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The effect of emotional freedom techniques (EFT) on anxiety and caregiver burden of family caregivers of patients with heart failure: A quasi-experimental study

Arash Marzban, Mohammad Akbari, Mohsen Moradi, Nasrin Fanian

Abstract:

BACKGROUND: Family members are at the forefront of providing care to patients with chronic illnesses, such as heart failure (HF). Since patient caregiving can affect the mental and physical health of family caregivers, the implementation and training of new psychological interventions by nurses are considered important and necessary for family caregivers. Therefore, the aim of this study was to evaluate the effect of emotional freedom techniques (EFTs) on anxiety and caregiver burden of family caregivers of patients with HF.

MATERIALS AND METHODS: This study was a quasi-experimental study, in which 91 family caregivers participated. The family caregivers were assigned into two groups of intervention (n = 46) and control (n = 45). Data were collected using a demographic information form, Zung Self-Rating Anxiety Scale (SAS), and Caregiver Burden Inventory (CBI) developed by Novak and Guest. The intervention group underwent EFT training within six sessions, while the control group received no training. Descriptive statistics (mean, standard deviation, and absolute and relative frequency) and inferential statistical tests such as Chi-square, Fisher's exact, and independent t-tests were run, and the data were analyzed by Statistical Package for the Social Sciences (SPSS) version 23 software.

RESULTS: The findings showed that the intervention group had a significant improvement in reducing anxiety ($P > 0.001$). In addition, EFT significantly reduced caregiver burden among family caregivers of HF patients ($P > 0.001$).

CONCLUSION: EFT could significantly reduce anxiety and caregiver burden in family caregivers of patients with HF in our study. Therefore, nurses working in clinical settings are recommended to learn and use EFT to reduce the anxiety and caregiver burden of patients' family caregivers.

Keywords:

Anxiety, caregiver burden, emotional freedom techniques, heart failure

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Introduction

Heart failure (HF) is developed following a functional or structural defect in the heart, impairing ventricular filling or ejection of blood.^[1] According to the latest studies, more than 64 million people suffer from HF worldwide.^[2] The most common risk factors for HF include hypertension, diabetes,

physical inactivity, hyperlipidemia, and smoking.^[3] Common signs and symptoms of HF in sufferers are shortness of breath when they move or lie down, feeling fatigue and weakness, swollen legs, decreased appetite, a fast or irregular heartbeat, increased need to urinate during the night, frequent coughing or wheezing, ascites, and increased body weight due to fluid retention.^[1]

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Depending on the extent of the disease progress, patients with HF need various levels of care from their family members.^[4] More than 50% of people with cardiovascular diseases, especially HF, expect to have a family caregiver during hospitalization and after being discharged from the hospital.^[5] Family caregivers are people who help the patient with day-to-day activities such as nutritional care, moving or transferring from place to place, psychological, emotional, and social support, communicating with the care team regarding changing circumstances, medication, and providing financial resources.^[6] These individuals have the greatest involvement in patient care regarding adaptation to and management of chronic disease.^[7,8] Family caregivers often do not pay attention to their physical and emotional needs in an effort to provide the best possible care for their sick loved ones.^[9] In the literature, family caregivers are also referred to as “secondary patients” because they suffer from many physical and mental problems, such as insomnia, reduced quality of life, reduced social adjustment, chronic fatigue, depression, and extreme anxiety after caring for their sick family member.^[10,11]

Anxiety is one of the most important problems and psychological stresses of family caregivers of patients with chronic diseases, especially those with HF. A study in 2021 found that more than a third of family caregivers of patients with HF experienced anxiety following caring for their patient.^[4] A review of the literature showed that the presence of anxiety in family caregivers made patients feel worse.^[12] There is also evidence demonstrating that anxiety causes depression, decreased resilience, and increased caregiver burden among family caregivers.^[13]

Caregiver burden is the psychological, physical, and social pressures imposed on the caregivers of patients as a result of caring for the patient, which unfortunately is often ignored by doctors, nurses, and medical staff.^[14] Among the risk factors for increased caregiver burden in family caregivers are female gender, low level of education, permanent residence with the recipient of care, increased hours of patient care, depression, social isolation, and financial stress.^[15,16] Evidence suggests that caregiver burden causes reduced quality of life, insomnia, decreased physical function, depression, stress, and severe anxiety among family caregivers.^[13,17,18]

Since the emotions, behavior, and physical and mental health status of family caregivers can seriously affect the process of treatment and recovery of the patients, nurses should pay enough attention to the physical and mental health condition of family caregivers in addition to caring for the patients.^[12] Therefore, the implementation of nursing interventions to reduce the physical and psychological stresses of family caregivers seems necessary and important.^[19] One of the new

interventions that nurses can use to reduce the physical and psychological stresses of patients and family caregivers is emotional freedom techniques (EFTs).^[20] In fact, EFT is similar to acupuncture, but does not cause any painful physical injury or discomfort to the body. During EFT, the person taps on key acupuncture points slowly using his/her fingertips while repeating certain sentences.^[21] Making EFT sentences to solve physical and mental problems is not an easy task and requires expertise because they are based on cognitive, behavioral, and psychological therapy techniques. EFT instructors believe that tapping energy points and repeating positive sentences make the human brain receive special signals, subsequently resulting in complete or significant resolution of human physical and mental problems in a short period of time.^[22]

Many studies have examined the efficacy of this technique in improving the mental and physical health condition of patients.^[21] Among these, we can touch on the efficacy of EFT in increasing happiness and sleep quality,^[23] and reducing anxiety,^[24] stress,^[25] depression,^[26] pain,^[27] and post-traumatic stress disorder (PTSD).^[28] So far, few studies have investigated the efficacy of this new technique in alleviating the physical and psychological problems of family caregivers, especially family caregivers of patients with HF. Therefore, this study aimed at investigating the effect of EFT on anxiety and caregiver burden of family caregivers of patients with HF.

Materials and Methods

Study design and setting

The present quasi-experimental study was conducted using a two-group design and one-month follow-up period. The study was performed at Chamran Hospital from September 2021 to February 2022. This hospital provides specialized and subspecialized cardiac services and is affiliated with the Isfahan University of Medical Sciences.

Study participants and sampling:

The study population included all family caregivers of patients with HF who were hospitalized at Chamran Hospital. The sample size was calculated to be 44 per group based on a study conducted by Asmawati *et al.*,^[29] considering type 1 error of 0.01 and 90% test power and using G-Power program (version 3.1.9.4). Considering a dropout rate of 10%, 48 patients were recruited in each group [Figure 1].

Inclusion criteria defined for family caregivers were as follows: being a family caregiver of patient with HF who was in class IV according to the New York Heart Association (NYHA) classification of HF, willingness

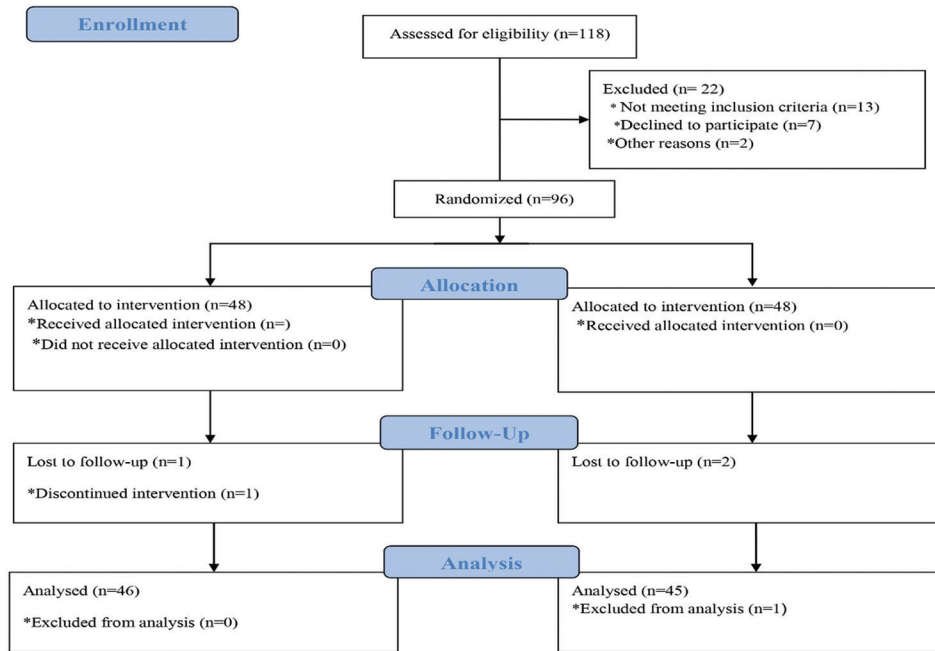


Figure 1: CONSORT flow diagram

to participate in the study, caring for only one person at home, not having acute or chronic mental disorders, not experiencing stress and tension severe, such as loss of a family member or loved one and divorce, during the last 6 months, and having access to cyberspace and communication applications such as WhatsApp and Skyroom. Exclusion criteria were unwillingness of family caregivers to continue participation in the study at any time of the study, death of caregiver or the patient, simultaneous participation in another educational program similar to our study, absence in more than one training session, and not doing the assignments.

Data collection tool and technique

The tools used in this research included a demographic information form, Zung Self-Rating Anxiety Scale (SAS), and Caregiver Burden Inventory (CBI). The demographic information form used in this study comprised questions about age, sex, marital status, employment status, duration of patient care in a day (hours), education level, family relationship between the caregiver and the patient, and history of physical diseases in family caregiver. This scale has 20 items. Each item is scored based on a four-point Likert scale ranging from 1 to 4 (1 = never or rarely, 2 = occasionally, 3 = most often, and 4 = constantly or almost always). Four items of SAS are negatively worded (items 5, 9, 13, and 19) and scored in reverse from 4 (never or rarely) to 1 (constantly or almost always). The overall range of scores is between 20 and 80. Moreover, to obtain the standard score of this questionnaire, the raw score should be multiplied by 1.25. A higher score indicates greater levels of anxiety. It should be noted

that the cutoff point of SAS is 36.^[30] In Iran, Hasannia *et al.*^[31] confirmed the validity and reliability of SAS by reporting Cronbach's alpha coefficient of 84. The CBI developed by Novak and Guest consists of 24 items and five dimensions, namely time dependence and developmental, physical, emotional, and social burden. There are five items for each dimension, except for the physical dimension, which has four items. Items are scored based on a 5-point Likert scale (0 to 4). Therefore, the total score ranges from 0 to 20 for the dimensions of time dependence and developmental, emotional, and social burden and varies from 0 to 16 for the dimension of physical burden. Therefore, a higher score represents a greater care burden in each dimension. In addition, the score on physical burden can be multiplied by 1.25 to obtain an equivalent score of 20.^[32] Shafiezadeh *et al.*^[33] assessed and confirmed the validity and reliability of the Iranian version of CBI reporting Cronbach's alpha coefficient of 91.

Having learned and gained skills regarding the implementation of EFT, the third author of this study developed a six-session intervention for this research based on the EFT Manual^[34] [Table 1]. The objectives of the study were explained to all the included participants, and written informed consent was received from each of them. After randomly assigning the participants into two groups of intervention and control, both groups took a pretest before the intervention and were asked to complete demographic information form, SAS, and CBI. For the intervention group, six individual training sessions of EFT (each lasted 30 to 45 minutes) were

Table 1: Brief description of EFT training sessions

Session	Description
Session 1	Explaining how to conduct EFT training sessions, creating group rules and regulations, getting acquainted with EFT, and getting acquainted with the location of tapping points [Figure 2]
Session 2	Examining participants' beliefs about the effectiveness of EFT and motivating the participants: If family caregivers did not trust EFT, we started the intervention by saying these sentences: Even though I feel there is no benefit to me in learning these techniques, I agree to do it anyway. Although EFT seems like a simple and ridiculous method, I decided to give it a try (this and similar sentences are repeated many times until the person accepts that this technique can be effective)
Sessions 3 and 4	Identifying anxiety factors and scoring the severity of anxiety from zero to ten for each caregiver: In this session, each caregiver was asked to express factors that cause anxiety and panic in her/him. Then, tapping was started by focusing on the factor or factors mentioned. After doing EFT three times, the caregivers were asked to score their anxiety from 0 to 10 (this process was repeated until the caregiver gave the lowest score to her/his anxiety)
Session 5	Identifying negative experiences and emotions affecting caregivers: In this session, it was explained to each caregiver that in many cases, the state of our physical and mental health is affected by our memories, experiences, and negative views, and peace of mind can be achieved when we control our negative feelings, experiences, and views. Then, after recognizing the experiences and negative emotions and feelings of each caregiver, tapping was started again. This process continued until each caregiver felt calm and could control her/his negative and unpleasant feelings and experiences
Sessions 5 and 6	Identifying factors increasing caregiver burden: Caregivers were asked about factors and problems which made patient care difficult and unbearable for them. Then, after examining and recognizing the main problems, tapping was started. This process continued until caregivers gave the lowest possible score from 0 to 10 to problems related to the patient care

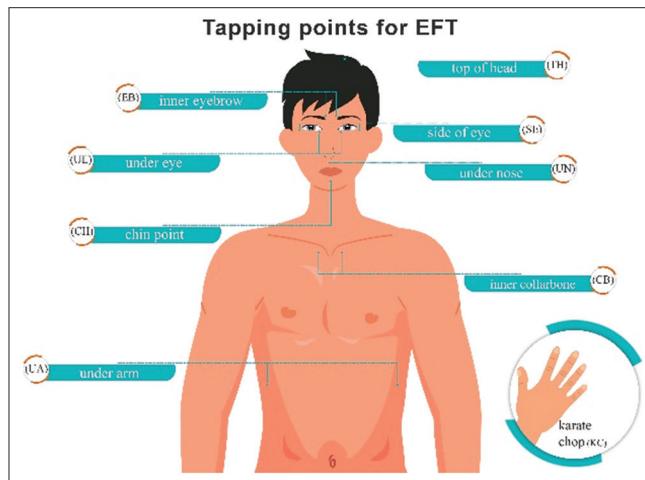


Figure 2: EFT tapping points: top of the head (TH), beginning of the collarbone (CB), side of the eye (SE), karate chop (KC), eyebrow (EB), under the arm (UA), under the nose (UN), under the eye (UE), chin (Ch)

held twice a week. Family caregivers were asked to do some assignments between training sessions. Family caregivers were also required to perform these tasks at home and perform EFT at least three times a day. It should be noted that to ensure the performance of the assignments and implementation of EFT by family caregivers, during the intervention process and one-month follow-up period, the researchers were in contact with them through face-to-face visits, telephone calls, and WhatsApp messaging applications. The intervention group was asked not to provide the training information to the control group. It should be noted that the control group did not receive any intervention during the study except for routine ward care services. Finally, both groups took posttest (immediately and one month after the intervention) by re-completing the questionnaires online. Finally, after the completion of the study, to adhere to ethical standards, the control group underwent three intensive EFT training sessions.

Data analysis

To statistically analyze the data, Statistical Package for the Social Sciences (SPSS) (version 23, IBM, Armonk, NY, USA) was applied. Initially, the normality of quantitative variables was assessed using the skewness and kurtosis test. Then, the collected data were analyzed using descriptive (i.e., frequency, percentage, mean, and standard deviation) and inferential (i.e., independent *t*-test, Chi-square, Fisher's exact test, and repeated-measures analysis of variance (ANOVA)) statistics.

Ethical consideration

All procedures were approved by the ethics committee of Isfahan University of Medical Sciences (ethical code: IR.MUI.NUREMA.REC.1400.093). In addition, this study complied with the Declaration of Helsinki.

Results

The mean age of family caregivers in this study was 42.02 ± 12.21 years in the intervention group and 43.06 ± 11.54 years in the control group. In terms of gender, most caregivers were women in the intervention ($n = 33$) (71.7%) and control ($n = 28$) (62.2%) groups. Most of the caregivers were married in the intervention ($n = 32$) (69.6%) and control ($n = 36$) (80%) groups. Mostly, family caregivers were patients' spouse in the intervention ($n = 19$) (40%) and control ($n = 15$) (33.3%) groups. More than 31% of family caregivers participating in this study suffered from one or more physical diseases. More than 40% of family caregivers allocated 1 to 5 hours a day to caregiving. According to Table 2, intervention and control groups did not differ significantly with respect to demographic variables ($P > 0.05$).

Independent *t*-test results yielded no statistically significant difference between the groups with respect to mean scores of anxiety and caregiver burden before the

Table 2: Distribution of family caregivers of HF patients in intervention and control groups based on demographic characteristics

Characteristics	Control group (Mean±SD) or number (%)	Intervention group (Mean±SD) or number (%)	P
Age	43.06±11.54	42.02±12.21	0.861 ^a
Gender			
Men	37.8 (17)	13 (28.3)	0.378 ^b
Female	62.2 (28)	33 (71.7)	
Marital status			
Married	36 (80)	32 (69.6)	0.336 ^b
Single	9 (20)	14 (30.4)	
History of physical diseases			
Yes	16 (35.6)	13 (28.3)	0.505 ^b
No	29 (64.4)	33 (71.7)	
Duration of patient care in a day (hours)			
1–5	18 (40)	19 (41.3)	0.697 ^b
6–10	12 (26.7)	15 (32.6)	
≥ 11	15 (33.3)	12 (26.1)	
Family relationship			
Spouse	15 (33.3)	19 (41.3)	0.478 ^c
Daughter	14 (31.3)	16 (34.8)	
Son	14 (31.1)	11 (23.9)	
Other	2 (4.4)	0 (0)	
Education level			
Illiterate	9 (20)	12 (26.1)	0.619 ^b
Less than high school education high school diploma	12 (26.7)	10 (21.7)	
College education	11 (24.4)	15 (32.6)	
College education	13 (28.9)	9 (19.6)	
Employment status			
Employed	20 (44.4)	19 (41.3)	0.834 ^b
Unemployed	25 (55.6)	27 (58.7)	

^aIndependent-samples t-test, ^bchi-squared, ^cFisher's exact

intervention [Table 3, $P > 0.05$]. However, the results of this test revealed a significant difference between groups regarding mean scores of anxiety and caregiver burden immediately and one month after the intervention [Tables 3 and 4, $P < 0.001$], suggesting the efficacy of EFT in reducing anxiety and caregiver burden in family caregivers of patients with HF.

Figures 3 and 4 show the mean scores of anxiety and caregiver burden in the intervention and control groups before, immediately, and one month after the intervention, suggesting that the mean scores of anxiety and caregiver burden had a gentle slope in the control group but a steep slope in the intervention group. Additionally, it was found that, during the one-month follow-up period that EFT was not taught to the intervention group, the mean scores of anxiety and caregiver burden increased slightly in the family caregivers of the intervention group.

Discussion

The aim of this study was to investigate the effect of EFT on anxiety and caregiver burden in family caregivers of patients with HF. The results of the present study showed

that the use of EFT in the intervention group reduced anxiety and caregiver burden in family caregivers of patients with HF. A review of the literature revealed that few studies investigated the effect of EFT on family caregivers of patients. However, some studies reported the positive effect of this new technique on anxiety and stress,^[24] cancer-related cognitive disorders,^[35] menstrual-related symptoms,^[36] depression,^[26] fatigue,^[37] and physiological indicators, such as blood pressure, heart rate, and cortisol.^[38] Nevertheless, a review of the literature yielded that most of the interventions used to reduce the physical and psychological stress of family caregivers of patients with cardiovascular diseases, especially HF, resorted to psychological education and few studies addressed the effect of these techniques on family caregivers.^[39] Among these, we can refer to studies such as the effect of cognitive behavioral therapy on the level of anxiety, stress, and depression,^[40] multidisciplinary supportive program on caregiver burden and quality of life,^[41] supportive educative group intervention on caregiver burden,^[42] and mindfulness-based care methods on improving mental and emotional status of family caregivers of HF patients.^[43]

Table 3: Participants' mean scores of caregiver burden in the control and intervention groups before, immediately, and one month after the intervention

Caregiver burden inventory (CBI)	Stage	Control group (Mean±SD)	Percent change in the control group	Intervention group (Mean±SD)	Percent change in the intervention group	Effect size (Cohen's d)	P
Time dependence	Before the intervention	12.75±4.35		12.58±3.89		0.041	0.846 ^a
	Immediately after the intervention	11.88±3.80	-6.8%	11.80±2.67	-11.92%	0.026	0.903 ^a
	One month after the intervention	11.04±3.74	-7.07%	11.28±2.62	-4.4%	-0.074	0.725 ^a
Developmental burden	Before the intervention	10.51±3.52		10.08±3.03		0.129	0.540 ^a
	Immediately after the intervention	10.33±2.41	-1.71%	8.23±2.51	-18.35%	0.850	<0.001 ^a
	One month after the intervention	10.04±2.92	-2.8%	8.73±2.44	+6.07%	0.485	0.023 ^a
Physical burden	Before the intervention	9.94±3.72		10.29±3.30		-0.101	0.632 ^a
	Immediately after the intervention	9.86±3.78	-0.8%	7.11±2.64	-30.9%	0.840	<0.001 ^a
	One month after the intervention	9.41±3.42	-4.56%	7.52±2.54	+5.76%	0.629	0.004 ^a
Emotional burden	Before the intervention	8.31±3.55		7.84±2.85		0.144	0.495 ^a
	Immediately after the intervention	8.08±3.47	-2.76%	5.41±2.41	-43.75%	0.895	0.001 ^a
	One month after the intervention	7.93±3.25	-1.85%	5.80±2.50	+7.20%	0.734	0.001 ^a
Social burden	Before the intervention	10.91±3.79		10.13±3.68		0.208	0.323 ^a
	Immediately after the intervention	10.31±3.21	-5.4%	6.19±2.15	-38.89%	1.508	0.001 ^a
	One month after the intervention	10.06±3.20	-2.4%	6.45±1.94	+4.2%	1.368	0.001 ^a
Total CBI scores (0–100)	Before the intervention	52.43±9.73		50.95±8.54		0.162	0.442 ^a
	Immediately after the intervention	50.48±8.51	-3.71%	38.77±5.66	-23.90%	1.623	<0.001 ^a
	One month after the intervention	48.50±7.68	-3.92%	39.80±5.89	+2.65%	1.261	<0.001 ^a

SD, standard deviation. ^aIndependent-samples *t*-test

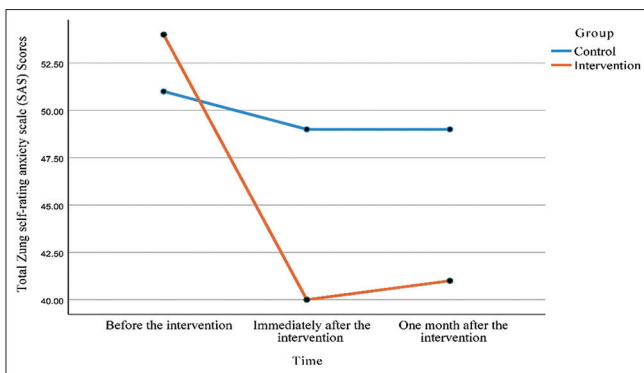


Figure 3: Line chart of family caregivers' anxiety scores during the intervention

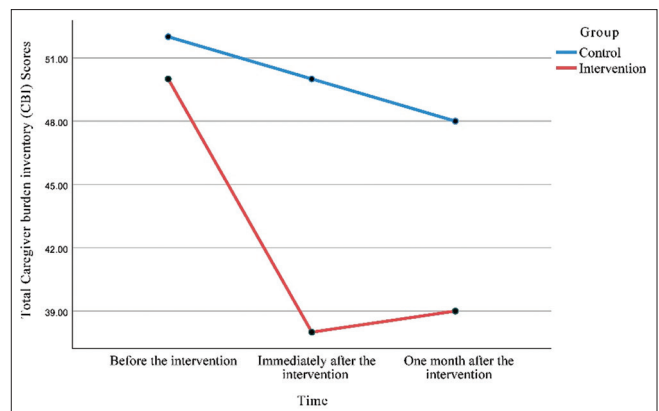


Figure 4: Line chart of family caregivers' caregiver burden scores during the intervention

One of the advantages of our study over psychoeducational interventions conducted for family caregivers was that our intervention was inexpensive, easy to learn, accessible, safe, and non-time-consuming because the implementation of EFT took between 2 and 3 minutes each time.^[44] Gary Craig, the developer of EFT, attributes the main cause of all unpleasant feelings, including anxiety and dissatisfaction, to a disruption in the body's energy system.^[45] Craig

acknowledges that, during EFT, the energy system in the body is balanced following tapping specific points on the body with fingers and simultaneously using negative and positive emphatic sentences along with using new psychological methods.^[46] Evidence suggests that relaxing signals will be sent to different areas of the brain by tapping

Table 4: Participants' mean scores of anxiety in the control and intervention groups before, immediately, and one month after the intervention

Zung Self-Rating Anxiety Scale (SAS)	Stage	Control group (Mean±SD)	Percent change in the control group	Intervention group (Mean±SD)	Percent change in the intervention group	Effect size (Cohen's d)	P
Total raw SAS scores	Before the intervention	51.5±11.51		54.37±10.80		-0.258	0.222 ^a
	Immediately after the intervention	49.66±10.60	-3.57%	40.97±7.91	-24.64%	0.930	<0.001 ^a
	One month after the intervention	49.02±10.09	-1.28%	41.76±7.60	+1.92%	0.814	<0.001 ^a

SAS, Zung Self-Rating Anxiety Scale. ^aIndependent-samples t-test

energy points during EFT, thereby lowering cortisol and increasing serotonin and dopamine in the brain, which consequently leads to the induction of a sense of calm, self-fulfillment, and empowerment in individuals.^[47,48] EFT is a more well-known method today than in previous years, but so far little academic clinical research has studied the efficacy of this new technique in alleviating physical and psychological problems. Therefore, more clinical research studies are needed to verify the efficacy of this new technique. In addition, in underdeveloped countries and developing countries such as Iran, due to low government support and limited health financial resources, patient care is entirely weighing on the shoulders of patients' families and caregivers. As a result of these shortcomings, family caregivers incur additional time, financial, and social costs associated with patient care. This is the reason for the decrease in family caregivers' communication with the outside world and their social isolation, which will endanger the physical and mental health of this group of people over time. Therefore, it is necessary for nurses, as those who spend most of their time with patients and their family caregivers, to pay more attention to the family caregivers' physical and psychological problems and to reduce the caregiver burden and physical and mental problems of family caregivers by learning and using new scientific methods, such as EFT. Despite positive results, this study faced some limitations. One was the impossibility of long-term follow-up of the participants in this research. The other limitations included the use of self-report questionnaires to measure the effect of this technique on anxiety and care burden, which may cause an underestimation or overestimation regarding the effect of EFT on anxiety and caregiver burden in family caregivers of patients with HF. Furthermore, the small number of participants and the selection of samples from one city limited the generalizability of the results to all family caregivers of HF patients. Further limitation of this study was the lack of examining the physiological and biological indicators in the caregivers while investigating the effect of EFT.

Limitation and recommendation

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Conclusion

Considering the efficacy of EFT in reducing the anxiety and caregiver burden in family caregivers of patients with HF, this easy and cost-effective technique is suggested to be performed in scope by nurses working in cardiac wards. In other words, it seems that if EFT is added to the routine care provided to these patients by nurses, it can influence treatment results and highlight the importance of nurses' roles.

Acknowledgments

Finally, the authors of this article express their gratitude to all the family caregivers, nurses, and personnel of Chamran Hospital who played an important role in completing this research.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Conflicts of interest

There are no conflicts of interest.

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