



The effect of acupressure on quality of life among female nurses with chronic back pain[☆]



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ABSTRACT

Background: Chronic back pain is one of the most common work-related diseases and most important of musculoskeletal disorders in nursing professionals and because of the physical and psychological effects, has a significant impact on quality of life (QOL). Acupressure is a holistic form of complementary medicine. This study aimed to investigate the effect of acupressure on QOL among female nurses with chronic back pain.

Materials and methods: This randomized single-blind clinical trial was conducted on 50 nurses with chronic back pain working at the selected hospitals in Isfahan, Iran. After convenient sampling, the subjects were randomly allocated, through lottery, to the two groups of experimental ($n = 25$) and sham ($n = 25$). In the experimental group, acupressure techniques were performed during 9 sessions, 3 times a week for 14 min for each patient. In the sham group, points within 1 cm of the main points were only touched. Data were collected using the SF36 questioner, before, and immediately, 2 weeks, and 4 weeks after the intervention. Data analysis was performed using SPSS software.

Results: Independent *t*-test showed that the mean total score of QOL before the intervention was not significantly different between the two groups before the intervention ($P = .68$). However, it was significantly higher in the experimental group compared to the Sham group, immediately, 2 weeks, and 1 month after the intervention ($P < .001$).

Conclusions: Acupressure on specific points of the foot and back improves back pain and as a result, increases QOL. Therefore, acupressure can be used as a drug-free and low-cost approach without side effects to improve QOL in nurses with chronic back pain.

1. Introduction

Musculoskeletal disorders (MSDs) are the most common and costly occupational injuries and account for one-third of work-related injuries every year. According to studies carried out on various jobs, nursing is among the top ten jobs which cause the most severe musculoskeletal injuries, and low back pain (LBP) is the most important MSD (Ghaseminejad, Tavafian, & Heidarnia, 2015). In fact, 80% of the occupational back pains are observed in the most important section of life (i.e. 20–55-year-old people) and are usually nonspecific, which means that the pain is not caused by infection, trauma, or any other specific reasons (Babadi, Nazari, Safari, & Abdoli, 2016). Low back pain without

pathological evidence for > 3 months is called chronic back pain (Nachemson, Waddell, & Norlund, 2000). Among all types of chronic pain, back pain has often been suggested to be the most frequent type of pain experienced (Husky, Farin, Compagnone, Fermanian, & Kovess-Masfety, 2018). Chronic back pain is the most important reason for absence from work, reduced QOL, emotional disorders, social cost, occupational disability, and occupational disability compensation. (Lopez-Lopez et al., 2017) and > 185 million working days are lost each year due to back pain-related disabilities (Waddell & Burton, 2001). The literature review reveals that the frequency of LBP in nurses ranges between 40% and 97.9% and occurs more frequently in nurses when compared with other individuals in society (Tosunoz & Oztunc,

[☆] Key messages: the use of acupressure on specific points (GV20, H7, K1, BL60, BL32, and GB30) can be reduced pain. Therefore, acupressure can be used as a drug-free and low-cost approach without side effects to improve QOL in nurses with chronic back pain. Key messages: the use of acupressure on specific points (GV20, H7, K1, BL60, BL32, and GB30) can be reduced pain. Therefore, acupressure can be used as a drug-free and low-cost approach without side effects to improve QOL in nurses with chronic back pain

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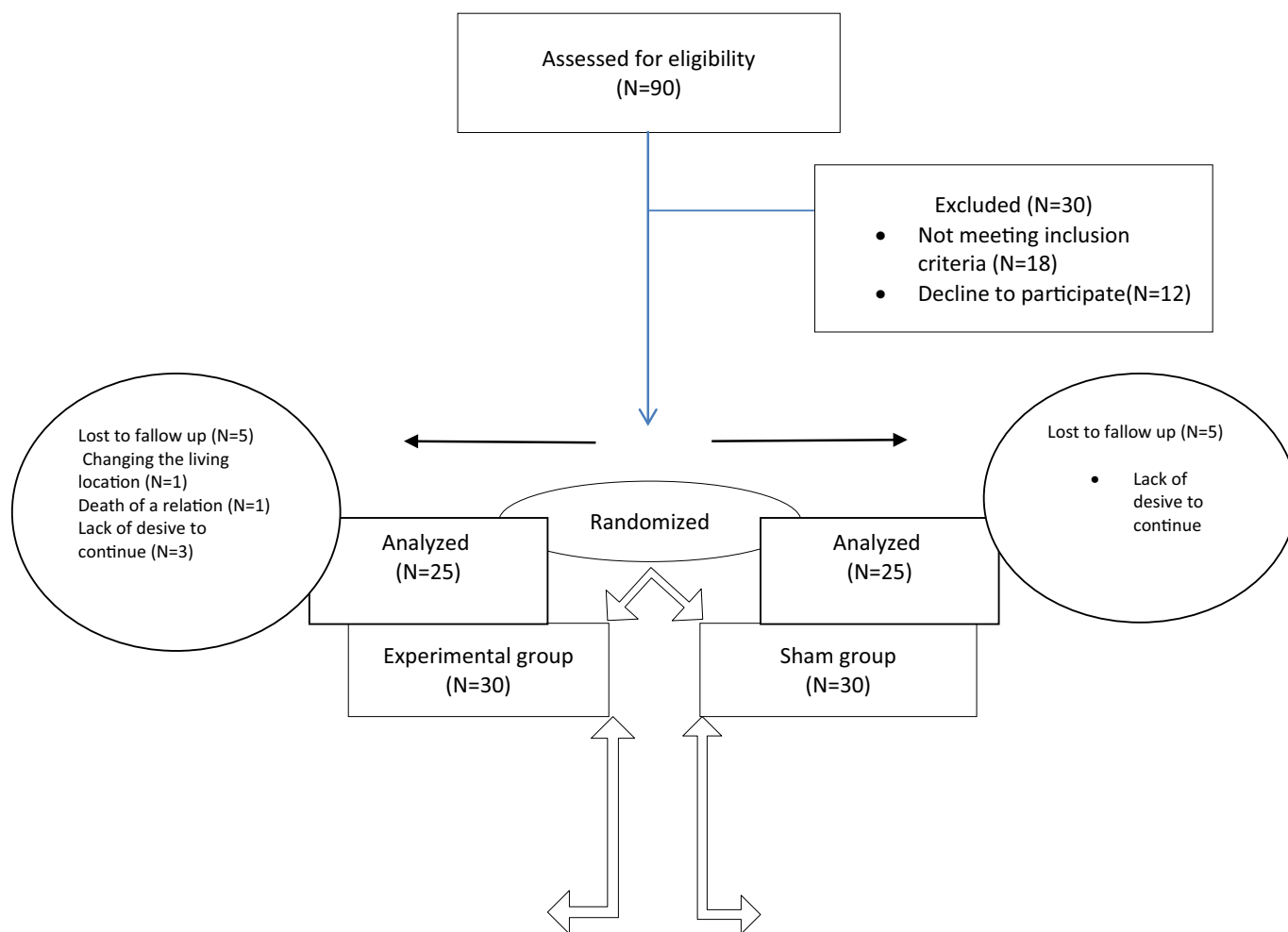


Fig. 1. CONSORT guideline.

2017). Owayolu found that 84.2% of the nurses experienced low back pain, and 66.7% of the nurses evaluated this pain as “a pain with moderate severity” (Owayolu, Owayolu, Genc, & Col-Araz, 2014). According to a study by the World Health Organization, individuals who live with persistent pain are four times more likely than those without pain to suffer from depression or anxiety, and more than twice as likely to have difficulty working (Katz, 2002).

Chronic back pain creates social, personal, emotional, sexual, educational, communication, and economic problems for individuals. Moreover, it is the cause of increased fatigue and decreased performance among nurses. Thus, it has a serious impact on QOL and renders it impossible for patients to live without pain and concern (Aliafsari-Mamaghani et al., 2014). Chronic and uncontrolled pain, when it is not effectively treated and relieved, has a deteriorative effect on all aspects of QOL. Regardless of the type or source of pain, the negative effects of pain on the QOL, occur at any age and every stage of life. If poorly controlled pain has a deteriorative effect on QOL, then the implication is that analgesics, by decreasing pain, will increase QOL (Katz, 2002).

The World Health Organization (WHO) has defined QOL as individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. Attention to this concept can increase individual's efficiency and prevent psychological tensions (Aliafsari-Mamaghani et al., 2014). Physical and mental degradation of nurses results in their quitting of their job, vulnerability in professional communication, decreased quality of care provided, and dissatisfaction with and leaving the profession. Therefore, nursing managers should

create a desirable working environment to not only attract new nurses, but also keep the current nurses and prevent their movement (Khaghanizadeh, Ebadi, & Rahmani, 2008). Effective management of symptoms is needed to improve individuals' QOL and reduce health care costs. Thus, interventions to effectively manage symptoms such as pain are required. Acupressure may be an effective intervention. This intervention is noninvasive and relatively inexpensive, and has been demonstrated to be without adverse effects. The use of acupressure is based on meridian theory, which proposes that acupressure stimulates meridians, a network of energy pathways throughout the body, to increase the flow of qi (bioenergy) (Lee & Frazier, 2011).

To the knowledge of the authors, no studies have been performed on the effect of acupressure on QOL in nurses with chronic back pain. However, different studies on the effects of acupressure on pain have reported conflicting results (Bastani, Sobhani, Bozorgnejad, & Shamsikhani Haghani, 2012; Karimipour, Fayazi, Mowla, & Latifi, 2012). Thus, the purpose of this article was to investigate the effect of acupressure on QOL of female nurses with chronic back pain.

2. Materials and methods

2.1. Study population

This single-blind randomized clinical trial was conducted on 50 nurses with chronic back pain in 2015. The study population included all female nurses with chronic back pain employed in hospitals affiliated to Isfahan University of Medical Sciences, Isfahan, and with an

Table 1
Comparison of mean age, weight, height, BMI between the two groups before the intervention.

Group	Experimental group		Sham group		Independent t-tests	
	Mean	SD	Mean	SD	t	P
Age	37	9/6	36/5	11/5	0/17	0/86
Weight	63/2	11/3	64/8	12/1	0/47	0/64
Height	161/4	7/2	161/5	5/3	0/02	0/98
BMI	24/3	3/9	25	4/8	0/56	0/57

Table 2
Comparison of the mean QOL and its dimensions (Physical and mental) scores before the intervention in the two groups.

Group	Experimental group		Sham group		Independent t-tests	
	Mean	SD	Mean	SD	t	P
Physical health	56/9	21/4	54/6	17/4	0/42	0/67
Mental health	55/4	18/6	54/1	19/3	0/25	0/80
Total score of QOL	56/2	17/3	54/3	13/7	0/41	0/68

associate's degree, bachelor's degree, or higher in nursing. The number of the subjects required to conduct the research was calculated at 25 individuals in each group using the sample size formula and based on a similar study (Soheilshahreza, Nazari, Shaygannejad, & Valiani, 2014) and comparison of means, with 95% confidence interval and power of 80% (equal to 1.96 and 0.84). To reduce potential problems in the research process such as the possibility of sample loss and to increase the statistical accuracy, the sample size was considered as 30 patients in each group. It should be noted that by the end of the study, there was a loss of 10 subjects. In the experimental group, one subject due to changing the living location, one subject due to the death of a relative, and 3 due to lack of desire to continue the study were excluded from the research. In the sham group, 5 subjects due to Lack of desire to continue were excluded from the research. Finally, the study included 50 patients (25 patients in the experimental group and 25 patients in the Sham group) (Fig. 1).

2.2. Inclusion and exclusion criteria

The inclusion criteria included age of 25–55 years, chronic back pain diagnosed by a physician, pain score of higher than 4, history of back pain for > 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 subjects were randomly assigned to one of the study groups (experimental and Sham) through a lottery. The exclusion criteria included lack of desire to continue to participate, using other methods of alternative medicine during the study, having other diseases which spread to the back, any physical or psychological deterrent to

Table 3
Comparison of the mean total QOL and its dimensions (Physical and mental) scores at different time periods (before, immediately after, 2 weeks and 1 month after intervention) in the two groups.

Dimension	Time	Total score of QOL		Physical health		Mental health	
		Mean	SD	Mean	SD	Mean	SD
	Before intervention	56/2	17/3	56/9	21/4	55/4	18/6
	Immediately after the intervention	69/9	15/7	71/8	18/5	67/9	17/1
	Two weeks after intervention	70/5	14/9	73/3	19/9	67/8	15/7
	1 month after the intervention	74/6	15/9	75/4	21/4	73/8	14/8
ANOVA	F	12/92		4/78		20/44	
	P	< 0/001		0/01		< 0/001	

continue the research, menstrual cycle outside 28 days, and absence from one meeting during the study.

2.3. Interventions

We described the purpose of the research to the patients and then written consent form was obtained from all the participants, then the questionnaires were filled by all participants lonely (paper and pencil) in a private and quiet place which located in each center of research.

The data collection tool was a 2-part questionnaire, which was completed before the intervention, and immediately, 2 weeks, and 4 weeks after the intervention by the subjects in both groups. The first part of the questionnaire included demographic characteristics and the second part, was the SF36 questionnaire.

Before the intervention, the questionnaires were distributed among the participants by the research assistant, and the subjects responded to them. Then, the intervention began. 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 min. When the pressure is applied correctly, the participants feel a sense of heaviness, numbness, and warmth in the area. Pressure was applied to the points for 5 continuous seconds and released for 1 s (Khaghanizadeh et al., 2008). The starting point was the governing vessel 20 (GV20), 5 cun posterior to the anterior hairline. After 2 min of pressure, pressure was applied to other points. The order of the pressure points were GV20, heart 7 (H7) (at the wrist crease, on the radial side of the flexor carpi ulnaris tendon, between the ulna and the pisiform bones), kidney 1 (K1) (on sole of the feet, in the arch of the foot with foot in plantar flexion, at the junction of the anterior 1/3 and posterior 2/3 of the line connecting the base of the 2nd and 3rd toes to 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) (on the back of the leg between the greater trochanter and sacral hiatus, outer one-third).

The nurses in the Sham group also received acupressure. Nevertheless, the pressure points were at a distance of 1 to 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 14 min, and a total of 9 sessions were held in 3 weeks (3 times a week). Questionnaires were completed before the intervention, and immediately, 2 weeks, and 4 weeks after the intervention by the subjects.

It should be noted that the intervention started after the subjects' menstrual bleeding. To ensure the homogeneity of the subjects, they were asked not to perform this technique at home until the end of the study.

2.4. Statistical analysis

The data were analyzed using the Statistical Package for the Social

Sciences (SPSS) version 18.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were expressed in mean \pm standard deviation (SD). The significance of the difference between the groups was analyzed using independent *t*-test, and repeated measure analysis of variance (ANOVA). The significance level was considered < 0.05 .

2.5. Ethical considerations

This study was approved by the Ethics Committee of Isfahan University of Medical Sciences and written informed consents were obtained from all participants.

3. Results

The results of this study showed that, in terms of age, weight, height, and BMI, there were no significant differences between the two groups ($P > .050$) (Table 1). According to independent *t*-test regarding the mean score of QOL and its dimensions (Physical and mental) before the intervention, there was no significant difference between the two groups ($P > .050$) (Table 2). However, immediately, two weeks, and four weeks after the intervention, mean changes in total score of QOL, physical and mental health in the intervention group were more than Sham group ($P < .050$). Repeated measures ANOVA showed that the mean total score of QOL ($P < .001$), physical ($P = .01$) and mental ($P < .001$) health differed significantly between different times in the experimental group, but showed no significant difference between the 4 periods in the Sham group ($P > .050$). LSD post hoc test showed that the mean changes in total score of QOL, physical and mental health in the intervention group, was significantly lower before the intervention than the three periods after the intervention ($P < .005$) (Table 3).

4. Discussion

Low back pain is one of the most common and costly occupational diseases and is one of the main causes of disability, which usually does not respond to common treatments, and people are encouraged to use other non-pharmacological treatments. Furthermore, reducing pain has a significant effect on improving the quality of life (QOL) of these patients. The results of this study showed that acupressure techniques improved QOL in nurses with chronic back pain, immediately, 2 weeks, and 4 weeks after the intervention. Lee's thesis confirmed the results of this study (Lee & Frazier, 2011). In this regard, Che et al. showed that the combination of acupressure and magnetic sticker could ameliorate QOL in patients with advanced gastro enteric tumor (Che, Pu, Wang, He, & Shi, 2014). Furthermore, according to the study of Kao et al. after a 4-week treatment, all experimental groups (blended essential oil, lavender essential oil, and acupressure massage) showed significant improvements in sleep quality and QOL (Kao et al., 2017). Also, Lee et al. and Yeh et al. studies demonstrate the effectiveness of acupressure massage on improvements overall QOL (Lee, Lu, Lee, et al., 2014; Yeh, Chang, Huang, & Lee, 2015). However, Liang et al. reported that acupressure massage has no effect on sleep quality in nursing personnel with a rotating roster (Liang, Jong, Chang, & Chen, 2010). Furthermore Lu et al. illustrated acupuncture has a moderate effect on the improvement of physical functioning and pain for pain associated with the spine (PAWS) patients in the short term; but the effect for mental functioning is small and delayed (Lu, Zheng, & Xue, 2011). Results of Wang et al. study indicated that auricular acupressure significantly helped patients with chronic kidney diseases to improve their QOL outcomes (Wang et al., 2014).

Although studies about the effect of acupressure are little, similar studies such as Auricular Acupressure have stated the positive effect of acupressure on QOL in patients with constipation and CKD (Lia, Diana-Leeb, & Lorna-Suen, 2014; Wang et al., 2014). Auricular Acupressure is a treatment method similar to acupuncture in which specific acupoints on the ear (with a special machine) are stimulated without the use of

needles (Lin et al., 2015). Yeh et al. examined the effect of auricular acupressure in heart rate variability and QOL for hypertension and found that Auricular acupressure is acceptable and feasible although it does not support physiological benefits. Further studies are warranted to assure the effects of using auricular acupressure as an adjunctive care for patients with hypertension (Abaraogu and Ochuogu, 2015). Also in Abaraogu & Ochuogu study, Acupressure showed evidence of pain relief while acupuncture improved both the mental and the physical components of QOL. (Abaraogu & Ochuogu, 2015). However, the present study was single-blind randomized clinical trial that conducted on 50 nurses. Considering the conflicting results of studies and little research about the techniques of acupressure on chronic back pain among nurses, despite its low-cost and being easy to learn, this technique requires further studies and research.

4.1. Limitations

The strengths of this study are a single blind, equal to the time pressure is for all participants in the intervention group. In order to prevent bias, pressure was applied by one person. The limitation of this study was the statistical population's lack of coverage of male nurses with chronic back pain. Of the other limitations of this study is a small sample size (51 people).

5. Conclusion

This study showed the positive effect of acupressure on the improvement of QOL among female nurses with chronic back pain immediately, 2 weeks, and 4 weeks after the intervention of acupressure. Based on the results of the present study and previous studies, it is hoped that nurses and their families use this simple and low-cost technique without side effects in combination with conventional drug therapies to improve chronic back pain. Further quantitative and qualitative research is needed to confirm that self-managed acupressure is effective in all nurses living with a chronic pain.

Authors' contribution

All authors were involved in study design and manuscript writing. All authors approved the submitted version of the manuscript.

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Declaration of competing interest

The authors declare that they have no conflict of interest.

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