Research Paper

Investigating the Effects of the Virtual Training of the Benson Relaxation Technique on Illness Anxiety Disorder Among the Informal Caregivers of COVID-19 Patients: A Randomized Clinical Trial

Hamid Barghbani[1], Rouhollah Barghbani[2], Yeganeh Salehi[1], Mostafa Rad[3*]

1. Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran.
2. Sabzevar Health Factors Monitoring Center (Cohort), Sabzevar University of Medical Sciences, Sabzevar, Iran.
3. Department of Nursing, Iranian Research Center on Healthy Aging, School of Nursing and Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran.

Use your device to scan and read the article online

Citation Barghbani H, Barghbani R, Salehi Y, Rad M. Investigating the Effects of the Virtual Training of the Benson Relaxation Technique on Illness Anxiety Disorder Among the Informal Caregivers of COVID-19 Patients: A Randomized Clinical Trial. Journal of Research & Health. 2023; 13(2):99-108. http://dx.doi.org/10.32598/JRH.13.2.2111.1

doi: http://dx.doi.org/10.32598/JRH.13.2.2111.1

ABSTRACT

Background: Informal caregivers of COVID-19 patients, who are in direct contact with patients and the virus, experience many psychological issues and are prone to Illness Anxiety Disorder (IAD). Accordingly, this study aims to determine the effects of virtual training of the Benson Relaxation Technique (BRT) on IAD in the informal caregivers of COVID-19 patients.

Methods: This randomized clinical trial study was conducted on 54 informal caregivers of COVID-19 patients who scored X ≥20 on the health anxiety inventory (HAI) by Salkovskis. They were randomly divided into control (n=28) and intervention (n=26) groups. The intervention group received the BRT audio file and pamphlet through messengers, and applied this technique twice a day, each for 20 min, for 3 weeks. However, the control group did not receive any training. Subsequently, after 3 weeks, HAI was completed by both groups again. Data analysis was done using SPSS software, version 22.

Results: The mean score of IAD in the informal caregivers of the patients before the intervention in the experimental and the control groups was 24.88±5.89 and 23.27±5.64, respectively. After the intervention, the mean score of the IAD in the informal caregivers of the patients in the intervention and the control groups changed to 17.30±7.15 and 19.78±7.14, respectively. The result of the t-test showed a significant difference between the changes in the IAD scores of the two groups after the implementation of the intervention (P=0.046).

Conclusion: The findings show that the virtual training of BRT, as a comprehensive, simple, and inexpensive method, reduces IAD in the informal caregivers of COVID-19 patients. The healthcare systems can take steps to support these people who are exposed to IAD by providing virtual training of BRT to informal caregivers of COVID-19 patients.

Keywords: Virtual, Relaxation therapy, Anxiety disorders, Caregivers, COVID-19

Article info:
Received: 21 Nov 2022
Accepted: 15 Jan 2023
Publish: 01 Mar 2023

*** Corresponding Author:**
Mostafa Rad, PhD.
Address: *Department of Nursing, Iranian Research Center on Healthy Aging, School of Nursing and Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran.*
Phone: *+98 (915) 9720970*
E-mail: *mostafarad633@yahoo.com*

1. Introduction

The distress caused by quarantines during the COVID-19 pandemic, such as long-term isolation, the fear and the anxiety of contracting the illness, hearing bad news, the lack of sufficient information and resources, and financial problems, have caused or exacerbated mental health problems, especially health anxiety [1]. Health anxiety is a spectrum with normal and transitory concerns on one side and severe and debilitating health anxiety on the other. It is called hypochondriasis and has been renamed to Illness Anxiety Disorder (IAD) in "The Diagnostic and Statistical Manual of Mental Disorders," 5th edition (DSM-5) classification [2]. The large volume of news and information about COVID-19 has increased anxiety and unreasonable worries about the physical symptoms of the disease, excessive attention to them, and fear of contracting this virus, thereby causing an increase in IAD [3]. These individuals have certain characteristics, including too much anxiety and mental preoccupation about having an illness or its progress, paying too much attention to the symptoms of the illness and their health, and searching about the symptoms and the illness on the Internet [4]. In some situations, especially during the COVID-19 pandemic, anxiety, and worries about the illness can lead to useful protective behaviors, such as getting vaccinated, wearing masks, observing social distancing, washing hands, and following self-quarantine rules [5]. However, if IAD gets persistent and excessive, it can be debilitating and problematic. These patients experience financial problems because of frequent visits to the doctors' clinics and tests, problems in job performance, being absent at work [6], personality disorders, major depressive disorder, and other anxiety disorders [7]. IAD can also cause some individuals to completely avoid visiting medical centers and receiving healthcare as a result of too much anxiety and fear of being diagnosed with an illness or contracting it [2]. This disorder can occur because of experiencing physical illness during childhood, the death or the severe illness of relatives, or living in a family that worries too much about health [8]. Nearly 5% of the general public and more than 12% of the individuals who visit medical clinics have IAD [9].

Some communities endure more problems compared to others because of their social role or special characteristics, for instance, informal caregivers. Few studies have been conducted on this population [10]. An informal caregiver is a friend or a family member who, without having sufficient skills and knowledge, provides unpaid care to patients who need it [11]. During the COVID-19 pandemic, with the increase in infection cases and the shortage of healthcare and treatment resources, providing home care for patients by informal caregivers has received more attention than before, and caregivers play a fundamental role in providing essential services to patients [12]. When informal caregivers take care of COVID-19 patients and live with them, their quality of life, along with their mental and physical health will be affected [13]. This is associated with consequences, such as abandoning the patient, insufficient patient care, losing the hope of receiving social support, family isolation, and the disruption of family relationships [14]. Therefore, it seems important to create and provide effective treatments for IAD to informal caregivers.

Patients with IAD require more psychological treatments compared to pharmacological treatments [15]. Relaxation is one of the most common complementary treatment methods [16]. The most common relaxation methods are mental imagery relaxation, Benson relaxation technique (BRT), progressive muscle relaxation, deep relaxation (deep breathing), meditation, hypnosis, and massage [17]. Relaxation affects the release of endorphins by reducing lactic acid in tissues and eliminating anxiety and musculoskeletal stress. It also reduces blood pressure, breathing rate, and heart rate. The physical calmness provided by relaxation leads to the stability of thoughts and feelings, mental relaxation, and increased concentration [18]. BRT was developed by Herbert Benson in 1970 as a behavioral and non-pharmacological method [19]. It is more common than other relaxation methods thanks to its ease of teaching and learning [20]. Studies have shown that BRT with music reduces anxiety, depression, and fatigue in hemodialysis patients [21]. It also improves the quality of life in patients with irritable bowel syndrome [22]. Relaxation methods have rarely been applied to the informal caregivers of patients, especially the informal caregivers of COVID-19 patients. In addition, the few existing studies that have investigated such methods in informal caregivers have reported conflicting results. In one study, the relaxation technique reduced anxiety in the parents of the Dren with leukemia undergoing chemotherapy [23]. However, in another study that evaluates the effect of progressive muscle relaxation, with and without music, on anxiety, fatigue, and the quality of life in the family caregivers of hospice patients, no statistically significant difference has been reported between the caregivers in the control and the intervention group [24].

New technologies have the potential to greatly increase access to evidence-based treatments [25]. One of these cases is an Internet-delivered psychological treatment program that uses structured modules along with experts' guidance and home assignments, reflecting the same change processes and techniques used in traditional face-to-face therapy [26]. The increase in the use of the Internet among individuals provides an opportunity to support informal caregivers in this way [27]. The interventions provided through the Internet reduce stress, anxiety, depression, and care burden [28], along with improving the quality of life [29] and self-confidence in informal caregivers [30]. Compared to face-to-face support, providing support for family caregivers through the Internet has some advantages, including increasing users' comfort, reducing costs, reducing health service costs [31], and reducing social isolation. It is also suitable for caregivers who cannot leave their homes because of their patients' needs [32] or are geographically located in distant areas. Using multimedia (animation, graphics, and so on) makes the content more attractive and increases the desire of caregivers to learn the content [33]. Wright's study (2018) on midwives showed that the comprehensive web-based stress reduction intervention, i.e., using yoga, meditation, and mindfulness-based stress reduction, reduces stress and improves coping strategies in these individuals [34].

Given the wide spread of COVID-19 and the need to observe the social distance, the use of virtual space to teach low-cost and simple methods for supporting informal caregivers who have been suffering from psychological disorders, especially anxiety disorders, during this pandemic has become particularly important. Based on our search, no study was found that investigates the effects of BRT on IAD in informal caregivers of patients with COVID-19. On the other hand, IAD in caregivers causes an increase in psychological, social, and emotional problems in informal caregivers and reduces the provision of optimal care to patients with COVID-19. Therefore, this study aims to determine the effects of the virtual training of BRT on IAD in informal caregivers of COVID-19 patients.

2. Methods

With a control group, this randomized clinical trial study was conducted from July 16th to December 8th, 2021, on the informal caregivers of COVID-19 patients who had been discharged from Vasei Hospital in Sabzevar City, Iran, during the last two weeks. The inclusion criteria were having 18 to 65 years of age, being a non-professional caregiver (not being employed as a health-care worker), obtaining a score of X≥20 from the Health Anxiety Inventory (HAI), having access to a smartphone and the Internet, being able to use messengers, being literate, willing to participate in the study, not being actively infected by COVID-19, not having a neuromuscular disorder, not having an acute illness or special conditions that require medical care, not suffering from any severe mental disorders (such as schizophrenia, schizoaffective, and bipolar), not using sedatives, not having hearing or vision impairment, and not having any addictions. The exclusion criteria consisted of participating in any courses or programs that affect stress, such as relaxation, yoga, and meditation, not fully completing the questionnaire; and unwillingness to continue with the study.

Determining the sample size

The sample size of this study was calculated based on Antognelli's study [35]. Considering an attrition rate of 10%, a significance level of 0.05, and a test power of 0.9, the sample size obtained for each group was 30 (Equation 1).

1. $$n=\frac{2\times(z_{1-a/2}+z_{1-\beta})^2\delta^2}{d^{*2}}$$

Study interventions

The list of patients' names along with their contact numbers was obtained from the hospital. After contacting them, the main caregivers were identified and investigated over the phone according to the inclusion criteria. The online link of Salkovskis HAI and the demographic information questionnaires were sent to eligible individuals through national and international messengers (Sorush, Telegram, and WhatsApp). The questionnaires were completed individually on the Porsline platform, and after caregivers' confirmation of the information, the results were shown online in their user accounts created on the Prosline website. Individuals who scored X ≥20 on HAI were randomly divided into two groups, namely intervention, and control, using permuted block randomization with a 1:1 randomization and a block size of 4.

The research assistant was a nursing student and was trained by the main researchers of the study for 10 h and completely mastered the BRT. The audio file of BRT along with a pamphlet categorizing the content of the audio file of BRT was sent through the messengers. Subsequently, the participants were asked to use the BRT twice a day, in the morning and evening, with an interval of at least 2 h for 20 minutes each time, for three weeks. During the study, 3 days after sample allocation, individuals in the intervention group were followed up by telephone at 7-day intervals (on the 10th and 17th days) to ensure

that they were using the relaxation technique correctly. Besides the questions and problems they were facing regarding the relaxation technique were addressed and answered. The control group did not receive any intervention and was investigated simply for not participating in any courses or programs affecting stress at the above-mentioned times. It is worth mentioning that a contact number was available to the participants and they could contact the research team in case they needed any help regarding the possible problems raised while completing the questionnaires or using the BRT. Then, after 3 weeks, HAI was completed again by both groups.

In the BRT group, the caregivers were asked to lie down or sit on a chair in a comfortable position in a quiet environment and close their eyes. Then, they should gradually relax their muscles, beginning from their feet toward the face while breathing in through the nose and being aware of their breathing. They would then say the word "one" silently to themselves while exhaling. The subjects were advised not to worry if they did not reach a deep level of relaxation, and to allow relaxation to occur at its own pace. They were also asked to ignore disturbing thoughts and to focus on saying "one" while exhaling. After they were done, they were supposed to open their eyes and sit for a few minutes before standing up slowly (they might open their eyes to check the time, but without using an alarm clock).

Outcome-assessment of demographic characteristics and illness anxiety disorder

Demographic information

The following information was collected from the participants in terms of demographics: caregivers' age, the duration of patient care, the number of hours of patient care, the number of hours of following COVID-19 news, income, being/not being a parent, gender, education, marital status, occupation, access to alternative caregivers, the patient relationship, having a chronic illness, living with the patient, and having insurance.

Health Anxiety Inventory

HAI was used to examine IAD. This valid and reliable questionnaire includes 18 questions in 3 domains: developing an illness (5, 6, 8, 9, 11, 12), general health concerns (1, 2, 3, 4, 7, 10, 14), and illness consequences (13, 15, 16, 17, 18). Each item has 4 options and each option includes the individual's description of the components of health and illness in the form of a statement. The participants must choose one of the sentences which describe them better. Scoring is done from 0 to 3 points for each item as follows: option A=0, option B=1, option C=2, and option D=3. The total score ranges from 0 to 54. A high score is a sign of health anxiety [36]. The validity and the reliability of the Persian version of this questionnaire have been measured in the study by Nargesi et al. and its Cronbach α coefficient has been reported at 75% [37]. In the present study, the reliability of the questionnaire was reported at 80% using the Cronbach α method.

Statistical analysis

All the quantitative and qualitative variables were described using Mean±SD and frequency (percentage), respectively. The Kolmogorov-Smirnov test was used to check the normality of the variables, and the independent t-test was used to compare the difference between the mean scores before and after the intervention, the mean overall score, and the mean score of each IAD subscale between the two groups. Moreover, the paired t-test was used to compare mean scores of illness anxiety and its subscales in each group. Data analysis was done using SPSS software, version 22. The statistical significance level was 0.05.

Ethical considerations

The protocol of this study was approved by the Ethics Committee of Sabzevar University of Medical Sciences with the following code: IR.MEDSAB.REC.1400.063. This study was also registered in the Iranian Registry of Clinical Trials with the following code: IRCT20210712051849N2. The caregivers were aware that they could withdraw from the study at any stage without giving a reason. All the data were recorded in a way to maintain the caregivers' confidentiality. The general information about the study was provided to the caregivers before sending them the survey link. If the participants accepted to take part in the study, the online questionnaire's link was sent to them, along with the informed consent form. Completing the questionnaire indicated their consent to participate in the study.

3. Results

Overall, after examining the caregivers in terms of the criteria, 60 individuals were randomized, and finally, 54 samples completed the study (Figure 1). The Mean age±Standard Deviation (SD) of the caregivers was 30.40±12.51 years and 66.7% (n=36) were women. Both groups were homogeneous in all demographic information except for the variable of living with the patient (P=0.029) (Table 1).

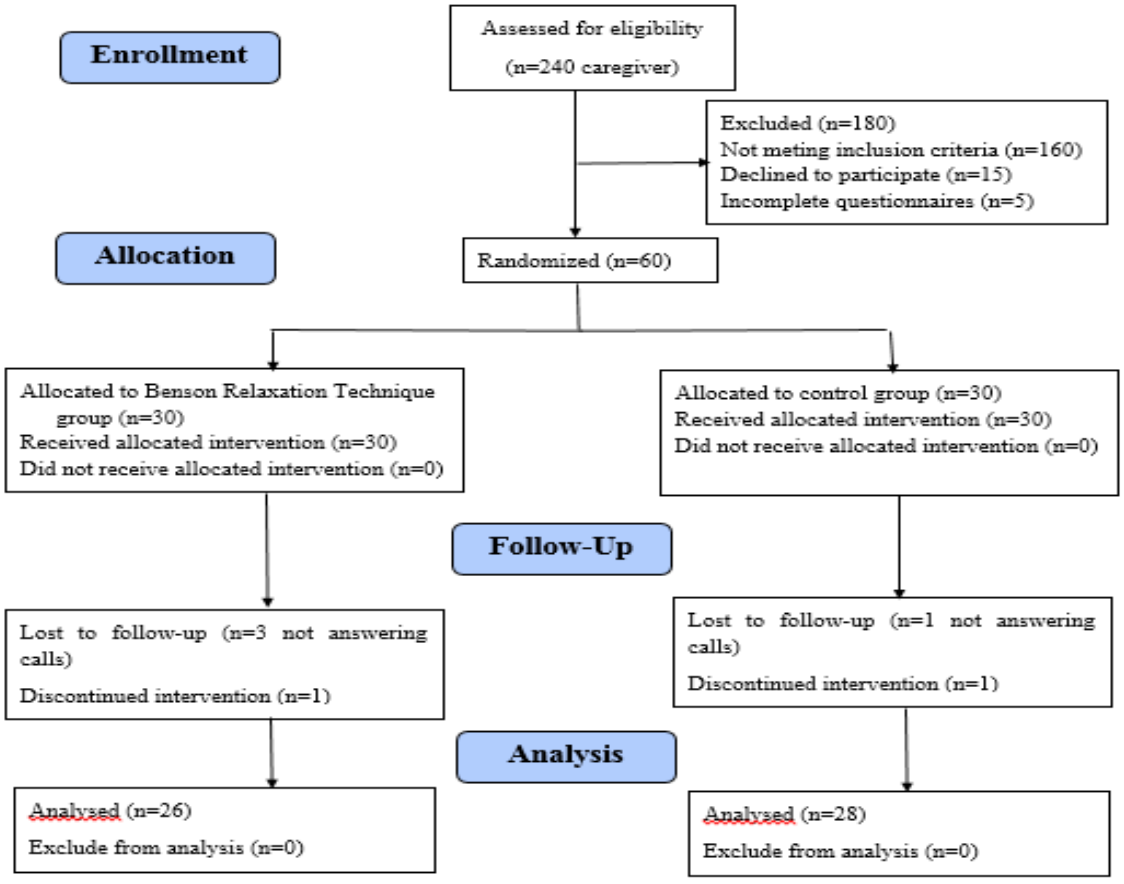

Figure 1. CONSORT diagram of study

The results of the study show that the mean total score of health anxiety and its dimensions are not significantly different between the two groups before and after the intervention, which indicates their heterogeneity. The results of the study show that the mean total score of health anxiety and its dimensions are not significantly different between the two groups before and after the intervention, which indicates their heterogeneity. Considering that the distribution of quantitative data was normal via the Komogrov-Smirnov test. The independent t-test and the paired t-test were used for inter-group and intra-group comparisons, respectively. Based on the paired samples t-test, the mean scores of the dimensions of "general health concerns" and "illness consequences" and the mean total score of health anxiety in the control group decreased significantly after the intervention (P=0.000, P=0.003, and P=0.000, respectively). The mean total score of health anxiety and dimensions of "general health concerns," "developing an illness," and "illness consequences" decreased significantly after the intervention in the intervention group (P=0.000, P=0.000, P=0.040, P=0.003, respectively) (Table 2).

The result of the t-test showed that the difference in the mean total score of health anxiety and the dimension of "general health concerns" between the two groups is significant (P=0.046 and P=0.008, respectively) (Table 3).

4. Discussion

To the best of our knowledge, this is the first study that investigates the effect of the virtual training of BRT on IAD in the informal caregivers of COVID-19 patients. The results of the present study showed that the virtual training of BRT reduces IAD in the informal caregivers of patients with COVID-19.

A study by Tolgou et al. showed that the technique of imagery rescripting reduces the symptoms of health anxiety, such as anxiety and avoidance of safety behavior. In this method, individuals are asked to remember the most stressful movie scene and re-experience it, then rewrite the scene with positive results (what they wished would have happened), and imagine the new scene as much as possible [38]. The reason for being in line with the results of the present study can be that the patients with health

Table 1. Baseline demographic characteristics of caregivers

Variables		Mean±SD/No. (%)		P[b]
		Control	BRT	
Age (years)		29.07		0.423
Duration of patient care (days)		27.85±26.57		0.555
Mean patient care hours (per week)		40.74±45.36		0.236
Mean hours of following COVID-19 news (in last two weeks)		11.85±21.81		0.357
Income (million / month)		2.66±2.92		0.191
Being a parent	Yes	9(32.14)	9(34.62)	0.538
	No	19(67.86)	17(65.38)	
Gender	Male	10(35.71)	8(30.77)	0.462
	Female	18(64.29)	18(69.23)	
Educational level	Elementary	2(7.14)	1(3.85)	0.915
	Middle School	2(7.14)	2(7.69)	
	Diploma	10(35.72)	8(30.77)	
	Above diploma	14(50.0)	15(57.69)	
Marital status	Married	12(42.86)	11(42.31)	0.593
	Single	16(57.14)	15(57.69)	
Occupational status	Retired	2(8.0)	1(3.85)	0.190
	Employer	12(48.0)	7(26.92)	
	Unemployed	11(44.0)	18(69.23)	
Access to alternative caregivers	Yes	21(75.0)	18(69.2)	0.433
	No	7(15.0)	8(30.8)	
Relation to the patient	Parent	6(21.42)	6(24.0)	0.115
	Offspring	14(50.0)	4(16.0)	
	Brother	0(0)	1(4.0)	
	Sister	0(0)	1(4.0)	
	Spouse	4(14.29)	5(20.0)	
	Others	4(14.29)	8(32.0)	
Having a chronic disease	Yes	10(35.71)	5(19.23)	0.148
	No	18(64.29)	21(80.77)	
Living with patient	Yes	21(75.0)	12(46.15)	0.029
	No	7(25.0)	14(53.85)	
Having insurance	Yes	22(78.57)	24(92.31)	0.150

BRT: Benson relaxation technique; SD: Standard deviation. bIndependent t-test and the Chi–square.

Table 2. Comparison of mean scores of total health anxiety and its dimensions between intervention and control groups

Variables		Mean±SD		P[b]
		Control	BRT [a]	
General health concerns	Before	10.07±2.56	11.26±2.75	0.105
	After	8.07±3.09	7.34±2.84	0.373
	P[b]	0.000	0.000	0.000
Developing an illness	Before	6.82 ±3.24	6.57±2.80	0.768
	After	6.39±3.26	5.23±2.65	0.157
	P	0.396	0.040	0.040
Illness consequences	Before	6.85±2.56	7.03±2.64	0.799
	After	5.42±2.60	4.73±2.60	0.329
	P	0.003	0.003	0.003
Total health anxiety	Before	23.75±5.64	24.88±5.89	0.474
	After	19.78±7.14	17.30±7.15	0.209
	P	0.000	0.000	0.000

[a]Benson Relaxation Technique, [b]Paired t-test

Table 3. Comparison of mean difference (before – after) of total health anxiety score and its dimensions in intervention and control groups

Variables	Mean±SD		P[a]
	Control	BRT [b]	
General health concerns	-2.00±1.80	-3.92±3.03	0.008
Developing an illness	-0.42±2.63	-1.34±3.16	0.254
Illness consequences	-1.42±2.31	-2.30±3.56	0.292
Total health anxiety	-3.96±5.10	-7.57±7.48	0.046

[a] Independent t-test, [b] Benson Relaxation Technique

anxiety have disturbing mental images of suffering from a new illness, the diagnosis of the illness, and death due to the new illness. Meanwhile, the imagery rescripting technique reduces negative emotions and thoughts as well as health anxiety by changing the content of emotion-stimulating memory. Also, BRT increases individuals' ability to prevent negative thoughts by focusing on their breathing and paying attention to the word "one."

The results of the study by McManus et al. showed that mindfulness-based cognitive therapy reduces the symptoms of hypochondriasis. In this method, meditative methods and attitudes based on cultivating mindfulness and cognitive therapy ideas are combined, the purpose of which is to get familiar with mental states and create a new relationship with them [39]. The reason for being consistent with the results of the present study is that mindfulness-based cognitive therapy increases the individual's concentration, reduces stress, and prevents negative thoughts, which is similar to the effects of BRT, in addition to the 1-year follow-up of the patients.

The result of a study showed that BRT reduces anxiety in the family caregivers of cancer patients [40], which is consistent with the results of the present study. The explanation can be that relaxation reduces the secretion of cat-

echolamines and the activity of the sympathetic nervous system while the increasing concentration in individuals, thereby reducing anxiety.

Another study by Tsitsi et al. showed that progressive muscle relaxation and guided imagery techniques reduce anxiety and improve moods in the parents of children with malignant cancers [41]. The reason for being consistent with the results of the present study is the use of complementary treatment methods that are used to reduce stress, and BRT is also among these treatment methods. On the other hand, the simultaneous use of these two methods by the parents of children with malignant cancers increases their effectiveness.

Various relaxation methods are based on stress reduction. Also, in BRT, the four elements of a calm environment, comfortable position, mental device (a word to focus on), and passive attitude are used as important and fundamental elements in reducing stress [42]. As a result, reducing the activity of the sympathetic nervous system leads to muscle relaxation and anxiety reduction. Through concentration, individuals can lower blood pressure and heart rate, regulate breathing, and eliminate many negative physiological responses to stress [43].

One of the benefits of BRT virtual training for IAD is having access to it even in quarantine conditions or for individuals who have the desire to receive treatment due to having concerns about contracting COVID-19. Our findings provide more evidence in support of the positive results of BRT virtual training on IAD, showing that such low-cost, simple, and effective programs can be continued to improve IAD and psychological distress in pandemic conditions. By reducing the activity of the sympathetic system, musculoskeletal stress, and anxiety, as well as increasing concentration and preventing disturbing thoughts, BRT reduces IAD in informal caregivers of patients with COVID-19.

Study Limitations

One of the limitations of the present study is the use of online data collection and intervention which may have a negative impact on the random allocation of samples. We have only assessed IAD without considering the specific fears caused by COVID-19. Besides, the diagnosis of IAD was based on self-report data and no diagnostic interview was conducted. Therefore, it is unclear whether the participants met the criteria for IAD or somatic symptom disorder, the specific fear of COVID-19, adjustment disorders, or other medical conditions. Another limitation of the study was that the control group did not receive any intervention, hence the placebo effect of the intervention is not known.

5. Conclusion

Virtual training of the informal caregivers of the patients with COVID-19 in the field of BRT and their use for three weeks reduces IAD in these individuals. Since this method is low-cost, without side effects, and easy to learn and teach, it is recommended that health and treatment systems introduce this technique through the Internet to the informal caregivers of patients with COVID-19 who are exposed to psychological problems, especially anxiety disorders so that a step can be taken to support caregivers. It is suggested that future research be done with a larger sample size over a longer period, using a combination of virtual and face-to-face training, and investigate the usage rate and the results of BRT virtual training on IAD in the later stages of the pandemic as well as future pandemics.

Ethical Considerations

Compliance with ethical guidelines

The protocol of this study was approved by the Ethics Committee of Sabzevar University of Medical Sciences (Code: IR.MEDSAB.REC.1400.063), and it was also registered in the Iranian Registry of Clinical Trials (IRCT) (CODE: IRCT20210712051849N2). The caregivers were told that they could withdraw from the study at any stage without giving a reason. All the data were recorded in such a way as to maintain the caregivers' confidentiality. The general information about the study was provided to the caregivers before sending them the survey link. If the participants accepted to take part in the study, the online questionnaire's link was sent to them, along with the informed consent form. Completing the questionnaire indicated their consent to participate in the study.

Funding

The financial support for this work was provided by Sabzevar University of Medical Sciences.

Authors' contributions

All authors contributed equally to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

The researchers would like to express their gratitude toward the Student Research Committee and the Research

and Technology Vice-Chancellor of Sabzevar University of Medical Sciences for their financial support of the project, and the respected caregivers of the patients with COVID-19 who participated in the study.

References:

[1] Bell DJ, Self MM, Davis C, Conway F, Washburn JJ, Crepeau-Hobson F. Health service psychology education and training in the time of COVID-19: Challenges and opportunities. American Psychologist Journal. 2020; 75(7):919-32. [DOI:10.1037/amp0000673] [PMID]

[2] American Psychiatric Association. Diagnostic and statistical manual of mental disorders (fifth edition). Arlington, VA: American Psychiatric Association; 2013. [DOI:10.1176/appi.books.9780890425596]

[3] Tingaz EO. The psychological impact of COVID-19 pandemic on elite athletes, management strategies and post-pandemic performance expectations: a semi structured interview study. IJERI: International Journal of Educational Research and Innovation. 2021(15):73-81. [DOI:10.46661/ijeri.4863] [DOI:10.46661/ijeri.4863]

[4] Haig-Ferguson A, Cooper K, Cartwright E, Loades ME, Daniels J. Practitioner review: Health anxiety in children and young people in the context of the COVID-19 pandemic. Behavioural and Cognitive Psychotherapy. 2021; 49(2):129-43. [DOI:10.1017/S1352465820000636] [PMID] [PMCID]

[5] Asmundson GJG, Taylor S. How health anxiety influences responses to viral outbreaks like COVID-19: What all decision-makers, health authorities, and health care professionals need to know. Journal of Anxiety Disorders. 2020; 71:102211. [DOI:10.1016/j.janxdis.2020.102211] [PMID] [PMCID]

[6] Almalki M, Al-Tawayjri I, Al-Anazi A, Mahmoud S, Al-Mohrej A. A recommendation for the management of illness anxiety disorder patients abusing the health care system. Case Reports in Psychiatry. 2016; 2016.[DOI:10.1155/2016/6073598] [PMID] [PMCID]

[7] Chappell AS. Toward a lifestyle medicine approach to illness anxiety disorder (formerly hypochondriasis). American Journal of Lifestyle Medicine. 2018; 12(5):365-9. [DOI:10.1177/1559827618764649] [PMID] [PMCID]

[8] Alberts NM, Hadjistavropoulos HD, Sherry SB, Stewart SH. Linking illness in parents to health anxiety in offspring: Do beliefs about health play a role?. Behavioural and Cognitive Psychotherapy. 2016; 44(1):18-29. [DOI:10.1017/S1352465814000319] [PMID]

[9] Scarella TM, Boland RJ, Barsky AJ. Illness anxiety disorder: psychopathology, epidemiology, clinical characteristics, and treatment. Psychosomatic Medicine. 2019; 81(5):398-407. [DOI:10.1097/PSY.0000000000000691] [PMID]

[10] Budnick A, Hering C, Eggert S, Teubner C, Suhr R, Kuhlmey A, Gellert P. Informal caregivers during the COVID-19 pandemic perceive additional burden: findings from an ad-hoc survey in Germany. BMC Health Services Research. 2021; 21:1-11. [DOI:10.1186/s12913-021-06359-7] [PMID] [PMCID]

[11] Alliance FC. Family caregiver support: policies, perceptions and practices in 10 states since passage of the national family caregiver support program. California : National Center on Caregiving; 2002. [Link]

[12] Todorovic N, Vracevic M, Rajovic N, Pavlovic V, Madzarevic P, Cumic J, et al. Quality of Life of Informal Caregivers behind the Scene of the COVID-19 Epidemic in Serbia. Medicina. 2020; 56(12):647. [DOI:10.3390/medicina56120647] [PMID] [PMCID]

[13] Cohen SA, Kunicki ZJ, Nash CC, Drohan MM, Greaney ML. Rural-urban differences in caregiver burden due to the COVID-19 pandemic among a national sample of informal caregivers. Gerontology and Geriatric Medicine. 2021; 7:23337214211025124. [DOI:10.1177/23337214211025124] [PMID] [PMCID]

[14] Safaeian Z, Hejazi SS, Delavar E, Hoseini Azizi T, Haresabadi M. The relationship between caregiver burden, and depression, anxiety and stress in family caregivers of cancer patients referred to Imam Reza Hospital in Bojnurd City. Iranian Journal of Psychiatric Nursing. 2017; 5(3):7-14. [DOI:10.21859/ijpn-05032]

[15] 38. Walker J, Vincent N, Furere P, Cox B, Kjernisted K. Treatment preference in hypochondriasis. Journal of Behavior Therapy and Experimental Psychiatry. 1999;30:251-8. [DOI:10.1016/S0005-7916(99)00027-0] [PMID]

[16] Pelekasis P, Matsouka I, Koumarianou A. Progressive muscle relaxation as a supportive intervention for cancer patients undergoing chemotherapy: A systematic review. Palliative and Supportive Care. 2016; 15(4):465-73. [DOI:10.1017/S1478951516000870] [PMID]

[17] Moradi Mohammadi F, Bagheri H, Khosravi A, Ameri M, Khajeh MM. The effect of Benson relaxation technique on sleep quality after coronary artery bypass graft surgery. Avicenna Journal of Nursing and Midwifery Care. 2020; 27(6):371-80. [DOI:10.30699/ajnmc.27.6.371]

[18] Keihani Z, Jalali R, Shamsi MB, Salari N. Effect of benson relaxation on the intensity of spinal anesthesia-induced pain after elective general and urologic surgery. Journal of PeriAnesthesia Nursing. 2019; 34(6):1232-40. [DOI:10.1016/j.jopan.2019.05.005] [PMID]

[19] Pishgooie SAH, Akbari F, Keyvanloo Shahrestanaki S, Rezaei M, Nasiri M, Momen R. Effects of relaxation techniques on acute postlaminectomy pain: a three-arm randomized controlled clinical trial. Journal of PeriAnesthesia Nursing. 2020; 35(5):533-8. [DOI:10.1016/j.jopan.2020.02.004] [PMID]

[20] Hassanzadeh M, Kiani F, Bouya S, Zarei M. Comparing the effects of relaxation technique and inhalation aromatherapy on fatigue in patients undergoing hemodialysis. Complementary Therapies in Clinical Practice. 2018; 31:210-4. [DOI:10.1016/j.ctcp.2018.02.019] [PMID]

[21] Eroglu H, Gok Metin Z. Benson relaxation technique combined with music therapy for fatigue, anxiety, and depression in hemodialysis patients: a randomized controlled trial. Holistic Nursing Practice. 2022; 36(3):139-48. [DOI:10.1097/HNP.0000000000000509] [PMID]

[22] Asadi M, Fayazi S, Adarvishi S, Alavinejad P, Latifi M, Soleimani A. The effect of Benson relaxation on quality of life of patients with irritable bowel syndrome. Jundishapur Journal of Chronic Disease Care. 2016; 5(4):e31068. [DOI:10.17795/jjcdc-31068]

[23] Pouraboli B, Poodineh Z, Jahani Y. The effect of relaxation techniques on anxiety, fatigue and sleep quality of parents of children with leukemia under chemotherapy in South East Iran. Asian Pacific Journal of Cancer Prevention: APJCP. 2019; 20(10):2903. [DOI:10.31557/APJCP.2019.20.10.2903] [PMID] [PMCID]

[24] Choi YK. The effect of music and progressive muscle relaxation on anxiety, fatigue, and quality of life in family caregivers of hospice patients. Journal of Music Therapy. 2010; 47(1):53-69. [DOI:10.1093/jmt/47.1.53] [PMID]

[25] Holmes EA, Ghaderi A, Harmer CJ, Ramchandani PG, Cuijpers P, Morrison AP, Roiser JP, Bockting CL, O'Connor RC, Shafran R, Moulds ML. The Lancet Psychiatry Commission on psychological treatments research in tomorrow's science. The Lancet Psychiatry. 2018; 5(3):237-86. [DOI:10.1016/S2215-0366(17)30513-8] [PMID]

[26] Brown M, Glendenning A, Hoon AE, John A. Effectiveness of web-delivered acceptance and commitment therapy in relation to mental health and well-being: a systematic review and meta-analysis. Journal of Medical Internet Research. 2016; 18(8):e221. [DOI:10.2196/jmir.6200] [PMID] [PMCID]

[27] Blom MM, Zarit SH, Groot Zwaaftink RB, Cuijpers P, Pot AM. Effectiveness of an Internet intervention for family caregivers of people with dementia: results of a randomized controlled trial. PloS One. 2015; 10(2):e0116622. [DOI:10.1371/journal.pone.0116622] [PMID] [PMCID]

[28] Biliunaite I, Kazlauskas E, Sanderman R, Truskauskaite-Kuneviciene I, Dumarkaite A, Andersson G. Internet-based cognitive behavioral therapy for informal caregivers: randomized controlled pilot trial. Journal of Medical Internet Research. 2021; 23(4):e21466. [DOI:10.2196/21466] [PMID] [PMCID]

[29] Guay C, Auger C, Demers L, Mortenson WB, Miller WC, Gélinas-Bronsard D, Ahmed S. Components and outcomes of internet-based interventions for caregivers of older adults: systematic review. Journal of medical Internet research. 2017; 19(9):e313. [DOI:10.2196/jmir.7896] [PMID] [PMCID]

[30] Ploeg J, Ali MU, Markle-Reid M, Valaitis R, Bartholomew A, Fitzpatrick-Lewis D, McAiney C, Sherifali D. Caregiver-focused, web-based interventions: systematic review and meta-analysis (part 2). Journal of Medical Internet Research. 2018; 20(10):e11247. [DOI:10.2196/11247] [PMID] [PMCID]

[31] Griffiths F, Lindenmeyer A, Powell J, Lowe P, Thorogood M. Why are health care interventions delivered over the internet? A systematic review of the published literature. Journal of Medical Internet Research. 2006; 8(2):e498. [DOI:10.2196/jmir.8.2.e10] [PMID] [PMCID]

[32] Hopwood J, Walker N, McDonagh L, Rait G, Walters K, Iliffe S, Ross J, Davies N. Internet-based interventions aimed at supporting family caregivers of people with dementia: systematic review. Journal of Medical Internet Research. 2018; 20(6):e216. [DOI:10.2196/jmir.9548] [PMID] [PMCID]

[33] Hattink B, Meiland F, van der Roest H, Kevern P, Abiuso F, Bengtsson J, et al. Web-based STAR E-learning course increases empathy and understanding in dementia caregivers: results from a randomized controlled trial in the Netherlands and the United Kingdom. Journal of Medical Internet Research. 2015; 17(10):e241. [DOI:10.2196/jmir.4025] [PMID] [PMCID]

[34] Wright EM. Evaluation of a web-based holistic stress reduction pilot program among nurse-midwives. Journal of Holistic Nursing. 2018; 36(2):159-69. [DOI:10.1177/0898010117704325] [PMID]

[35] Antognelli SL, Sharrock MJ, Newby JM. A randomised controlled trial of computerised interpretation bias modification for health anxiety. Journal of Behavior Therapy and Experimental Psychiatry. 2020; 66:101518. [DOI:10.1016/j.jbtep.2019.101518] [PMID]

[36] Salkovskis PM, Rimes KA, Warwick HM, Clark D. The Health Anxiety Inventory: development and validation of scales for the measurement of health anxiety and hypochondriasis. Psychological Medicine. 2002; 32(5):843-53. [DOI:10.1017/S0033291702005822] [PMID]

[37] Nargesi F, Izadi F, Kariminejad K, Rezaii SA. The investigation of the reliability and validity of Persian version of Health anxiety questionnaire in students of Lorestan University of Medical Sciences. Quarterly of Educational Measurement Allameh Tabataba'i University. 2017; 7(27):147-60. [DOI:10.22054/jem.2017.19621.1495].

[38] Tolgou T, Rohrmann S, Stockhausen C, Krampen D, Warnecke I, Reiss N. Physiological and psychological effects of imagery techniques on health anxiety. Psychophysiology. 2018; 55(2):e12984. [DOI:10.1111/psyp.12984] [PMID]

[39] McManus F, Surawy C, Muse K, Vazquez-Montes M, Williams JMG. A randomized clinical trial of mindfulness-based cognitive therapy versus unrestricted services for health anxiety (hypochondriasis). Journal of Consulting and Clinical Psychology. 2012; 80(5):817-28. [DOI:10.1037/a0028782] [PMID] [PMCID]

[40] Ebrahimi B, Adib-Hajbaghery M. Effect of benson's relaxation technique on anxiety in family caregivers of patients with cancer: A randomized controlled trial. Nursing and Midwifery Studies. 2022; 11(1):37. [DOI: 10.4103/nms.nms_22_21]

[41] Tsitsi T, Charalambous A, Papastavrou E, Raftopoulos V. Effectiveness of a relaxation intervention (progressive muscle relaxation and guided imagery techniques) to reduce anxiety and improve mood of parents of hospitalized children with malignancies: A randomized controlled trial in Republic of Cyprus and Greece. European Journal of Oncology Nursing. 2017; 26:9-18. [DOI:10.1016/j.ejon.2016.10.007] [PMID]

[42] Benson H, Kotch JB, Crassweller KD. The Relaxation Response: A Bridge Between Psychiatry and Medicine. Medical Clinics of North America. 1977; 61(4):929-38. [DOI:10.1016/S0025-7125(16)31308-6] [PMID]

[43] Jourabchi Z, Satari E, Mafi M, Ranjkesh F. Effects of Benson's relaxation technique on occupational stress in midwives. Nursing Research. 2020; 50(9):64-8. [DOI:10.1097/01.NURSE.0000694836.00028.28] [PMID]