

# Acupressure in dysmenorrhea – a pilot study

Małgorzata Molenda<sup>1</sup> (BDEF), Mariusz Molenda<sup>1</sup> (ABD), Martyna Zabłocka<sup>1</sup> (BC), Natalia Kędra<sup>1</sup> (BC), Agnieszka Kurpas<sup>1</sup> (BC), Daria Ciechanowicz<sup>1</sup> (BC), Jan Hořejší<sup>2</sup> (AD), Agnieszka Drosdzol-Cop<sup>1</sup> (ADE)

<sup>1</sup> Department of Pregnancy Pathology, School of Health Sciences, Medical University of Silesia, Katowice, Poland

Kierownik: dr hab. n. med. Agnieszka Drosdzol-Cop

<sup>2</sup> Department of Obstetrics and of Adult and Pediatric Gynecology, 2nd Medical Faculty, Charles University, Prague, Czech Republic

Kierownik Naukowy: Prof. dr hab. n. med. Jan Hořejší

**AUTHORS' CONTRIBUTION:** (A) Study Design · (B) Data Collection · (C) Statistical Analysis · (D) Data Interpretation · (E) Manuscript Preparation · (F) Literature Search · (G) Funds Collection

## SUMMARY

**Introduction.** The World Health Organization (WHO) classifies dysmenorrhea to conditions that can be effectively treated by acupressure, as proven in controlled clinical trials. The aim of the study was to evaluate the influence of acupressure on relieving symptoms associated with painful menstruation in young women.

**Material and methods.** The study involved 33 women aged 19–25 years with dysmenorrhea. After inclusion, the participants were instructed about acupressure procedures to be able to perform it on their own. They were taught how to locate acupressure points used in the study: SP6, LR3 and LI4. The women performed acupressure procedures on every day of menstruation twice daily for two consecutive menstrual periods. Results were measured after the first and second menstruation, after intervention.

**Results.** Acupressure performed during menstruation by the participants themselves reduced pain in most of the women and, in some of them, relieved certain symptoms associated with menstruation.

**Conclusions.** Acupressure significantly improves the quality of life during menstruation in young women with dysmenorrhea.

**Key words:** acupressure, dysmenorrhea, menstruation, pain

**Address for correspondence:** Małgorzata Molenda  
Zakład Patologii Cięży, Wydział Nauk o Zdrowiu, Śląski Uniwersytet Medyczny w Katowicach  
ul. Medyków 12; 40-752 Katowice, Poland  
Tel.: +48 32 2088751; +48 668 306 868  
e-mail: małgorzata.molenda@med.sum.edu.pl

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## INTRODUCTION

Dysmenorrhea (painful menstruation) is a significant gynecological problem in girls and young women. This disorder concerns 30–70% of women aged 19–23. The prevalence of dysmenorrhea in this population is the highest [1]. This condition is divided into primary and secondary due to its etiology. Primary dysmenorrhea is pelvic pain that appears during menstruation without any concomitant pathology within the pelvis. Secondary dysmenorrhea coexists with another pathology within the pelvis minor. The former type constitutes 90% of all cases of painful menstruation [1]. Pain associated with menstruation can appear as cramps in the lower abdomen radiating to the mid-abdomen, sacral region and inner thighs. In 50% of cases, pain can be accompanied by additional symptoms, such as nausea, vomiting, fatigue and loss of appetite. Pain usually starts as menstruation begins and persists for 24–48 hours [1]. First-line treatment of dysmenorrhea involves non-steroidal anti-inflammatory drugs (NSAIDs) and two-component contraceptive pills. Second-line therapy involves surgery, dietary supplements and alternative methods, including acupressure [1].

The World Health Organization (WHO) classifies dysmenorrhea to conditions that can be effectively treated by acupuncture, as proven in controlled clinical trials [2]. According to the WHO, *acupuncture*, in a narrow sense, is a therapy that consists in stimulation of given points with needles [2]. However, effects can be achieved not only with needles. The points can also be stimulated by pressure; the method involving pressure is called *acupressure*. In its publication, the WHO uses the term *acupuncture* in a broader sense encompassing all traditional methods involving stimulation of points, referred to as

acupoints [2]. The conclusions of the WHO concerning acupuncture also refer to acupressure. Acupressure is the stimulation of acupoints with pressure applied with the therapist's hands or fingers [3].

According to Dorsher, acupuncture is an umbrella term for procedures involving stimulation of strictly specified anatomical points in order to achieve clinical effects [4]. He proves that pain-relieving action of acupressure is based on an endogenous opioid system and the action of the peripheral and central nervous system [4]. Acupuncture increases the level of endorphins in blood and cerebrospinal fluid, and decreases it in certain brain regions. Computed tomography has shown that acupuncture results in short- and long-term increases in limbic system  $\mu$ -opioid binding potential, leading to pain reduction. Acupuncture reduces paleocortical activation (including limbic system structures) to painful stimuli without limiting neocortical activation, thereby attenuating the behavioral response to a painful stimulus without impairing the ability to localize the site of that painful stimulus [4].

Acupuncture points (acupoints) are given areas of the skin and adjacent tissues that are stimulated in order to regulate the functional status of given organs or systems. It has been proven that acupoints have greater amounts of smooth muscle tissue and receptors (tactile bodies, conical flasks and other bodies) compared with adjacent tissues. Moreover, these points are characterized by lower electric resistance and increased potential than the surrounding skin [5]. Some acupuncture points coincide with Head areas, i.e. skin areas that become more sensitive and then painful when there is a pathology of a specific internal organ [6]. It has also been shown that acupuncture points are consistent with trigger points in anatomical and clinical aspects (both in pain management and treatment of somatovisceral disorders) [7]. Acupoints most frequently used in dysmenorrhea treatment are SP6 and LR3 (nomenclature after the WHO [8]) located on the lower extremity.

## AIM

The aim of the study was to evaluate the influence of acupressure on relieving symptoms associated with painful menstruation in young women aged 19–25 years.

## MATERIAL AND METHODS

The study design has been evaluated by the Ethics Committee of the Medical University of Silesia in Katowice (KNW/0022/KB1/24/16). The Committee has decided that the study was not an experiment and did not require approval of the Ethics Committee.

### Recruitment to the study

It was a prospective study. The participants were recruited on the basis of diagnosed dysmenorrhea ( $n=33$ ). The essential inclusion criterion was age from 19 to 25 years. All women were informed about the aim of the study and its procedures. All patients consented to the participation in the study.

Inclusion criteria included: diagnosed dysmenorrhea, age 19–25 years and consent to the participation in the study. Exclusion criteria were: using pharmacotherapy within the past 6 months (e.g. hormonal drugs, contraceptive pills, NSAIDs) and concomitant systemic diseases (e.g. cardiovascular diseases, diabetes, stomach ulcers, autoimmune diseases, other endocrine conditions, epilepsy).

### Research tools

The results were measured with an anonymous questionnaire filled in by the participants before procedures as well as after the first and the second menstruation during which interventions were applied. The aim of the questionnaire was to collect basic demographic information, data on family medical history, lifestyle, physical activity, health status and gynecological history. The questionnaire also contained scales measuring pain and other ailments associated with dysmenorrhea as well as a scale to assess quality of life. The following aspects were evaluated: magnitude of pain during menstruation (visual analogue scale, VAS) and intensity of other related ailments, such as nausea, vomiting, appetite, fatigue, diarrhea, headache, quality of sleep, back pain, nervousness, mood disorders, dizziness and syncope. Each additional symptom was given a score from 0 to 100 on a visual analogue scale. The range was divided into four zones: green (0–25 points), yellow (25–50), orange (50–75) and red (75–100). Explanations were provided on each scale. The color and description indicated that values nearer the 0 value were more positive whereas those nearing 100 were the most negative. Descriptions on the scales for the individual parameters were

as follows: lower abdomen pain during menstruation (0=no pain, 100=the worst imaginable pain); nausea during menstruation (0=no nausea, 100=the worst imaginable nausea); vomiting (0=no vomiting, 100=the worst imaginable vomiting); appetite (0=good appetite, 100=complete loss of appetite); fatigue (0=no fatigue, 100=the worst imaginable fatigue); diarrhea (0=no diarrhea, 100=constant diarrhea during menstruation); headache (0=no headache, 100=the worst imaginable headache); sleep (0=ideal sleep; 100=complete lack of sleep); back pain (0=no pain, 100=the worst imaginable pain); nervousness during menstruation (0=completely relaxed, 100=the worst imaginable nervousness); mood swings (0=no mood swings, 100=constant mood swings); dizziness (0=no dizziness, 100=constant dizziness); fainting (0=no fainting, 100=constant fainting). Moreover, the participants' quality of life was also assessed (*Short Form 36* questionnaire).

## Intervention

The following acupoints were used in the study: SP6 (Spleen 6), LR3 (Liver 3) and LI 4 (Large Intestine 4). A given acupoint was pressed and massaged with the thumb for 4 seconds followed by a 2-second interval. This sequence was repeated 10 times per minute. One point was stimulated for 5 minutes. The points are located symmetrically in the lower extremities, and in each case, the point stimulated first was that on the right side. It was followed by the stimulation of the point on the left extremity. The patient could experience numbness, heaviness, warmth or tenderness in the pressed point.

The women included in the study were instructed about acupressure procedures to be able to perform them on their own. They were taught how to locate each of the three acupoints as well as instructed about the technique and duration of applying pressure. The patients performed acupressure procedures on each day of menstruation twice daily. One procedure took 30 minutes; 6 points were stimulated, each for 5 minutes. This procedure was conducted for two consecutive menstruations. The questionnaire was filled in twice (after the first and second menstruation).

## Statistical analysis

Statistical calculations were done in the EzAnova system. The statistical significance level was  $p < 0.05$ . The statistical analysis involved the analysis of variance (ANOVA).

## RESULTS

The mean age of the surveyed women was  $21.24 \pm 0.81$ , mean height was  $166.14 \pm 6.76$  cm, and mean weight –  $60.89 \pm 8.20$  kg. Most patients came from cities of up to 100 thousand inhabitants (68%). The vast majority of the participants (96%) were non-smoking women. Most of them drank alcohol occasionally (59%) or during parties (34%). The mean age of menarche was  $12.10 \pm 1.18$  years. Menstrual cycles were regular in 79% of the women. 66% of the participants had already initiated sexual intercourse.

Acupressure procedures caused a significant reduction in pelvic pain experienced by the patients during menstruation ( $p = 0.000001$ ) (Tab. 1). Also, additional symptoms that accompanied dysmenorrhea were relieved. Improvement was significant for: nausea ( $p = 0.003613$ ), fatigue ( $p = 0.0028860$ ), headache ( $p = 0.006074$ ), nervousness ( $p = 0.011608$ ) and mood disorders ( $p = 0.013575$ ) (Tab.1). Changes in the remaining aspects were not statistically significant.

The quality of life of the surveyed women after acupressure procedures increased in terms of general well-being, vitality, social and emotional functioning as well as mental health, but these changes were not statistically significant (Tab. 2).

## DISCUSSION

The study investigating the influence of acupressure on dysmenorrhea proved that such procedures reduce pain experienced by young women during menstruation in a significant way and considerably relieve other symptoms associated with menstruation, such as nausea, fatigue, headache, nervousness and mood disorders. They also improve the quality of life, but this change was not statistically significant.

These results are consistent with those obtained by other authors [9–13]. Research has provided evidence that acupressure of point SP6 considerably reduces pain during menstruation and relieves concomitant ailments. The pain-relieving effect is observed directly after the procedure and persists for 2 [9] or 3 hours [10,12] afterwards. Moreover, acupressure of point SP6 shortens the time devoted to rest due to pain and reduces the use of ibuprofen in women with dysmenorrhea [11]. Furthermore, a meta-analysis of studies has shown that acupressure of point SP6 significantly relieves pain experienced during menstruation [14]. Other studies have shown the efficacy applying pres-

sure to point LR3 in dysmenorrhea treatment [15,16].

Other meta-analyses also confirm the efficacy of acupressure during dysmenorrhea treatment [14,17–20]. However, their authors conclude that these results have certain limitations due to a low number of studies, and postulate the need for further observations.

In certain studies, women were instructed how to perform acupressure procedures on their own [11,13,16]. The participants were taught how to find acupoints and instructed how to perform acupressure as they experience menstrual pain and in an adequate time during the menstrual cycle. The authors claim that acupressure causes no adverse effects and can be conducted by patients themselves if adequately instructed [11]. Also, a meta-analysis conducted to assess the efficacy and safety of acupressure performed by patients themselves in order to reduce various health-related problems (including dysmenorrhea) has shown positive effects of these interventions – significant improvement was noted [21]. Studies show that 58–90% of

young women that experience certain ailments during menstruation choose bed rest rather than proactive methods and therapies [3]. That is why acupressure performed by women themselves could be a genuine pain-relieving action and could be used as an effective, simple and safe method of treating menstruation-related ailments [3]. Acupressure does not cause any adverse effects and brings instantaneous pain relief, at the same time improving quality of life [3]. The study described above has certain limitations. It was conducted on a low number of women (n=33), there was no control group and evaluation based on self-assessment questionnaires was subjective.

## CONCLUSIONS

Acupressure performed by women themselves reduces pain experienced by young women during menstruation in a significant way and considerably relieves other symptoms associated with menstruation, such as nausea, fatigue, headache, nervousness and mood disorders.

**Tab. 1.** Mean intensity of symptoms depending on the stage of the therapy (mean± SD)

Variable	Before treatment	After intervention 1	After intervention 2	ANOVA test
Pain	70.34±15.00	53.45±19.32	38.79±19.71	p=0.000001*
Nausea	31.9±23.35	18.79±18.79	13.79±19.12	p=0.003613*
Vomiting	11.21±22.35	6.72±16.60	6.38±16.42	p=0.548845
Appetite	29.83±22.22	36.72±25.75	34.83±27.34	p=0.582375
Fatigue	61.55±19.92	48.10±21.02	42.24±22.82	p=0.002886*
Diarrhea	30.52±25.75	28.10±26.37	22.76±23.63	p=0.491862
Headache	42.76±25.02	28.62±21.91	23.79±21.24	p=0.006074*
Sleep quality	31.9±23.35	33.1±21.61	29.66±24.42	p=0.847655
Back pain	38.1±29.08	28.28±26.7	23.97±25.96	p=0.135592
Nervousness	65.69±21.74	52.93±26.1	46.21±25.66	p=0.011608*
Mood disorders	68.62±21.08	55.86±25.07	50.17±25.34	p=0.013575*
Dizziness	23.34±20.89	20.24±23.87	15.41±21.16	p=0.388656
Fainting	9.66±18.8	7.93±19.53	9.31±19.4	p=0.936948

\* statistical significance (p<0.05)

**Tab. 2.** Mean values on the SF-36 scale depending on the stage of the therapy (mean± SD)

Variable	Before treatment	After intervention 1	After intervention 2	ANOVA test
Physical functioning	94.14±7.20	93.10±6.74	94.48±6.32	p=0.722176
Limitations due to physical health	73.28±34.02	67.24±37.86	77.59±32.28	p=0.526406
Pain	44.83±18.75	50.66±18.07	54.97±17.76	p=0.109924
General well-being	60.62±11.64	62.38±13.81	62.24±14.12	p=0.853805
Vitality	63.03±15.79	63.97±16.33	68.79±16.88	p=0.358712
Social functioning	75.43±21.77	79.31±18.68	80.60±18.48	p=0.584002
Emotional functioning	81.61±31.61	78.16±34.82	82.76±30.37	p=0.853209
Mental health	64.55±14.37	68.41±15.28	70.34±16.34	p=0.347386
MCS	47.07±9.30	48.26±10.04	49.34±9.89	p=0.675525
PCS	46.92±5.19	46.56±4.93	48.19±3.94	P=0.386438

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