Patients' Anxiety in Coronary Care Unit: Comparison of Face-to-Face and Glass Visitation

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Abstract

Background: In Iran, the presence of the patient's family is forbidden at coronary care units (CCUs), and the patient will be hospitalized without the presence of the family at these units. The issue of being away from family is one of the main causes of tenseness in patients of CCUs and has some side effects, such as isolation and seclusion, after discharge.
Objectives: The present study aimed to investigate the effect of face-to-face visiting and behind-the-glass visiting on patients' anxiety at CCUs.
Methods: This quasi-experimental study was performed on 80 random patients at the CCU of Dr. Ganjavian hospital, Dezful, Iran, by considering inclusion and exclusion criteria. The visiting time in both groups was 20 minutes, and the questionnaires were collected by the researchers from patients 10 minutes before and after visiting.
Results: The average obvious and hidden anxiety in patients significantly reduced after the visit. Anxiety in the group of face-to-face visiting was more reduced than in the other group [face-to-face (P = 0.0008) and behind-the-glass (P = 0.02)].
Conclusions: Face-to-face visiting is an appropriate method to reduce anxiety in the patients of CCUs. It is suggested to adopt this method to improve the visits in this unit.

Keywords: Anxiety, Coronary Care Unit, Visit, Face-to-Face Visitation, Behind-the-Glass Visitation

1. Background

Cardiovascular disease (CVD) has been identified as one of the main sources of mortality in the world (1). The CVD is an overall term referring to the conditions that affect a human body's heart and blood vessels. The CVD can also include the damage of the arteries in the organs, such as the kidneys, heart, eyes, and brain (2). It is estimated that CVD is responsible for 2200 cases of mortalities in the United States per day (3). Reports in recent years show that CVD is steadily continued to increase in Iran (4). The coronary care unit (CCU) is created as one of the most important developments in the patient-care sector for those who suffer from CVD. This unit has benefited from advanced devices for caring and supporting the patients and operates to treat patients with emergency CVD as promptly as possible (5).

The clinical manifestations of patients admitted to CCUs include chest pain, increased or decreased heart rate and blood pressure, cardiogenic shock, and early fatigue (6). Heart patients who experience high anxiety are more susceptible to ischemia, re-stroke, increasing heart rate, and ventricular fibrillation than those with low anxiety, in addition to some isolation and withdrawal (7). Increasing evidence indicates a strong interrelationship between CVD and anxiety. Patients with CVD have an associated 26% increased risk of anxiety. Moreover, anxiety contributes to higher all-cause and cardiac mortalities (8).

Being away from family members is one of the most important psychological and stressful factors in intensive care unit (ICU) patients (9) that is mostly due to ICU policies that limit visiting the patients (10). The literature suggests that depression and anxiety are among the common responses of patients at this unit (11). Anxiety has a polyhedral structure comprising behavioral, cognitive, and physiological arousals. These structures can be evaluated by questionnaire, observation, and physiological responses (12). Anxiety is defined as a temporary emotional state resulting from a potentially harmful situation with the potential for minor harm to an individual associated with decreasing the quality of life in both patients and their companions (13, 14).

Having a family member with an acute illness is a very stressful experience that leads to anxiety, anger, and helplessness in the patient's companions and consequently insomnia, increased smoking, and poorer nutrition (15). Family members have an essential part in decision-making. Family members also prepare the medical record and security for the patient. These are some natural parts of family members of patients at CCU to speed up recovery (16). The hospital visits have three forms, namely behind-the-glass visiting, face-to-face visiting, and half-open visiting (17). According to some studies, family members and patients tend to face-to-face visiting; however, nurses tend to behind-the-glass visiting (18). Some CCU personnel believes that family members might interfere with patients' care or even increase their anxiety (19). On the other hand, some studies show that face-to-face visiting can decrease their anxiety, and they feel better after the visit (20-22). These different results and approaches in some countries led the researchers to undertake this study to investigate the effect of face-to-face visiting and behind-the-glass visiting on patients' anxiety at the CCU of a large hospital in Dezful, Iran.

2. Objectives

This study aimed to investigate the effect of face-to-face visiting and behind-the-glass visiting on patients' anxiety at CCUs.

3. Methods

This quasi-experimental study was performed on 80 patients at the CCUs of Dr. Ganjavian hospital in Dezful. After the confirmation of the Ethics Committees of Dezful University of Medical Sciences (no. IR.DUMS.REC.1397.050) and permission of the Vice-Chancellor for sampling, the samples were randomly chosen by considering inclusion and exclusion criteria. The inclusion criteria were: (1) being conscious and aware of time, place, and person; (2) passing at least 18 hours of hospitalization; (3) being more than 18 years; (4) being able to communicate and understanding Persian; (5) not using any sedative drugs within past 6 hours; and (6) appropriate clinical status (monitoring patients for lack of recurrent arrhythmias and other risk factors). The exclusion criteria were: (1) suffering from or difficulty in visionary and hearing abilities in communication; (2) suffering from mental illness; and (3) being addicted to junk.

Considered hours of hospitalization as indicators of inclusion in the study are according to similar studies within a range of 12 - 24 hours. Accordingly, an average of 18 hours

were selected. After getting the letter of consent from the patients, they were divided into the test group (face-to-face visiting; n = 40) and the control group (behind-the-glass visiting; n = 40). At first, the questionnaires about demographic information, such as age, gender, education, marital status, record of hospitalization, length of hospitalization, and kind of heart disease, were collected.

In the test group, a researcher explained the plan to a patient and asked the patient to name an individual whom they wished to see. In addition, the researcher mentioned that they could see only in person due to some limitations. Then, the visitor will visit the patient for 30 minutes. The same thing happened for the control group. The visitor visited the patient behind the glass for 30 minutes. The anxiety rates of both groups were recorded with Spielberger State-Trait Anxiety Inventory (STAI) 10 minutes before the visit (basic anxiety) and 10 minutes after the visit. Finally, the anxiety rates of patients before and after the visit were measured in both groups; then, the researchers compared the calculated rates with each other.

The questionnaire of Spielberger STAI is a standard scale used in numerous countries with Cronbach's alpha coefficient in a study by Mehram performed in Iran at 91%, indicating scientific credit of this questionnaire (23). The questionnaire of the STAI includes 40 items, with the first 20 items for the state of anxiety and the second 20 items for the trait of anxiety. The scale of state anxiety (obvious anxiety) has 20 items that measure the feeling of the individual while answering the questions. The scale of trait anxiety (hidden anxiety) also has 20 items that measure the general and usual feelings of the individual. Each of these questionnaires contains 20 items with a score range of 20-80. Totally, the scores within the ranges of 20 - 31, 31 - 42, 43 - 53, and higher than 54 indicate no anxiety, low anxiety, normal anxiety, and high anxiety, respectively (24).

Stata software (version 13) was used for data analysis. The paired *t*-test with a significance level of 0.05 was utilized to compare the average between the obvious and hidden anxiety of the test group before and after the visit. The paired *t*-test was also used with the same significance level in the control group to compare the average between obvious and hidden anxiety before and after the visit. Finally, the average of obvious and hidden anxiety in both groups was compared with a significance level of 0.05 using the independent samples *t*-test.

4. Results

This study measured the level of anxiety in 40 patients with a mean age of 64.5 ± 9.73 years in behind-the-glass visiting and 40 patients with the mean age of 61.8 ± 11.3 years in face-to-face visiting. Moreover, a P-value of less than 0.05

indicated that all patients in each group did not differ significantly based on the type of heart disease, number of hospitalizations, number of hospitalizations in the CCU, and length of hospital stay in this ward (Table 1).

Furthermore, the independent *t*-test was used to compare the average levels of obvious anxiety and hidden anxiety in both ways of visiting at the significance level of 0.05, in which the P-value was more than 0.05 in both experiments. There was no significant difference between the average anxiety of the two groups before the visit (Table 2). The results of the hypothesis test in the control group at the significance level of 0.05 with a 95% confidence interval showed anxiety inequality, in which the levels of obvious anxiety of patients were different before and after behind-the-glass visiting. In addition, the average level of obvious anxiety of patients before the visit was higher than after the visit (P = 0.01).

The levels of hidden anxiety were also different in these patients before and after behind-the-glass visiting, and the average level of hidden anxiety of patients before the visit was higher than after the visit (P = 0.04). Furthermore, in the test group, the results of the hypothesis test at the significance level of 0.05 with a 95% confidence interval showed anxiety inequality in which the levels of obvious anxiety were different before and after the visit (P = 0.01). Additionally, the patients' average level of hidden anxiety before the visit was higher than after the visit (P = 0.02; Table 3).

The grouped comparison of obvious and hidden anxiety levels was performed using the Spielberger questionnaire. Table 4 shows obvious and hidden anxiety classification in face-to-face visiting and behind-the-glass visiting groups. The results of the K^2 test at the significance level of 0.05 showed that there was a significant difference between different levels of obvious and hidden anxiety before and after behind-the-glass visiting [hidden (P = 0.01) and obvious (P = 0.008)]. In face-to-face visiting, this significant difference was also remarkably different between the obvious and hidden anxiety of patients [hidden (P = 0.01) and obvious (P = 0.002)].

The average anxiety was normal in the four groups (before and after behind-the-glass visiting and before and after face-to-face visiting), and the p-value of the Kolmogorov-Smirnov test was less than 0.05. The average levels of obvious anxiety and hidden anxiety were compared in both ways of visiting at the significance level of 0.05 using the independent *t*-test, and the p-value was less than 0.05 in both experiments. Moreover, there was a significant difference in the average level of anxiety of both ways of visiting. Finally, the obvious anxiety of patients of the face-to-face visiting group was significantly less than behind-the-glass visiting after the visit (P = 0.04). In addi-

tion, the hidden anxiety of patients of the face-to-face visiting group was significantly less than the behind-the-glass visiting group after the visit (P = 0.01) (Table 2 and Figure 1).

5. Discussion

The purpose of this study was to compare the effect of face-to-face visiting and behind-the-glass visiting on the anxiety of patients hospitalized at CCUs. The results showed that the average levels of obvious and hidden anxiety in face-to-face visiting and behind-the-glass visiting had no significant difference before the visit; however, in both groups, the levels of obvious and hidden anxiety reduced significantly after the visit. Finally, after face-to-face visiting, the average obvious and hidden anxiety levels were significantly less than behind-the-glass visiting. It should be noted that the obtained results are in a controlled condition, and regular visiting and the number of patient's visitors should not increase as it might cause restlessness and negative effects on both the patient and staff.

Regarding open visitation, it should be considered that it is not a standardized philosophy. Moreover, it should be clarified that open visitation is not allowed for all visitors and is not available at any time. Additionally, it is important to understand that taking to account visitation is a complex process which means that patient interests are considered, communication skills for clinicians have improved, and families are supported and prepared for their visits. Furthermore, it is recommended to change the terms "open" and "unrestricted" to "flexible" and "free" that can help alleviate some of the barriers of healthcare providers in open visitation. Finally, feasibly each CCU will need to have an individualized approach to open visitation policies which corresponds to the needs of patients, families, and healthcare providers. However, open visitation is required, and CCUs have accepted it (25).

In this regard, Kamrani et al. conducted a study in 2011 to compare the physiological indices of patients before, during, and after the visit at a CCU. The results showed that the physiological indices of patients during the visit change normally and temporarily and return to the normal condition after 30 minutes. That is why it seems that restricting patients' visits is irrational only due to physiological changes, and there is no need to restrict patients' visits with their visitors (26). On the other hand, the results of a study by Salavati et al. aimed at observing the effect of planned visiting on physiological indices of these patients hospitalized at the CCU showed that planned visits have positive effects on the physiological indices of these patients and reduce the heart rate, respiratory rate, and systolic and diastolic blood pressure and increase the oxy-

Table 1. Demographic Information of Patients in the Study [a]

Demographic & Hospital Information	Experimental Group [b]; n = 40	Comparison Group [c]; n = 40	P-Value
Gender			0.001
Male	27 (67.5)	23 (57.5)	
Female	13 (32.5)	17 (42.5)	
Marital status			0.032
Married	32 (87.5)	34 (85)	
Single	2 (5)	3 (2.5)	
Divorced	1 (2.5)	3 (2.5)	
Widow	1 (2.5)	0 (0)	
Education			0.021
Illiterate	17 (42.5)	14 (35)	
Elementary school	14 (35)	13 (32.5)	
Middle school	2 (5)	6 (15)	
High school	4 (10)	3 (7.5)	
University	3 (7.5)	4 (10)	
Record of hospitalization at a coronary care unit			0.011
None	27 (67.5)	24 (60)	
Once	11 (27.5)	6 (15)	
More than once	2 (5)	10 (25)	
Record of hospitalization			0.014
None	23 (57.5)	18 (45)	
Once	10 (25)	8 (20)	
More than once	7 (17.5)	14 (35)	
Length of the current hospitalization			0.019
Less than 24 hours	3 (7.5)	4 (10)	
24-48 hours	20 (50)	18 (45)	
48-72 hours	7 (17.5)	10 (25)	
More than 72 hours	10 (25)	8 (10)	
Disease			0.021
Heart attack	5 (12.5)	3 (7.5)	
Unstable angina	24 (60)	27 (67.5)	
Congestive heart failure	10 (25)	8 (20)	

[a] Values are expressed as No. (%).
[b] Face-to-face visiting.
[c] Behind-the-glass visiting.

gen saturation percentage; however, these changes are not statistically significant (27).

Similarly, Rezaei et al., in a study with the aim of investigating the effect of planned visiting on the physiological indices of 90 patients hospitalized at CCUs, did not report any significant difference in the physiological indices of such patients (28). However, the results of a study performed by Rahmani et al. pointed out a significant re-duction of the physiological indices of patients hospitalized at the CCU after three visits on 3 consecutive days. The aforementioned study aimed at investigating the effect of planned visiting on the physiological indices of 72 patients with acute coronary syndrome hospitalized at the CCU. The results indicated the improved treatment performance and reduced anxiety of patients if planned visiting is implemented rather than no visitor policies (29), which

Table 2. Patients' Anxiety Levels Before and After Visits

Kinds of Anxiety	Average	*t*-Value	P-Value
Patients' Anxiety Levels Before Visits			
Obvious anxiety before behind-the-glass visiting	38.6	0.98	0.093
Obvious anxiety before face-to-face visiting	39.9		
Hidden anxiety before behind-the-glass visiting	37.7	1.12	
Hidden anxiety before face-to-face visiting	37.9		0.156
Patients' Anxiety Levels After Visits			
Obvious anxiety after behind-the-glass visiting	33.3	2.1	0.04
Obvious anxiety after face-to-face visiting	31.3		
Hidden anxiety after behind-the-glass visiting	34.2	2.5	0.01
Hidden anxiety after face-to-face visiting	32.1		

Table 3. Comparison of Patients' Mean Anxiety Levels Before and After Visits

Kinds of Anxiety	Average	Standard Deviation	Fiducial Interval	Quantity-T	P-Value
Obvious anxiety before behind-the-glass visiting	38.6	12.0	38.12 ± 6.0	2.5	0.01
Obvious anxiety after behind-the-glass visiting	33.3	12.4	33.12 ± 3.4		
Hidden anxiety before behind-the-glass visiting	37.7	13.1	37.13 ± 7.1	1.99	0.04
Hidden anxiety after behind-the-glass visiting	34.2	12.6	34.12 ± 2.6		
Obvious anxiety before face-to-face visiting	39.9	11.9	39.11 ± 9.9	2.9	0.01
Obvious anxiety after face-to-face visiting	31.3	11.6	31.11 ± 3.6		
Hidden anxiety before face-to-face visiting	37.9	13.8	37.13 ± 9.8	2.1	0.03
Hidden anxiety after face-to-face visiting	32.1	12.0	32.12 ± 1.0		
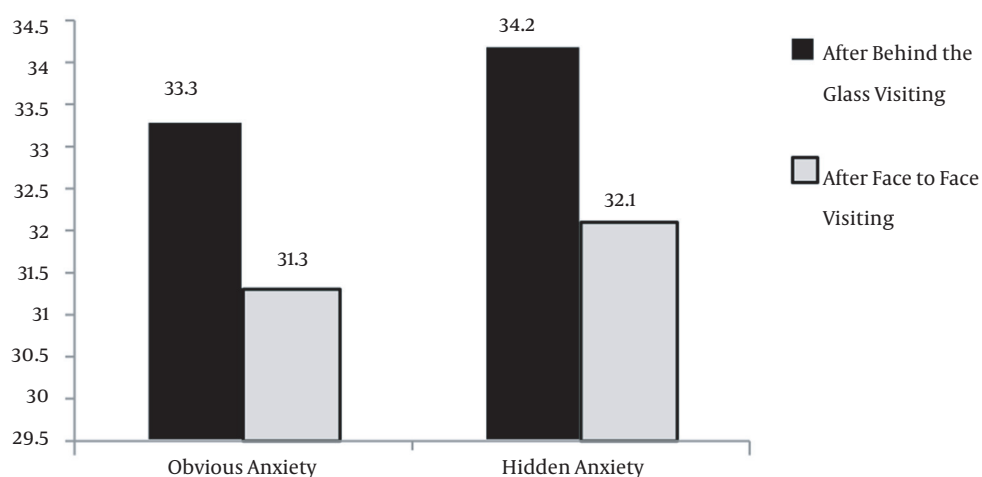
Figure 1. Comparing the average between obvious and hidden anxiety in behind the glass and face to face visiting.

Table 4. Comparison of Obvious and Hidden Anxiety Levels of Patients

Kinds of Anxiety and Rate of Anxiety	Comparison Group	P-Value	Experimental Group	P-Value
Obvious anxiety before visiting				
Low (20 - 30)	14		10	
Intermediate (31 - 42)	11		12	
High (43 - 53)	7		10	
Very high (54 <)	8	0.008	8	0.002
Obvious anxiety after visiting				
Low	19		19	
Intermediate	14		13	
High	4		5	
Very high	3		3	
Hidden anxiety before visiting				
Low (20 - 34)	11		10	
Intermediate (35 - 45)	7		8	
High (46 - 56)	9		7	
Very high (57 <)	13	0.01	15	0.01
Hidden anxiety after visiting				
Low	19		18	
Intermediate	14		14	
High	4		5	
Very high	3		3	

is in line with the result of the current study. Additionally, the results of a study by Azimi Lolaty et al. to investigate the effect of family and friends visiting on the anxiety and physiological indices of patients hospitalized at the CCU indicated a significant reduction of the physiological indices of patients 10 - 30 minutes after the visit. This reduction is considered a sign of reduction of these patients' anxiety (30).

Due to the randomness of sample selection, more samples, using a comprehensive and reliable questionnaire, matching the demographic characteristics of control and intervention groups before the visits, and eliminating the maximum number of confounders in the inclusion and exclusion criteria in the present study, compared to previous studies, it can be claimed that the results are more accurate and reliable than other studies. It is worth noting that although most studies have shown different benefits of face-to-face visiting, few hospitals have implemented this strategy. One of the reasons could be the lack of proper implementation of these studies, all of which have been studied in the present study and can be submitted to hospitals for implementation.

According to the nurses' report, one of the patients in the past few months had an increase in the heart rate and reduction in arterial oxygen saturation following a simultaneous visit with four of his visitors; therefore, it is expected that the increased number of visitors at CCUs does not have positive effects, as this leads to increased noise in the unit which in turn increases patients' anxiety and dissatisfaction. Therefore, it is suggested to allow each patient to visit only one of his/her visitors.

5.1. Conclusions

The results of this study showed that face-to-face visiting, provided that it is within some frameworks, including specific visit time, specific number of visitors, sterilization, and confirmation of the physician, might decrease the anxiety of hospitalized patients at CCUs. This method not only decreases the anxiety of patients and their companions but also can improve the efficiency of recovery and help speed up the healing process.

Acknowledgments

Footnotes

Authors' Contribution: Study concept and design, Hadi Bahrami and Vahid Kheirandish; Analysis and interpretation of data, Leily Mahmudi; Drafting of the manuscript,

Azar Hosseini; Critical revision of the manuscript for important intellectual content, Vahid Kheirandish and Seied Kosar Mosavi; Statistical analysis, Leily Mahmudi.

References

1. Roger VL, Go AS, Lloyd-Jones DM, Benjamin EJ, Berry JD, Borden WB, et al. Heart disease and stroke statistics-2012 update: a report from the American Heart Association. *Circulation*. 2012;**125**(1):e2–e220. doi: 10.1161/CIR.0b013e31823ac046. [PubMed: 22179539]. [PubMed Central: PMC4440543].

2. Swathy M, Saruladha K. A comparative study of classification and prediction of Cardio-Vascular Diseases (CVD) using Machine Learning and Deep Learning techniques. *ICT Express*. 2022;**8**(1):109–16. doi: 10.1016/j.icte.2021.08.021.

3. Fitzgerald JD, Johnson L, Hire DG, Ambrosius WT, Anton SD, Dodson JA, et al. Association of objectively measured physical activity with cardiovascular risk in mobility-limited older adults. *J Am Heart Assoc*. 2015;**4**(2). doi: 10.1161/JAHA.114.001288. [PubMed: 25696062]. [PubMed Central: PMC4345863].

4. Ingram P, Sinclair L, Edwards T. The safe removal of central venous catheters. *Nurs Stand*. 2006;**20**(49):42–6. doi: 10.7748/ns2006.08.20.49.42.c4483. [PubMed: 16939143].

5. Yamamoto T, Yoshida N, Takayama M, Tokyo C. Temporal Trends in Acute Myocardial Infarction Incidence and Mortality Between 2006 and 2016 in Tokyo- Report From the Tokyo CCU Network. *Circ J*. 2019;**83**(6):1405–9. doi: 10.1253/circj.CJ-19-0187. [PubMed: 31006733].

6. Mohebbi B. ST-Segment Elevation Myocardial Infarction. In: Maleki M, Alizadehasl A, Haghjoo M, editors. *Practical Cardiology*. Amsterdam: Elsevier; 2018. p. 311–27. doi: 10.1016/b978-0-323-51149-0.00019-5.

7. Garvin BJ, Moser DK, Riegel B, McKinley S, Doering L, An K. Effects of gender and preference for information and control on anxiety early after myocardial infarction. *Nurs Res*. 2003;**52**(6):386–92. doi: 10.1097/00006199-200311000-00006. [PubMed: 14639085].

8. Zhang L, Bao Y, Tao S, Zhao Y, Liu M. The association between cardiovascular drugs and depression/anxiety in patients with cardiovascular disease: A meta-analysis. *Pharmacol Res*. 2022;**175**:106024. doi: 10.1016/j.phrs.2021.106024. [PubMed: 34890773].

9. Mehrnejad N, Ganji T, Ardeshiri M, Fathi P. [The effect of family presence at the bedside on serum cortisol levels and physiological indexes in patients hospitalized in intensive care unit]. *Iran J Cardiovasc Nurs*. 2014;**2**(4):36–42. Persian.

10. Benner P, Kyriakidis PH, Stannard D. *Clinical Wisdom and Interventions in Acute and Critical Care*. 2nd ed. New York, USA: Springer Publishing Company; 2011. doi: 10.1891/9780826105745.

11. Tel H, Tel H. The effect of individualized education on the transfer anxiety of patients with myocardial infarction and their families. *Heart Lung*. 2006;**35**(2):101–7. doi: 10.1016/j.hrtlng.2005.09.001. [PubMed: 16543038].

12. Moskowitz LJ, Rosen T, Lerner MD, Levine K. Assessment of Anxiety in Youth With Autism Spectrum Disorder. In: Kerns CM, Renno P, Storch EA, Kendall PC, Wood JJ, editors. *Anxiety in Children and Adolescents with Autism Spectrum Disorder*. Massachusetts, USA: Academic Press; 2017. p. 79–104. doi: 10.1016/b978-0-12-805122-1.00005-3.

13. Goes TC, Almeida Souza TH, Marchioro M, Teixeira-Silva F. Excitotoxic lesion of the medial prefrontal cortex in Wistar rats: Effects on trait and state anxiety. *Brain Res Bull*. 2018;**142**:313–9. doi: 10.1016/j.brainresbull.2018.08.009. [PubMed: 30120930].

14. Nikayin S, Rabiee A, Hashem MD, Huang M, Bienvenu OJ, Turnbull AE, et al. Anxiety symptoms in survivors of critical illness: a systematic review and meta-analysis. *Gen Hosp Psychiatry*. 2016;**43**:23–9. doi: 10.1016/j.genhosppsych.2016.08.005. [PubMed: 27796253]. [PubMed Central: PMC5289740].

15. Cullen L, Titler M, Drahozal R. Family and pet visitation in the critical care unit. *Crit Care Nurse*. 1999;**19**(3):84–7. [PubMed: 10661096].

16. Lee MD, Friedenberg AS, Mukpo DH, Conray K, Palmisciano A, Levy MM. Visiting hours policies in New England intensive care units: strategies for improvement. *Crit Care Med*. 2007;**35**(2):497–501. doi: 10.1097/01.CCM.0000254338.87182.AC. [PubMed: 17205012].

17. Herbert V, Harris C, Schmollgruber S, Langley G. Open visiting: Beliefs and attitudes of intensive care clinicians. *Combined meeting of the Critical Care Society of Southern Africa (CCSSA)*. Sun City, North West Province, South Africa. Critical Care Society of Southern Africa; 2012.

18. Tanner J. Visiting time preferences of patients, visitors and staff. *Nurs Times*. 2005;**101**(27):38–42. [PubMed: 16035413].

19. Hardin SR, Bernhardt-Tindal K, Hart A, Stepp A, Henson A. Critical-care visitation: the patients' perspective. *Dimens Crit Care Nurs*. 2011;**30**(1):53–61. doi: 10.1097/DCC.0b013e3181fd03a0. [PubMed: 21135614].

20. 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**(2):605–22. doi: 10.1097/01.CCM.0000254067.14607.EB. [PubMed: 17205007].

21. Gonzalez CE, Carroll DL, Elliott JS, Fitzgerald PA, Vallent HJ. Visiting preferences of patients in the intensive care unit and in a complex care medical unit. *Am J Crit Care*. 2004;**13**(3):194–8. [PubMed: 15149052].

22. Fumagalli S, Boncinelli L, Lo Nostro A, Valoti P, Baldereschi G, Di Bari M, et al. Reduced cardiocirculatory complications with unrestrictive visiting policy in an intensive care unit: results from a pilot, randomized trial. *Circulation*. 2006;**113**(7):946–52. doi: 10.1161/CIRCULATIONAHA.105.572537. [PubMed: 16490316].

23. Mahram B. *Standardization of Spielberger's test anxiety inventory in Mashhad*. Tehran, Iran: Allameh Tabatabaei University; 1994.

24. Khanipour H. [Thought control strategies and trait anxiety: predictors of pathological worry in non-clinical sample]. *Int J Behav Sci*. 2011;**5**(2):173–8. Persian.

25. McAdam JL, Puntillo KA. Open visitation policies and practices in US ICUs: can we ever get there? *Crit Care*. 2013;**17**(4):171. doi: 10.1186/cc12763. [PubMed: 23905784]. [PubMed Central: PMC4056561].

26. Kamrani F, Seyedjavadi M, Abedsaeedi Z, Alavimajd H, Hosseinian E. Physiologic indices of patients before, during and after visit in coronary care unit at Imam Khomeini hospital in Ardebil. *Adv Nurs Midwifery*. 2010;**20**(70):18–22.

27. Salavati M, Najafvandzadeh M, Oshvandi K, Homayonfar PDS, Soltanian AR. [The effects of programmed visiting on physiological indexes in CCU patients]. *Avicenna J Nurs Midwifery Care*. 2012;**20**(3):43–53. Persian.

28. Rezaie H, Sadeghi T, Abdoli F. The effects of scheduled visitation on the physiological indices of conscious patients admitted at intensive care units. *Evid Based Care J*. 2016;**5**(4):33–40.

29. Rahmani R, Ahmadian YR, Motahedian E, Rahimi A. [To assess the effect of planed meeting on the physiologic indicators of the patients who suffer from Acute Coronary Syndrome]. *Iran J Crit Care Nurs*. 2013;**6**(1):57–64. Persian.

30. Azimi Lolaty H, Bagheri-Nesami M, Shorofi SA, Golzarodi T, Charati JY. The effects of family-friend visits on anxiety, physiological indices and well-being of MI patients admitted to a coronary care unit. *Complement Ther Clin Pract*. 2014;**20**(3):147–51. doi: 10.1016/j.ctcp.2014.03.002. [PubMed: 25129882].