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A randomized controlled clinical trial evaluating quality of life when using a simple acupressure protocol in women with primary dysmenorrhea

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ABSTRACT

Objective: To evaluate a simple acupressure protocol in LIV3 and LI4 acupoints in women with primary dysmenorrhea.

Methods: This paper reports a randomized, single blinded clinical trial. 90 young women with dysmenorrhea were recruited to three groups to receive 20 min acupressure every day in either LIV3 or LI4, or placebo points. Acupressure was timed five days before menstruation for three successive menstrual cycles. On menstruation, each participant completed the Wong Baker faces pain scale, and the quality of life short form −12 (QOL SF-12).

Results: Intensity and duration of pain between the three groups in the second and third cycles during the intervention ($p < 0.05$) differed significantly. Significant differences were seen in all domains of QOL except for mental health ($p = 0.4$), general health ($p = 0.7$) and mental subscale component ($p = 0.12$) in the second cycle, and mental health ($p = 0.9$), and mental subscale component ($p = 0.14$) in the third cycle.

Conclusion: Performing the simple acupressure protocol is an effective method to decrease the intensity and duration of dysmenorrhea, and improve the QOL.

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1. Introduction

Primary dysmenorrhea describes painful menstrual bleeding where there is no other associated disease in the pelvic[1]. In young women, there is an 88% prevalence worldwide of primary dysmenorrheal and painful menstruation.[2] Symptoms start at the onset of menstruation, and typically include pain which radiating from the lower abdomen to the inner thighs.[3] Dysmenorrhea may disturb activities of daily living for as much as 1–3 days per month. Dysmenorrhea and its associated symptoms may have an economic burden on society since the condition can cause women to lose some workdays per month.[4] Primary dysmenorrhea leads to recurrent absence from work, anxiety, and it is reported that quality of life is affected.[5,6]

During menstruation, excessive prostaglandin release causes excessive uterine contraction, uterine hypoxia and ischemia which results in primary dysmenorrhea. Pharmacologic medications aimed at alleviating menstrual pain and relaxing the uterine muscles include non steroidal anti inflammatory drugs ($NSAID_S$) and oral contraceptive pills (OCP). Side effects of these medications include nausea, breast tenderness, metrorrhagia, visual and auditory hallucinations.[7] About, 20–25% of women have reported that their menstrual pain is not controlled by taking NSAIDs alone.[8]

Acupuncture, electro acupuncture and moxibusion are traditional treatments in Chinese medicine. Acupoints stimulation improves Qi and blood flow, restores harmony to the body, and improves balance in the body by modulating physiologic interactions and transmitting impulses to the brain and other organs located at the line of nerves and meridians. Acupoint stimulation in Chinese medicine has been described as effective in managing primary dysmenorrhea. According to the Chinese medical theory, primary dysmenorrhea is the stagnation or deficiency of energy in the uterus, and it is cured by changing the energy flow and blood flow; and regulating the performance of internal organs,

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especially the spleen, liver, and kidney.[9–11]

According to Chinese medical theory, dysmenorrhea is divided into two categories: excess and deficiency syndromes. The symptoms of excess syndrome include lower abdominal pain before menstruation; diffuse pain across the back, menses of a purple colour with blood clots, a purplish tongue, deep pulse, swelling of the breast, and anxiety. Acupoints associated with the excess syndrome are LIV_3, LI_4, SP_{10}, SP_8, and $B_{23;}$ it is easy to access acupoints of LIV_3 and LI_4, for treatment with acupressure. The symptoms of the deficiency syndrome include abdominal pain during or after menstruation, pale colour menses with small volume, and cold hands and feet. Acupoints used in deficiency syndrome are B_{20}, B_{23}, and SP6.[12,13] The criterion of excess syndrome is identical to the western medical definition of primary dysmenorrhea (abdominal pain before or during menstruation). Previous studies have reported that primary dysmenorrhea is alleviated by applying pressure on pressure on acupoints of CV_6, CV_4, SP_6, SP_{10}, and LIV_3.[14]

Complementary and alternative therapies including acupressure are increasingly offered as part of holistic nursing care.[15] Considering the high prevalence of primary dysmenorrhea among young women and its adverse effects on their QOL, trying to reduce this problem is an important clinical nursing task in primary care to promote health and self-care in young women. Acupressure may provide a means to improve young women's dysmenorrhea, improve their self care and hence their wellbeing.[16] A previous study by the authors had tested quality of life and severity of dysmenorrhea by using acupressure at LIV3 acupoint compared placebo point.[11,17–19] The findings indicated that effective acupressure in LIV3 acupoint than the placebo could improve quality of life and severity of dysmenorrhea. The authors concluded that there was a need to study effective acupoints in the excess syndrome of dysmenorrhea and compare LIV3 and LI4 acupoints. Thus, the present study aimed to determine the impact of acupressure in the LIV_3, LI_4, and the placebo points on the QOL of young women with primary dysmenorrhea.

2. Materials and methods

2.1. Participants

Young female students with primary dysmenorrhea were recruited to a randomized single blind controlled clinical trial; students were living in accommodation in the Hormozgan University of Medical Science, Iran from 2015 to 2016. Inclusion criteria are given in Table 1.

Table 1
Inclusion criteria.

being18–21 years old
being single
Having regular menstrual periods of 3–8 days duration and a cycle of 21–35 days
A pain score of 4–10 according to the Wong-Baker faces pain scale
The presence of excess syndrome signs (fixed and heavy pain 1–2 days before menstruation, breast and stomach swelling, menses of dark colour with blood clots, purplish tongue, deep pulse and diffused pain to the back)
No genital disease; at least two hours passing after the last meal
absence of pain in all days of bleeding
absence of moderate to severe complications specially moderate to severe depression (based on HADS questionnaire)
no usage of oral or other contraceptives or drugs which disturb the ovulation cycle, analgesics, prostaglandin synthesis inhibitors) four days before acupressure is started
lack of any abdominal/pelvic surgery
absence of tobacco consumption; not being alcohol consumer; absence of medical disease (cardio-vascular disease, nephropathy, respiratory disorders, diabetes, asthma, hypo/hyperthyroidism)
absence of any speaking, visual, and auditory problems
absence of any severe psychological stress during the last six months (loss of relatives, etc)
Absence of any lesion, varices, or inflammatory skin disease at the location of applying pressure.

Simple randomized sampling and allocation of the groups to the intervention groups was undertaken. For this purpose, we used the table of random numbers to allocate participants to the study groups. Researchers invited all occupants of two dormitories in Hormozgan University to participate in the study; volunteers were screened against the inclusion criteria and those participants who were eligible to enter the study identified. Participants were assured that participation is voluntary and that their information would remain confidential. 90 participants were accepted onto the study after giving written consent. This process is shown in Fig. 1. They was randomly divided into three groups of $LIV_{3,}$ LI_4, and the placebo group using the table of random numbers. Participants were blinded to their allocation to the intervention and placebo groups. They were in separate blocks in accommodation of Hormozgan University of medical sciences. They were requested to not search for information about acupressure and only ask the researchers if they required further information about the study protocol and outcomes.

2.2. Sample size

The sample size of this study was determined by the primary hypothesis. That is, the difference between Wong-Baker faces pain scale scores after acupressure on LIV3, LI4 and the mean score after the placebo. The effect size was estimated from pilot data for the LIV3 and LI4 acupressure compared with that for a control group. Using a significance level of 0.05, a power of 80%, and a sample size of 30 per group (90 in total) was needed to test this hypothesis.

2.3. Intervention

2.3.1. First cycle (control cycle)

The pain intensity was measured using the Wong-Baker faces pain scale, and the duration of pain was assessed by participants' replies. The QOL SF_{12} questionnaire was also completed by participants. Participants were trained about acupressure on the related acupoints.

2.3.2. Second cycle

Participants were laid down firstly in the supine position (to avoid hypotension and dizziness). Windows and doors were locked to ensure privacy and to avoid external stimuli. The LIV_3 point (or third hepatic acupoint) is one of the hepatic meridians located at the point of bones junction. The LI_4 point (HUGO) is located at the dorsal surface of the hand between the thumb and the index finger, at the middle of the second metacarpus bone. The placebo point is located between the third and the fourth toes which are not in the meridian line (Fig. 2).

Applying pressure for 20 min on the above mentioned points was started at between three to seven days before menstruation (for average five days) on the right foot (according to Chinese medicine, the vital energy of women is stronger in the right foot) between 19.00–21.00. This process was repeated daily until the bleeding started. The points were pressed for two minutes in a harmonic manner (one minute in a clockwise direction and one minute in a counter clockwise direction). After that, pressure was stopped for two minutes and the researcher manipulated the point so that the meridian remained stimulated. Applying pressure continued until the participant felt a mild pain in the point, the pressing was stopped, and the amount of colour change in the nail was adopted as a marker to show participants how much pressure they should apply themselves in the next menstrual cycle. The researcher also trained participants to apply pressure on the points of LIV_3 or LI_4, or placebo according to which group they had been randomly assigned to. As menstrual bleeding started, participants were asked to complete SF_{12} questionnaire, as well as the intensity and duration of pain questionnaire.

2.3.3. Third cycle

Based on the education offered to the participants during the