



The Effect of Telehealth Communication on Anxiety, Depression, and Visits of Family Members of COVID-19 Patients Admitted to Intensive Care Units

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Abstract

Background: The family's inability to communicate with a patient with COVID-19 who was admitted to the intensive care unit (ICU) and the lack of information about the patient's condition greatly affected the anxiety, depression, and uncertainty of family members.

Objectives: This study examined the effect of telehealth communication on anxiety, depression, and visits by family members of COVID-19 patients admitted to ICUs.

Methods: This quasi-experimental study was performed on 60 family members of COVID-19 patients admitted to ICUs of medical centers affiliated with Zahedan University of Medical Sciences in 2021. The participants were selected using convenience sampling and randomly divided into intervention and control groups. In the intervention group, the patient's condition, changes in the patient's consciousness level, diagnostic and therapeutic measures, and the care received was reported daily for 5 days at the discretion of the family member in the form of audio and video messages. One day after the intervention, data were collected using the Hospital Anxiety and Depression Scale (HADS) and analyzed with SPSS software (version 22) using the paired samples *t*-test, independent samples *t*-test, chi-square test, and analysis of covariance (ANCOVA).

Results: The results of ANCOVA showed that after the intervention, the mean score of depression and anxiety of the family caregivers of patients admitted to the ICU in the intervention group was significantly lower than that of the members of the control group ($P = 0.001$). Besides, the mean number of visits made by the patient's family members in the intervention group (2.73 ± 2.04) was significantly lower than the visits made by the participants in the control group (3.96 ± 1.80) ($P = 0.001$).

Conclusions: The study's results showed that telehealth communication using audio and video messages reduced the level of anxiety and depression experienced by family members of patients with COVID-19 and reduced the frequency of their visits to the hospital. Thus, the use of new technologies to enable virtual hospital visits during the COVID-19 outbreak for families of ICU patients is recommended due to the restrictions caused by this disease.

Keywords: COVID-19, Telehealth Communication, Visit, Anxiety, Depression

1. Background

The 21st century is facing one of its greatest challenges (1). COVID-19 disease, caused by the SARS-Cov-2 virus, was first observed in Wuhan, China, in December 2019 and soon spread to all parts of the world, causing a pandemic (2). This disease has also spread widely in Iran, and according to the statistics of the Ministry of Health, Treatment and Medical Education of Iran, as of November 2021, 6,000,000

people have been infected with this disease in the country (3). About 81% of patients infected with coronavirus have mild symptoms and recover. In 14% of cases, the patient shows severe symptoms, and in 5% of cases, the patient's condition deteriorates, and the patient is admitted to the intensive care unit (ICU) (4). About one-third of ICU patients are admitted for supportive care due to the severe form of COVID-19, and more than 30% of these patients die eventually (5). A serious illness caused by any life-

threatening factor or incident causes anxiety among family members of patients cared for in the ICU. Factors such as the unstable and uncertain condition of the patient, environmental conditions of the ICU and equipment, limited visiting hours, and financial factors are involved in causing concern (6). About 25 to 50% of patients' families suffer from symptoms such as stress, anxiety, and depression, known as post-intensive care syndrome (PICS) (7).

The family members' inability to communicate with the COVID-19 patient admitted to the ICU and the lack of information about the patient's condition greatly affected the family members' stress, uncertainty, and ambiguity experienced by them. As the ban on families entering the ICU intensifies, the psychological reactions of patients' family members worsen (8). This, the admission of a COVID-19 patient to the ICU, predicts the risk of depression and anxiety in patients' family members (9). During pandemics, the severity of these symptoms increases with restrictions imposed on face-to-face visits. The prevalence of anxiety and depression in relatives of COVID-19 patients admitted to the ICU was 46.7% and 62.5%, respectively (6). Thus, healthcare systems should quickly change their strategy to a family-oriented approach (10).

Anxiety and depression affect the ability to receive and understand information, the consistency of family functioning, effective coping strategies, and providing support to the patient. Thus, providing support and adopting effective strategies are essential to prevent and reduce the causes of anxiety (11). So far, various interventions have been performed on family members of patients admitted to ICUs to improve their psychological status. Examples of these interventions include supportive training intervention to reduce anxiety, stress, and depression, and increase family satisfaction, informing about the patient's condition on the level of family anxiety, the information provided through telenursing, and its impact on the level of family members' anxiety, and application of a family-centered care model to reduce family members' anxiety. Previous studies have shown that planned reporting on the changes in the condition of COVID-19 patients admitted to ICUs reduces the level of anxiety and worry of family members (12-15).

Although families interact with healthcare staff in the ICU, they are not aware of the care received by the patient, and thus, they are not assured of the quality of care and measures taken in the ICU (16). Reporting the patient's condition is important in helping families alleviate their psychological problems. Family members must receive consistent information from updated sources (17). In order to reduce the number of family visits and eliminate their unnecessary gathering behind closed doors of the ICU, a large amount of information needed by families can be

transferred to them using information and communication technology (ICT), thus finding a solution to their information needs and, as a result, coping with their anxiety (15). Since family members cannot see, touch, or care for the patient in the ICU, virtual family visits should be made possible to facilitate communication between family members and the patient when face-to-face visits are impossible (18, 19).

Despite the desire of family members to know about the patient and the disease, due to the limitations of the ICU and the need for compliance with health protocols, they are concerned about the transmission of the disease in a dangerous hospital environment during face-to-face visits. Furthermore, given the crowds of clients, the medical staff's workload, the lack of time to answer questions, the concerns of family members, and the inconsistency in the information provided, families are not very satisfied with the quality and quantity of information provided by medical staff (16). On the other hand, despite the effectiveness of training, treatment, and telenursing care procedures and the development of online communication technologies, no study has addressed the use of these technologies during the COVID-19 critical situation to provide timely and reliable information to families of ICU patients in Iran.

2. Objectives

To this end, the present study aimed to examine the effect of telehealth communication on anxiety, depression, and visits of family members of COVID-19 patients admitted to ICUs in medical centers affiliated with Zahedan University of Medical Sciences in 2021.

3. Methods

This quasi-experimental study was performed on 60 family members of COVID-19 patients admitted to ICUs of medical centers affiliated with Zahedan University of Medical Sciences in 2021. The participants were selected using convenience sampling and randomly (limited random allocation) divided into intervention and control groups, each with 30 members.

The sample size was estimated as 3.29 persons per group based on the mean anxiety and stress scores as the main variables in a study by Navidian et al. with a 95% confidence interval and 95% statistical test power using the following formula (20). However, to ensure sampling adequacy, considering the possible dropout, and the possibility of performing statistical analyses, the sample size in each group was considered to be 30 persons (60 persons in total):

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 (S_1^2 + S_2^2)}{\left(\bar{X}_1 - \bar{X}_2\right)^2}$$

$$= 3.29$$

$$Z_{(1-\frac{\alpha}{2})} = 1.96$$

$$Z_{(1-\beta)} = 1.64$$

$$S_1 = 1.66$$

$$S_2 = 3.37$$

$$\bar{X}_1 = 2.55$$

$$\bar{X}_2 = 10.00$$

The inclusion criteria were being a confirmed COVID-19 case, the admission of only one family member in the ICU, being a member of the patient's immediate family, acting as the caregiver taking care of the patient and being involved in the treatment process, having minimum literacy and ability to use mobile phones and audio and video messaging systems, the passage of at least 48 hours after the patient's admission, being at least 18 years old, not having a job in the healthcare system, no history of hospitalization or concurrent hospitalization of a family member in the hospital or ICU, not having any known psychiatric and physical illness, and not taking narcotics or neuroleptic drugs. Moreover, the main exclusion criteria were the discharge or death of the patient before 3 days, non-response of the caregiver to video and telephone calls, and the occurrence of a traumatic or tragic accident/event during the study.

The data in this study were collected using a demographic information form and the Hospital Anxiety and Depression Scale (HADS). The demographic information form assessed the patient's and family members' demographic information, including age, gender, marital status, education, occupation, kinship, and the number of hospital visits during the patient's stay. The Hospital Anxiety and Depression Scale was developed by Zigmond and Snaith (21). This self-report tool provides an intensive and rapid measure of anxiety and depression in non-psychiatric populations and groups and takes about 10 minutes to complete. The 14-item scale has a 7-item depression subscale and a 7-item anxiety subscale. The advantages of this tool are its shortness, easy scoring, and relative sensitivity to change. Each item has been formulated based on 4 options, and the respondent must choose the one that best

describes his/her feelings. Each item is weighted on a four-point scale ranging from 0 to 3 (0 = almost never, 1 = sometimes, 2 = most of the time, and 3 = almost always). Accordingly, a score of 3 indicates a high level of anxiety or depression, and a score of 0 shows minimal anxiety or depression. Therefore, the total score on each subscale ranges from 0 to 21, with a higher score indicating a higher level of anxiety and depression (21). This scale has been used in numerous studies and administered to different groups. The validity and reliability of this tool were reviewed and confirmed for use in Iran by Kaviani et al. (18). Its validity was confirmed by determining its correlation with the Beck Anxiety Inventory (BAI) using a parallel-form test and clinical interviews with a psychiatrist. Moreover, its reliability was estimated by measuring internal consistency using Cronbach's alpha with values of 0.70 and 0.85 for the depression and anxiety subscales, respectively (18). In the present study, the reliability indices of the two subscales were measured using Cronbach's alpha, and the corresponding values were 0.92 and 0.88, respectively.

After obtaining permission from the ethics committee and an introduction letter from the Vice-Chancellor for Research and Technology, the researcher was referred to hospitals affiliated with Zahedan University of Medical Sciences, including Khatam al-Anbia Hospital, Imam Ali Hospital, and Bu Ali Hospital. After making arrangements with hospital managers and nursing and ICU officials, and intensive care units, the sampling process began. The participants were selected using convenience sampling from the patients admitted to the ICUs based on the inclusion criteria and were randomly assigned to the intervention and control groups. Before sampling, blue (control) and red (intervention) balls were prepared for the total number of participants and randomly removed from a container to determine the group membership for each of the 60 patients and family members recorded on a list. Gradually, by referring to the intensive care units and identifying eligible individuals, the patients and family members were assigned to the related groups according to the prepared list.

A face-to-face meeting was held for the main caregiver of each patient with COVID-19 in the intervention group. If the family member met the inclusion criteria, he/she would be given some information about the study's objectives and procedure. Written informed consent was then obtained from them to indicate their voluntary participation. In the face-to-face meetings, the items in the Hospital Anxiety and Depression Scale (HADS) were completed for the caregivers, and they were assured that the content of the audio and video messages sent would be deleted immediately and would not be made available to any person. The family members of the COVID-19 patients in the interven-

tion group received daily information at an agreed hour about the general condition of the patient, the changes in the patients' medical conditions/level of consciousness, diagnostic and therapeutic measures taken, and care received in the form of either audio or video messages upon the member's preference. After sending the information, further explanations would be provided to clarify any possible issue or ambiguity or in response to questions asked by family members about the patient or the disease. The information was sent for 5 consecutive days. One day after the intervention, the HADS items were completed again as the post-test for the family members in person or by telephone. The patients and caregivers in the control group did not receive any intervention, and caregivers were informed about the patient and care process based on the routine ICU procedure. The HADS items were completed for the participants in the control group at the same time interval considered for the intervention group members. In order to prevent the possibility of bias, the scale was completed before and after the intervention for the participants in both groups by an assistant who did not know about the intervention.

The content of the messages was prepared mostly based on the common questions that would normally be asked from physicians and nurses by family members of COVID-19 patients admitted to the ICU and with a focus on the concerns raised by family members. Furthermore, following previous studies, issues such as changes in the patient's consciousness level, medications, tests, oxygen saturation, care, diagnostic procedures, treatment processes, complications and consequences of the disease and hospitalization, disease process and prognosis, the probable time of the patient's transfer to the general ward and discharge were further considered in audio and video messages in simple language based on the literacy and socio-cultural status of the family members.

3.1. Ethical Considerations

The protocol for this study was approved by the Ethics Committee of Zahedan University of Medical Sciences, Iran, under the code IR.ZAUMS.REC.1400.173. To comply with ethical considerations, informed consent was obtained from the participants, and they were assured of the confidentiality of the information and that they would be free to leave the study at any stage.

3.2. Data Analysis

The collected data were analyzed with SPSS software (version 22) using the paired samples *t*-test, independent samples *t*-test, chi-square test, and analysis of covariance (ANCOVA) at the significance level of 0.05 ($P = 0.05$). The

normality of the data was determined using the Shapiro-Wilk test.

4. Results

The mean age of the patients and the family caregivers in the intervention group were 61.53 ± 19.07 and 43.66 ± 12.71 years, respectively, and the corresponding values for the participants in the control group were 64.03 ± 19.54 and 46.93 ± 10.77 years, respectively. The results of the independent *t*-test did not show any difference between the two groups in terms of age ($P > 0.05$). The ICU length of stay ranged from at least 8 days to a maximum of 25 days, but there was no significant difference between the intervention and control groups, as indicated by the independent samples *t*-test ($P = 0.73$). The results of the chi-square test (Table 1) showed no significant differences between the two groups in terms of other demographic characteristics, including kinship, gender, education, and occupations of the patients and family caregivers ($P > 0.05$).

The mean depression score of the family caregivers in the intervention group decreased from 11.96 ± 4.25 before the intervention to 8.10 ± 4.34 after the intervention, showing a significant difference ($P = 0.001$), and the mean depression score of the family caregivers in the control group increased from 11.66 ± 4.34 to 12.26 ± 4.24 but did not show any significant difference ($P = 0.42$) (Tables 2 and 3). The independent samples *t*-test showed that after the interventions, the mean depression score of the caregivers in the intervention group was significantly lower than that of the caregivers in the control group ($P = 0.001$). The results of the analysis of covariance to control the significant effect of the pre-test scores also indicated that the mean depression scores of the family caregivers in the two groups were significantly different after the intervention ($P = 0.001$).

As shown in Tables 2 and 3, the mean anxiety scores of the family caregivers in the intervention and control groups were 10.37 ± 4.21 and 10.60 ± 3.63 before the intervention. Besides, the mean anxiety scores after the intervention for the two groups changed to 7.33 ± 4.75 and 10.96 ± 4.32 , showing a significant decrease in the group receiving the intervention ($P = 0.002$). Furthermore, the results of the independent samples *t*-test indicated that the mean score of the caregivers in the intervention group was significantly lower than the control group after the intervention ($P = 0.001$). The analysis of covariance to control the significant effect of the pre-test scores showed that the mean anxiety scores of the family caregivers in the two groups after the intervention were significantly different ($P = 0.001$). The result of the chi-square test showed that the average number of family face-to-face visits to the hospital and intensive care unit was significantly lower ($P =$

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

| Variables | Intervention 30 (100) | Control 30 (100) | P-Value |
|---------------------------------|-----------------------|------------------|-------------------|
| Patient gender | | | |
| Female | 14 (46.7) | 13 (43.3) | 0.79 ^b |
| Male | 16 (53.3) | 17 (56.7) | |
| Caregiver gender | | | |
| Female | 14 (46.7) | 16 (53.3) | 0.78 |
| Male | 14 (46.7) | 14 (46.7) | |
| Patient occupation | | | |
| Employed | 18 (60) | 15 (50) | 0.43 |
| Unemployed | 12 (40) | 15 (50) | |
| Caregiver occupation | | | |
| Employed | 23 (76.7) | 21 (70) | 0.55 |
| Unemployed | 7 (23.3) | 9 (30) | |
| Patient marital status | | | |
| Single | 10 (33.3) | 11 (36.7) | 0.78 |
| Married | 20 (66.7) | 19 (63.3) | |
| Caregiver marital status | | | |
| Single | 8 (26.7) | 6 (20) | 0.54 |
| Married | 22 (73.3) | 24 (80) | |
| Relatives | | | |
| Child | 18 (60) | 18 (60) | 0.71 |
| Spouse | 8 (26.7) | 6 (20) | |
| Others | 4 (13.3) | 6 (20) | |
| Age of patient | 61.53 ± 19.07 | 64.03 ± 19.54 | 0.61 ^c |
| Age of caregiver | 43.66 ± 12.71 | 46.93 ± 10.77 | 0.28 |
| Hospitalization | 10.20 ± 4.33 | 10.60 ± 4.69 | 0.73 |

^a Values are expressed as No. (%) or mean ± SD.^b Chi-square^c Independent t-test**Table 2.** Depression and Anxiety Scores of Family Members of Patients in Intervention and Control Groups Before-After the Audio-Visual Information ^a

| Variables | Before | After | Change | Paired t-test (Before-After) |
|--------------------|--------------|--------------|--------------|------------------------------|
| Depression | | | | |
| Intervention | 11.96 ± 4.25 | 8.10 ± 4.34 | -3.86 ± 4.97 | 0.001 |
| Control | 11.66 ± 4.36 | 12.26 ± 4.25 | 0.6 ± 4.04 | 0.42 |
| Independent t-test | 0.78 | 0.001 | 0.001 | |
| Anxiety | | | | |
| Intervention | 10.37 ± 4.21 | 7.33 ± 4.75 | -3.40 ± 5.35 | 0.002 |
| Control | 10.60 ± 3.63 | 10.96 ± 4.32 | 0.36 ± 4.18 | 0.63 |
| Independent t-test | 0.89 | 0.001 | 0.004 | |

^a Values are expressed as mean ± SD.

Table 3. The Results of Covariance Analysis on the Score of Post-traumatic Depression and Anxiety After Audio-Visual Information by Adjusting the Pre-test Effect

| Source of Change | SS | df | MS | f | P-Value | Eta | Power |
|-------------------|---------|----|--------|-------|---------|------|-------|
| Depression | | | | | | | |
| Pretest | 212.70 | 1 | 212.70 | 14.10 | 0.001 | 0.19 | 0.95 |
| Group | 276.99 | 1 | 276.99 | 16.36 | 0.001 | 0.24 | 0.98 |
| Error | 859.86 | 57 | 15.08 | | | | |
| Total | 7555 | 60 | | | | | |
| Anxiety | | | | | | | |
| Pretest | 159.99 | 1 | 159.99 | 8.78 | 0.004 | 0.13 | 0.83 |
| Group | 204.13 | 1 | 204.13 | 11.21 | 0.001 | 0.16 | 0.90 |
| Error | 1037.64 | 57 | 18.20 | | | | |
| Total | 6419 | 60 | | | | | |

0.001) in the intervention group (2.73 ± 2.04) compared to the number of visits made by the family members in the control group (3.96 ± 1.80).

5. Discussion

The results of the present study suggested that reporting the patient's condition by sending audio and video messages to family members can have a positive and significant effect on reducing anxiety and depression experienced by family members of COVID-19 patients admitted to the intensive care unit. Imanpour et al. believe that providing information through online media about the patient's condition, regardless of the type of illness leading to admission to the ICU, plays an important role in helping families reduce the severity of psychological problems faced (14). The patients' family members need to receive the latest information from various sources, such as phone calls, text messages, and online media. Providing information about the patient's condition using phone calls and maintaining constant contact with family members can reduce their anxiety and worry (14). A review of studies by Navidian et al. who examined the effectiveness of educational-supportive intervention in the satisfaction of Iranian family members of ICU patients, Jabbarpour et al. who explored the effect of providing information about the patient's condition on the anxiety level of family members of hospitalized patients with traumatic brain injury, Imani et al. who examined the impact of nurse notification by phone (telenursing) on the anxiety level of families of ICU patients, and Hamzah et al. to determine the effect of a family-centered care model on reducing the anxiety of family members of ICU patients suggested that although these studies have often been performed on patients admitted to the ICU for reasons other than COVID-19 disease,

implementing interventions to provide information in the form of face-to-face or telehealth communication can have a positive effect on reducing the anxiety of family members of patients admitted to the ICU (8, 13, 16, 20). Contrary to the above studies, the results of a systematic review and meta-analysis of articles published from 1990 to 2016 by Shafipour et al. examined the effect of education on the anxiety of families of patients in the intensive care unit showed that the mean score of anxiety in the recipients of educational intervention was slightly (0.329 units) lower than that of the control group, but the effect size of this difference was not statistically significant. The authors concluded that although education reduces the anxiety experienced by family members of ICU patients, this impact size is insignificant (12).

In a study by Kennedy et al., during COVID-19 hospital visit restrictions, family members and ICU clinicians' experiences, perspectives, and attitudes regarding phone and video interactions were studied (17). In the study, both groups rated phone and video communication as somewhat effective but inferior to face-to-face communication. Despite clinicians' concern that empathy could not be conveyed remotely, families reported that empathy was successfully conveyed via phone and video (17). Since the lack of contact with the patient, unawareness, ambiguity, doubt, and lack of information about the course and prognosis of the disease are among the important sources of anxiety and worry in families of patients with COVID-19 admitted to the ICU, it seems that providing the information needed by the family in a transparent, consistent and timely manner, as well as answering their questions, uncertainties, and concerns via telehealth communication or by the liaison psychiatrist in this study, play a role in reducing anxiety and depression in family members.

The present study's findings also indicated that in-

forming the status of patients admitted to the intensive care unit due to COVID-19 significantly reduced the average number of family members' hospital visits compared to the control group. Accordingly, it can be argued that due to the nature of COVID-19 disease and the fear of the high risk of its transmission in hospitals as environments infected with this virus, if communication can meet the demands, concerns, needs, questions, and uncertainties of the patient's family members in the best way possible, there will be less need for face-to-face visits to the hospital. To find a new way to communicate with and inform reference persons of COVID-19 patients admitted to the ICU instead of face-to-face meetings, Cattelan et al. made voice calls to the family once a day, as well as at times of acute and unexpected patient problems, allowing them to send voice messages to the patient if desired (19). Following two one-hour webinars around basic communication skills, Lopez-Soto et al. found that the family liaison team (FLT) formed by redeployed clinicians in critical care (CC) facilitated over 12,000 videos and telephone calls with 172 patients' family and friends (PFF) (22). Moreover, most of PFF interviewed were mostly, very, or extremely satisfied with the frequency, ease, understanding, honesty, completeness, and consistency of the information provided (22). In another study, Zimmerman et al. examined patient satisfaction with partial hospital telehealth treatment during the COVID-19 pandemic compared to in-person treatment (23). They showed that patients receiving telehealth and in-person treatments were highly satisfied with all treatment program components. Almost all would recommend the treatment to a friend or family member (23). Perhaps one of the reasons for the positive effect of telehealth communication intervention on reducing the number of face-to-face visits in this study can be considered the quality of the information provided in response to family members' questions and concerns and their satisfaction with the information provided.

5.1. Conclusions

Overall, the results of the present study showed that communication about the status of COVID-19 patients admitted to the ICU via audio and video messages intended to answer questions and concerns of family members significantly reduced the severity of the two psychological variables, anxiety, and depression. Besides, communication by the liaison psychiatrist reduced the face-to-face visits of family members. To reduce the unnecessary commute to the hospital with a high risk of disease transmission through accurate, consistent, and transparent communication and to reduce the concerns of the families of patients with COVID-19, telehealth communication with the

help of new technologies can be used in ICUs. This telehealth visitation method can be used for family members of any kind of hospitalized patient, especially those in hospitals with ICU closed policies and with limited visitation.

Short-term communication intervention (only 5 days) and various information received from different sources (doctors, nurses, and assistant nurses) in face-to-face visits were the most important limitations of the present study.

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Footnotes

Authors' Contribution: All the authors contributed to conducting the study and drafting the manuscript.

Conflict of Interests: There was no conflict of interests in this study.

Ethical Approval: This research project was approved by Zahedan University of Medical Sciences with the code of ethics IR.ZAUMS.REC.1400.173, and the authors complied with all required protocols.

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Informed Consent: Informed consent was obtained from the participants.

References

1. Purabdollah M, Ghasempour M. Tele-Nursing New Opportunity for Nursing Care in COVID-19 Pandemic Crisis. *Iran J Public Health*. 2020;49(Suppl 1):130-1. [PubMed ID: 34268221]. [PubMed Central ID: PMC8266018]. <https://doi.org/10.18502/ijph.v49iS1.3685>.
2. Azoulay E, Cariou A, Bruneel F, Demoule A, Kouatchet A, Reuter D, et al. Symptoms of Anxiety, Depression, and Peritraumatic Dissociation in Critical Care Clinicians Managing Patients with COVID-19. A Cross-Sectional Study. *Am J Respir Crit Care Med*. 2020;202(10):1388-98. [PubMed ID: 32866409]. [PubMed Central ID: PMC7667906]. <https://doi.org/10.1164/rccm.202006-2568OC>.
3. Ministry of Health and Medical Education. *Home page*. Tehran, Iran: Ministry of Health and Medical Education; 2023. Available from: <https://behdasht.gov.ir/>.
4. Kosovali BD, Mutlu NM, Gonen CC, Peker TT, Yavuz A, Soyol OB, et al. Does hospitalisation of a patient in the intensive care unit cause anxiety and does restriction of visiting cause depression for the relatives of these patients during COVID-19 pandemic? *Int J Clin*

- Pract.* 2021;**75**(10). e14328. [PubMed ID: 33960085]. [PubMed Central ID: PMC8236937]. <https://doi.org/10.1111/ijcp.14328>.
5. Lautrette A, Darmon M, Megarbane B, Joly LM, Chevret S, Adrie C, et al. A communication strategy and brochure for relatives of patients dying in the ICU. *N Engl J Med.* 2007;**356**(5):469-78. [PubMed ID: 17267907]. <https://doi.org/10.1056/NEJMoa063446>.
 6. Phua J, Weng L, Ling L, Egi M, Lim CM, Divatia JV, et al. Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. *Lancet Respir Med.* 2020;**8**(5):506-17. [PubMed ID: 32272080]. [PubMed Central ID: PMC7198848]. [https://doi.org/10.1016/S2213-2600\(20\)30161-2](https://doi.org/10.1016/S2213-2600(20)30161-2).
 7. Hart JL, Turnbull AE, Oppenheim IM, Courtright KR. Family-Centered Care During the COVID-19 Era. *J Pain Symptom Manage.* 2020;**60**(2):e93-7. [PubMed ID: 32333961]. [PubMed Central ID: PMC7175858]. <https://doi.org/10.1016/j.jpainsymman.2020.04.017>.
 8. Jabbarpour M, Abdoli F, Kazemi M. [The effect of providing information about the patient's condition on the anxiety level of the family members of hospitalized patients with traumatic brain injury]. *Hayat.* 2018;**24**(2):127-39. Persian.
 9. Abate SM, Ahmed Ali S, Mantfardo B, Basu B. Rate of Intensive Care Unit admission and outcomes among patients with coronavirus: A systematic review and Meta-analysis. *PLoS One.* 2020;**15**(7). e0235653. [PubMed ID: 32649661]. [PubMed Central ID: PMC7351172]. <https://doi.org/10.1371/journal.pone.0235653>.
 10. Montauk TR, Kuhl EA. COVID-related family separation and trauma in the intensive care unit. *Psychol Trauma.* 2020;**12**(S1):S96-7. [PubMed ID: 32567872]. <https://doi.org/10.1037/tra0000839>.
 11. Chen C, Wittenberg E, Sullivan SS, Lorenz RA, Chang YP. The Experiences of Family Members of Ventilated COVID-19 Patients in the Intensive Care Unit: A Qualitative Study. *Am J Hosp Palliat Care.* 2021;**38**(7):869-76. [PubMed ID: 33789492]. [PubMed Central ID: PMC8020036]. <https://doi.org/10.1177/10499091211006914>.
 12. Shafipour V, Moosazadeh M, Jannati Y, Shoushi F. The effect of education on the anxiety of a family with a patient in critical care unit: a systematic review and meta-analysis. *Electron Physician.* 2017;**9**(3):3918-24. [PubMed ID: 28461865]. [PubMed Central ID: PMC5407223]. <https://doi.org/10.19082/3918>.
 13. Imani A, Dabirian A, Safavibiat Z, Payandeh A. [Examining the impact of nurse notification by phone (telenursing) on anxiety level of hospitalized patient's family in intensive care unit]. *Iran J Nurs Res.* 2015;**9**(4):22-8. Persian.
 14. Imanipour M, Heidari Z, Seyedfatemi N, Haghani H. [Effectiveness of informational support on anxiety among family carers of patients undergone open heart surgery]. *Hayat.* 2012;**18**(3). Persian.
 15. Negro A, Mucci M, Beccaria P, Borghi G, Capocasa T, Cardinali M, et al. Introducing the Video call to facilitate the communication between health care providers and families of patients in the intensive care unit during COVID-19 pandemic. *Intensive Crit Care Nurs.* 2020;**60**:102893. [PubMed ID: 32576488]. [PubMed Central ID: PMC7247985]. <https://doi.org/10.1016/j.iccn.2020.102893>.
 16. Hamzah A, Husni A; Sukarni. Family Care Centre Model Could Decrease Anxiety Level among Family Members of Patients Who Have Been Undergoing in the Intensive Care Unit (ICU). *Open J Nurs.* 2017;**7**(1):58-67. <https://doi.org/10.4236/ojn.2017.71006>.
 17. Kennedy NR, Steinberg A, Arnold RM, Doshi AA, White DB, DeLair W, et al. Perspectives on Telephone and Video Communication in the Intensive Care Unit during COVID-19. *Ann Am Thorac Soc.* 2021;**18**(5):838-47. [PubMed ID: 33181033]. [PubMed Central ID: PMC8086546]. <https://doi.org/10.1513/AnnalsATS.202006-729OC>.
 18. Kaviani H, Seyfourian H, Sharifi V, Ebrahimkhani N. Reliability and validity of anxiety and depression hospital scales (HADS): Iranian patients with anxiety and depression disorders. *Tehran Univ Med J.* 2009;**67**(5):379-85.
 19. Cattelan J, Castellano S, Merdji H, Audousseau J, Claude B, Feuillasseur L, et al. Psychological effects of remote-only communication among reference persons of ICU patients during COVID-19 pandemic. *J Intensive Care.* 2021;**9**(1):5. [PubMed ID: 33422153]. [PubMed Central ID: PMC7794617]. <https://doi.org/10.1186/s40560-020-00520-w>.
 20. Navidian A, Rezaei J, Payan H. Effectiveness of educational-supportive intervention in satisfaction of Iranian family members of intensive care unit patients. *J Research Health.* 2018;**8**(1):12-20. <https://doi.org/10.29252/acadpub.jrh.8.1.12>.
 21. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand.* 1983;**67**(6):361-70. [PubMed ID: 6880820]. <https://doi.org/10.1111/j.1600-0447.1983.tb09716.x>.
 22. Lopez-Soto C, Bates E, Anderson C, Saha S, Adams L, Aulakh A, et al. The Role of a Liaison Team in ICU Family Communication During the COVID 19 Pandemic. *J Pain Symptom Manage.* 2021;**62**(3):e112-9. [PubMed ID: 33892123]. [PubMed Central ID: PMC8057931]. <https://doi.org/10.1016/j.jpainsymman.2021.04.008>.
 23. Zimmerman M, Benjamin I, Tirpak JW, D'Avanzato C. Patient satisfaction with partial hospital telehealth treatment during the COVID-19 pandemic: Comparison to in-person treatment. *Psychiatry Res.* 2021;**301**:113966. [PubMed ID: 33990071]. [PubMed Central ID: PMC8074532]. <https://doi.org/10.1016/j.psychres.2021.113966>.