



Evaluating the Effect of Planned Online Video Visitations on Anxiety and Depression of Patients at Open Heart Intensive Care Unit: A Randomized Controlled Trial

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Abstract

Background: Anxiety and depression are among the most important and common problems in patients admitted to the intensive care unit open-heart (ICU-OH). While the family plays a vital supportive role in decreasing these complications, patients are deprived of this supportive source during the important post-operative days due to visiting restrictions at these wards.

Objectives: Therefore, this study aimed to evaluate the role of online video visitations on the anxiety and depression of patients at ICU-OH.

Methods: This randomized clinical trial was carried out among 66 patients at ICU-OH of Imam Reza Hospital in Mashhad, Iran. The subjects were selected by the convenience sampling method and were randomly allocated to the intervention and control groups. Data were collected using a demographic characteristics checklist and HADS. In the intervention group, online video visitations with the family were carried out three times in the morning, evening and night on the second and third days of hospitalization in ICU-OH. In the control group, patients received the routine care of the ward and had no visitations with their families. Data were collected before the surgery, as well as 24 and 48 hours after admission to the ICU-OH. In addition, data analysis was performed in SPSS using independent t-test, Mann-Whitney U test, paired t-test, and Chi-square test.

Results: No significant difference was observed between the intervention (7.8 ± 2.2) and control (8.3 ± 2.3) groups regarding the mean anxiety score 24 hours after the intervention ($P = 0.416$). However, the mean anxiety scores 48 hours after the intervention were 6.1 ± 2.3 and 7.7 ± 2.6 in the intervention and control groups, respectively, showing a significant decrease in the intervention group, compared to the control group ($P = 0.010$). However, the mean depression scores 24 and 48 hours after the intervention were estimated at 8.0 ± 2.0 and 7.1 ± 2.0 , respectively, demonstrating no significant difference from the control group ($P = 0.933$ and $P = 0.269$).

Conclusions: According to the study results, online video visitations decreased anxiety in patients at ICU-OH. Therefore, it is recommended that this method be used as an alternative to in-person meetings of patients at this ward.

Keywords: Planned Online Video Visitations, ICU-OH, Anxiety, Depression

1. Background

Cardiac diseases, and at the top of them, ischemic heart disease, have become one of the most serious health problems in the world during the late 20th and early 21st centuries (1). One of the valuable and effective methods in the treatment of coronary artery disease is coronary artery bypass graft (CABG) (2). However, surgery is one of the most stressful phenomena in life. Regardless of its type and severity, surgery is considered a severely stressful condition in patients (3). Patients in intensive care units (ICUs) face an abnormal environment that creates psychological distress (4). However, depression and anxiety are the most

severe post-operative psychological disorders (5). Awaiting surgery, being hospitalized, fear of death, acquaintance with someone who died the same way, and fear of the unknowns lead to depression and anxiety in patients (6). Generally, anxiety and depression are one of the major causes of prolonged hospital stay, wound infection, pain (7), and even increased mortality and serious complications (8). In addition, anxiety and depression in a patient undergoing heart surgery can prolong recovery and increase respiratory rhythm, heart rhythm, blood pressure, and gastric stasis (9).

Drug therapy is a conventional method to deal with

anxiety and depression in these patients. However, given the detrimental effects of these drugs on the body, it seems that more attention must be paid to non-pharmaceutical methods. Various methods (e.g., psychological counseling sessions, educational movies, music therapy before surgery, and introducing patients to staff and familiarizing them with operating room equipment) have been used in different studies, yielding completely contradictory results (10). Therefore, more effective, cost-effective, and implementable methods must be identified and applied to reduce depression and anxiety in these patients.

Visiting patients is one of the most fundamental rights of patients and their families and is recognized as an important support system. Given the cultural and social features of the Iranian community, people mostly use support-seeking compatibility mechanisms (e.g., family) to reduce the anxiety and depression caused by the disease (11). According to Lee et al. (12), patient visitation is one of the top 100 most important needs of a patient admitted to ICU. Nevertheless, patients hospitalized in ICUs are often deprived of meeting their families. Currently, visiting restrictions are applied in almost all Iranian hospitals due to various reasons, such as the risk of infection, delay in rest, violation of patient privacy, disrupting nursing and medical care, and changes in physiological indexes such as pulse and blood pressure (13). All of these concerns have led to healthcare staff's resistance to in-person patient visits.

With regard to the mentioned issues, a solution must be proposed for visiting patients in a way that they could benefit from the supportive effects of this act while clinical staff's concerns about this issue were eliminated. Along with traditional methods, the advancement of communication technology, and the expansion of the use of various communication methods and tools have provided an opportunity for using other methods of virtual communication (i.e., not in-person), such as video and Internet visiting (14). Online video visitation is a virtual way to talk face-to-face with a patient. In addition, an online video visitation involves video and audio communication between a hospitalized patient and his/her family through the Internet using a video communication software program. In general, online video visitations are low cost and easy to use. Given the expansion of communication programs between people, holding virtual and remote visitations can replace in-person meetings in special units, which also prevents issues that concern physicians and nurses.

2. Objectives

Therefore, this study evaluates the effect of planned online video visitations on anxiety and depression of patients

admitted to ICU-OH.

3. Methods

This was a randomized parallel-group controlled clinical trial performed during July 2019-January 2020 at ICU-OH of Imam Reza Hospital in Mashhad, Iran. The statistical population included all patients hospitalized at the ICU-OH of the mentioned hospital. Inclusion criteria were willingness to participate in the study, the age range of 18 - 75 years, being in a conscious state, ability to verbally communicate, lack of a history of known anxiety and depression, undergoing coronary artery bypass graft (CABG) for the first time, and a smartphone with an internet connection to be used by patients' families. On the other hand, the exclusion criteria included hemodynamic instability, decreased consciousness, returning to the operating room for any reason, need for reintubation, and inability to communicate through video calls more than two times.

In total, 66 CABG candidates were selected by convenience sampling and were randomly divided into intervention and control groups. According to a pilot study, the minimum sample size was estimated at 20 (10 per group), and the mean comparison formula with a 95% confidence interval and 80% test power was estimated for all the indexes. In the end, a total of 66 patients (33 per group) were entered into the study. The following questionnaire was applied to evaluate anxiety and depression in patients:

Hospital Anxiety and Depression Scale (HADS) is a self-reporting questionnaire developed to screen for levels of anxiety and depression among patients in a general hospital setting. This part of the scale comprises 14 items related to anxiety (seven items) and depression (seven items). Each test item is scored based on a three-point scale, and a total of 21 scores can be attained in this section of the scale. In this regard, the score range of 0-7 is indicative of a healthy state, whereas the score ranges of 8 - 10 and ≥ 11 show interstitial disorder and pathological disorder, respectively. The scale can be completed in less than five minutes and targets individuals from 16-year-olds to elderlies. The validity and reliability of its Farsi translation were confirmed by Montazeri et al. (15) at a Cronbach's alpha of 0.78 and 0.86 for the subscales of anxiety and depression, respectively. In the current research, the content validity of the tool in terms of ease of use was confirmed by seven faculty members of the School of Nursing and Midwifery, including the Department of Psychiatric Nursing.

Patients' individual data were collected using a researcher-made questionnaire, which contained multiple-choice and short questions about age, weight, height, gender, marital status, level of education, occupational status, history of depression, and anxiety disorders,

using sedatives, and history of CABG. The questionnaire was completed by patients through self-report and based on their medical files. The questionnaire's content validity was confirmed by seven faculty members of the School of Nursing and Midwifery, including the Department of Psychiatric Nursing. The research was initiated after receiving permission from the regional Ethics Committee of Mashhad University of Medical Sciences, obtaining an introduction letter from the School of Nursing and Midwifery, and presenting it to the authorities of Imam Reza Hospital and ICU-OH. After admission to the ICU-OH, the research objectives were explained to the participants, and an informed written consent was obtained to participate in the study.

Subjects were selected by the random time block method. The random sequences were created in SPSS and written on small cards held in closed envelopes. At the beginning of the week, the cards were removed from the envelopes, and the research subjects were allocated to the control or intervention groups that week. The eligible patients were selected based on the inclusion criteria, and their demographic characteristics and medical history were used to fill the questionnaire before the day of the survey through interviews by the researcher at the ICU-OH. In the intervention group, an educational meeting was held for the patients and their families to teach the method of communication through IMO software and the schedule of online video visitations. Patients selected their visitors, which could be more than one person due to the possibility of visiting multiple family members.

The HADS was completed by patients the night before the surgery. On the first hospitalization day, no online video visitations were made, which was due to the intubation of patients and their lack of full consciousness after removing the endotracheal tube due to the effect of sedatives. However, online video visitations were conducted between patients and their companions three times in the morning, evening, and night shifts on the second and third days. However, the visits were scheduled in a way that they would not interrupt the physician's visit, nursing, and medical care, and patients' rest time. It is notable that online video visitations were made after confirming patients' preparedness; otherwise, no communication would be made. However, all the patients had at least two online video visitations per day with their families. At the end of the second and third days, the HADS was completed by all patients, similar to before the intervention. On the other hand, the method of routine care with no visits was conducted in the control group.

In order to adhere to ethical considerations, the subjects were ensured of the confidentiality of their personal information. In addition, the participants were allowed

to withdraw from the study at any time. The current research was approved by the Ethics Committee of Mashhad University of Medical Sciences with the code of ethics: IR.MUMS.NURSE.REC.1398.038. Moreover, the study was registered at the Iranian Registry of Clinical Trials (IRCT) with the code of IRCT20190705044105N1. Data analysis was performed in SPSS version 23 using the Kolmogorov-Smirnov test, Shapiro-Wilk test, Mann-Whitney U test, and independent *t*-test.

4. Results

In this study, 78.8% ($N = 52$) of the 66 patients were male, and the rest were female. The mean age of the patients in the intervention and control groups was 51.8 ± 13.5 and 50.8 ± 15.1 years, respectively. According to the independent *t*-test, no significant difference was observed between the groups in terms of age ($P = 0.777$). Other demographic variables were evaluated by Chi-square and Mann-Whitney U test, and the results were indicative of homogeneity between the groups (Table 1).

In addition, no significant difference was observed between the intervention and control groups regarding the mean anxiety score before the intervention. Holding online video visitations for patients during the first 24 hours of hospitalization in ICU-OH led to no significant difference between the groups despite a decrease in patients' anxiety in the intervention group. However, the anxiety of patients significantly decreased 48 hours after admission to the ICU-OH, compared to the control group ($P = 0.010$). Moreover, the intergroup test showed that online visiting significantly reduced anxiety scores in the intervention group, compared to the control group ($P < 0.001$; Table 2).

On the other hand, the results of the independent *t*-test were indicative of no significant difference between the intervention and control groups in terms of depression score after the intervention. Similar results were obtained 24 and 48 hours after the intervention ($P = 0.933$ and $P = 0.269$; Table 3).

5. Discussion

This study aimed to determine the effect of online video visits on the anxiety and depression of patients admitted to the ICU-OH. Regarding the first objective of the study, the results showed that patients' anxiety in the intervention group was significantly reduced within 48 hours after the intervention. This finding can be justified by the fact that the psychological support of the visitors

Table 1. Demographic Characteristics of Patients in the Intervention and Control Groups

Variable	Group		Test Results
	Intervention (N=33)	Control (N = 33)	
Marital status			P = 0.229 ^a
Single	4 (12.1)	7 (21.2)	
Married	24 (72.7)	20 (60.6)	
Deceased spouse	3 (9.1)	6 (18.2)	
Divorced	2 (6.1)	0 (0.0)	
ICU or CCU admission history			P = 0.769 ^b
Yes	7 (21.2)	8 (24.2)	
No	26 (78.8)	25 (75.8)	
Type of surgery			P = 0.778 ^b
Heart valve surgery	8 (24.2)	9 (27.3)	
Heart vascular surgery	25 (75.8)	24 (72.7)	
Income level			P = 0.848 ^a
Less than enough	15 (45.5)	13 (39.4)	
Enough	17 (51.5)	18 (54.5)	
More than enough	1 (3.0)	2 (6.1)	

^aExact chi-square^bChi-square**Table 2.** Anxiety Score of Patients at ICU-OH in the Intervention and Control Groups Before and After the Intervention

Anxiety	Group		Test Results
	Intervention (N = 33)	Control (N = 33)	
Before the intervention	8.9 ± 2.2	8.8 ± 2.0	P = 0.724 ^a
24 hours after the intervention	7.8 ± 2.2	8.3 ± 2.3	P = 0.416 ^a
48 hours after the intervention	6.1 ± 2.3	7.7 ± 2.6	P = 0.010 ^a
Intergroup test results	P < 0.001 ^b	P = 0.001 ^b	

^aIndependent t-test^bThe repeated measurements ANOVA**Table 3.** Depression Score of Patients at ICU-OH in the Intervention and Control Groups Before and After the Intervention

Depression	Group		Test Results
	Intervention (N = 33)	Control (N = 33)	
Before the intervention	7.7 ± 2.4	6.8 ± 2.6	P = 0.132 ^a
24 hours after the intervention	8.0 ± 2.0	8.1 ± 2.6	P = 0.933 ^a
48 hours after the intervention	7.1 ± 2.0	7.7 ± 2.6	P = 0.269 ^a
Intergroup test results	P = 0.187 ^b	P = 0.008 ^c	

^aIndependent t test^bFriedman^cThe Repeated Measurements ANOVA

and their empathy will cause peace of mind in patients, reduce mental tension, and ultimately, decrease their anxiety. Various studies have shown that visiting patients and

accompanying them in the intensive care unit reduces their anxiety. Fumagalli et al. (16) reported that unrestricted visiting policy significantly reduced anxiety in ICU-

OH patients, which is in line with our study findings that showed the importance of family psychological support in reducing patients' anxiety. Due to the fact that people are dependent on their families in Iranian culture and family relationships are very important, forbidding a patient to have visitors causes the patient to be deprived of the important psychological support of the family.

Ahmadian et al. (17) found that allowing three visits per day in patients admitted to the cardiac intensive care unit significantly reduced anxiety on the third day compared to the first day, which is consistent with the results of the present study. Yari-Bajelani (18) found that the open visit policy for patients after coronary artery bypass graft surgery significantly reduced their anxiety compared to the control group. Bashti et al. (19) reported similar results; their study showed that the visiting policy led to a reduction in the anxiety of patients with angina pectoris admitted to ICUs.

The mentioned studies examined the effect of hospital visits, which are not possible in Iran due to the fact that ICU-OH patients are not allowed to have visitors. On the one hand, applying an open hospital visiting policy increases the risk of transmitting infections, disrupting the privacy of other patients, overcrowding, and interfering with nursing and medical care. On the other hand, the ban on hospital visits causes many psychological problems for the patient, so it is important to think of alternative ways. In the present study, online video visit was used to provide communication between the patient and his family, and the literature review did not show any similar study investigating the effect of online video visits to establish communication between hospitalized patients and their families, and this study is the first attempt to use this method.

Regarding the second objective of this study, the results showed that depression was decreased in both groups after the intervention among ICU-OH patients, but the difference between the two groups was not significant. Fumagalli (16) found that the unrestrictive visiting policy did not reduce depression in patients, in line with our study results. Given that depression is an indicator that requires more time to be affected, a lack of significant difference in this reduction is justified because depression does not change in a short time, unlike anxiety. White et al. (20) found that the development of a family support program had no effect on the depression of ICU patients. Ahmadian also stated that open visiting after three days did not cause a significant reduction in depression in the intervention group (17).

The findings of Camp (2010) and Jennifer M (2009) showed that increased patient-family visits reduced anxiety and depression (21), contrary to the results of the present study. The reason for the difference in results can

be due to the short period of intervention in the present study. Due to the short duration of hospitalization of patients in ICU-OH, it was impossible to have a longer intervention in this study. Therefore, longer-term interventions are needed to investigate the effect of open visits on depression.

The results of this study suggest that online video visits are just as effective as hospital visits while they do not have the disadvantages of hospital visits. Especially after the COVID-19 epidemic, which led to restrictive visiting policies in hospitals, effective communication between patients and their families can reduce the psychological effects of restrictive visiting policies.

5.1. Conclusion

Given the fact that online video visitations decreased anxiety and depression in patients admitted at ICU-OH, this method can be used to reduce postoperative complications in these patients. Since these patients experience strict restrictions on visiting family members, online video visitations can be a suitable replacement for in-person visits. In addition to the mental support of patients by their families, online video visitations are easy to use and cost-effective and decrease referrals to hospitals. It can be particularly used when contagious diseases such as COVID-19 are prevalent, and hospital visits are forbidden.

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Footnotes

Authors' Contribution: Study concept and design: R. M., and S. V.; analysis and interpretation of data: R. M., and H. SH.; drafting of the manuscript: H. SH.; critical revision of the manuscript for important intellectual content: SH. A, R. M., and S. V.; statistical analysis: H. SH, R.M.

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