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THE EFFECT OF FOOT REFLEXOLOGY ON ANXIETY AND PAIN IN PATIENTS UNDERGOING ELECTROCONVULSIVE THERAPY

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ABSTRACT

Introduction: The aim of this study was to investigate the effect of reflexology on anxiety and pain in patients undergoing electroconvulsive therapy
Methods and materials: 68 admitted patients receiving ECT that were randomly assigned into control (n = 34) and intervention groups (n = 34). The intervention group received foot reflexology three 20-min sessions, and in the control group, the patient leg was massaged for 1 minute using olive oil. The anxiety of patients was measured once before the intervention (reflexology) in both groups, and once again, after the ECT (after consciousness of the patient) at the end of each session, with Spiel Berger state-trait anxiety inventory (STAI), and pain of the patients was measured and compared using numeric pain scale at 15 min after electroconvulsive therapy at the end of each session in both groups.
Findings: The results showed that at the end of the third session of reflexology, the mean score of state anxiety (s) in the intervention group was had significantly reduced compared to the control group ($p<0.05$). Comparison of pain between both groups didn't show a significant difference immediately after intervention, but in the sessions 2 and 3, the pain was significantly decreased in the intervention group ($p<0.05$).
Conclusion: It expected that non-drug methods such as reflexology that are associated with a few complications are used to reduce the anxiety of patients undergoing electroconvulsive therapy and pain.

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Introduction

Today, the electroconvulsive therapy (ECT) is used as an effective and useful therapy for many of the psychiatric disorders in the world [1]. For example, nearly 100 thousand people in the United States and more than 1 million people around the world received the ECT [2]. Despite several decades of ECT and its application in depression disorders, catatonic schizophrenia, and other disorders associated with psychotic features, and also in people with suicidal behavior or thoughts, it has not yet achieved the real position in the field of psychiatry for invasion and the complications [3-5]. One of the most common problems in patients undergoing ECT was the anxiety before intervention [6]. The studies show that the patients undergoing the ECT, as any other medical procedure, have often reported the fear and anxiety [7, 8], so that the researchers have reported 29-75% fear of ECT in the patients[9, 10], and such a fear and anxiety lead to the rejection of the therapy by the patients and efficiency

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reduction of the ECT[9].The studies have shown that the anxiety has increased the pain and discomfort, and the increased anxiety is associated with the increased pain experienced by the people[11].
Despite use of anti-anxiety drugs as a method to manage anxiety in the step before implementation, many medical procedures cannot be used for complications such as raising the seizure threshold in these patients[12, 13]. The drug therapy is the most effective method to reduce the pain in the patients but because of the adverse effects of analgesics and difference in the responses, it is suggested to use the non-drug methods to reduce pain[14]. On the other hand, in recent years, the emphasis is on use of non-drug methods that are relatively simple, non-invasive, with lower complications and cost, compared to the drug methods in psychiatry such as anxiety reduction[15, 16]. One of the prevalent non-invasive and non-drug methods is the foot reflexology supplement as a pressure on certain areas of the legs with an impact on physiological responses[17], which has positive effects such as blood pressure reduction, pain reduction, multiple sclerosis, fatigue, reduced anxiety symptoms in patients undergoing coronary angiography as well as the nulliparous women, and pain decline in the patients with scoliosis undergoing spinal surgery[18]. Today, the nursing focused on the holistic nursing care[19] and reflexology can be used as a nursing intervention with medical therapies[20].
Thus, with regard to the important role of the complementary therapy in patients' issues management, the extensive use of shock therapy and the lack of studies in this field in Iran, this study was conducted with a purpose to evaluate the effect of reflexology on anxiety and pain decline in patients undergoing the ECT with electricity.

Materials and methods

This research is a clinical trial on 68 patients who received electroconvulsive therapy in Tabriz Razi Psychiatric Center in 2016. After acquisition of the approval from Ethics Committee of Tabriz University of Medical Sciences, and reception of a

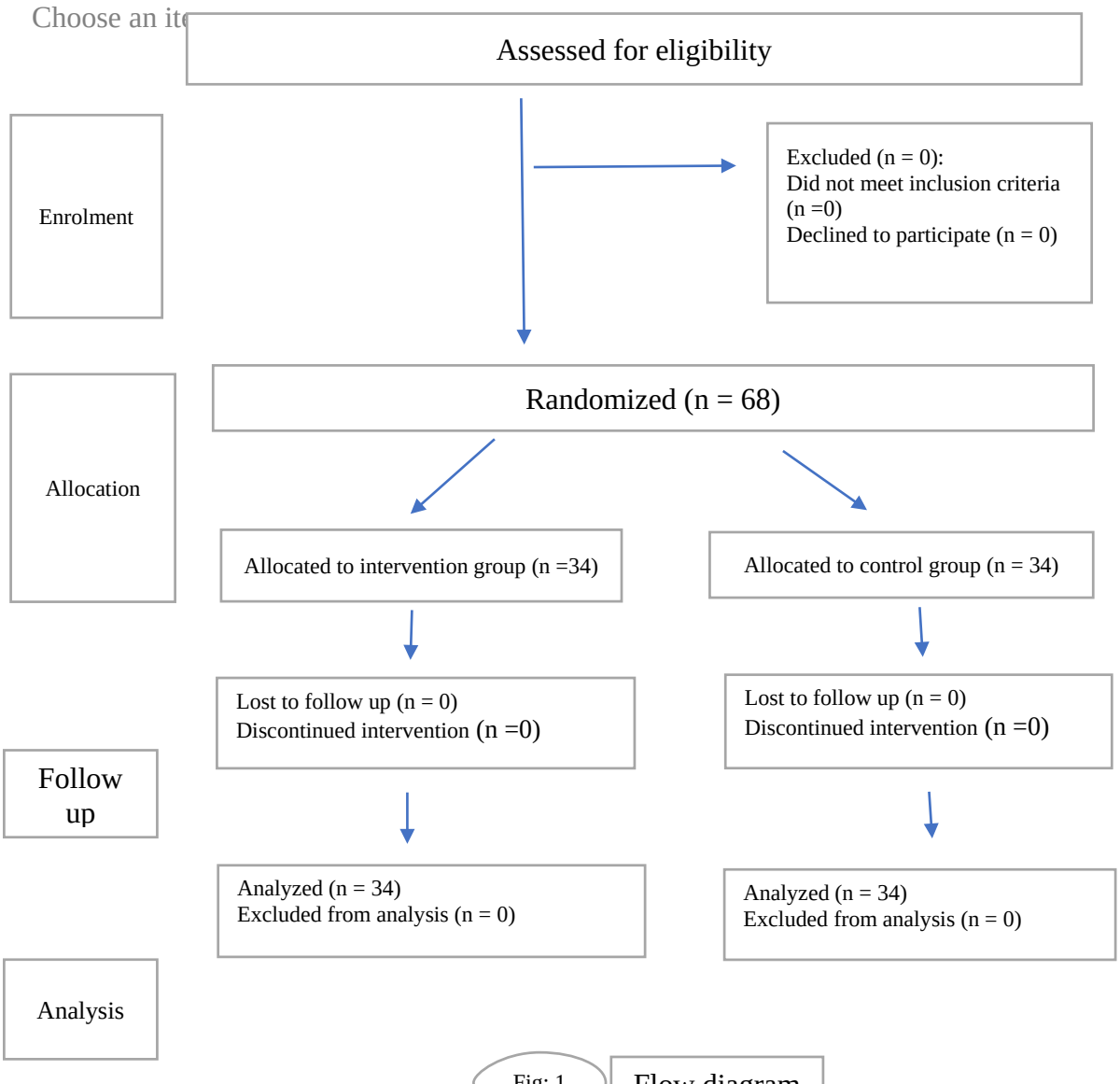

Fig: 1 Flow diagram

code from the clinical trial center (IRCT2015080623525N2) using the randomized sampling, the patients were assigned into two intervention and control groups (Fig: 1).

The inclusion criteria were hospitalization and candidate for ECT, no history of ECT, 18-year-old male and female patients and older, having no problem in the leg such as scars, no drug addiction, no use of sleep medications the night before therapy, lack of impaired perception in reality testing (delusions and hallucinations), lack of anxiety disorder, and finally the lack of acute vision problems, due to the interference by filling out the pain visual scale, and exclusion criteria were the patients with mild to average anxiety scores (score of 43 or less), absence more than one session in the intervention process, the patients who are not willing to continue the cooperation.

To determine the sample size, the initial information including mean, standard deviation, and anxiety and pain variable were obtained from the study by Quattrin et al. entitled the foot reflexology massage to reduce anxiety in hospitalized patients with cancer in the chemotherapy treatment[21]. By assuming confidence of 95% and test power of 90%, double-sequence test, considering 18% change in the anxiety variable and using the comparison formula of the means from two independent societies, the number of 34 participants was determined for each group.

Anxiety level of patients was measured using Spielberger state-trait anxiety inventory (STAI). This questionnaire included self-assessment isolated scales to measure the state-trait anxiety. The state anxiety scale consists of twenty sentences that evaluate the feelings of the person “at the moment and in response time”. A number of options are provided for each term and the participants should select those options that describe their feeling in the best possible manner.

These options include: 1. Very low, 2. Low, 3. High 4. Very high. To each of the test terms, based on the response, a score of 1-4 is given. The score 4 shows the high presence of anxiety that included 10 terms of this scale, and for scoring the other 10 terms, the high rating of each term suggests the lack of anxiety, and in the state anxiety scale, the score 20-31 suggests the mild anxiety, score 32-42 suggests the below average anxiety, score 43-53 suggests the above average anxiety, score 54-64 is relatively severe anxiety, score 65-75 suggests severe anxiety, and the score above 76 indicates highly severe anxiety[22]. The trait anxiety scale also includes 20 terms, measuring the public and ordinary feelings of the people. In responding to the trait anxiety scale, the participants should choose an option which represents their common feeling in a four-item scale as following: 1. Almost never, 2. Sometimes, 3. Often, and 4. Almost always. To each of the test terms, based on the response, a score 1-4 is assigned. The score 4 shows the high presence of anxiety, and 11 terms of this scale are scored on this basis. For scoring other terms, a high rating of each term indicated the lack of anxiety, which consists 9 other terms. In this scale, the score 20-31 shows mild anxiety, 32-42 below average anxiety, 43-52 above average anxiety, 53-62 relatively severe anxiety, 63-72 severe anxiety, and the score above 73 shows highly severe anxiety[22].

The anxiety of the patient undergoing treatment was measured with pre-intervention ECT (reflexology) in both groups, and once again, after the ECT (after consciousness of the patient), it was completed by the researcher who is unaware of assigning subjects into intervention and control groups. The Spielberger state-trait anxiety inventory was a standard questionnaire, and Mahram had studied the test reliability coefficient into norm and standard groups individually in 1993 to standardize the Spielberger test[22]. According to the same study, the inventory has a simultaneous validity. The pain of the patients was also measured using (0–10 Numeric Pain Rating scale)[23]. Evaluation of pain level in this scale consists of 10 numbers with visual symbols, and with regard to the pain perceived by the patient, the pain scores were completed in 15 minutes after the ECT and guiding patients to the recovery room, every other day in the morning shift in three sessions in all patients equally. Before the start of sampling, the objectives and benefits of the study, confidentiality of information, information and the right to withdraw from the study were explained to the patients, and informed consent was signed. The researcher, with respect to the inclusion criteria and obtaining informed consent from patients, divided the patients in the two groups (intervention and control) using randomization. The randomization was carried out in random sequence generation method by the random number table in Excel. After dividing people into two groups of control and intervention, for covering the allocation of two groups, the opaque and sealed envelopes were used, then the envelopes were used by someone other than the researcher in order to place the subjects in the intervention and control groups. It should be noted that the patients were not aware of the allocation in two groups, and reflexology intervention as well as the questionnaire completion was carried out by the researcher and research assistant who were aware of allocation of patients into control and intervention groups.

Massage intervention: For test group, the reflexology intervention was conducted by the researcher and female research assistant. For intervention and standard massage, the interventionists obtained the required skills by participating in the theoretical and practical concepts for 3 weeks, and practicing on patients during learning. The reflexology procedure was carried out based on Fitzgerald methodology[24]. The reflexology steps were in such a way that the reflexology is conducted during 3 sessions in a week, each session for 40 min, 20 min of which for each leg massage, 10 min for metatarsus general

massage, and 10 min for massage of areas related to relaxation and anxiety. Among the subjects placed in the intervention group, the reflexology was performed using the olive oil and without the use of gloves, based on the standard sequence in a room embedded in each sector every other day in the morning shift at the time not interfering with sector round (visiting, occupational therapy), while in the control group, the patient's leg was massaged for 1 minute using the oil. The massage began from the left foot, and the patients were asked to prevent speaking during massage unless necessary. The massage was performed in a quiet and closed environment (if possible), with low lighting to reduce the possibility of distraction in patients. The nurses by wearing a clean uniform and removing the watches, rings, jewelry, and washing and warming the hands, performed the intervention at the end of the bed in an appropriate position and putting a small pillow under the knees for comfort. After the reflexology intervention in the room in any sector, the patients were moved to the ECT sector to receive it and transferred to the recovery room in the ECT sector to complete the questionnaire. Therefore, the collected information was classified. The data was analyzed using SPSS V.11 and descriptive and inferential statistics.
Quantitative data normality was evaluated by Kolmogorov-Smirnov test, histogram, and skewness and kurtosis indices, and to compare the relevant mean of normal quantitative variables between two groups, the parametric t-test was used. The chi-square test was used to compare the values of nominal qualitative variables in both intervention and control groups, the non-parametric Mann-Whitney tests were used to compare abnormal quantitative and qualitative data between two groups, and Friedman test was used to compare between time periods.

Research findings

Demographic characteristics included variables such as age, sex, education, smoking, type of diagnosis, duration of illness, and history of hospitalization. According to the research findings, the mean age of participants was (10.7) 36.05 year and most of them were married.(Table 2) shows the demographic characteristics of the participants. According to initial investigation, there was an interaction between time and group therapy, so that the passage of time causes the effects and different behaviors in two intervention and control groups on the studied indices. Therefore, for more accurate examination of impact of the study, the analyses were divided into intervention and control groups, and due to the lack of default data normality, the Friedman Test was used to assess the effect of time in both groups separately. Also, at any period of time, in order to compare anxiety and pain indices in two groups, the Mann-Whitney test was used.

Table2: Demographic characteristics

	Intervention (n=34)	Control (n=34)	p-value
Age, years	37.5(11.47)	34.6(9.93)	p =0.272
Gender, n (%)			
Female	16(47.1)	14(41.2)	p =0.625
Male	18(52.9)	20(58.8)	
Marital status, n (%)			
Single	11(32.4)	14(41.2)	p =0.587
Married	19(55.9)	18(52.9)	
widowed	4(11.8)	2(5.9)	
Education, n (%)			
illiterate	10(29.4)	11(32.4)	
Guidance	10(29.4)	10(29.4)	
Diploma	10(29.4)	8(23.5)	p =0.946
Bachelor	3(8.8)	5(14.7)	
Master's degree or higher	1(2.9)	-	
Smoking			
Yes	20(58.8)	19(55.9)	p =0.806
no	14(41.2)	15(44.1)	

The results showed that in terms of state anxiety (S), no significant difference was seen between the two groups before and immediately after intervention, but in session 3 and 4, the anxiety was significantly lower in the intervention group, and the maximum decrease was observed in session 4. (Table 3). Also, according to Mann-Whitney test results, no significant difference was seen in trait anxiety (T) in any of the four sessions (before intervention, first session, second session, and third

session). The trait anxiety score (T) in the intervention group was highest in the session 2, and lowest in session 4, and a decline was seen after the session 2. (Table 4).

Also, according to Mann-Whitney test results, to evaluate the effect of intervention on pain intensity, no significant difference was observed between pain scores in two groups immediately after the intervention, but in sessions 2 and 3, the pain was significantly lower in the intervention group ($p<0.05$). According to Friedman test, the state anxiety score in the intervention group significantly decreased over time, while a significant increase is seen in the control group. (Table 3). According to Friedman test, the trait anxiety score in both groups immediately increased after the intervention group (end of the ECT first session) than before the intervention (because of ECT) with the maximum value, but then, it was significantly decreased in both groups, but the decline is more intense and dramatic in the intervention group (p-value<0.001 in intervention group, and p-value=0.001 in the control group). (Table 4).

Table 3: Comparison of Mean score of state anxiety before and after the intervention in groups

Anxiety s	Pre-intervention	Session1	Session2	Session3	p-value*
control	3.76 (.74)	4.08 (.86)	4.08 (.86)	4.11 (.87)	.003
intervention	3.97 (.96)	3.73 (.82)	3.73 (.82)	3.41 (.92)	.001
p-value**	0.455	0.120	0.036	0.002	

*Friedman t
**Mann-Whitney test

Table 4: Comparison of Mean score of trait anxiety before and after the intervention in groups

Anxiety t	Pre-intervention	Session1	Session2	Session3	p-value*
control	3.70 (.79)	4.00 (.92)	4.05 (.81)	3.88 (.72)	.01
intervention	3.79 (.91)	4.23 (.95)	3.85 (1.01)	3.58 (.95)	<.001
p-value**	.785	.298	.428	.141	

*Friedman test
**Mann-Whitney test

Also, according to Friedman test results, the pain score in the intervention group significantly decreased over time, while it shows a significant increase in the control group. (Table 5).

Table 5: Comparison of Mean score of pain after the intervention in groups

Pain	Session1	Session2	Session3	p-value*
control	5.58(4.00-7.00)***	5.91(5.00-7.00)	6.00(5.00-7.00)	.04
intervention	5.52(4.00-7.00)	4.94(4.00-6.00)	4.97(4.00-6.00)	.03
p-value**	0.985	0.008	0.007	

*Friedman test
**Mann-Whitney test
*** Median (Min-Max)

Discussion and conclusion

Research results showed that the foot reflexology had a significant change in the anxiety and pain level reduction in patients undergoing electroconvulsive therapy. On the effect of foot reflexology on the anxiety and pain level reduction in the patients under ECT, no study has been conducted. However, on the effect of the anxiety and pain in the patients, various studies have been performed, in which the location and type of reflexology massage intervention, and duration of reflexology massage was different with the present study. Molavi Vardanjani et al (2013) on 100 patients undergoing coronary angiography come to the

conclusion that the foot reflexology can reduce the state anxiety among patients undergoing coronary angiography [25], which is consistent with our results. Also, a study entitled anxiety examination, salivary cortisol and melatonin secretion was carried out followed by reflexology treatment, by McVicar et al. (2007), and level of state anxiety affected by reflexology significantly decreased in subjects, while the trait anxiety was not changed [26), which is consistent with our results. Akin Coran et al. (2014) showed that foot, ear and hand reflexology, for 5 days also reduce physiological signs of anxiety and also decrease sedative drugs among mechanically ventilated patients [27].

Results of Bagheri Nasemi et al. (2014) entitled the effect of foot reflexology massage on anxiety of patients undergoing coronary artery bypass graft showed that after the left foot reflexology for 20 minutes in 4 days, the anxiety of patients was reduced after coronary artery bypass graft [28]. Also, the results of the study after open heart surgery showed that 10 min massage under the thumb of the right foot for ten minutes, in the third and fourth days after the surgery can significantly reduce the state anxiety in the first day of the intervention, but in the second day of intervention, it does not cause a significant change in the anxiety reduction [29]. In this study, the state anxiety was significantly reduced in the first session, while in our study no significant difference was seen between two groups before and immediately after intervention, but in the third and fourth session, the anxiety was significantly lower in the intervention group. The difference in duration of the massage, number of massage sessions, and probably the differences in conditions or nature of the disease of the subjects can be the due to the causes of mon-agreement of this study and our study.

In another study by Quattrin et al. with a purpose to use foot reflexology massage in reducing the anxiety of hospitalized patients with cancer under treatment by chemotherapy, the levels of anxiety before, after, and 24 hours after the intervention was measured using (STAI) state-trait anxiety inventory, which showed that the level of anxiety among the patients in intervention group was significantly reduced compared to control group [21]. A review of studies in Iran and other countries also showed the positive effect of foot reflexology in reducing the anxiety in patients and health status [30-34].

With regard to the analysis of state anxiety (S) results in both control and intervention groups in four periods, and significant difference in periods 3 and 4 in the test group, the effect of time and repetition of reflexology sessions on state anxiety (S) decline in patients undergoing therapy can be mentioned. Some of the studies show that the regular reflexology reduces the anxiety and increases the relaxation among people [35]. On the other hand, according to Mann-Whitney test (T), no significant difference was seen in the trait anxiety (T) in four periods between both groups, but the trait anxiety score (T) in the intervention group was the highest in the period 2, and the lowest in the period 4, and the causes of such difference can be the individual differences in response to stressful situations with different levels of state anxiety [36, 37]. The trait anxiety shows the personal anxiety of the person. Some people are more prone to the trait anxiety, while the state anxiety occurs in a specific situation, the person has the feeling of tension and conflict with no self-control [38]. Despite lower level of trait anxiety in the intervention group than the control group, the difference was not statistically significant. Since that the trait anxiety is originated from the personal characteristics, thus, more studies are suggested with longer intervention and larger sample sizes. According to the autonomic nervous system, as the most recent theory on reflexology mechanism, the autonomic nervous system regulates the body systems such as breathing, heart rate, and blood pressure, which are controlled by the subconscious. These indices are prone to the stressful factors and on basis of physical and psychological changes experienced by the person, and through the adjustment of the vague nerve that controls the sedative changes, it modifies the regular or sympathetic performance, which controls the excitation and fight or flight response [39]. According to the results of Mann-Whitney test, to examine the effect of the intervention on pain intensity, no significant difference was seen between pain score in both groups immediately after the intervention. However, in the second and third sessions, the pain was significantly lower in the intervention group ($p<0.05$). Also, in accordance to Friedman test, the pain score in the intervention group was significantly decreased over time ($p = 0.03$), while in the control group, it shows a significant increase ($p = 0.04$).

By studying the earlier research, the positive effect of reflexology on the pain in patients [40-44] with different backgrounds can be mentioned, and the results of previous studies are consistent with this study. Although, the study performed by Stephenson (2003) as the effect of foot reflexology on pain in patients with metastatic cancer have inconsistent results with the present study, he performed the reflexology treatment twice a day with 24-hour interval on these patients, but no significant effect on the pain level of these patients was not observed at 3 and 24 hours after the intervention [45]. The probable cause of difference in these two studies can be duration and number of sessions, time of intervention to pain measurement. It seems that the efficiency of foot reflexology based on the pressure, status, massage area, and duration of massage is different. The reflexology by stimulating the secretion of endorphins and enkephalins might relieve the pain and improve the patient's mood [41].

The studies have shown that the anxiety led to the increased pain and discomfort, and increased anxiety is associated with increased pain experienced by the people [11]. As a result, it can be said that the modification in one of them through the reflexology would reform the other one, and pain relief and relaxation in the patients will increase the relaxation.

With respect to this issue that one of the challenges in the electroconvulsive therapy are the complications including anxiety, pain, and need for sedative-hypnotic drugs, and such drugs, in addition to problems and complications, have high costs on the care system, the nurse is obliged to use different ways to reduce anxiety and pain. Therefore, the use of results of this study at the same time with conventional therapy methods, the cooperation and preparation of the patients can be increased significantly for diagnostic and therapeutic procedures. Also, using the results of this research, the administrators and managers of the health

system can adopt the programs and guidelines for development and application of reflexology, to improve the quality of life and recovery of patients undergoing electroconvulsive therapy. Also, by training the families of patients, this strategy can be used to improve the quality of life of psychiatric patients in the society. Due to the lack of similar studies and with regard to the fact that the electroconvulsive therapy can be used as the primary treatment for mood disorders, catatonic schizophrenia and other disorders with psychotic characteristics as well as people with suicidal behaviors or thoughts [3-5], so it is suggested to have further studies on effect of reflexology on anxiety level and pain decline in patients undergoing electroconvulsive therapy. Among the benefits of this research, the lack of awareness of research assistant in dividing the groups into control and test groups can be mentioned.

Constraints of the study

This study has constraints. The study population in this study was selected from a health center, which might not be generalized to other patients. Thus, it is suggested the future studies should be conducted on a larger sample of patients in numerous centers. The other constraints of this study, the help to complete the questionnaire by the researcher and research assistant can be noted, which might affect the responses of the research units. However, by participating in the theoretical and practical concepts for 3 weeks, and practicing on subjects during the learning period, there was an attempt to provide a higher coordination between intervention performers. In addition, the study was only performed in one province of the country and can be generalized to other areas. The other constraint was the different electrical dose received by patients at the time of electroconvulsive therapy that can affect the time to reach the level of consciousness and responses. Since in this study, the pain and anxiety of patients were measured in three periods and four periods after interventions (once before test, and three times after electroconvulsive therapy), so the further studies are suggested on effect of foot reflexology on anxiety and pain level decline in patients undergoing ECT by causing changes in the start time of the massage (the start of intervention a few days before electroconvulsive therapy), changes in duration of the massage, and increase in number of reflexology massages to evaluate the long-term effects of the foot reflexology intervention and anxiety of the studied patients. Since this is a clinical trial study, and effect of confounding variables on the results is inevitable in case of lack of control, in this regard, by choosing the control group and random assignment of participants into two groups, the confounding variables were partly controlled.

References:

1. Ray AK. How bad was unmodified electroconvulsive therapy! A retrospective study. Indian Journal of Psychiatry. 2016;58(2):212.
2. Semkovska M, McLoughlin DM. Objective cognitive performance associated with electroconvulsive therapy for depression: a systematic review and meta-analysis. Biological psychiatry. 2010;68(6):568-77.
3. McClintock SM, Husain MM. Electroconvulsive therapy does not damage the brain. Journal of the American Psychiatric Nurses Association. 2011;17(3):212-3.
4. Kavanagh A, McLoughlin DM. Electroconvulsive therapy and nursing care. British journal of nursing. 2009;18(22):1370
5. Husain MM, Rush AJ, Fink M, Knapp R, Petrides G, Rummans T, et al. Speed of response and remission in major depressive disorder with acute electroconvulsive therapy (ECT): a Consortium for Research in ECT (CORE) report. Journal of Clinical Psychiatry. 2004.
6. Hersh JK. Electroconvulsive therapy (ECT) from the patient's perspective. Journal of medical ethics. 2012:medethics-2012-101195.
7. Fox HA. Patients' fear of and objection to electroconvulsive therapy. Psychiatric Services. 1993;44(4):357-60.
8. Wo NKH, Guyitt B, Owen R. Cognitive Behavioral Therapy as a Treatment for Electroconvulsive Therapy Phobia. 2015.
9. Benbow S. Patients' Views on Electroconvulsive Therapy on Completion of a Course of Treatment. The Journal of ECT. 1988;4(2):146-52.
10. Gomez J. Subjective side-effects of ECT. The British Journal of Psychiatry. 1975;127(6):609-11.
11. Hafslund B. Mammography and the experience of pain and anxiety. Radiography. 2000;6(4):269-72.
12. Biddiss E, Knibbe TJ, McPherson A. The effectiveness of interventions aimed at reducing anxiety in health care waiting spaces: a systematic review of randomized and nonrandomized trials. Anesthesia & Analgesia. 2014;119(2):433-48.
13. Zolezzi M. Medication management during electroconvulsant therapy. Neuropsychiatric disease and treatment. 2016;12:931.
14. Bagheri-Nesami M, Zargar N, Gholipour-Baradari A, Khalilian A. The Effects of Foot Reflexology Massage on Pain and Fatigue of Patients After Coronary Artery Bypass Graft. Journal of Mazandaran University of Medical Sciences (JMUMS). 2012;22(92).
15. Zakerimoghadam M, Shaban M, Mehran A, Hashemi S. Effect of muscle relaxation on anxiety of patients undergo cardiac catheterization. Hayat. 2010;16(2):64-71.
16. Maust DT. Complementary and Integrative Therapies for Mental Health and Agingedited by Helen Lavretsky, Martha Sajatovic, and Charles Reynolds III. New York, Oxford University Press, 2016, 592 pp., $125.00 (hardcover). The American journal of psychiatry. 2016;173(7):737.
17. Anderson PG, Cutshall SM. Massage therapy: a comfort intervention for cardiac surgery patients. Clinical Nurse Specialist. 2007;21(3):161-5.
18. Embong NH, Soh YC, Ming LC, Wong TW. Revisiting reflexology: Concept, evidence, current practice, and practitioner training. Journal of traditional and complementary medicine. 2015;5(4):197-206.

19. Kaur J, Kaur S, Bhardwaj N. Effect of'foot massage and reflexology'on physiological parameters of critically ill patients. Nursing and Midwifery Research. 2012;8(3):223.
20. Lee YM. [Effect of self-foot reflexology massage on depression, stress responses and immune functions of middle aged women]. Taehan kanho Hakhoe chi. 2006;36(1):179-88.
21. Quattrin R, Zanini A, Buchini S, Turello D, Annunziata M, Vidotti C, et al. Use of reflexology foot massage to reduce anxiety in hospitalized cancer patients in chemotherapy treatment: methodology and outcomes. Journal of Nursing Management. 2006;14(2):96-105.
22. Mahram B. The normative of Spielberger anxiety test in Mashhad city: Thesis of module and evaluation in psychology. Psychology College Allameh Tabatabaie University 2000.[in Persian]; 2000.
23. Farrar JT, Troxel AB, Stott C, Duncombe P, Jensen MP. Validity, reliability, and clinical importance of change in a 0—10 numeric rating scale measure of spasticity: a post hoc analysis of a randomized, double-blind, placebo-controlled trial. Clinical therapeutics. 2008;30(5):974-85.
24. Fitzgerald NH, Bowers EF. Zone Therapy or relieving pain at home. Kessinger Publishing, Whitefish, MT, USA. 2003.
25. Vardanjani MM, Alavi NM, Razavi NS, Aghajani M, Azizi-Fini E, Vaghefi SM. A randomized-controlled trial examining the effects of reflexology on anxiety of patients undergoing coronary angiography. Nursing and midwifery studies. 2013;2(1):3-9.
26. Mc Vicar A, Greenwood C, Fewell F, D'arcy V, Chandrasekharan S, Alldridge LC. Evaluation of anxiety, salivary cortisol and melatonin secretion following reflexology treatment: a pilot study in healthy individuals. Complementary Therapies in clinical practice. 2007;13(3):137-45.
27. Korhan EA, Khorshid L, Uyar M. Reflexology: its effects on physiological anxiety signs and sedation needs. Holistic nursing practice. 2014;28(1):6-23.
28. Bagheri-Nesami M, Shorofi SA, Zargar N, Sohrabi M, Gholipour-Baradari A, Khalilian A. The effects of foot reflexology massage on anxiety in patients following coronary artery bypass graft surgery: a randomized controlled trial. Complementary therapies in clinical practice. 2014;20(1):42-7.
29. Ahamadi M, Raygani AAV, Rezaee M, Heydarpour B, Taghizaeh P. Comparing the effect of metatarsus and ankle reflexology massage on patients' state anxiety after coronary artery bypass graft surgery. Iran J Crit Care Nurs. 2013;6:235-40.
30. Moghimi-Hanjani S, Mehdizadeh-Tourzani Z, Shoghi M. The effect of foot reflexology on anxiety, pain, and outcomes of the labor in primigravida women. Acta Medica Iranica. 2015;53(8):507-11.
31. Moyle W, Cooke ML, Beattie E, Shum DH, O'Dwyer ST, Barrett S, et al. Foot massage and physiological stress in people with dementia: a randomized controlled trial. The Journal of Alternative and Complementary Medicine. 2014;20(4):305-11.
32. Çelebioğlu A, Gürol A, Yildirim ZK, Büyükavci M. Effects of massage therapy on pain and anxiety arising from intrathecal therapy or bone marrow aspiration in children with cancer. International journal of nursing practice. 2015;21(6):797-804.
33. Song HJ, Son H, Seo H-J, Lee H, Choi SM, Lee S. Effect of self-administered foot reflexology for symptom management in healthy persons: A systematic review and meta-analysis. Complementary therapies in medicine. 2015;23(1):79-89.