



*Int. J. New. Chem.*, 2022, Vol. 9, Issue 4, pp. 587-595.

## International Journal of New Chemistry

Published online in <http://www.ijnc.ir/>  
Open Access



Print ISSN: 2645-7237

Online ISSN: 2383-188x

### Original Research Article

## The Comparison of the Effect of Acupressure Point SP6 with ST36 on Pain Due to Fistula Implantation in Hemodialysis Patients

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*Received: 2022-03-03*

*Accepted: 2022-03-15*

*Published: 2022-03-25*

### ABSTRACT

**Introduction:** Therefore, due to the frequent exposure of hemodialysis patients to the pain caused by vascular needles and in order to achieve an effective and non-pharmacological action in relieving pain in those patients and due to the widespread use of acupressure and not using this method in SP6 and ST36 in The aim of this study was to compare the effect of acupressure on SP6 and ST36 points on pain due to fistula implantation in hemodialysis patients. **Material and Methods:** In this study, which is the result of clinical experiences in Tabriz University of Medical Sciences, 90 candidates for dialysis fistula implantation were examined. SP6 and ST36 points massage method was used in dialysis patients to control their pain and their results were compared with each other. **Results:** There was a statistically significant difference in the mean difference in pain intensity before and after the intervention in the three groups. Tukey post hoc test showed this difference between the control group and the experimental groups [ $P < 0.001$ ] while the two experimental groups together There was no significant difference [ $P = 0.759$ ]. **Conclusion:** The findings of the present study, while confirming and supporting the research hypothesis, showed that massage of SP6 and ST36 pressure points significantly reduces the pain intensity of the needle entry site in venous arterial fistula of patients undergoing hemodialysis.

**Keywords:** SP6 Point, ST36 Point, Pain, Fistula Implantation

## Introduction

Today, the use of non-pharmacological methods to control pain is more important and is developing. Pain relief is the basis of nursing care. Also, since pain management is a fundamental right of individuals and an important component of the nursing process, so nurses should be aware of the psychological and physical aspects of pain and use effective strategies to manage it and improve the quality of life of dialysis patients [1, 2]. Although there are countless pain medications available today, their indiscriminate use can have many side effects and can be costly. Various methods have been performed to reduce pain before performing painful procedures such as injections and intravenous and arterial catheterization in different patients. Previous research has shown that using topical anesthetic creams such as EMLA as well as cooling sprays such as ethyl chloride can reduce the pain of catheterization [3]. Acupressure is one of the main branches of complementary medicine with a history of five thousand years. The general goal of acupressure should be to increase the body's energy [4]. Accordingly, there are certain points in the body that are known as acupuncture points. These points have a high ability to conduct energy. The Chinese believe that this is done by the balance of Qi in the body. Qi travels through twelve major energy pathways called meridians, each connected to specific internal organs or points of pressure [5]. Acupressure is a non-invasive way to boost the immune system, improve blood flow to the heart and reduce pain. Also, using acupressure method and strategic points from the perspective of Chinese medicine, it is possible to eliminate the imbalance of vital energy and thus eliminate pain, reduce muscle contraction, improve blood circulation and perform vital activities [6]. Acupressure increases the level of endorphins in the blood, which is a type of internal morphine, and has two important effects; First, it relaxes the body and relaxes, and second, it reduces pain. Endorphins are a group of amino acids produced by the pituitary gland that, when released into the bloodstream, travel to opioid receptors in the central nervous system and suppress pain [7]. Skin stimulation as an independent nursing action is also effective in reducing pain. One of the types of skin irritation methods is stimulation of pressure points. Point stimulation in acupressure is applied with the palm, fist, or fingertips. One of the main advantages of acupressure is the simplicity of application and the ability to learn and apply it by the patient. Therefore, acupressure is readily available and patients can use it with simple training to help treat and care for themselves [8]. Further study can lead to definitive results on the effect of non-pharmacological interventions such

as acupressure on pain intensity[10]; Therefore, due to the frequent exposure of hemodialysis patients to the pain caused by vascular needles and in order to achieve an effective and non-pharmacological action in relieving pain in those patients and due to the widespread use of acupressure and not using this method in SP6 and ST36 in The aim of this study was to compare the effect of acupressure on SP6 and ST36 points on pain due to fistula implantation in hemodialysis patients.

## Material and Methods

**Study design:** The present study is a clinical experience. This means that the samples and the person measuring the pain intensity did not know how to allocate the samples to the experimental and control groups. The statistical population of this study was hemodialysis patients referred to Imam Reza [Tabriz Medical Sciences] hospitals in 2017. The samples were selected by the available method and in order to uniform the groups, the research units were randomly divided into two experimental groups [ST36 and SP6] and a control group through a lottery. Thirty people were considered in each group to determine the sample size based on similar studies with a probability of 20% drop.

## Inclusion and exclusion criteria

Inclusion criteria include age 15 years and older, ability to communicate verbally, awareness of time, place and people, willingness to participate in research, patients with fistula for hemodialysis, no signs of bruising and ulcers on site Catheter placement and non-wounding and amputation at the site of the pressure point, non-smoking, minimum literacy, non-use of analgesics in the 24 hours before hemodialysis, and exclusion criteria included patient cancellation and further death.

## Methodology

The researcher referred to research environments on even and odd days and in the morning and evening shifts and selected qualified individuals. Normally, each patient was referred to the relevant center every other day in the morning or evening shifts for hemodialysis. In the first meeting with each of the samples, the researcher first explained the purpose of the research and the steps of the work in a simple and understandable language and assured the patient about the

confidentiality of information and not imposing additional costs. Then, written informed consent was obtained and patients were randomly divided into experimental and control groups. All placements were performed in male patients by a male nurse and in female patients by a female nurse. Catheter placement was performed by a nurse for the patient in the first and second rounds. The data collection tool was a questionnaire sheet and a checklist that had two parts; The first part was related to demographic information such as age, sex, marital status, occupation, place of residence, level of education and duration of hemodialysis and the second part was related to the evaluation of the patient's pain intensity. The patient's pain intensity was assessed using a numerical pain measurement scale. The numerical scale for measuring pain is a horizontal line numbered from zero to 10, and the scale is rated as painless [zero], mild pain [1 to 3], moderate pain [4 to 6], severe pain [7 to 9], and most severe. Imaginable pain [10] is divided. The scientific validity and reliability of numerical instruments for measuring pain have been investigated in several studies. In Rambod's study entitled The effect of shiatsu massage on the severity of pain due to venipuncture for hemodialysis, the validity of this questionnaire with Cronbach's alpha is 0.95 and its reliability with test power is 0.90 and in several other studies, validity and scientific trust This tool has been proven. The method was that in both experimental and control groups, the demographic characteristics questionnaire was completed for the first time in the week and before hemodialysis. Then, by selecting the nurses and determining the code for them, the needle was inserted into an arterial venous fistula, and after the needle was fixed, patients were asked to express their pain intensity based on the VAS scale, which was recorded in a questionnaire by the researcher. In the second visit in the same week, in one of the groups, acupuncture massage was performed at SP6 point in both legs and in the other group, massage was performed at ST36 point in both legs; In such a way that the researcher bends his thumb joint and massages it directly, rotating and perpendicular to the desired point, alternately for a maximum of thirty minutes; That is, first a two-minute pressure was applied to the area in a way that felt mild pain and burning, according to the acupuncturist and the articles in this field, and then a minute was rested for a maximum of thirty minutes. There were a total of ten two-minute periods with one-minute breaks between massages. Immediately after that, the needle was inserted by the appointed nurse and after fixing the needle, the amount of pain was recorded again in both groups with VAS scale. The intervention was performed by a researcher who had been trained by a traditional medicine specialist for one month. Given that the approximate average time for the rotation of the meridian

flow cycle in the body is 24 minutes, the choice of 30 minutes of pressure was applied to ensure the complete rotation of the energy flow cycle. Before the start of acupressure, the accuracy of finding the desired points and the appropriate technique with 100% accuracy on twenty patients undergoing hemodialysis was approved by an acupuncturist. For work consistency, all patients's needle No. 16 of Supa company was used for vascular access of patients. An arterial needle was inserted into the patient's arteries at a distance of at least 50 cm from the fistula at an angle of 30 to 45 degrees. The severity of pain was measured only the first time the patient's skin was perforated by the nurse to place each of the arterial and venous needles, and if the arterial and venous needles were not placed in the right place and the nurse tried again in the same dialysis session to perform this procedure [ Re-perforation of the skin to place any arterial or venous needles], the resulting pain was not measured.

### **Ethical considerations**

This project was carried out in Tabriz University of Medical Sciences under the code number of ethics IR.TBZMED.REC.1398.278. No costs were charged from the study participants and they entered the study with full and informed consent.

### **Data analysis**

In order to analyze the data, descriptive statistical methods including mean and standard deviation for quantitative variables and absolute and relative frequency for qualitative variables and inferential statistical test [Chi-square] were used. To evaluate the normality of the distribution of quantitative variables, Kolmogorov-Smirnov test was used and for the age variable that did not have a normal distribution, Kruskal-Wallis test was used to compare the three groups. One-way analysis of variance test was used to compare other quantitative variables in the three groups due to the normal distribution. Paired t-test was also used to compare the severity of pain before and after the intervention in the three groups. Data were analyzed in SPSS software version 16 at a significance level of 0.05.

### **Results**

In this study, a total of ninety people with a mean age of  $83.53 \pm 13.13$  years in SP6 group and  $81.53 \pm 14.16$  years in ST36 group and  $50.54 \pm 66.13$  years in control group participated. In SP6 group, 70% were female and 30% male and in ST36 group, 7.56% were female and 43.43% were male. There was no statistically significant difference between the two experimental groups in terms of age, sex, duration of dialysis, number of hours and overweight. Findings showed that there was no statistically significant difference between the three groups in terms of mean pain score before the study [ $P=0.081$ ]. Also, analysis of variance did not show a significant difference between pain intensity after the intervention in the three groups [ $P=0.309$ ]. For in-group comparison using paired t-test, the results showed that the mean pain intensity in all three groups was significantly different between before and after the intervention [ $P=0.02$ ,  $P < 0.001$  and  $P=0.03$ , respectively. SP6, ST36 and control groups] and by comparing the means before and after, it was found that in the control group, unlike the two experimental groups, the mean pain intensity after the intervention was higher than before. There was also a statistically significant difference in the mean difference in pain intensity before and after the intervention in the three groups. Tukey post hoc test showed a significant difference between the control group and the experimental groups [ $P < 0.001$ ] while the two experimental groups with There was no significant difference [ $P = 0.759$ ].

## Discussion

The experimental and control groups did not differ statistically significantly in terms of demographic characteristics and were identical. There was a statistically significant difference between the three groups in comparing the mean differences in pain intensity before and after the intervention. Pain was reduced in both experimental groups and the results showed that both methods of acupressure [SP6 and ST36 points] reduced the pain to the same extent[11]. Acupressure is used to treat a variety of pain types such as tension headaches, migraines, labor pains, dysmenorrhea, postoperative pain, hip fractures and back pain, so acupressure is an effective way to treat pain. Although the duration of intervention in the above studies has been different from the current study, the remarkable point is the effect of the intervention on reducing pain. The results of the current study, like the above studies, showed that acupressure reduces pain. Based on the evidence, it seems that certain peptides are released by acupressure [12], which have several properties, including analgesic properties. These peptides

partially explain the analgesic mechanism of acupressure [13, 20]. Both acupuncture and acupressure are used to reduce pain after surgery by reducing the need for analgesics and opioids. Researchers in a study entitled "The effect of acupressure on the relief of migraine headache showed that in patients who used acupressure compared to the placebo group, the reduction in severity and duration of headache was not confirmed that these differences may be due to the use of different methods of acupressure. The difference is in the duration of acupressure, the location of the pain, the cause and the nature of the pain [14-16]. In a study by Fayazi et al. Who used acupressure to relieve pain in patients with rheumatoid arthritis, as well as other researchers who conducted similar studies, the results showed that the mean pain intensity was different in the acupressure group before and after the intervention, although this difference was not statistically significant which is not consistent with the present study [17-19]. Perhaps the reason for this is that the causes of pain in patients with rheumatoid arthritis are not the same as the pain caused by vascular needle placement in hemodialysis patients, which makes the pain relief different in the two diseases, and perhaps in the non-physical dimension Group of patients. Other researchers examined the effect of PC6 point compression on pain, nausea and vomiting after appendectomy and reported that the mean pain intensity of PC6 group was not statistically significant compared to the control group, which is not consistent with the results of the present study. PC6 point is used to reduce nausea and vomiting, but in the study it was used to reduce pain, and the nature of the pain and the points used in the present study are different. In a study conducted by another group of researchers to investigate the effect of ear acupressure on pain relief in patients after lumbar surgery, the results showed that pain was reduced in both groups, but there was no statistically significant difference between the two groups in terms of mean pain. The present study was not in line with this study. The difference with the results of the present study may be due to the type of pain [pain due to surgery], the difference in selected points and the number of days of acupressure. These differences may also be due to the use of different methods of acupressure, differences in the duration of acupressure, the location of the pain, the cause and the nature of the pain [15, 21].

## Conclusion

The findings of the present study, while confirming and supporting the research hypothesis, showed that massage of SP6 and ST36 pressure points significantly reduces the pain intensity of the needle entry site in venous arterial fistula of patients undergoing hemodialysis. This means that this treatment plan as a nursing intervention and a non-pharmacological method can reduce the severity of acute pain at the needle site. Routine procedures, such as the use of medications and painkillers, are costly, requiring a doctor's order and specialist personnel. Using SP6 and ST36 massage is an easy, non-invasive and low-cost procedure that patients can easily learn, empowering patients and their families to control complications after dialysis.

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### How to Cite This Article

Abdolreza Mehdiavaz Aghdam, Solmaz Fakhari, **“The Comparison of the effect of acupressure point SP6 with ST36 on pain due to fistula implantation in hemodialysis patients”** International Journal of New Chemistry., 2022; DOI: 10.22034/ijnc.2022.4.8.