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Original Article

Evaluation of the Effects of Social Media-Based Training on Satisfaction and Anxiety Among the Families of Patients at the Intensive Care Unit After Coronary Artery Bypass Surgery

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ABSTRACT

Background: Patients' relatives who receive insufficient information suffer immense anxiety before their patients' surgery and hospitalization. Providing information and training via social media alleviates anxiety and boost satisfaction among patients' relatives.
This research was conducted to evaluate the effects of social media-based training on anxiety and satisfaction among the family members of patients at the intensive care unit (ICU) following coronary artery bypass graft surgery (CABG).

Methods: In the present quasi-experimental research, the study population was divided into intervention and control groups. Data were collected on 100 family members of patients at the ICU after CABG in the year 2017. The sample was selected via the convenience sampling method in Rajaie Cardiovascular, Medical, and Research center. The intervention group became members of a Telegram channel and subsequently received information about CABG and postoperative treatments through this channel. For the control group, however, only traditional methods were performed. For data collection, the Spielberger State-Trait Anxiety Inventory (STAI) questionnaire and and ICU family satisfaction questionnaire were used. The data were analyzed in SPSS.

Results: Based on the findings, there were no statistically significant differences between the 2 groups before the intervention. However, after the intervention, the average score for the STAI questionnaire showed a significant drop and the amount of satisfaction after receiving information exhibited a significant rise in the intervention group, as compared with the control group ($P < 0/0001$).

Conclusions: Based on our findings, social media-based training confers increased satisfaction and reduced anxiety among the family members of post-CABG patients at the ICU. ***(Iranian Heart Journal 2019; 20(4): 13-21)***

KEYWORDS: Coronary artery bypass surgery, Anxiety, Satisfaction, Virtual media, Social media, Family-centered care

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Due to significant changes in lifestyle all around the world, it is predicted that by the year 2020, cardiac diseases will have replaced infectious diseases as the leading cause of mortality and morbidity. [1] In Iran, cardiac diseases are the leading cause of death in both genders as well. [1,2]

The prevalence of cardiac diseases is very high and, consequently, cardiac surgery is the most prevalent procedure and the essential method for the treatment of such diseases. [3] Hospitalization for cardiac surgery can create anxiety among the patient's family members; the anxiety level among this group may be high by comparison with the family members of patients undergoing non-cardiac surgery. [4] The results of a study by Siahkali et al [5] suggested that 77.1% of their patients' family members experienced a degree of anxiety. The intensive care unit (ICU) and its unfamiliar equipment, strange treatment furnishings, monitor circuits, and other wires connected to the patient, in addition to the complicated situation, all together may increase anxiety among the family members of the patient. [6]

Today, a key concept in nursing care is "satisfaction". The importance of satisfaction is not limited to patients; it is essential for patients' family members as well. Some key factors have been suggested for the measurement of family satisfaction such as the sympathy and empathy of personnel, respect, emotional aspects of behavior, the information presented to families and the level of health care and treatment. [7] Human beings need education to take care of themselves, to remain healthy, and to recover from diseases. Educating patients is, therefore, the most important factor in the performance of health care and treatment professionals. [8]

Family education is a process that provides the opportunity of learning together, both for patients and their family. The topic of education may include the disease itself, treatment, compatibility mechanisms, and developing different coping skills. [9] Patients' family education is an essential component of self-care. [10] Education is one of the main roles of nurses, and today it is considered a priority in community-based health care programs the world over. [11] As a result, it is necessary for nurses to educate not only patients but also their families. [12] Technology may change communities; the influence of the virtual world on the spheres of policy, economy, and cultural affairs is incredible. By participating in social networks and using social media, people can enjoy the advantages of such networks and media. For example, they can get support, information, and emotions and feelings from other people. [13] Through this technology, great amounts of information can be transferred easily in a short period of time and provide opportunities to deal with the different effects of anxiety on the family members of the patient. This can be a solution to the problem of providing patients' families information with a view to alleviating and managing their anxiety. [14]

Today, the duration of hospitalization after cardiac surgery is declining and a great proportion of patients' recovery time is spent at home, without continuous medical and nursing care; as a result, the needs of patients and their families should be examined and necessary supports should be presented during the time of admission and before discharge. There is, however, a paucity of information in this regard in the existing literature, although nurses constitute the largest medical staff in the hospital. [15,16] We aimed to evaluate the effects of virtual social network-based education on the degree of anxiety and satisfaction among the family members of post-CABG patients at the ICU.

METHODS

The present quasi-experimental study was conducted from January to March 2016. The

study population consisted of the family members of post-CABG patients at the ICU of Rajaie Cardiovascular, Medical, and Research Center in the Iranian capital city, Tehran. The sample size was calculated according to previous studies [17] with a test power of 80%. With a *P* value < 0.05 for first-time errors, our sample size was 27. With the probability of a drop in the sample size and after consultations with expert statisticians, our final sample size was 100. Via the accessible sampling method on the basis of the inclusion criteria, 50 family members of post-CABG patients were consecutively selected for the control and interventions groups. The inclusion criteria were comprised of having the main role in the care of the non-emergency CABG patient, access to the Internet and Telegram, the ability to read and understand the Persian language, age between 18 and 80 years, not having the experience of taking care of patients having undergone cardiac surgery before, and not being a member of health care or treatment teams.

The data-gathering instruments consisted of a demographic characteristics questionnaire, the Spielberger State-Trait Anxiety Inventory (STAI) questionnaire, and an ICU family satisfaction questionnaire.

The demographic characteristics questionnaire contained questions about age, sex, education, occupation, and the type of insurance. This questionnaire was completed by the family members. The STAI questionnaire contained 20 questions based on a 4-point Likert-type scale, with 4 options: 1) Not at all, 2) Sometimes, 3) Often, and 4) Almost always. The final scores obtained from the questionnaires ranged from 20 to 80. The reliability and validity of the STAI questionnaire were verified in a study by Mahram under the title of "Standardization of Spielberger" in 1994. To verify the reliability of this test, Mahram studied 600 cases and reported a Cronbach's alpha for the reliability of 0.942 in the normal population and 0.9418 in the criterion population. [18] In Mahram's study on the validity of this test, the mean of the anxiety level in the normal and criterion populations was compared at the level of 0.05 and 0.1 in all age groups and the result was statistically significant with satisfactory validity. The severity of anxiety was measured in both intervention and control groups using the anxiety questionnaire of Spielberger. This assessment was done in a pretest-posttest design. The first assessment was done at the time of admission of the patient for cardiac surgery and the second one after discharge from the ICU. The questionnaire for the patients admitted in the ICU following CABG was evaluated from the point of validity and reliability by Heidary and colleagues[19] in Iran. The questionnaire consists of 24 questions with a 4-point Likert scale and a range of 24 to 96. The satisfaction questionnaire was also completed once on the day of admission for surgery and subsequently after the discharge of the patient from the ICU.

After obtaining permission from the Committee on Ethics and Research of Rajaie Cardiovascular, Medical, and Research Center (code: RHC, AC. IR. REC.1396. S7 on 16/12/2017), the researcher explained the targets and methods of the study to the patients' families in a clear and understandable language and assured them of the confidentiality of their information. The researcher also explained the possibility of the exclusion of some samples from the study in the case of the unwillingness of each sample. Thereafter, the researcher obtained written informed consent from the patients and their families.

The intervention was carried out by the researcher with the aid of current literature review and references. The researcher also designed a Telegram channel with the goal of educating the families by providing them with information regarding ICU conditions, hospital rules, clinical postoperative situations, the principles of taking care of patients at home and hospital, necessary diet and medications, the level of patients' activity at home, wound

management, and the rehabilitation of patients. The main caregivers of the patients became members of this Telegram channel. It should be noted that joining this Telegram channel was only possible under the control of the researcher so that none of the control group members had access to this channel. In addition to all the interventions, the Telegram group members had the opportunity to secretly chat with the researcher and receive information about their patients' postoperative condition during the ICU admission. In the control group, the routine type of education was offered to the families via traditional methods such as brochures and conversations with nurses and physicians during the time of the study.

Ultimately, after the completion and collection of all the questionnaires, the data were analyzed using SPSS 23 with descriptive and analytic statistical tests such as the Mann–Whitney *U* test. The *t*-test and the χ^2 test were also utilized for data analysis.

RESULTS

In the present study, 105 subjects were evaluated in 2 groups. The drop-out rate was 4.7% or 5 subjects. Two of them were in the control group, and they were excluded because of unwillingness to participate in the study. The other 3 subjects were in the intervention group: two of them were excluded because of extubation failure in the first 24 hours after surgery and the other one was excluded because of unwillingness to participate in our research. The age of the samples was evaluated using the *t*-test. The other demographic variables such as gender, marital status, education, occupation, and the type of insurance were analyzed using the χ^2 test. The results suggested that both control and intervention groups were matched in terms of the aforementioned demographic characteristics (Table 1 & Table 2).

Table 1. Assessment of the similarity in age between the control and intervention groups, consisting of the family members of the post-CABG patients at the ICU (These findings are shown as descriptive statistics, including mean ± standard deviation.)

Group	Number	Mean and Standard Deviation	T	DF	*P* value
Intervention	50	37.94±11.71	0.35	1	0.72
Control	50	38.68±14.02	-	-	-

CABG, Coronary artery bypass graft surgery; ICU, Intensive Care Unit

The analysis of the range of the changes and the median of the satisfaction scores via the Mann–Whitney *U* test showed a statistically significant difference between the intervention and control groups. The result suggested that the intervention (virtual education) was effective in improving family satisfaction ($P < 0.001$) (Table 3). The comparison of the obvious and hidden anxiety through the independent *t*-test revealed a significant difference between the 2 groups: the intervention group had lower degrees of anxiety than did the control group ($P < 0.001$) (Table 4 & Table 5).

As is shown in Table 1 and Table 2, the 2 study groups were matched in terms of age and other demographic characteristics and there were no significant differences according to these variables between the groups ($P < 0.05$). It can, therefore, be concluded that any difference in the result of satisfaction and anxiety scores between the 2 groups was related to the intervention.

Table 2. Comparison of the demographic characteristics between the intervention and control groups

Variable	Intervention Group	Control Group	*P* value	Statis.
Gender				
male	56%	60%	0.68	**X^2=0.16**
female	44%	40%		
Marital Status				
single	22%	14%	0.31	**X^2=3.54**
married	72%	82%		
divorced	4%	0		
Widowed	2%	4%		
Occupation				
employed	57.2%	64%	0.5	**X^2=1.25**
retired	2%	0		
homemaker	40.8%	0.36%		
Level of Education				
illiterate	0	0	0.13	**X^2=7.11**
elementary	7%	6%		
secondary school	30%	40%		
high school	28%	26%		
academic education	32%	28%		
Type of Insurance				
Health care service	14%	18%	0.74	**X^2=0.57**
social security	54%	56%		
Others	29%	26%		

Table 3. Comparison of the range of the changes and the median of the satisfaction score between the control and intervention groups

Group	Number	Median	Range	*P* value
Before Intervention				
intervention group	50	31.74	27-35	0.52
control group	50	31.42	27-37	
After Intervention				
intervention group	50	88.24	54-96	** <0.0001
control Group	50	53.34	40-65	

(*P* value is significant when < 0.05 [shown with ** sign].)

Table 4. Comparison of the mean hidden anxiety score between the intervention and control groups

Group	Number	Mean ± SD	*P* value
Before Intervention			
intervention group	50	51.32± 5.29	0.6
control group	50	51.9 ± 5.77	
After Intervention			
intervention group	50	26.82± 3.25	** <0.0001
control group	50	33.70±2.38	

(*P* value is significant when < 0.05 [shown with ** sign].)

Table 5. Comparison of the mean and the standard deviation of the obvious Anxiety score between the intervention and control groups

Group	Number	Mean ± (SD)	*P* value
Before Intervention			
intervention group	50	48.44 ± 6.18	0.7
control group	50	46.20 ± 6.42	
After Intervention			
intervention group	50	28.26 ± 3.66	** <0.0001
control group	50	35.60 ± 3.73	

(*P* value is significant when < 0.05 [shown with ** sign].)

DISCUSSION

The results of the current study demonstrated that virtual social network-based education significantly decreased the degree of anxiety and increased the level of satisfaction in the intervention (experimental) group. This finding is similar to that reported by Farzafmehr et al [20], Selahshur et al [21], and Golaghaii et al. [22] In their clinical trial, Farzadmehr and colleagues evaluated the family members of patients admitted to the cardiac surgery ICU and reported that nursing counseling programs and effective communication between nurses and families reduced the degree of anxiety in the family members. Similar to our study, in their investigation, Farzadmehr and coworkers also employed the STAI questionnaire for the assessment of anxiety in their study population. The type of intervention in their study was nursing counseling, whereas we implemented our intervention with a virtual social network. [20]

In a 2-group quasi-experimental study using the Depression Anxiety Stress Scales (DASS) questionnaire, Selahshur and colleagues suggested that nursing support programs such as informational and emotional supports lessened anxiety in family members during cardiac surgery. [21]

Farahani et al [23] conducted a quasi-experimental study to assess the effects of cyberspace educational support on satisfaction and efficacy among mothers whose neonates were admitted to the NICU. In that study, the mothers in the control group received routine education, while the mothers in the intervention group received cyberspace education. The results showed that in both groups, the satisfaction and efficacy levels increased after any kind of education (routine or cyberspace); nonetheless, a comparison of the mean scores showed that the improvement in the satisfaction level was significantly higher in the experimental group, who received cyberspace education, than in the control group. This result chimes in with our study. While Farahani and coworkers used the satisfaction questionnaire of Pridham for the evaluation of satisfaction, we drew upon a satisfaction questionnaire for the family members of patients at the ICU.

In 2013, a clinical trial was performed by Saleh Moghadam et al, [24] who sought to assess the effects of virtual education on adherence to diet among patients with type 2 diabetes mellitus. The results of that study are concordant with our findings in that Saleh Moghadam and colleagues showed that in the intervention group members, who received virtual education, improvement in adherence to the diabetic diet was statistically significant after the intervention in comparison with the control group members, who received conventional education. The type of intervention and virtual education in their study was CD, which differs from the intervention carried out in our study.

Farnia et al [25,26] designed investigations to evaluate the effects of family-based care on the satisfaction level among the family members of patients admitted to the ICU. The result showed

that satisfaction in the intervention group was statistically significantly higher.

Imanipour et al [14] assessed the effects of informational support on the level of anxiety in the families of patients who underwent cardiac surgery. Informational support in their study was through 3 methods: ICU acquaintance tour, in-person training sessions, and educational booklets. The results showed that the mean anxiety score had no statistically significant difference between the control and intervention groups (P = 0.18). This statistically insignificant difference between the 2 study groups of Imanipour and coworkers may be attributed to the time of anxiety assessment. In that study, the anxiety level of the family members of the patients was assessed only up to the patients' discharge time from the ICU. Another possible reason is that the nurses in that study focused only on informational needs and neglected other needs.

CONCLUSIONS

The findings of the present study support the hypothesis of the research insofar as they showed that virtual social network-based education alleviated anxiety and boosted satisfaction among the family members of post-CABG patients at the ICU. In today's modern society, where specialization in all aspects of life is manifest, in the field of education, we must choose special methods that are appropriate for specific target populations and situations. Evidence shows that these methods can augment the learners' levels of knowledge and skills.

Study Limitations

The small sample size in an educational environment of the current study constrains the generalizability of the results to the family members of other patients. Therefore, we recommend that this factor be considered in future similar research.

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Conflict of Interest

There are no conflicts of interest as regards the authors of this article.

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