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The Effects of Acupressure on Pain Severity in Female Nurses with Chronic Low Back Pain

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Abstract

Background:

Low back pain causes physical and psychological impacts among nurses. This study aimed to investigate the effects of acupressure on the severity of pain in chronic low back pain in female nurses.

Materials and Methods:

This study is a single-blinded randomized clinical trial conducted among 50 nurses suffering from chronic low back pain. After simple sampling, participants were randomly assigned into acupressure and sham groups using lottery method (25 patients in each group). In the experimental group, the intervention was performed by the researcher three times a week throughout a 3-week period. The sham group received placebo interventions. Data was collected through VAS questionnaire before, immediately after, 2 weeks, and 4 weeks after performing intervention. Data analysis was conducted using SPSS version 18 using descriptive and inferential statistical methods.

Results:

There was no significant difference in the mean pain severity scores in the pre-interventions phase between the groups ($P = 0.63$), however, a significant difference was observed Immediately, 2 weeks, and 4 weeks after performing intervention. Further, the mean pain severity scores in intervention group significantly decreased compared to the sham group ($P = 0.000$).

Conclusions:

Acupressure on specific points was proved to reduce pain. Thus, acupressure can be used as nonmedicament, inexpensive, and without side effects treatment in reducing pain.

Keywords: *Acupressure*, *chronic low back pain*, *nurse*, *Iran*

Introduction

Nurses are the largest providers of healthcare services making up 70% of the healthcare staff.[1] Hospital environment causes stress and physical problems among nurses. Hence, nursing is considered as a high-risk occupation.[2]

Low back pain is one of the most important musculoskeletal work-related disorders among nurses[3] that has a 80% prevalence in their professional life. The disorder has been reported to have a frequency of 76% among nurses in the Netherlands, 80% in Philippines, and 50% in Iran.[4,5] However, there is no accurate statistical data in the quantity of nurses with chronic low back pain (CLBP) in Isfahan. According to Azizpoor *et al*., 78.30% of the Isfahan's nursing staff in three large university hospitals suffer from back pain.[6] Because human resources are the most vital elements of every organization, employees needs should be taken into account.[7] Due to the physical, mental, social, and economic effects of CLBP, prevention and early treatment is crucial. In fact, pain is one of the most important priorities that could be relieved with both pharmacological and nonpharmacological methods,[8] hence, using of nonpharmacologic interventions will be an alternative due to the abundant side effects of the available drugs such as opioids.[9,10]

Today, complementary medicine has a special state, and it is estimated that one out of three people uses these therapies during their lifetime.[11,12] One type of complementary medicine is acupressure – an inexpensive, and noninvasive method – that is applicable and easy-to-learn.[9] In this method, the acupuncture points are pressed with a finger; the pressure causes endorphin release which leads to muscle relaxation and pain reduction.[13,14]

Several researches have been conducted on the application of acupressure and positive effects of this approach in relieving some of the symptoms of the disease.[9,15] However, based on some studies on patients with rheumatoid arthritis, there were no significant differences in the the mean pain intensity score before and after the intervention between acupressure and control groups.[16] Yang *et al*. in their study "Acupressure, Reflexology and Auriculotherapy for Insomnia" reported that sleep medications are less effective than Acupressure.[17] In addition, the results of Molassiotis research on 5000 cancer patients revealed no significant differences between three groups of patients receiving acupressure.[18]

Due to the lack of sufficient scientific evidence to support many of complementary therapies, further research is needed.[19] Therefore, the aim of the present study is to determine the effects of acupressure on CLBP in female nurses.

Materials and Methods

This single-blind randomized clinical trial (IRCT2016020617387N5) was conducted among 50 female nurses with associate's degree, bachelor's degree, or higher in nursing suffering from CLBP employed in hospitals affiliated to Isfahan University of Medical Sciences from March 2016 to April 2016. The number of participants required to conduct the research was calculated to be 25 individuals in each group using the sample size formula and based on a similar study[19] and comparison of means, with 95% confidence interval and power of 80% (equal to 1.96 and 0.84). To reduce potential problems, such as the possibility of sample loss, and to increase the statistical accuracy, the sample size was calculated to be 30 patients in each group. At the end of the study, 10 participants were excluded due to the following reasons: 1 participant due to changing the residential location, 1 due to the death of his/her relative, 3 due to lack of desire to continue the study in the experimental group, and 5 in the sham group due to lack of tendency to participate in the study because they thought that the method was inadequate. Finally, the study included 50 patients. The inclusion criteria included age ranging from 25–55 years, chronic back pain diagnosed by a physician, pain score of higher than 4, history of back pain of more than 3 months, and lack of acute pain, rheumatic diseases, depression, autoimmune diseases, pregnancy, and addiction to medication and psychotropic drugs. After obtaining written informed consent forms, the participants were randomly assigned to one of the study groups (experimental and sham) through a lottery method. The exclusion criteria included a lack of desire to continue to participate, using other methods of alternative medicine during the study, suffering from other diseases which spread to the back, any physical or psychological deterrent to continue the research, and absence from one appointment during the study.

The data collection tool was a two-part questionnaire which was completed in four phases: before, immediately after, 2 weeks, and 4 weeks after the intervention[20] by participants in both the groups. The first part of the questionnaire included demographic characteristics and the second part of the questionnaire was a visual analog scale (VAS). It is a measuring instrument with 10 scores – 1–3 represents slight pain, 4–7 for moderate pain, and 8–10 indicate severe pain.[7]

After completing the questionnaires, the researchers began to intervene. Light stroking was initially performed on the back. Next, pressure was applied to the main points. This pressure was equivalent to 3–4 kg. Using the tip of the thumb of both hands, pressure was symmetrically applied by the researcher on each of the points for 2 minutes. If the pressure was applied correctly, the participants felt a sense of heaviness, numbness, and warmth in the area. Pressure was applied on the points for 5 continuous seconds and released for 1 second.[13] The starting point was governing vessel 20 (GV20), five Cun (a measurement relative to the patient's body that is used to find acupuncture points. It is equal to the space between the distal and the proximal interphalangeal joint on the middle finger) posterior to the anterior hairline, and after 2 minutes, pressure was applied to other points. The order of the pressure points was GV20, heart seven (H7) (at the wrist crease, on the radial side of the flexor carpi ulnaris tendon, between the ulna and the pisiform bones), kidney one (K1) (on sole, in depression with foot in plantar flexion, at the junction of the anterior 1/3 and posterior 2/3 of line connecting base of the 2nd and 3rd toes with the heel), bladder 60 (BL60) (behind the ankle joint, in the depression between the bumps of the lateral malleolus and the Achilles tendon), bladder 32 (BL32) (on the second sacral foramen), and gallbladder 30 (GB30) (back of the leg between greater trochanter and sacral hiatus, outer one-third).

The nurses in the sham group also received acupressure, whereas the pressure points were at a distance of 1–1.5 cm from their original location. The pressure applied was less than the effective pressure, and light stroking was not performed for this group. In general, each session lasted for 14 minutes, and a total of 9 sessions were held in 3 weeks (3 times a week).

It should be noted that the intervention started after the participants' menstrual bleeding. For the homogeneity, participants were asked not to perform this technique at home until the end of the study. Data analysis was performed using the SPSS software (version 18, SPSS Inc., Chicago, IL, USA).

Ethical considerations

Necessary permissions and informed consents were obtained from related organizations and the participants respectively. The objectives of the study were introduced and the participants were assured of keeping their information confidential. The participants were allowed to leave the research at any time. A permission to use the results in simple language was attained. The principles of plagiarism were respected. Finally, the proposed technique was taught to the participants according to their will. The ethics code number was IR.MUI.REC.1394.3.738.

Results

The results of this study showed that, in terms of age, weight, height, and body mass index there were no significant differences between the groups ($P > 0.05$) [Table 1]. Analysis of variance (ANOVA) showed that the mean value of severity of pain differed significantly between different times in the experimental group, however, showed no significant differences between the 4 periods in the sham group ($P > 0.050$). According to independent *t*-test, regarding the severity of pain before the intervention, there was no significant difference between the two groups. However, immediately after, 2 weeks after, and 4 weeks after the intervention, mean pain score was significantly lower in the experimental group than the sham group ($P = 0.000$) [Table 2].

Discussion

The results of this study revealed that acupressure, if conducted immediately after, 2 weeks after, and 4 weeks after the intervention, reduces pain in nurses with chronic back pain. Based on a study reported by Mahmodzadeh-Ardakani *et al*., the mean of pain after intervention significantly decreased compared to pre-intervention phase ($P < 0.05$).[21] According to the research done by Bastani *et al*., there was significant

reduction of severity of pain in experimental group compared to placebo group in three phases – immediately, 2 weeks after, and 4 weeks after the intervention.[9] In the study of Cho *et al*., results were consistent with the present research. However, they stated that further clinical trials were required.[22] Despite all the above, there is no study on the effect of acupressure on pain severity in female nurses suffering from CLBP, and due to the hectic nature of nursing profession, acupressure might be considered as a useful treatments.

Etri and Adib-Hajbaghery reported conflicting results in their study "Effects of Acupressure on Pain and Vital Signs of Patients Following Small Abdominal Surgeries."[23] They used acuband for pressure application, and their intervention was limited to 7 hours after abdominal surgery. Further, Karimipour *et al*. in their study "The Effectiveness of Acupressure on Severity of Pain in Patients with Rheumatoid Arthritis" showed that this method had no positive effect.[16] In this research, the researcher pressed the acupoints only for 1 minute. It appears that because of the chronic nature of rheumatic pains, the pressure should have been applied more than 1 minute for every point. They should have also used some kind of light stroke for opening meridians. Moreover, in a study by Molassiotis titled "Management of Chemotherapy-Related Acute and Delayed Nausea," there were no clear recommendations regarding the use of acupressure wristbands in the management of chemotherapy-related nausea and vomiting.[18] The study used randomized sampling method, three-group, sham-controlled trial, and included 5000 patients suffering from cancer undergoing chemotherapy who received standardized antiemetics and acupressure wristbands, sham acupressure wristbands, or antiemetics alone. Despite the strength of this study, and high quantity of participants (5000 patients) the results did not show significant differences. Considering the conflicting results of the studies, inadequate research about the techniques of acupressure on chronic back pain among nurses, and its low-cost and easy-to- learn nature, this technique requires further studies and research. The limitation of this study was the lack of coverage of the statistical population of male nurses with chronic back pain.

Conclusion

According to the finding of researchers and the present study, pressure on GV20, H7, K1, BL60, BL32, and GB30 points reduced the severity of CLBP. Therefore, the use of acupressure to reduce the severity of CLBP is recommended for nurses. Further research is recommended on the effect of acupressure on CLBP with more acupressure sessions, as well as comparison of these results with other complementary medicine.

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Conflicts of interest

There are no conflicts of interest.

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Figures and Tables

Table 1

Mean quantitative factors in two groups

Group	Experimental group	Sham group*	Independent t-test	
Factor	Mean (Standard deviation)	Mean (Standard deviation)	*t*	*P*
Age	37.00 (9.58)	36.48 (11.47)	0.17	0.86
Weight	63.21 (11.34)	64.84 (12.14)	0.47	0.64
Height	161.48 (7.19)	161.52 (5.25)	0.02	0.98
BMI	24.26 (3.99)	25.00 (4.82)	0.56	0.57
Work experience (years)	12.16 (7.22)	11.18 (9.20)	0.42	0.68

*Sham is the group which received placebo interventions

Table 2

Mean pain severity scores at different times in both groups

Group	Experimental group		Sham group		Independent *t*-test	
Time	**Mean**	**Standard deviation**	**Mean**	**Standard deviation**	***t***	***P***
Before the intervention	5.96	1.74	5.72	1.79	0.48	0.63
Immediately after the intervention	2.24	1.90	6.16	1.77	7.55	<0.001
Two weeks after the intervention	2.44	2.00	5.84	2.13	5.81	<0.001
A month after the intervention	2.52	2.16	6.08	1.75	6.39	<0.001
ANOVA						
F	25.50		1.98			
P	<0.001		0.15			