in family members of patients with burns. *J Burn Care Res* 2014;35:243-50.
- Alvarez GF, Kirby AS. The perspective of families of the critically ill patient: Their needs. *Curr Opin Crit Care* 2006;12:614-8.
- Smith CD, Custard K. The experience of family members of ICU patients who require extensive monitoring: A qualitative study. *Crit Care Nurs Clin North Am* 2014;26:377-88.
- Rybarczyk MM, Schafer JM, Elm CM, Sarvepalli S, Vaswani PA, Balhara KS, et al. Prevention of burn injuries in low- and middle-income countries: A systematic review. *Burns* 2016;42:1183-92.
- Nolin M, Malla A, Tibbo P, Norman R, Abdel-Baki A. Early intervention for psychosis in Canada: What is the state of affairs? *Can J Psychiatry* 2016;61:186-94.
- Koohi M, Bagheri-Nesami M, Esmaeili R, Mousavinasab N, Hosseini H. Effect of family participation in primary care provision to reduce pain anxiety among burn ICU patients. *J Mazandaran Univ Med Sci* 2017;26:88-99. Available from: <http://jmums.mazums.ac.ir/article-1-9644-fa.html>. [Last accessed on 2017 Mar].
- Fumagalli S, Boncinelli L, Lo Nostro A, Valoti P, Baldereschi G, Di Bari M, et al. Reduced cardiocirculatory complications with unrestricted visiting policy in an intensive care unit: Results from a pilot, randomized trial. *Circulation* 2006;113:946-52.
- Wei H, Roscigno CI, Swanson KM, Black BP, Hudson-Barr D, Hanson CC. Parents' experiences of having a child undergoing congenital heart surgery: An emotional rollercoaster from shocking to blessing. *Heart Lung* 2016;45:154-60.
- Al-Mutair AS, Plummer V, O'Brien A, Clerehan R. Family needs and involvement in the intensive care unit: A literature review. *J Clin Nurs* 2013;22:1805-17.
- Garrouste-Orgeas M, Willems V, Timsit JF, Diaw F, Brochon S, Vesin A, et al. Opinions of families, staff, and patients about family participation in care in intensive care units. *J Crit Care* 2010;25:634-40.
- Davidson JE, Powers K, Hedayat KM, Tieszen M, Kon AA, Shepard E, et al. Clinical practice guidelines for support of the family in the patient-centered intensive care unit: American college of critical care medicine task force 2004-2005. *Crit Care Med* 2007;35:605-22.
- Kross EK, Engelberg RA, Gries CJ, Nielsen EL, Zatzick D, Curtis JR. ICU care associated with symptoms of depression and posttraumatic stress disorder among family members of patients who die in the ICU. *Chest* 2011;139:795-801.
- Bray K, Hill K, Robson W, Leaver G, Walker N, O'Leary M, et al. British association of critical care nurses position statement on the use of restraint in adult critical care units. *Nurs Crit Care* 2004;9:199-212.
- Bernstein SL, Aronsky D, Duseja R, Epstein S, Handel D, Hwang U, et al. The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med* 2009;16:1-0.
- Jo S, Jeong T, Jin YH, Lee JB, Yoon J, Park B. ED crowding is associated with inpatient mortality among critically ill patients admitted via the ED: Post hoc analysis from a retrospective study. *Am J Emerg Med* 2015;33:1725-31.
- Mohammadi Fakhar F, Rafii F, Jamshidi Orak R. The effect of jaw relaxation on pain anxiety during burn dressings: Randomised clinical trial. *Burns* 2013;39:61-7.
- Park E, Oh H, Kim T. The effects of relaxation breathing on procedural pain and anxiety during burn care. *Burns* 2013;39:1101-6.
- Hsu KC, Chen LF, Hsieh PH. Effect of music intervention on burn patients' pain and anxiety during dressing changes. *Burns* 2016;42:1789-96.
- Movallali G, Abdollahzadeh Rafi M, Nemati S. Comparison of general health status in mothers of hearing and hearing-impaired children. *Audiol* 2013;22:33-9. Available from: <http://aud.tums.ac.ir/article-1-5011-en.html>. [Last accessed on 2013 Oct].
- Jeppesen E, Pedersen CM, Larsen KR, Rehl A, Bartholdy K, Walsted ES, et al. Music does not alter anxiety in patients with suspected lung cancer undergoing bronchoscopy: A randomised controlled trial. *Eur Clin Respir J* 2016;3:33472.
- Pochard F, Darmon M, Fassier T, Bollaert PE, Cheval C, Coloigner M, et al. Symptoms of anxiety and depression in family members of intensive care unit patients before discharge or death. A prospective multicenter study. *J Crit Care* 2005;20:90-6.
- Lee LY, Lau YL. Immediate needs of adult family members of adult intensive care patients in Hong Kong. *J Clin Nurs* 2003;12:490-500.
- Fumis RR, Ranzani OT, Martins PS, Schettino G. Emotional disorders in pairs of patients and their family members during and after ICU stay. *PLoS One* 2015;10:e0115332.
- Chien WT, Chiu YL, Lam LW, Ip WY. Effects of a needs-based education programme for family carers with a relative in an intensive care unit: A quasi-experimental study. *Int J Nurs Stud* 2006;43:39-50.
- Anderson WG, Arnold RM, Angus DC, Bryce CL. Passive decision-making preference is associated with anxiety and depression in relatives of patients in the intensive care unit. *J Crit Care* 2009;24:249-54.