

Original article

Self-aromatherapy massage of the abdomen for the reduction of menstrual pain and anxiety during menstruation in nurses: A placebo-controlled clinical trial

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Abstract

Aim: The purpose of this study was to investigate the effect of self-aromatherapy massage on menstrual pain and anxiety.

Participants and methods: The subjects were 63 female nurses who rated their menstrual pain >5 on a 10-point visual analogue scale. Subjects were non-randomly allocated into three groups: an experimental group ($N=26$) who performed self-aromatherapy massage, a placebo group ($N=18$), and a no-treatment control group ($N=19$). Eleven participants dropped out of the study either because of nausea (experimental group, $N=1$) or because they took medication during the trial (placebo group, $N=3$; control group, $N=4$). The final analysis included 25 in the experimental group, 15 in the placebo group, and 15 in the no-treatment control group. Menstrual pain and anxiety levels were assessed using a visual analogue scale, and we assessed the menstrual pain 4 times during a short time period.

Results: The menstrual pain was significantly lower in the aromatherapy group than in the other two groups after 24 h. Using multiple regression analysis, the use of aromatherapy was found to be associated with the changes in menstrual pain levels (Beta = -1.74 , 95% CI: -2.64 to -0.85 , $P<0.001$) and the level of anxiety (Beta = -0.53 , 95% CI: -0.76 to -0.31 , $P=0.001$).

Conclusion: These findings suggest that self-aromatherapy massage of the abdomen using topically applied essential oils may be an effective treatment that decreases menstrual pain and the level of anxiety.

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Keywords: Aromatherapy; Menstrual pain; Anxiety; Placebo

Introduction

Dysmenorrhea is defined as painful menstruation involving lower abdominal pain, which may be accompanied by other symptoms such as nausea and fatigue [1]. Menstrual pain is a common problem. Many women (25–97%) experience menstrual pain, and 5–25% of women experience severe pain [2].

Menstrual pain is usually treated with drugs including prostaglandin synthesis inhibitors, oral contraceptive agents, and

analgesics [3]. Some reports have noted that medication might not be effective if not used regularly [4]. Non-pharmacological interventions have also been used. These treatments include topical heat, transcutaneous electrical nerve stimulation (TENS), and several complementary and alternative medicines. It has been reported that the most common methods to cope with menstrual cramps are “endurance” and medication [1]. However, menstrual pain is not managed efficiently or effectively despite its high occurrence.

Several complementary and alternative therapies have been used to treat menstrual pain, including acupuncture, TENS, herbal medicine, vitamin pills, omega-3 fatty acids and behavioural interventions [2]. Another option is aromatherapy, which is the therapeutic use of essential oil from plants [5]. Essential oils can be absorbed into the body via the skin or via

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the olfactory system [5]. Aromatherapy is thought to be particularly efficacious against menstrual pain without severe adverse effects.

Different methods are used to deliver aromatherapy, such as diffusers, baths, massage, and compresses. Massage is believed to be an effective way to improve blood and lymph circulation, reduce stress and ease stiff muscles [5]. Massage appears to be a suitable method to deliver aromatherapy to treat menstrual pain [5]. Several studies have reported that aromatherapy is effective for reducing pain in patients with many types of pain conditions, including postoperative pain, fibromyalgia and dysmenorrhoea [6–10]. However, the therapeutic effects of aromatherapy are not well supported by clinical studies. Most evidence of the therapeutic efficacy of aromatherapy has been published in books about aromatherapy and not in peer-reviewed journals. Furthermore, most published trials used aromatherapy applied by practitioners. However, application by a practitioner is not a convenient method compared with self-delivered methods. The purpose of this study was therefore to determine whether self-massage of the abdomen using essential oils alleviates pain and anxiety during menstruation.

Participants and methods

Participants

The participants were nurses working in University Hospital in Daejeon, Korea. Of the 83 volunteers who were originally selected, 63 entered the initial phase of the study. The selection criteria were as follows: (a) menstrual pain severity greater than 5 points on a 10-point VAS (a line from 0 to 10 with regular markings on it, with 0 as “no pain at all” and 10 as “pain as bad as it could be”); (b) no systemic disease or disease of the genital organs; (c) no use of contraceptives; (d) no use of any other complementary and alternative therapies; and (e) no allergies to the aromatherapy essential oils. Participants who failed to meet all of these criteria were excluded from the study. Patients with myoma or fibrocystadenoma were also excluded from the study.

The participants were non-randomly assigned to one of three groups. They were allocated into an experimental group ($N = 26$) who performed self-aromatherapy massage, a placebo group ($N = 18$), and a no-treatment control group ($N = 19$). One person in the experimental group dropped out because of a side effect, nausea. Three subjects in the placebo group and 4 subjects in the control group dropped out because they took a medicine due to severe menstrual pain. The final analysis included 25 subjects in the experimental group, 15 in the placebo group, and 15 in no-treatment the group. The experimental group ($N = 25$, mean age, 24.8 years) treated themselves with aromatherapy with massage. The placebo group ($N = 15$, mean age, 24.9 years) massaged themselves with almond oil only, and the control group ($N = 15$, mean age, 25.0 years) did not do anything to alleviate their pain. In this study, it was impossible to blind the subjects completely because of the scent of the essential oils used in the aromatherapy. The study was approved by the Institutional Review Board of the University Hospital before we approached the subjects and obtained written consent from them.

Intervention

The author gave a bottle containing aromatherapy oils to each subject in the aromatherapy group and a bottle containing only almond oil to each subject in the placebo group. The amount of liquid in the bottle was same in both groups. The participants had learned the abdomen massage techniques before the experiment started and had reviewed the techniques several times using written paper instructions. Both groups performed self-massage twice on the first and second days of menstruation on the abdomen using the oils provided by the author when the pain was too severe to endure. Before and 24 h after the massage, they self-reported their current pain and anxiety levels using a visual analogue scale (VAS). The participants of the experimental group massaged their abdomens for 10 min with essential oils from rose absolute (*Rosa centifolia*), rose otto (*Rosa damascena*), clary sage (*Salvia sclarea*), rose geranium (*Pelargonium graveolens*) and ginger (*Zingiber officinale*) in a 0.5:0.1:1:1:1 ratio that were diluted in almond oil, jojoba oil, and evening primrose oil in a 8:1:1 ratio, with the essential oils present at a final concentration of 3%. The placebo group participants massaged themselves with almond oil alone.

Measurement of anxiety and menstrual pain

The levels of anxiety and menstrual pain were measured using a 10-point VAS. Each level was indicated by pointing to the appropriate value of 10 cm horizontal ruler. The menstrual pain severity was assessed 4 times during a short time period. The intensity was rated to the first decimal place in cm. Higher scores reflected a greater severity of symptoms.

Data analysis

The data were analysed using SigmaStat (Systat Software, CA) and SPSS software (SPSS Inc., IL). The results are presented as the means and standard deviations (SDs). All outcomes were compared using the Tukey post-hoc test between groups and the one-way analysis of variance (ANOVA) test across treatment times for each group.

Multiple regression analyses were used to estimate the treatment effects and the validity of the hypothesis. In this analysis, the change score was regressed against the baseline score with two dummy-variable indicators: one indicator was 1 for the placebo group and 0 otherwise, and the other was 1 for the aromatherapy group and 0 otherwise. The coefficients of these indicators therefore represent the placebo vs. control and aromatherapy vs. control comparisons. The change scores for pain or anxiety (24 h after intervention minus baseline) were regressed against the baseline score and age.

Results

The participants reported no side effects of the treatment except nausea, which was reported by one person. The demographic characteristics of the participants are listed in Table 1.

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