

Research Article**Investigate the Effect of Acupressure on Fatigue Severity and Life Quality in Patients with Chronic Heart Failure**

Seyyedeh Maryam Shafi'ei Darabi¹, Hamidreza Khankeh^{2*},
Masoud Fallahi Khoshknab³ and Pouriya Reza Soltani⁴

¹MSc, Internal Nursing - Surgery, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

²Professor, Emergency and Disaster Health Research Center,
University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

³Associate Professor, Department of Nursing, Faculty of Nursing,
University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

⁴Ph.D. Student of Biomedical Sciences, Basic Sciences Department,
University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

*Corresponding Author: Hamidreza Khankeh

ABSTRACT

Objective: This study was conducted with the aim to investigate the effect of acupressure on fatigue severity and life quality in patients with chronic heart failure.

Background: Fatigue is a common symptom in patients with heart failure and fatigue leads to low quality of life in these individuals. Acupressure is an easy, inexpensive, and non-invasive method which can reduce the fatigue and improve the quality of life in patients with chronic heart failure.

Method: This study was a single-blind randomized clinical trial in which 72 patients with chronic heart failure by having the inclusion criteria were randomly selected and divided into two intervention and control groups. At first, fatigue and life quality of patients were measured through the Fatigue Severity Scale (FSS) and McNew's questionnaire on life quality respectively in both groups, in addition to the individual data collection. Then in the intervention group, acupressure on points KI3, CV6 and GV20 was trained on both sides of samples' bodies for three minutes and conducted by the researcher. In the next step, this intervention was done by the patients themselves for four weeks. In the control group, the same process continued with the difference that touching the desired points was raised instead of pressure. Fatigue and quality of life were measured in both groups four weeks after the first intervention. Analysis of data was conducted by using the SPSS software.

Findings: The patients were homogeneous in terms of demographic data. There was no significant difference between the two intervention and control groups, in fatigue ($P = 0.285$) and mean of emotional ($p = 0.190$), physical ($p = 0.279$), and social ($p = 0.290$) aspects of life quality before the intervention. But there was a significant difference in the intervention group compared with the control group on fatigue ($P = 0.000$) and mean of emotional ($p = 0.000$), physical ($p = 0.000$), and social ($p = 0.000$) aspects of life quality after implementing the intervention.

Conclusion: The present study showed that acupressure can be effective in improving the fatigue and life quality in patients with chronic heart failure; and due to the importance of reducing the fatigue and improving the life quality in patients with chronic heart failure, it is suggested that the intervention of acupressure to be used in caring of these patients.

Keywords: Chronic heart failure, Fatigue, Quality of life, Acupressure

INTRODUCTION

Heart diseases are the most common of chronic diseases and a major causes of death around the world and heart failure also is considered the common final path to all heart disorders (Rafiei et al., 2010). Approximately 5.3 million Americans with heart failure along with 550000 new cases in each year have been recently diagnosed, and it is expected the available

statistics to be doubled in the next 30 years (Hunt et al., 2005). The incidence of heart failure is rising due to age increasing of societies and recent advances in the treatment of myocardial infarction and congenital heart diseases and reducing the mortality in them (Davis et al., 2000). There is no exact statistics from the process of mortality resulting from

cardiovascular diseases in Iran, but available evidence in lifestyle changes of people indicates that the prevalence of heart diseases is increasing in Iran (Berzin et al., 2011).

Heart failure is usually a chronic disease that can affect various systems of the body over time. Evidence has shown that heart failure is a gradual process that often begins by an acute event and gradually changes the heart structure and reduces the performance and eventually leads to lose of its performance and death (McCarthy et al., 1996). The prevalence and incidence of this disease has a direct relationship to age increasing; so that based on the study of Rochester and Friedman, the incidence of heart failure doubles with age increasing in each decade (Friedman and Rochester, 2003). Although many advances have occurred in the treatment of heart patients during the past two decades, the incidence of heart failure is increasing (Salehi et al., 2008) and has become one of the most important medical conditions around the world (Makala et al, 2002 and Reme et al., 2005). That is one of the most costly expenses for national health services; for example in 2007, the estimate of direct and indirect costs of this disease has been about 2.33 million dollars in America and the majority of costs has been spent in hospital expenses (Sobern and Rigel, 2009).

Patients with heart failure experience many physical and psychological symptoms such as shortness of breath, lack of energy, weakness, fatigue, edema, sleep disorders, depression and chest pain (Norgren and Sorensen, 2003) which collection of this symptoms makes limitations for patient's daily activities in doing his personal and social affairs that this itself has a direct relationship with the patient's frequent hospitalizations and increase in mortality (Ella et al., 2002). One of the most common symptoms in patients with heart failure is fatigue (Stephen, 2008). The most common definition of fatigue includes increase in irritability and feelings of demoralization (Apelz et al., 1987). Fatigue is associated with two to three fold increased risk of mortality in patients with chronic heart failure disease (Apelz et al., 1995 and Kopp et al., 1994).

Fatigue has negative impact on performance, well-being and relationships with others. Acute fatigue starts with activity and is relieved by rest, but fatigue becomes chronic in patients with heart disease (Aslaj et al., 2000). The prevalence of fatigue in heart failure is within the range of 50% to 96% (Mac Millen et al., 2007). In 2000, Levinson et al in a study showed that the most common causes of anxiety and distress in advanced heart failure is lack of energy, weakness or fatigue, pain, shortness of breath, insomnia and depression (54). In another study conducted by Kopp et al in 1998, the relationship between fatigue and depression symptoms in patients with heart failure has been demonstrated (69).

Fatigue leads to lower quality of life (14), limited physical activity (15), and worsening the prognosis (16) in these patients. Testa et al define affected and constructive aspects of life quality as follows: Physical, social and mental areas of health that are affected by the experiences, beliefs, expectations and perceptions of the individual (42). Patients suffering from heart failure have problems in the quality of life due to multiple physical and mental disorders, so that various studies show that patients suffering from the disease have a lower quality of life than the general population (43). Martenson et al state that the primary source of undesirable life quality in patients is because of multiple physical symptoms caused by the disease (44). Activity intolerance causes these patients lose their independence to perform the routine activities of life and are dependent on others in caring of themselves, therefore, the family's life quality of these patients also affected (45). Several studies also have shown that patients with heart failure have no satisfactory quality of life. Tindel et al showed in a study that poor physical performance leads to undesirable quality of life in these patients (46). Johanson et al. also showed in a study that patients with heart failure have lower quality of life compared to patients with other chronic diseases such as chronic obstructive pulmonary disease, arteritis, unstable angina and patients who had the history of heart attack (47). Patients with heart failure had to

cope with problems caused by disease for the rest years of their lives (17). Identifying the problems of patients with heart failure helps the nurses to perform a more detailed planning for solving problems and improving their quality of life. Although drug therapy is the most effective means available for nurses to reduce the pain and fatigue in patients, it is important that the nonpharmacological methods should be used to reduce pain and fatigue along with these medications due to the side effects of painkillers, drugs and differences in their responses (Lee, 2005, Abbasi et al., 2007).

Acupuncture and acupressure include non-drug treatments that are very important today. Based on the definition of America's National Library of Medicine, acupressure is a kind of massage that performs on specific points of the body to promote issues such as health. Although there are points which used in acupuncture, but needle or similar tools that used for acupuncture are not used in acupressure (Johnsky et al., 2005). If this is done right, it will be a safe and secure method and can even be performed by the individual, and thus they can participate in self-care and self-control issues that are part of the holistic care, and this leads to reduce the dependence of the patients to others (we et al., 2007). On the other hand, it does not require special equipment and has no cost (McGovern. Lakart, 2003). Given that acupuncture requires the patient disrobe and performs invasive intervention (Barker et al., 2006) and also is associated with the risk of HIV and hepatitis (Roger, 1981), these factors lead to the tendency and more using of the acupressure. So considering the importance of complementary and alternative treatments in the nursing profession as well as the consequences of other therapies, the researcher believes that using this area of interventions is a golden opportunity for to be professional of nurses in the true sense and also can be certain positions to earn the autonomy and authority of nurses.

MATERIALS AND METHODS

This research was an interventional study of two groups before and after that was performed in heart clinic at the Medical Center of Doctor Shariati. The research population in this study

has been all adult patients with chronic heart failure referring to heart clinic at the Medical Center of Doctor Shariati. In this study, samples were randomly assigned on the basis of having all the inclusion criteria as the study samples and 36 patients have been used as sample in each group. Inclusion criteria included the absence of any wounds, scratches and deformation in desired points, literacy of reading and writing, complaining of pain and fatigue, lack of experience in the use of acupressure, lack of using the smoking and drugs or tranquilizers, lack of pregnancy between the ages of 40 to 80 years. Exclusion criteria included the unwillingness to continue the participation in trial for any reason, patients who have complications, known and serious physical-mental disorders and diseases during the intervention, patients who does not feel warmth, heaviness, swelling, or numbness during performing the acupressure on desired point for any reason, and patients who do not perform the intervention more than a quarter of the designated days for acupressure. After receiving the ethic permission from the Research Council of Tehran's Social Welfare and Rehabilitation Sciences University, obtaining a license to conduct research in Hospital of Doctor Shariati was carried out from the treatment and research and protection Department of hospital with people's willingness to participate in the study after obtaining the signature of written consent form, placement of samples to two intervention and control groups in the form of randomized blocks; Thus each of two patients who referred was placed in the intervention or control groups by a draw, and the questionnaire related to demographic information and information about the disease was completed by the researcher via asking questions of the patients; Fatigue Severity Scale which were used to measure the fatigue severity in this study, is a short questionnaire that determines the level of fatigue and the tool includes nine questions with a score of 1-7 on the Likert scale that generally measures the fatigue and sum of these scores shows the rate of fatigue; and if the sum of points obtained from 9 questions of the questionnaire was more than 36, it means that

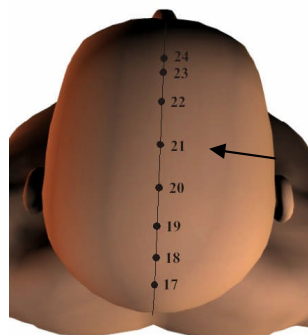
the patient suffers from fatigue. Validity and reliability of this tool have been confirmed, the validity of instruments through the face validity and its reliability via Cronbach Alpha estimation for the total scale of 0.824 have been calculated by the researcher in 2014, and the patients were asked to complete this questionnaire with this explain that number one is the lowest fatigue and number seven shows the highest fatigue severity.

McNew's quality of life questionnaire which were used to measure quality of life in this study, is a valuable tool for the study and evaluation of health in relation to the quality of life for heart patients that has 26 questions; maximum score on each question was seven (the best conditions in relation to the quality of life) and the lowest score was one (the worst conditions in relation to quality of life). Validity and reliability of this tools have been confirmed; validity of instruments through the face validity and its reliability through test- retest method have been calculated by the researcher in 2014 within fifteen days ($r=0.879$). It should be noted that the initial completion of fatigue severity scale and McNew's quality of life questionnaire was for information before the intervention. Then, the necessary trainings have been provided to do the desired intervention by the researcher to distinguishing between the acupressure (intervention) or the touch (control) groups. Training was conducted individually and face-to-face. Such that after identifying group of each individual, the researcher first provided a brief overview of chronic heart failure, pharmaceutical and nonpharmacological treatment methods and focusing on acupressure (to the intervention group) and touch (to the control group) by lecture method (five minutes); then, the desired points were explained for patients with the help of laptop and PowerPoint software (five minutes), and it was given the opportunity to patients to raise their questions and receive the required answers in the last five minutes. In other words, method of applying the acupressure, desired points, technique of pressing the points and duration of applying the pressure were precisely taught by the researcher in the intervention group that this was performed

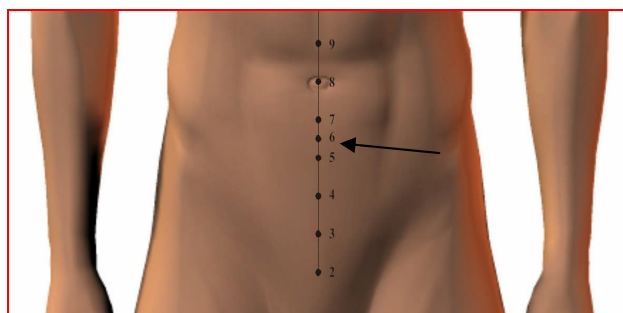
through verbal training along with showing the pictures and also written training via providing pamphlet. In this study, applying the pressure is on point KI3 (between the tip of medial malleolus foot and connection of Achilles tendon with the same level of medial malleolus foot), the point CV6 (in the midfield and 1.5 because it is below the navel) and point GV20 (7 because it is above the midpoint of the posterior hairline, 5 because it is above the midpoint of the anterior hairline, on the central line of connecting the top of both ears) (by: WWW.Acupunctureproducts.com, 2013). The desired intervention i.e. pressure on these points was carried out for three minutes (ten seconds pressure and two seconds repeated rest) in each of the areas explained, this practice has been done at the point KI3 in the opposite side of the body after the completion of three minutes. In other words, there are three points that for all three points three minutes and for point KI3 three minutes on the other side of the body and generally this procedure lasted twelve minutes for each intervention. The patients in the intervention group was reminded that the accuracy of point is confirmed when the client feels the warmth, heaviness, swelling, numbness at that point. The same process was applied in the control group with the difference that touching the desired three-points was used instead of pressing and time of applying the pressure and the entire process including education which was provided (except pamphlet) were similar to intervention group; patients were instructed to intervene twice each day (preferably morning at 10 am, preferably evening at 8 pm) for a four-week. Pressure or touching was conducted by the patients that they had been taught. The researcher daily followed doing the intervention by the patients via the phone during the four weeks. Patients were also given two versions of the Fatigue Severity Scale questionnaire and McNew's Quality of Life Questionnaire to complete one of them after the end of intervention at the end of second week (the fourteenth day) and another at the end of 28 days to and deliver to the researcher. The patient would have been excluded from the study in the absence of cooperation, and this would not

effect on protecting them. At the end of study, the correct way of pressing the points was taught to the control group for considering the moral considerations, and educational pamphlet was provided at their disposal. After performing the trial and steps of post-test, data was entered to computer and statistical analysis was performed

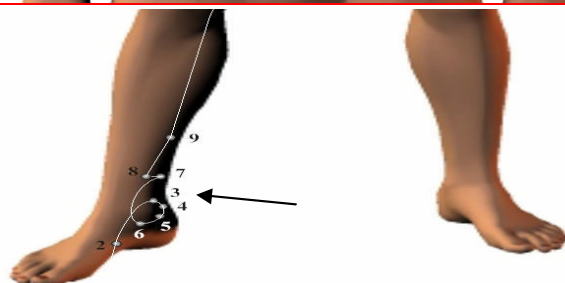
with the help of SPSS software version 16 by applying the chi-square, Fisher exact, independent t-test and ANOVA tests.



GV20:
7 because it is above the midpoint of the posterior hairline, 5 because it is above the midpoint of the anterior hairline, on the central line connecting the top of both ears



Cv6:
In the midfield and 1.5 because it is below the navel



KI3:
(Between the tip of medial malleolus foot and connection of Achilles tendon with the same level of medial malleolus foot)

FINDINGS

Results showed that the age average in the intervention group and the control group was 57.8611 ± 9.32632 and 56.5833 ± 8.95186 respectively. In this study, subjects were evaluated in terms of other demographic characteristics and the results showed that most (52.8%) participants had elementary and middle education level and 72.9% of them were married and 44.4% of them were housekeepers and 55.6% of the participants were women (Table 1). Statistical analysis has shown that fatigue severity of the studied patients had no significant difference in both intervention and control groups before the intervention ($p =$

0.285). Results of independent t-test showed that the fatigue severity of patients had significant difference in both intervention and control groups at four weeks after the intervention ($p = 0.000$) (Table 2). The average of fatigue severity in the intervention group came from 5.6883 before the intervention to 3.6790 four weeks after the intervention. While the process of decreasing the fatigue severity was not visible in the control group. The results of statistical analysis showed no significant difference in the average of emotional ($p = 0.190$), physical ($p = 0.279$), and social ($p = 0.290$) dimensions of life quality in both intervention and control groups before

intervention (Table 3). Results of independent t-test showed that there was a significant difference in the average of emotional ($p = 0.000$), physical ($p = 0.000$), and social ($p = 0.000$) dimensions of life quality in the intervention group compared with the control group after intervention (Table 4), while this significant difference was not visible in the control group.

DISCUSSION

This research has been conducted with the general aim "to determine the effect of acupressure on fatigue severity and quality of life in patients with chronic heart failure". Both intervention and control groups were compared in terms of the distribution of demographic characteristics by using the results of Fisher's exact, chi-square and independent t tests; it can be stated that there was no significant differences in demographic characteristics and they were similar; it should be noted that none of the subjects were excluded from the study and data analysis was performed on 72 patients. Overall in recent years, non-pharmaceutical methods have attracted attention of all patients including patients with chronic heart failure to itself in addition to pharmaceutical approaches which are known as complementary therapies. Complementary therapies like acupressure are treatments with holistic nature which are used to increase physical and mental comfort of patients (Johnson et al, 2006). Results of the study showed that there was a statistically significant difference in both intervention and control groups four weeks after the intervention on fatigue severity of patients under the study; in other words, it can be stated that applying the acupressure on desired points of this research reduced the fatigue severity in intervention group at four weeks after the intervention. In a study conducted by Beiykmoradi and colleagues in 2013 entitled the effect of acupressure on fatigue in patients with cancer, there was a significant difference between the groups under the study (Beiykmoradi et al., 2013) and intervention group has shown more improvement; in this study, a false point has been used in the control group, the duration of intervention has been two minutes in the desired points, and also the research population was different to the present study but results of our study was consistent with the

findings of the mentioned study. Another study entitled the effect of acupressure on fatigue of hemodialysis patients which was conducted by Sabouhi and colleagues in 2013 showed that there was a significant difference in groups under the study (Sabouhi et al., 2013). In this study, duration of intervention on the desired points has been also three minutes which is similar to the current study, but the research community is different; so, result of the study is compatible with the present study. With examining the researcher has done, the number of studies conducted on the effectiveness of acupuncture or acupressure on fatigue has been generally small or restricted.

Study results showed that there was a significant difference in life quality of the studied patients for both the intervention and control groups at four weeks after the intervention; in other words, it can be stated that applying the acupressure on desired points of this research improved the quality of life in the intervention group at four weeks after the intervention. In a study was conducted by Wang et al in 2014 entitled the effect of ear acupressure on improving the quality of life in patients with diabetes and chronic kidney disease, it was shown after performing the statistical tests of chi-square and ANOVA that there is a significant difference between two intervention and control groups (165). Duration of intervention and research population is different with the present study, but its results are consistent with the current study. In another study was conducted by MAA et al in 2007 entitled the effect of acupuncture or acupressure on the quality of life in patients with chronic obstructive asthma; results after conducting the statistical analysis showed that the life quality of patients who have been done acupressure and acupuncture along with the conventional therapy on them had greater improvement than the patients who have received only the common treatment. Results of the present research were consistent with the results of this study; of course, research population, used points, frequency of intervention, and duration of intervention were different (113). In analyzing these findings, it can be stated that improve the quality of life at four weeks after the intervention in intervention group can mean the effectiveness of acupressure in desired points of the study on

improving the quality of life in patients under the study.

The current study confirms the effectiveness of acupressure in reducing the fatigue severity and improving the quality of life in patients with chronic failure. Acupressure can be used as a non-pharmacologic, inexpensive, simple, effective and without the side effects method and most importantly a practical method that is applicable in each place and time, and can be recommended as a non-pharmacologic approach along with other treatment methods. This can reduce the consumption of sedatives and fatigue medications which have various side effects. Benefits of acupressure in this study do not mean that other treatments are excluded, but it is recommended that the acupressure to be used alongside them. As previously mentioned, acupressure requires no special tools and can be easily done by a nurse, physician, and patient. Using a limited number of points can be more effective in teaching the patients and also learning amount to them (Lang et al, 2007).

CONCLUSION

Generally, it can be concluded that the application of acupressure, as a non-pharmacologic method, on points KI3, GV20 and CV6 can be effective in reducing fatigue severity and improving quality of life and nurses can use this simple, inexpensive and uncomplicated method as a complement to pharmacological methods or train to their clients to easily perform it and control the side effects of fatigue and their low life quality. The limitations of this study was the use of available sample and study was performed on patients with chronic heart failure referring to the heart clinics of Shariati Hospital in Tehran. It is recommended that studies to be done in other hospitals and other cities to increase its generalizability.

ACKNOWLEDGEMENT

The researchers appreciate of all those who cooperated on carrying out the investigation, especially the patients and personnel in heart clinic at Educational Medical Center of Shariati.

REFERENCE :

1. Bikmoradi, A. et al. 2013. Effect of Acupressure on fatigue in Cancer Patients. *Development of Research in Nursing and Midwifery*, 10, 36-46.
2. Joke, A. Christel, W. Hugo, J. et al. 2001. Chronic pain and its impact on quality of life in adolescents and their families. *Society of pediatric psychology*.
3. ABBASI, Z., ABEDIN, Z., HASAN POUR AZGHANDI, S., FADAEI, A. & ESMAEILI, H. 2007. Study of the effect of massage therapy on the intensity of labor fatigue. *J Sabzevar Univ Med Sci* 14, 172-8.
4. AMERICAN, P. F. 2008. Available from: <http://www.painfoundation.org/VoicesSurveyReport.pdf>. Accessed February.
5. APPELS, A., HOPPENER, P. & MULDER, P. 1987. A questionnaire to assess premonitory symptoms of myocardial infarction. *Int J Cardiol*, 17, 15-24.
6. APPELS, A., KOP, W., BAR, F., DE SWART, H. & MENDES DE LEON, C. 1995. Vital exhaustion, extent of atherosclerosis, and the clinical course after successful percutaneous transluminal coronary angioplasty. *Eur Heart J* 16, 1880-5.
7. BARKER, R., KOBER, A., HOERAUF, K., LATZKE, D., ADEL, S., KAIN, Z. & WANG, S. 2006. Out-of-hospital auricular acupressure in elder patient with hip fracture: a randomized double-blinded trial. *Acad Emerg Med*, 13, 19-23.
8. BY: WWW.ACUPUNCTUREPRODUCTS.COM, P. 2013. Atlas Of Acupuncture Points.
9. DAILY, S. 2011. Depression and pain increase fatigue in breast cancer survivors.
10. DAVIS, R., HOBBS, F. & LIP, G. 2000. ABC of heart failure. *BMJ*, 320, 39-42.
11. DEPARTMENT OF ORTHOPEDICS AND SPORT MEDICINE, U. O. W. 2014. Fatigue. *UW Medicine*.
12. Alla, F, Briancon, S. et al. 2002. Self-rating of quality of life provides additional prognostic information in heart failure insight into the EPICAL study. *Eur Heart Fail*, 4, 337-43.
13. Dabiri, F. SHahi, A. 2014. the effect of L14 acupressure on labor pain intensity and duration of labor. *Oman Med*, 29, 425-429.
14. Sabuhi, F. et al. 2013. Effect of acupressure on fatigue in patients on hemodialysis. *Iran J Nurs Midwifery Res*, 18, 429-434.
15. FERIDMAN, M. & ROCHESTER, T. 2003. Gender differences in the health related quality of life of older adults with heart failure. *32*, 5, 20-7.
16. HUNT, S., ABRAHAM, W., CHIN, M. & AL., E. 2005. ACC/AHA 2005 Guideline update for the diagnosis and management of chronic heart failure in the adult: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure): developed in collaboration with the American College of Chest Physicians and

- the International Society for Heart and Lung Trans-plantation: endorsed by the Heart Rhythm Society. *Circulation*, 112, 1825-1852.
17. Halper J., Costello, K., Harris, C. 2006. Nursing Practice in Multiple Sclerosis. *Demos Medical Publishing*.
 18. JANSZKY, I., LEKANDER, M., BLOM, M., GEORGIADES, A. & AHNVE, S. 2005. Self-rated
 19. health and vital exhaustion, but not depression, is related to affective dispositions. *Psychol Bull* 131, 260-300.
 20. KOP, W., APPELS, A., MENDES DE LEON, C., DE SWART, H. & BAR, F. 1994. Vital exhaustion predicts new cardiac events after successful coronary angioplasty. *Psychosom Med*, 56, 281-7.
 21. LANGE, T., HAGER, H., FUNOVITS, V., BARKER, R., STEINLECHNER, B. & HOERAUF, K. 2007. Prehospital analgesia with acupressure at the baihui and hegu points in patients with radial a prospective, randomised, double-blind trial. *The american journal of fractures emergency medicine*, 25, 887-93.
 22. LEE, Y. & SOHNG, K. 2005. the effect of foot reflexology on fatigue and insomnia in patients suffering from coal worker's pneumoconiosis. *Taehan Kanho Hakhoe Chi*. 28-1221, 35
 23. Barzin, M. Mirmiran, P. et al. 2011. Distribution of 10-year risk for coronary heart disease and eligibility for therapeutic approaches among Tehranian adults. *Public health*, 125, 338-344.
 24. MAA, S., TSOU, T., WANG, K., WANG, C. & LIN, H. 2007. Self-administered acupressure reduces the symptoms that limit daily activities in bronchiectasis patients: pilot study findings. *Journal clinical nursing*, 16, 794-804.
 25. MCCARTHY, M., LAY, M. & ADDINGTON-HALL, J. 1996. Dying from heart disease. *Journal of the Royal College of Physicians of London* 30, 325-8.
 26. MCCULLOUGH, P., PHILBIN, E., SPERTUS, J. & AL., E. 2002. Confirmation of heart failure epidemic: findings from the resource Utilization Among Congestive Heart Failure (REACH). *J Am Coll Cardiol*, 39, 60-9.
 27. MCGOVERN, K. & LOCKHART, A. 2003. Nurse's handbook of alternative & complementary therapies. *philadelphia: Lippincott Williams & Wilkins*.
 28. MCMILLAN, S., DUNBAR, S. & ZHANG, W. 2007. The prevalence of symptoms in hospice patients with end-stage heart disease. *J Hosp Palliat Nurse*, 9, 124-131.
 29. David, N. Shulamith, K. 2001. Pain and quality of life. *Blackwell Science Inc*, 1, 150-161.
 30. NORGREN, L. & SORENSEN, S. 2003. Symptoms experienced in the last six months of life in patients with end-stage heart failure. *European Journal of Cardiovascular Nursing*, 2, 213-7.
 31. RAFIEI, F., PURIYAN, F., NASHER, Z., AZARABAD, M. & HOSEINI, F. 2010. Learning needs of patients with heart failure from the perspective of patients and nurses. *Iranian Journal of Nursing*, 22, 19-30.
 32. REMME, W., MCMURRAY, J., RAUCH, B. & AL., E. 2005. Public awareness of heart failure in Europe: first results from SHAPE. *Eur Heart J* 26, 2413-2421.
 33. ROGER, P. 1981. Serious complication of acupuncture or acupuncture abuse. *Am J Acupuncture*, 9, 347-351.
 34. Sledge, S. Ragsdale, K. Tabb, J. Jarmukli, N. 2000. Comparison of intensive outpatient cardiac rehabilitation of standard out patient care in veterans: effects on quality of life *J Cardiopulm Rehab*, 20, 383-88.
 35. SALEHI TALI, S., MOHAMMADALIAN, H., IMANI, R., KHALEDIFAR, A. & HATAMIPOUR, K. 2008. The effect of continuous educational and caring interferences on the quality of life patient with heart congestive failure. *Shahrekord Univ Med Sci*, 10, 14-19.
 36. SEBERN, M. & RIEGEL, B. 2009. Contributions of supportive relationships to heart failure self-care. *Eur J Cardiovas Nurs*, 8, 97-104.
 37. SOLANO, J., GOMES, B. & HIGGINSON, I. 2006. A comparison of symptom prevalence in far advanced cancer, AIDS, heart disease, chronic obstructive pulmonary disease and renal disease. *J Pain Symptom Manage* 31, 58-69.
 38. STEPHEN, S. 2008. Fatigue in older adults with stable heart failure. *Heart Lung*, 37, 122-131.
 39. SULLIVAN, M. & FERRELL, B. 2005. Ethical challenges in the management of chronic nonmalignant pain: negotiating through the cloud of doubt. *Journal of Pain* 6, 2.9-
 40. SULLIVAN, M. & O'MEARA, E. 2006. Heart failure at the end of life: symptoms, function, and medical care in the Cardiovascular Health Study. *Am J Geriatr Cardiol* 15, 217-225.
 41. TURK, D. 2002. Clinical effectiveness and cost-effectiveness of treatments for patients with chronic pain. *Clin J Pain* 18, 355-65.

Table 1 - Absolute and relative frequency distribution of demographic characteristics in patients with chronic heart failure in two experimental and control groups

Chi-square results	Control group	Intervention group	Variable
P	Number (percentage)	Number (percentage)	
0.633	(61.1) 22	(55.6) 20	Gender
	(38.9) 14	(44.4) 16	
0.338	(38.9) 14	(52.8) 19	Education Level
	(47.2) 17	(41.7) 15	
	(13.9) 5	(5.6) 2	
			Elementary - Guidance High School - Diploma University education

Fisher's exact test results	Control group	Intervention group	Variable
P	Number (percentage)	Number (percentage)	
0.328	0	(2.8) 1	Marital Status
	(88.9) 32	(72.2) 26	
	(5.6) 2	(5.6) 2	
	(16.7) 6	(16.7) 6	
	(2.8) 1	(2.8) 1	
0.854	(2.8) 1	(2.8) 1	Employment status
	(47.2) 17	(44.4) 16	
	(11.1) 4	(16.7) 6	
	(16.7) 6	(13.9) 5	
	(22.2) 8	(22.2) 8	
		Unemployed Housekeeper Employee Retired Free	

Table 2- Absolute and relative frequency distribution of fatigue severity before and after the intervention in patients with chronic failure in two experimental and control groups

After intervention		Before intervention		Fatigue severity
Control group	Intervention group	Control group	Intervention group	
Number (percentage)	Number (percentage)	Number (percentage)	Number (percentage)	
(38.9) 14	(94.4) 34	(33.3) 12	(25) 9	Less than 5
(27.8) 10	(5.6) 2	(47.2) 17	(41.7) 15	5-6
(33.3) 12	(0) 0	(19.4) 7	(33.3) 12	6-7
5.537 ± 0.806	3.679 ± 0.867	5.500 ± 0.722	5.688 ± 0.760	Mean ± standard deviation
P= 0.00 df= 70 t= - 9.408		P= 0.285 df= 70 t= 1.076		Independent t-test results

Table 3- Average of emotional, physical, and social dimensions of life quality before intervention in patients with chronic heart failure in both intervention and control groups

Control group	Intervention group	Emotional dimension
3.319 ± 0.508	3.192 ± 0.589	Mean ± standard deviation
P= 0.110	df=70	Independent t-test results
t= - 1.224		
Control group	Intervention group	Physical dimension
3.371 ± 0.425	3.170 ± 0.522	Mean ± standard deviation
P= 0.279	df=70	Independent t-test results
t= - 1.190		
Control group	Intervention group	Social dimension
3.313 ± 0.459	3.211 ± 0.502	Mean ± standard deviation
P= 0.290	df=70	Independent t-test results
t= - 1.167		

Table 4- Average of emotional, physical, and social dimensions of life quality after intervention in patients with chronic heart failure in both intervention and control groups

Control group	Intervention group	Emotional dimension
3.252 ± 0.428	3.427 ± 0.585	Mean ± standard deviation
P= 0.000	df=70	Independent t-test results
t= 8.281		
Control group	Intervention group	Physical dimension
3.325 ± 0.482	3.422 ± 0.519	Mean ± standard deviation
P= 0.000	df=70	Independent t-test results
t= 7.925		
Control group	Intervention group	Social dimension
3.367 ± 0.472	3.472 ± 0.500	Mean ± standard deviation
P= 0.000	df=70	Independent t-test results
t= 7.825		