Original Article

The Effect of Interactive Virtual Psycho-Educational Interventions via Social Networks on Self-Efficacy and Anxiety among Patients Infected with COVID-19 and Living in Home Quarantine: A Randomized Control Trial

Abstract

Background: Psycho-educational interventions might play a crucial role in the management of diseases. This study was conducted to determine the effect of psycho-educational interventions via social networks on self-efficacy and anxiety among Coronavirus Disease 2019 (COVID-19) patients in home quarantine. **Materials and Methods:** This randomized clinical trial was conducted on 72 COVID-19 patients, in Shiraz, Iran, in 2020. The patients were randomly assigned to an intervention and control group. Patients in the intervention group underwent psycho-educational interventions daily for 14 days. The data were collected using the Strategies Used by People to Promote Health (SUPPH) questionnaire and the State-Trait Anxiety Inventory (STAI) before and 2 weeks after the intervention. **Results:** After the intervention, the mean score of SUPPH was mean = 120.75 (16.56) and mean(SD) 111.27 (14.40) in the intervention and control groups, respectively. Moreover, after the intervention, the mean score of state and trait anxiety were 34.69 (10.75) and 38.31 (8.44) in the intervention group, and mean(SD) 45.75 (13.01) and 43.50 (8.44) in the control group, respectively. After the intervention, a difference was observed between the groups concerning the mean score of SUPPH (t_{70} = 2.58; p = 0.01), state anxiety (F_1 = 16.52; p < 0.001), and trait anxiety (t_{70} = −2.49; p = 0.01). **Conclusions:** Considering the effectiveness of psycho-educational interventions in self-efficacy and anxiety, healthcare providers are recommended to use these interventions in COVID-19 patients.

Keywords: *Anxiety, COVID-19, psychotherapy, self-efficacy*

**Maryam Shaygan[1],
Zahra Yazdani[2],
Masoume Rambod[1]**

[1]*Department of Nursing, Community Based Psychiatric Care Research Center, Nursing and Midwifery School, Shiraz University of Medical Sciences, Shiraz, Iran,* [2]*Department of Nursing, Nursing and Midwifery School, Shiraz University of Medical Sciences, Shiraz, Iran*

Introduction

Today, due to the high prevalence of Coronavirus Disease 2019 (COVID-19) in the world, many people with mild symptoms of COVID-19 are quarantined in their homes.[1] Being quarantined might exert negative effects on the mental health of the patients, their families, and society,[2] and cause severe stress among them.[3] Mood swings and increased irritability have also been reported to be more common among quarantined people, affecting more than half of them.[4] Moreover, living in quarantine led to the loss of face-to-face communication, thus resulting in social isolation.[3]

Providing mental healthcare can empower the world during the COVID-19 pandemic.[2] Some complementary and integrative health interventions have been used to improve the physical, psychological, and social aspects of patients' lives,[5-7] and their self-efficacy.[8] Psychologists, nursing psychiatrists, and peer group interventions have been used to reduce the negative psychological burden of quarantine. In fact, after the COVID-19 epidemic, psychologists and psychiatrists used the Internet and social media to teach people how to deal with stress.[2] Virtual communication with a team of experts and peers causes patients not to feel alone in the face of the disease. Other benefits of joining a team of professionals and peers include taking advantage of other people's experiences, sharing one's feelings with others,[9] and increasing hope.[6]

Address for correspondence:
Dr. Masoume Rambod,
Community Based Psychiatric Care Research Center,
Nursing and Midwifery School, Shiraz University of Medical Sciences, Shiraz, Iran.
E-mail: rambodma@yahoo.com

An online multimedia psycho-educational intervention improved resilience and reduced perceived stress in COVID-19 patients.[10] A study conducted on 13 medical staff of the Second Xiangya Hospital demonstrated the necessity of providing psychological interventions to decrease anxiety, panic, and other emotional problems in patients.[11] Psychological interventions were also found to play an important role in the management of deployment disease.[12] Similarly, a review of the literature showed that COVID-19 patients required early psychological and social interventions. Zhang *et al*.[3] found that since COVID-19 patients under quarantine had limited access to face-to-face psychological interventions, the use of technology and the Internet was the best way to educate and contact these patients. Moreover, it was shown that progressive muscle relaxation decreased anxiety and improved the quality of sleep among the COVID-19 patients who were in the isolation ward.[13]

Although previous studies have determined the effect of psychological, educational, and relaxation training on hospitalized patients,[10,11,13] these interventions have not been studied among quarantined people. Being quarantined creates different conditions for a person that would be different from being in the hospital. In addition, these studies did not measure self-efficacy and state-trait anxiety. Moreover, each of these studies has emphasized a specific intervention, while, in the present study, integrative psycho-educational interventions were used. Since face-to-face contact and training would be limited in COVID-19 patients in home quarantine, psycho-educational interventions through social networks could make access to these patients much easier and cheaper. Therefore, this study was conducted to determine the effect of integrative psycho-educational interventions via social networks on self-efficacy and anxiety among COVID-19 patients in home quarantine.

Materials and Methods

This clinical trial with a pretest-posttest design was conducted on 2 study groups (intervention and control). The study was registered in the Iranian Registry of Clinical trials (IRCT) on 01/05/2020 (ID: 47034, IRCT20130616013690N7). This study was conducted on patients infected with COVID-19 who were referred to outpatient clinics or hospitals affiliated with Shiraz University of Medical Sciences, Iran, and was then placed in home quarantine in 2020. The inclusion criteria of the study were the age greater than 18 years, COVID-19 diagnosis by a physician, ability to use a cell phone, access to the Internet, home quarantine for at least 48 hours, and need for home quarantine for at least 1 week. Patients who were hospitalized and those who died had severe symptoms, could not speak, perform exercises, or complete the questionnaires, had previous experience of

home quarantine, and had psychological diseases such as psychosis and dementia were excluded from the study.

Based on a pilot study, and considering $\alpha = 0.05$, power = 0.80%, the ($\mu1$–$\mu2$), δ as 5.61 and 13.00 for the Strategies Used by People to Promote Health (SUPPH) questionnaire, and 4.80 and 10.00 for state-trait anxiety, the sample size was estimated to be 30 and 32 individuals in each group, respectively. Considering a 12.50% drop-out rate and based on a higher required sample ($n = 32$), the sample size was estimated as 36 subjects in each group. As Figure 1 shows, at the beginning of this study, 80 patients were assessed for eligibility, and 8 subjects were excluded as a result of not having the inclusion criteria ($n = 4$), declining to participate ($n = 2$), and refusing to participate in this study ($n = 2$). Therefore, 72 COVID-19 patients were randomized into the intervention and control groups. All the subjects ended the study, and their data were analyzed.

Self-efficacy and anxiety were measured in the intervention and control groups using structured, anonymous online questionnaires before and 2 weeks after the intervention. The research assistant sent a link to the questionnaires to the participants and followed them until they had completed the questionnaires. It should be noted that the participants were free to ask questions from the research assistant. First, information including gender, marital status, education level, and the symptoms leading to referral to healthcare centers or hospitals as a result of COVID-19 were collected in a form.

The SUPPH questionnaire designed by Lev and Owen in 1996 was used to assess the patient's self-efficacy in performing self-care tasks. This questionnaire consists of 29 items scored on a 5-point Likert scale. The total score of the questionnaire ranges from 29 to 145, with higher scores representing higher self-efficacy.[14] The factorial structure of the Chinese version of this questionnaire was evaluated and its confirmatory factor analysis showed that a 3-factor model was better than a 4-factor model. It was reported that the 3 factors of positive attitude, stress reduction, and decision-making were highly associated with each other (0.77 to 0.90).[15] Therefore, in this study, like another Persian study,[16] the questionnaire with 3 dimensions was used. The questionnaire was translated into Persian through the forward-backward translation method, and then, its content validity was approved by 10 faculty members.[17] The internal consistency of the SUPPH questionnaire was found to be 0.97. Moreover, its test-retest reliability was reported to be 0.94.[14] In addition, the internal consistency of the Persian version of the SUPPH questionnaire was 0.91. This value was found to be 0.79, 0.80, and 0.87 for the positive attitude, stress reduction, and decision-making dimensions, respectively.[18] In the present study, the internal consistency of the SUPPH, and its dimensions including
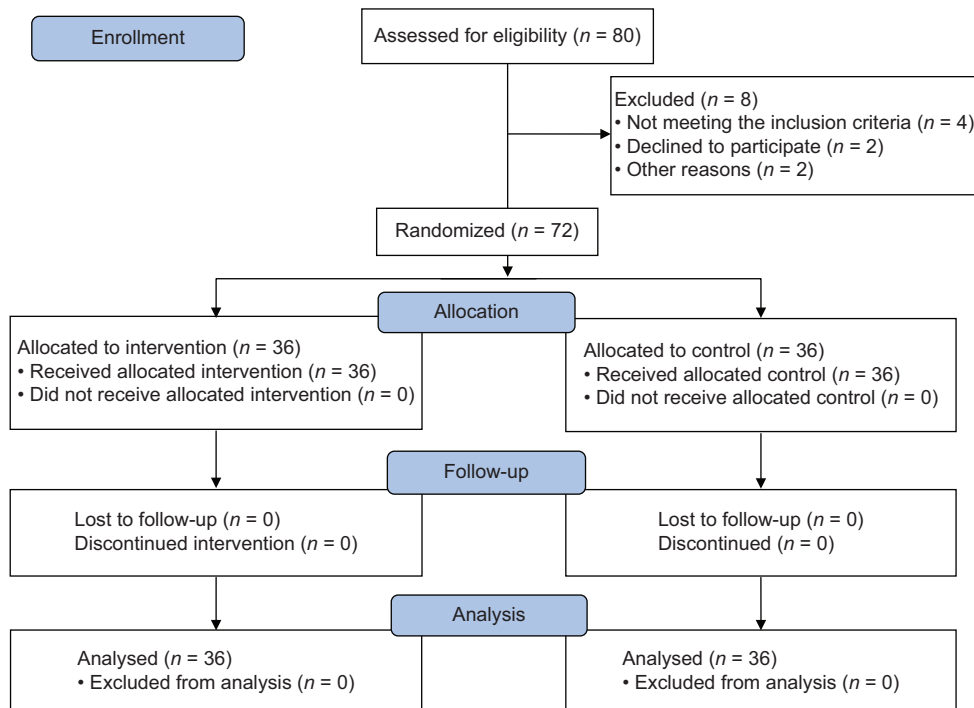
Figure 1: CONSORT 2010 Flow Diagram of COVID-19 patients who participated in this study

positive attitude, stress reduction, and decision-making using Cronbach's alpha was calculated to be 0.95, 0.96, 0.90, and 0.83, respectively. The State-Trait Anxiety Inventory (STAI) was used to assess the state and trait anxiety of the patients. The total score of the STAI ranges from 20 to 80, with higher scores indicating greater anxiety.[19] The content validity and reliability of the Persian version of this inventory have been approved.[20] The convergent validity of the Persian version of the STAI with the Beck Anxiety Inventory (BAI) was reported as 0.61 for trait and 0.64 for state anxiety.[21] In another Persian study, the reliability coefficients of the state and trait anxiety were reported as 0.87 and 0.90, respectively.[22] In the present study, the internal consistency of the state and trait anxiety subscales using Cronbach's alpha were determined to be 0.92 and 0.94, respectively. In the present study, the person who collected the data by a link and the statistician were blind to the intervention and control groups.

First, the cellphone numbers of the patients were obtained. Then, 72 patients were randomly assigned to the intervention or control groups through block randomization. The list of the block was created using the block randomization software. The patients in the intervention group were added to a WhatsApp group. They received numerous videos, audio files, and educational texts regarding mental health, coping strategies, positive thinking, hope, and spiritual well-being, and some enjoyable activities such as relaxation music. Other psychological interventions included encouraging the patients to apply the psychological techniques provided,

share their good memories, thank God, and express their positive abilities in a variety of areas in the group. The content of the intervention was prepared by the researchers and approved by 5 faculty members (2 psychologists, 1 psychiatrist, 1 mental health nurse, and 1 medical-surgical nurse) of Shiraz University of Medical Sciences. The patients in the intervention group received these interventions daily for 14 days until the end of the home quarantine period. A researcher contacted the patients every day and approved their adherence to the plans. However, the control group only received routine care. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software (version 22; IBM Corp., Armonk, NY, USA), and $p < 0.05$ was significant. Moreover, Kolmogorov-Smirnov test showed that the SUPPH ($p = 0.20$), and state anxiety ($p = 0.20$) and trait anxiety subscales ($p = 0.16$) had normal distribution. To determine the covariates of this study, first, the association between the SUPPH and its subscales and the STAI, and COVID-19 symptoms such as sore throat, chills and fever, dry cough, fatigue, nausea, and anorexia, vomiting, and sputum were assessed using the Pearson correlation coefficient. The results revealed no significant association between the SUPPH and its subscales and the STAI, and the abovementioned COVID-19 symptoms ($p > 0.05$), except between dyspnea and state anxiety, which had a significant association (r = 0.33; $p = 0.004$). Therefore, dyspnea was considered a covariate of state anxiety. In this study, t-test and ANCOVA were used to compare the study groups. Moreover, paired t-test was used to compare the mean pretest and post-test scores of variables.

Ethical considerations

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS. REC.1399.012). Permission was also obtained from the Vice Chancellor for Research Affairs of Shiraz University of Medical Sciences. The patients were given codes and the questionnaires were completed anonymously. Electronic written informed consent forms were also signed by the patients. In addition, they were informed of the purpose of the study. The subjects could leave the study whenever they wanted. They were also assured that participation in the study was voluntary and that the researchers were responsible for anything that occurred for the participants. The patients were provided with the cellphone number of the first author to report any complications or issues related to participation in the study.

Results

In this study, 23 (63.89%) of the patients in the intervention group and 13 (36.10%) of those in the control group were women. Additionally, most of the patients were 30–50 years of age and were married. Moreover, 18 (50.00%) of the patients in the intervention group and 19 (52.90%) of those in the control group had academic degrees. No significant difference was observed between the two groups regarding demographic characteristics [Table 1].

Most of the participants in the two study groups did not report a sore throat, dyspnea, chills and fever, dry cough, nausea and anorexia, vomiting, diarrhea, and sputum secretion. Moreover, 23 (63.89%) of the patients in the intervention group and 19 (52.80%) of those in the control group did not report fatigue [Table 1].

As can be seen in Table 2, the mean score of the SUPPH questionnaire was mean(SD) 103.63 (20.37) in the intervention group and mean(SD) 102.55 (11.75) in the control group before the intervention. No significant difference was observed between the study groups regarding the scores of the SUPPH questionnaire and the positive attitude, stress reduction, and decision-making dimensions at baseline ($p > 0.05$). The mean score of the SUPPH questionnaire was mean(SD) 120.75 (16.56) in the intervention group and mean(SD) 111.27 (14.40) in the control group after the intervention. Based on the partial Eta squared (η2) that was equal to 0.08, a moderate effect size was reported.

After the intervention, a significant difference was observed between the two groups regarding the mean scores of the positive attitude and stress reduction dimensions of the SUPPH questionnaire. However, no significant difference was observed between the study groups in terms of the mean score of the decision-making dimension after the intervention ($p = 0.57$).

Before the intervention, the mean score of state anxiety was mean(SD) 44.47 (10.69) in the intervention group and mean(SD) 47.19 (8.48) in the control group, but the difference was not statistically significant ($F_1 = 1.60$, $p = 0.21$). However, the mean score of state anxiety was mean(SD) 34.69 (10.75) in the intervention group and mean(SD) 45.75 (13.01) in the control group after the intervention. The results of ANCOVA and dyspnea as a covariate showed a difference between the groups regarding state anxiety ($F_1 = 16.52$; $p < 0.001$). Based on the partial Eta squared (η2) that was equal to 0.19, a large effect size was reported.

Before the intervention, the mean score of trait anxiety was mean(SD) 43.58 (9.06) in the intervention group and mean(SD) 43.39 (8.91) in the control group, but this difference was not significant ($t_{70} = 0.09$; $p = 0.92$). The results also showed a significant difference between the study groups concerning trait anxiety after the intervention ($t_{70} = -2.49$; $p = 0.01$). Based on the partial Eta squared (η2) that was equal to 0.08, a moderate effect size was reported.

Discussion

In the present study, the interactive psycho-educational interventions were effective in self-efficacy and positive attitude and stress reduction dimensions, among the patients infected with COVID-19 who lived in home quarantine. Accordingly, education regarding mental health, coping strategies, positive thinking, hope, spiritual well-being, and some enjoyable activities such as relaxation music can improve the strategies used by people to promote health and the patient's self-efficacy in performing self-care tasks. Since no study revealed the findings of the present study, the results were compared with studies that had studied a similar intervention or variable. Psychological interventions have been recommended for patients with COVID-19.[23] For instance, physical exercise has been suggested to be effective in preventing the mental and physical outcomes of home quarantine among patients infected with COVID-19.[24] In a systematic review, it was reported that mental health interventions promoted self-efficacy during the COVID-19 pandemic.[25] Moreover, coping skills training improved self-efficacy in chronic diseases.[8]

The results of the present study showed that state-trait anxiety was significantly lower in the participants who underwent interactive psycho-educational interventions via social networks compared to the control group after 2 weeks. In this study, some enjoyable activities, such as relaxation music, were used. Similarly, exergames have been used as a coping strategy for preventing and treating anxiety during the COVID-19 quarantine period.[26] In a study, it was reported that E-mental health mindfulness-based and skills-based interventions decreased psychological distress during the COVID-19 pandemic.[27] Generally, fear of death, feeling lonely, anger, and disturbance of face-to-face communication are common among COVID-19 patients in

Table 1: The demographic characteristics and COVID-19 symptoms of the patients in the intervention and control groups

Variables	Groups		χ^2	p
	Intervention n (%)	Control n (%)		
Age groups (years)				
18-30	6 (16.67)	6 (16.67)	0.07	0.99
31-40	14 (38.89)	13 (36.11)		
41-50	13 (36.11)	14 (38.89)		
≥51	3 (8.33)	3 (8.33)		
Gender				
Female	23 (63.89)	17 (47.22)	2.02	0.15
Male	13 (36.11)	19 (52.78)		
Marital status				
Married	26 (72.22)	27 (75.00)	3.26	0.35
Single	7 (19.44)	9 (25.00)		
Divorced	2 (5.56)	0 (0)		
Widowed	1 (2.78)	0 (0)		
Education level				
Primary, secondary, and high school	18 (50.00)	17 (47.22)	4.36	0.35
Academic	18 (50.00)	19 (52.78)		
Sore throat				
No	28 (77.78)	32 (88.89)	1.60	0.20
Yes	8 (22.22)	4 (11.11)		
Dyspnea				
No	24 (66.67)	24 (66.67)	0.00	≥0.99
Yes	12 (33.33)	12 (33.33)		
Chills and fever				
No	26 (72.22)	23 (63.89)	0.57	0.44
Yes	10 (27.78)	13 (36.11)		
Dry cough				
No	24 (66.70)	24 (66.70)	0.00	≥0.99
Yes	12 (33.30)	12 (33.30)		
Fatigue				
No	23 (63.89)	19 (52.78)	0.91	0.39
Yes	13 (36.11)	17 (47.22)		
Nausea and anorexia				
No	32 (88.89)	32 (88.89)	0.00	≥0.99
Yes	4 (11.11)	4 (11.11)		
Vomiting				
No	35 (97.22)	36 (100)	1.01	0.31
Yes	1 (2.78)	0 (0)		
Diarrhea				
No	33 (91.67)	36 (100)	3.13	0.07
Yes	3 (8.33)	0 (0)		
Sputum				
No	32 (88.89)	32 (88.89)	0.00	≥0.99
Yes	4 (11.11)	4 (11.11)		

quarantine.[28] Thus, these patients need to get information, be present on social networks, explain their negative emotions to others, continue their daily living activities, and perform pleasant activities.[29] Therefore, interactive psycho-educational interventions via social networks during this crisis might increase patients' information regarding positive coping strategies. This intervention might also reduce state-trait anxiety in patients infected with COVID-19 living in home quarantine through positive thinking, hope, and spiritual well-being interventions.

Table 2: Comparison of the two groups regarding the mean scores of Strategies Used by People to Promote Health (SUPPH) and anxiety before and after the intervention

Variables	Groups		Test, df, *p*	η2[§§§§§§]
	Intervention Mean (SD)	Control Mean (SD)		
SUPPH[§]				
Before	103.63 (20.37)	102.55 (11.75)	0.27[§§§], 70, 0.78	0.001
After	120.75 (16.56)	111.27 (14.40)	2.58[§§§], 70, 0.01[§§§§§]	0.08
SUPPH dimensions Positive attitude[§§]				
Before	60.75 (13.53)	60.72 (7.52)	0.01[§§§], 70, 0.99	0.00
After	69.19 (8.74)	64.39 (7.90)	2.44[§§§], 70, 0.01[§§§§§]	0.07
Stress reduction[§§]				
Before	32.67 (6.69)	31.58 (6.45)	0.69[§§§], 70, 0.48	0.007
After	40.53 (10.28)	35.61 (7.00)	2.37[§§§], 70, 0.02[§§§§§]	0.07
Decision-making[§§]				
Before	10.22 (2.45)	10.25 (2.00)	−0.05[§§§], 70, 0.95−0.57[§§§], 0.57	0.00
After	11.03 (1.94)	11.28 (1.76)		0.005
State anxiety				
Before	44.47 (10.69)	47.19 (8.48)	1.60[§§§§], 1, 0.21	0.02
After	34.69 (10.75)	45.75 (13.01)	16.52[§§§§], 1, <0.001[§§§§§]	0.19
Trait anxiety				
Before	43.58 (9.06)	43.39 (8.91)	0.09[§§§], 70, 0.92−2.49[§§§], 70, 0.01[§§§§§]	0.00
After	38.31 (8.44)	43.50 (8.44)		0.08

[§]SUPPH: Strategies Used by People to Promote Health, [§§]SUPPH dimensions, [§§§]*t*-test, [§§§§]ANCOVA, [§§§§§]Significant, [§§§§§§]Partial Eta squared

One of the implications of this study was that using interactive psycho-educational interventions via social networks might improve self-efficacy. This cost-effective intervention might also reduce state-trait anxiety among quarantined COVID-19 patients. Therefore, it is suggested that healthcare workers use these valuable interventions. As this study was conducted in outpatient clinics or hospitals affiliated with Shiraz University of Medical Sciences, generalizability might be one of this study's limitations. Therefore, to increase the generalizability of the results, more studies are warranted in this regard.

Conclusion

This study showed that interactive psycho-educational interventions via social networks improved self-efficacy and reduced anxiety among patients infected with COVID-19 who lived in home quarantine. To increase evidence-based practice, it is suggested that future studies assess the effects of these interventions on the abovementioned issues among quarantined COVID-19 patients.

Conflicts of interest

Nothing to declare.

References

1. Barbisch D, Koenig K, Shih F Y. Is there a case for quarantine? Perspectives from SARS to Ebola. Disaster Med Public Health Prep 2015;9:547-53.
2. Bao Y, Sun Y, Meng S, Shi J, Lu L. nCoV epidemic: Address mental health care to empower society. Lancet 2020;395:37-8.
3. Zhang J, Wu W, Zhao X, Zhang W. Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak in China: A model of West China Hospital. Precis Clin Med 2020;3:3-8.
4. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, *et al*. The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. Lancet 2020;395:912-20.
5. Rambod M, Pasyar N, Shamsadini M. The effect of foot reflexology on fatigue, pain, and sleep quality in lymphoma patients: A clinical trial. Eur J Oncol Nurs 2019;43:101678. doi: 10.1016/j.ejon. 2019.101678.
6. Pasyar N, Rambod M, Jowkar M. The effect of peer support on hope among patients under hemodialysis. Int J Nephrol Renovasc Dis 2020;13:37-44.
7. Pasyar N, Rambod M, Araghi F. The effect of bergamot orange essence on anxiety, salivary cortisol, and alpha amylase in patients prior to laparoscopic cholecystectomy: A controlled trial study. Complement Ther Clin Pract 2020;39:101153. doi: 10.1016/j.ctcp. 2020.101153.

8. Edraki M, Rambod M, Molazem Z. The effect of coping skills training on depression, anxiety, stress, and self-efficacy in adolescents with diabetes: A randomized controlled trial. Int J Community Based Nurs Midwifery 2018;6:324-33.

9. Dehghani A, Mohammadkhan Kermanshahi S, Memarian R, Baharlou R. The effect of peer group education on anxiety of patients with multiple sclerosis. Iranian J Med Educ 2012;12:249-57.

10. Shaygan M, Yazdani Z, Valibeygi A. The effect of online multimedia psychoeducational interventions on the resilience and perceived stress of hospitalized patients with COVID-19: A pilot cluster randomized parallel-controlled trial. BMC Psychiatry 2021;21:93.

11. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. Lancet Psychiatry 2020;7:15-6.

12. Li W, Yang Y, Liu Z-H, Zhao Y-J, Zhang Q, Zhang L, et al. Progression of mental health services during the COVID-19 outbreak in China. Int J Biol Sci 2020;16:1732-8.

13. Liu K, Chen Y, Wu D, Lin R, Wang Z, Pan L. Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. Complement Ther Clin Pract 2020;39:101132. doi: 10.1016/j.ctcp. 2020.101132.

14. Lev EL, Owen SV. A measure of self-care self-efficacy. Res Nurs Health 1996;19:421-9.

15. Yuan C, Qian H, Wang J, Lev EL, Yuan A, Hinds PS. Factorial structure of a scale strategies used by people to promote health-Chinese version. Cancer Nurs 2015;38:13-20.

16. Mansouri P, Ghadami M, Najafi SS, Yektatalab SH. The effect of self-management training on self-efficacy of cirrhotic patients referring to transplantation center of Nemazee Hospital: A randomized controlled clinical trial. Int J Community Based Nurs Midwifery 2017;5:256-63.

17. Moattari M, Ebrahimi M, Sharifi N, Rouzbeh J. The effect of empowerment on the self-efficacy, quality of life and clinical and laboratory indicators of patients treated with hemodialysis: A randomized controlled trial. Health Qual Life Outcomes 2012;10:115. doi: 10.1186/1477-7525-10-115.

18. Magharei M, Jaafari S, Mansouri P, Safarpour A, Taghavi SA. Effects of self-management education on self-efficacy and quality of life in patients with ulcerative colitis: A randomized controlled clinical trial. Int J Community Based Nurs Midwifery 2019;7:32-42.

19. Teichman Y, Melinick C. Manual for the State-Trait Anxiety Inventory (STAI). Tel-Aviv, Israel: Tel-Aviv University, Ramot; 1979.

20. Pasyar N, Rambod M, Rezaee Kahkhaee F. The effect of foot massage on pain intensity and anxiety in patients having undergone a tibial shaft fracture surgery: A randomized clinical trial. J Orthop Trauma 2018;32:482-6.

21. Abdoli N, Farnia V, Salemi S, Davarinejad O, Ahmadi Jouybari T, Khanegi M, et al. Reliability and validity of persian version of state-trait anxiety inventory among high school students. East Asian Arch Psychiatry 2020;30:44-7.

22. Rambod M, Rakhshan M, Tohidinik S, Nikoo MH. The effect of lemon inhalation aromatherapy on blood pressure, electrocardiogram changes, and anxiety in acute myocardial infarction patients: A clinical, multi-centered, assessor-blinded trial design. Complement Ther Clin Pract 2020;39:101155. doi: 10.1016/j.ctcp. 2020.101155.

23. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. Lancet Psychiatry 2020;7:300-2.

24. Jiménez-Pavón D, Carbonell-Baeza A, Lavie CJ. Physical exercise as therapy to fight against the mental and physical consequences of COVID-19 quarantine: Special focus in older people. Prog Cardiovasc Dis 2020;63:386-8.

25. Bäuerle A, Jahre L, Teufel M, Jansen C, Musche V, Schweda A, et al. Evaluation of the e-mental health mindfulness-based and skills-based "CoPE It" intervention to reduce psychological distress in times of COVID-19: Results of a bicentre longitudinal study. Front Psychiatry 2021;12:768132. doi: 10.3389/fpsyt. 2021.768132.

26. Viana RB, de Lira CAB. Exergames as coping strategies for anxiety disorders during the COVID-19 quarantine period. Games Health J 2020;9:147-9.

27. Bertuzzi V, Semonella M, Bruno D, Manna C, Edbrook-Childs J, Giusti EM, et al. Psychological support interventions for healthcare providers and informal caregivers during the COVID-19 pandemic: A systematic review of the literature. Int J Environ Res Public Health 2021;18:6939. doi: 10.3390/ijerph 18136939.

28. Zandifar A, Badrfam R. Iranian mental health during the COVID-19 epidemic. Asian J Psychiatr 2020;51:101990. doi: 10.1016/j.ajp. 2020.101990.

29. Jung SJ, Jun JY. Mental health and psychological intervention amid COVID-19 Outbreak: Perspectives from South Korea. Yonsei Med J 2020;61:271-2.