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The Effect of Acupressure at the SP6 and LI4 Points on the Reduction of Menstrual Pain (Dysmenorrhea) Among Adolescent Girls in the Anak Tuha Health Center Service Area, Central Lampung Regency

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Menstrual pain (dysmenorrhea) is a common reproductive disorder among female adolescents that can disrupt daily activities and diminish academic concentration. Management of dysmenorrhea involves both pharmacological and non-pharmacological approaches, including acupressure therapy at the SP6 (Sanyinjiao) and LI4 (Hegu) points, which are believed to enhance blood circulation and stimulate endorphin production to alleviate pain. This study aimed to determine the effect of acupressure at the SP6 and LI4 points on reducing menstrual pain among female adolescents at Islamic Junior High Schools (MTs) within the Anak Tuha Health Center service area, Central Lampung Regency, in 2025. A pre-experimental design with a one-group pretest-posttest approach was utilized, involving 25 respondents experiencing dysmenorrhea selected through total sampling. Data analysis using the Wilcoxon test revealed that the average menstrual pain scale decreased significantly from 4.48 (moderate pain) before the intervention to 1.32 (mild pain) after the intervention, with a p-value of 0.000 ($p < 0.05$). These findings indicate a significant effect of acupressure at the SP6 and LI4 points on reducing menstrual pain intensity. In conclusion, acupressure at the SP6 and LI4 points is effective in decreasing dysmenorrhea in female adolescents; therefore, it is recommended that students practice this technique independently as a non-pharmacological alternative, and that schools and healthcare providers offer education on safe, natural pain management

Keywords : Acupressure, SP6 and LI4 Points, Dysmenorrhea (Menstrual Pain), Female Adolescents.

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1. Introduction

Adolescence is characterized by changes across three primary domains: psychosocial development, wherein adolescents strive to establish their identity; cognitive development, involving the maturation of reasoning abilities; and physical transformation. These physical changes occur due to hormonal shifts that trigger the onset of puberty. Physical development in adolescents is further marked by a growth spurt, with height reaching 90% to 95% of adult stature, weight increasing by up to 59%, and an accumulation of adipose tissue resulting from hormonal fluctuations. A significant biological milestone in female adolescents is the onset of menstruation. Menstruation is the physiological process of shedding the endometrial lining, accompanied by bleeding that occurs cyclically each month for a duration of 3 to 7 days (Swandari, et.al., 2022).

Dysmenorrhea is one of the most common causes of pelvic pain among women. The World Health Organization (WHO) categorizes it as a primary and non-specific condition. Dysmenorrhea manifests in two forms: primary and secondary, with primary dysmenorrhea being the more prevalent. This condition is characterized by lower abdominal pain occurring immediately before or during menstruation in the absence of identifiable pelvic pathology, typically appearing 6 to 12 months or 1 to 2 years following menarche.

Secondary dysmenorrhea accounts for approximately 10% of cases, with endometriosis being the most common underlying cause. The pain associated with dysmenorrhea can range from moderate to severe and significantly impairs quality of life, affecting approximately 72.8% of women (Zhai et al., 2024). On average, women experience menstrual cycles ranging from 21 to 40 days, with only approximately 15% of women having a consistent 28-day cycle. Menarche typically begins between the ages of 12 and 15, and menstruation continues until menopause, which generally occurs between 45 and 50 years of age.

The primary etiology of menstrual pain involves an increase in prostaglandin levels, which intensifies myometrial contractions and induces vasoconstriction. This physiological process results in the contraction of the uterine muscles. Female adolescents typically experience primary dysmenorrhea during their menstrual periods. Additional contributing factors include age at menarche, nutritional status, physical activity levels, and psychological stress (Marlinda et al., 2022). Dysmenorrhea is frequently accompanied by systemic symptoms, including headaches, nausea, constipation or diarrhea, and urinary frequency, occasionally progressing to emesis. The clinical signs and symptoms of dysmenorrhea are characterized by lower abdominal pain that may radiate to the lower back and legs. This pain is typically described as intermittent cramping or a persistent, dull ache (Winengsih & Yuliani, 2024). Furthermore, other psychological and somatic manifestations include irritability, restlessness, insomnia, and impaired concentration. These symptoms may be accompanied by breast engorgement and menstrual-related disturbances, specifically in the form of dysmenorrhea (Swandari et al., 2022)

According to prevalence data from the World Health Organization (WHO) in 2020, the incidence of dysmenorrhea reached 1,769,425 (90%) among female adolescents, with 10% to 16% experiencing severe dysmenorrhea. The global incidence rate of dysmenorrhea remains exceptionally high, with an average of over 50% of female adolescents suffering from the condition. Data from the Association of Southeast Asian Nations (ASEAN) in 2020 indicated that the prevalence of dysmenorrhea was approximately 10% to 15% in Singapore, 35% to 40% in Malaysia, and 65% in Thailand. Dysmenorrhea exerts a significant impact on women's quality of life, academic achievement, and mental health (Soleha & Zelharsandy, 2025) .

According to prevalence data from the European Union, dysmenorrhea-related pain causes the loss of 3.6 million quality-adjusted life years (QALYs) annually, an impact comparable to chronic conditions such as type 1 diabetes, asthma, or chronic migraines. Recurrent episodes of dysmenorrhea negatively affect physical activity, schoolwork, and overall female well-being. Globally, 10% to 46% of young women miss one or more days of school each month due to dysmenorrhea, with the majority struggling with mental health issues and sleep disturbances (Liu, 2023).

The prevalence of dysmenorrhea in Indonesia is notably high, with approximately 60% to 70% of Indonesian women reporting the condition. Among these cases, the incidence of primary dysmenorrhea reaches 54.89%, while secondary dysmenorrhea accounts for 45.11%. The severity levels within primary dysmenorrhea cases consist of mild dysmenorrhea at 24.5%, moderate dysmenorrhea at 21.28%, and severe dysmenorrhea at 9.36% (Winengsih & Yuliani, 2024). Factors such as an unhealthy lifestyle, a lack of self-care awareness, and recurrent chronic menstrual pain can exacerbate symptoms by inducing menstruation-related fear or anxiety.

Dysmenorrhea results in high rates of school and work absenteeism, as well as a diminished quality of life. In a study conducted in Portugal, 8.1% of girls reported missing school or work due to menstrual pain, which impacted daily activities in 65.7% of cases. Notably, only 27.9% sought medical intervention. Menstrual pain primarily affects academic performance in terms of concentration, physical education, socialization, and overall school achievement. Furthermore, menstrual pain influences pain tolerance and leads to sleep disturbances, daytime fatigue, and somnolence (Guimarães & Póvoa, 2020).

The impact of dysmenorrhea can significantly disrupt the activities of adolescents during the school learning process. This condition causes female adolescents to struggle with concentration due to the discomfort experienced during episodes of dysmenorrhea. It is essential to manage dysmenorrhea in adolescents to prevent further adverse effects. Psychologically, dysmenorrhea manifests as emotional conflict, tension, and anxiety, which can induce feelings of discomfort and alienation. Even minor discomfort can rapidly escalate into a major concern accompanied by significant distress.

Dysmenorrhea can be managed through both pharmacological and non-pharmacological therapies. Pharmacological treatments include the administration of analgesics, hormonal therapy, non-steroidal anti-prostaglandin drugs (NSAIDs), and cervical canal dilation. However, the use of NSAIDs can result in adverse effects on vital organs, including the gastrointestinal tract, heart, and kidneys. Non-pharmacological therapies include warm compresses, exercise, Mozart therapy, acupuncture, and acupressure (Soleha & Zelharsandy, 2025).

The most widely utilized pharmacological treatments for dysmenorrhea are non-steroidal anti-inflammatory drugs (NSAIDs), which inhibit prostaglandin synthesis by suppressing cyclooxygenase. Another common treatment involves oral contraceptives, which suppress ovulation and reduce endometrial thickness, thereby alleviating cramping and menstrual pain. However, pharmacological interventions may induce gastrointestinal side effects, impact the central nervous system, affect metabolism, show diminished long-term efficacy, and potentially lead to drug resistance (Zhai et al., 2024).

Given the severity of symptoms during dysmenorrhea, which often preclude timely medical consultation, and the challenges patients face in mastering effective pain management techniques, there is a significant practical need for effective, patient-administered physical therapies. Numerous studies have demonstrated the efficacy of acupressure in alleviating dysmenorrhea. Acupressure is a non-invasive modality that involves the application of pressure to specific acupoints using the fingers or thumbs to achieve pain relief (Zhai et al., 2024)

Acupressure is a non-pharmacological therapy proven to reduce pain scales. Originating from Traditional Chinese Medicine (TCM) thousands of years ago, this therapy involves applying manual pressure or massage to specific points on the body. While the technique is derived from acupuncture, acupressure does not utilize needles; instead, it employs the fingers or blunt instruments. The objective is to gradually restore the balance of positive energy within the body, thereby stimulating the body's innate ability for natural self-healing (Winengsih & Yuliani, 2024)

A study conducted by Sumiatik (2025) utilized a one-group pretest-posttest experimental design at the Al-Uswah Islamic Boarding School. The study population consisted of all female senior high school students (*Aliyah*), with participants selected via accidental sampling. Data were analyzed using the paired-sample t-test. The results indicated that prior to the administration of acupressure at the LI4 point, the majority of students experienced menstrual pain categorized as moderate. Following the intervention, the majority reported a shift to the mild pain category. Statistical analysis yielded a p-value of (0,00) ≤ (0,05), leading to the acceptance of the alternative hypothesis Ha. These findings demonstrate that acupressure at the LI4 point significantly influences the reduction of menstrual pain among female students experiencing dysmenorrhea at the Al-Uswah Islamic Boarding School (Sumiatik & Handayani, 2025).

Another study conducted by Winengsih (2024) employed a quasi-experimental method with a two-group pretest-posttest design. The study population consisted of 30 postpartum mothers, and respondents were selected using a purposive sampling technique. Data were analyzed using the Mann-Whitney U test, with questionnaires utilized as the measurement instrument. Statistical analysis of the post-test data for both the control and intervention groups yielded a p-value of 0.000 ($p < 0.05$). These results indicate that

acupressure at the SP6 point significantly influences the level of dysmenorrhea pain among female adolescent students at SMK Pasundan Jatinangor (Winengsih & Yuliani, 2024).

A preliminary survey conducted by the researcher at the Islamic Junior High Schools (MTs) within the Anak Tuha Health Center service area, Central Lampung Regency, identified 60 menstruating female adolescents, 41% (25 students) of whom experienced menstrual pain or dysmenorrhea. Brief interviews were conducted with 24% (6 students) of those experiencing dysmenorrhea; results indicated that 50% (3 students) experienced moderate pain intensity, while the remaining 50% (3 students) reported mild pain intensity. Furthermore, the researcher discovered that these adolescents had never utilized acupressure to alleviate menstrual pain. Instead, they typically consumed analgesic medications, such as paracetamol and ibuprofen, to manage dysmenorrhea. Based on this background, the researcher is interested in investigating the effect of acupressure at the SP6 and LI4 points on the reduction of menstrual pain among female adolescents at MTs in the Anak Tuha Health Center service area, Central Lampung Regency, in 2025.

2. Methods

This study is a quantitative research project employing a pre-experimental design with a one-group pretest-posttest approach. The research was conducted at Islamic Junior High Schools (MTs) within the Anak Tuha Health Center service area, Central Lampung Regency, from August 25 to September 29, 2025. The study population consisted of all 25 female adolescents experiencing menstrual pain at the research site, all of whom were included in the study using a total sampling technique.The intervention consisted of acupressure therapy at the LI4 (Hegu) and SP6 (Sanyinjiao) points. Manual pressure was applied with 30 rotations for a duration of 3 to 5 minutes per point, performed three times daily (morning, afternoon, and evening) on both legs for two consecutive days during the first and second days of menstruation. Menstrual pain levels were measured before and after the intervention using the Numeric Rating Scale (NRS) with a score range of 0 to 10. Data collection was conducted through direct observation using observation sheets.The obtained primary data were analyzed using SPSS software. Data analysis included univariate analysis to determine the mean menstrual pain levels before and after the intervention, and bivariate analysis to test for differences in pain levels using the Wilcoxon signed-rank test. Statistical significance was set at a p-value of ≤ 0,05.

3. Result and Discussion

Result

Univariate Analysis

Table 1. Mean Menstrual Pain Scores Among Female Adolescents Prior to Acupressure Intervention at the SP6 and LI4 Points

Variabel	N	Min-Max	Mean	SD
Pre-Acupressure Intervention	25	3 - 7	4,48	1,159

Table 1 shows that the mean menstrual pain score among female adolescents prior to the acupressure intervention at the SP6 and LI4 points was 4.48, which is categorized as moderate pain. The reported pain scores ranged from a minimum of 3 to a maximum of 7, with a standard deviation of 1.159.

Table 2. Mean Menstrual Pain Scores Among Female Adolescents Following Acupressure Intervention at the SP6 and LI4 Points

Variabel	N	Min-Max	Mean	SD
Post-Acupressure Intervention	25	0 - 3	1,32	0,900

Table 2 illustrates that the mean menstrual pain score among female adolescents following the acupressure intervention at the SP6 and LI4 points was 1.32, which is categorized as mild pain. The pain scores ranged from a minimum of 0 to a maximum of 3, with a standard deviation of 0.900.

Bivariate Analysis

Table 3. The Effect of Acupressure at the SP6 and LI4 Points on the Reduction of Menstrual Pain Among Female Adolescents

Variabel	N	Negative Ranks	Positive Ranks	Ties	*p-value*
Pre- and Post-Intervention Menstrual Pain	25	0	25	0	0.000

Based on Table 3, the Wilcoxon signed-rank test yielded a p-value of 0.000 ($p < 0.05$). These results indicate a statistically significant effect of acupressure at the SP6 and LI4 points on the reduction of menstrual pain among female adolescents at the Islamic Junior High Schools (MTs) within the Anak Tuha Health Center service area, Central Lampung Regency, in 2025.

Discussion

Mean Menstrual Pain Scores Among Female Adolescents Prior to Acupressure Intervention at the SP6 and LI4 Points

The study results indicate that the mean menstrual pain score among female adolescents prior to the acupressure intervention at the SP6 and LI4 points was 4.48 (Moderate Pain), with a minimum score of 3, a maximum of 7, and a standard deviation of 1.159. These findings illustrate that the majority of female adolescents experienced primary dysmenorrhea with moderate intensity, typically occurring during the first and second days of menstruation. This condition aligns with the theory that elevated levels of prostaglandin F2α during menstruation induce potent uterine contractions, vasoconstriction of blood vessels, and reduced blood flow to the endometrium, thereby eliciting pain (Soleha et al., 2025).

These findings are consistent with the study conducted by Soleha et al. (2025), in which the majority of respondents also experienced moderate pain (40%) to controlled severe pain (60%) prior to the administration of acupressure therapy (Soleha et al., 2025). A study by Khasanah (2023) reported similar findings, stating that prior to the administration of acupressure at the SP6 and LI4 points, the mean pain scale score of respondents was 4.13, with the majority of adolescents reporting moderate pain (Khasanah, 2023).

The researcher assumes that the moderate mean menstrual pain scores indicate that the majority of respondents experienced primary dysmenorrhea due to hormonal factors rather than organic abnormalities. An increase in prostaglandin hormones leads to excessive uterine contractions, which trigger pain; consequently, prior to the acupressure intervention, pain intensity remained at a moderate level. Acupressure therapy at the SP6 and LI4 points is expected to reduce pain by stimulating the release of endorphins and improving blood circulation, thereby reducing uterine muscle tension and promoting relaxation.

Mean Menstrual Pain Scores Among Female Adolescents Following Acupressure Intervention at the SP6 and LI4 Points

Based on the research findings, the mean menstrual pain score among female adolescents following the acupressure intervention at the SP6 and LI4 points was 1.32 (Mild Pain), with a minimum score of 0, a maximum of 3, and a standard deviation of 0.900.

These results indicate a significant reduction in pain intensity after the administration of acupressure therapy. Prior to the intervention, the mean pain level was in the moderate category (4.48), whereas after acupressure, it decreased to the mild pain category (1.32). This evidence demonstrates that acupressure is effective in reducing menstrual pain (dysmenorrhea) among female adolescents.

This reduction in the pain scale is consistent with the study by Soleha et al. (2025), which found a decrease in the mean pain score from 6.65 to 2.70 following acupressure at the SP6 and LI4 points, with a p-value of 0.001. Similar results were also reported by Khasanah (2023), stating that after the administration of acupressure, the mean pain score among adolescents dropped from 4.13 to 3.13, with a p-value of < 0.05 (Khasanah, 2023).

The researcher assumes that the reduction in pain scores following acupressure indicates that stimulation of the SP6 and LI4 points is capable of increasing blood circulation and stimulating the release of endorphins, which function as the body's natural analgesics. Furthermore, pressure applied to these two points helps relax the uterine muscles and lower prostaglandin levels, thereby significantly reducing menstrual pain.

The Effect of Acupressure at the SP6 and LI4 Points on the Reduction of Menstrual Pain Among Female Adolescents

Based on the results of the Wilcoxon signed-rank test, a statistical p-value of 0,000 (p-value<0,05) was obtained, indicating that acupressure at the SP6 and LI4 points significantly influences the reduction of menstrual pain among female adolescents at the Islamic Junior High Schools (MTs) within the Anak Tuha Health Center service area, Central Lampung Regency, in 2025.These findings demonstrate that the administration of acupressure therapy is effective in reducing menstrual pain intensity from the moderate category to the mild category, with some respondents even becoming pain-free. This study's results are consistent with research by Khasanah (2023), which showed that acupressure at the LI4 and SP6 points has a significant effect on reducing dysmenorrhea in adolescents, with a p-value of 0.000 (Khasanah, 2023).

Another study by Soleha et al. (2025) also found that acupressure at the SP6 and LI4 points reduced menstrual pain from an average of 6.65 to 2.70 (p = 0.001). Physiologically, the SP6 (Sanyinjiao) point functions to improve blood circulation and balance reproductive hormones, while the LI4 (Hegu) point plays a role in reducing stress and increasing the release of endorphins hormones that act as natural analgesics to alleviate pain. The combined stimulation of these two points is capable of increasing blood flow to the uterus and reducing uterine muscle contractions, which are the primary causes of menstrual pain (Sumiatik & Handayani, 2025).

The researcher assumes that the reduction in pain scores following acupressure is attributed to increased endorphin levels, which function as natural analgesics, and improved blood circulation within the pelvic area. Dysmenorrhea is one of the most common causes of pelvic pain experienced by women of reproductive age. The WHO classifies dysmenorrhea as a primary and non-specific condition. Clinically, dysmenorrhea is divided into two forms: primary and secondary, with primary dysmenorrhea being the most prevalent. Primary dysmenorrhea is characterized by lower abdominal pain that appears immediately before or during menstruation in the absence of organic pelvic abnormalities; it typically begins 6–12 months or 1–2 years after menarche, once ovulatory cycles have matured (Zhai et al., 2024).

Secondary dysmenorrhea accounts for approximately 10% of cases and is commonly caused by endometriosis. Globally, dysmenorrhea affects up to 72.8% of women, with pain levels ranging from moderate to severe. Consequently, this condition can significantly interfere with daily activities and the quality of life among female adolescents (Zhai et al., 2024).

On average, women experience menstrual cycles ranging from 21 to 40 days, with only 15% having a standard 28-day cycle. Menstruation typically commences between the ages of 12 and 15 and continues until ages 45 to 50. The primary cause of menstrual pain is an increase in prostaglandin hormones, which trigger potent myometrial contractions and induce vasoconstriction of the blood vessels. This process reduces blood flow to the uterus, thereby eliciting pain. In addition to prostaglandins, factors such as age

at menarche, nutritional status, physical activity, and stress can also influence the severity of menstrual pain (Marlinda et al., 2022).

Clinically, dysmenorrhea is often accompanied by symptoms such as headaches, nausea, vomiting, diarrhea or constipation, urinary frequency, and cramping pain that radiates to the back and legs (Winengsih & Yuliani, 2024). Furthermore, some adolescents experience emotional complaints, including irritability, anxiety, insomnia, difficulty concentrating, and breast enlargement prior to menstruation (Swandari et al., 2022).

In this context, non-pharmacological interventions such as acupressure serve as a safe and effective option for reducing pain intensity. The researcher assumes that the reduction in pain scores following the administration of acupressure at the SP6 (Sanyinjiao) and LI4 (Hegu) points is related to increased endorphin levels and improved pelvic blood circulation, both of which play a crucial role in pain modulation. This assumption is supported by scientific evidence indicating that acupressure can stimulate the release of endogenous endorphins and neurotransmitters, such as serotonin, by stimulating free nerve endings; this subsequently activates the parasympathetic response, thereby lowering pain perception. Study by Can et al. (2025) demonstrating that acupressure increases endorphin levels and significantly reduces menstrual pain in the intervention group compared to the control group (Can et al., 2025).

Furthermore, study by Soleha et al. (2025) found that the administration of acupressure at the SP6 point significantly reduces dysmenorrhea through enhanced pelvic blood perfusion and uterine muscle relaxation. This mechanism is highly relevant for female adolescents who have experienced menarche, as the post-menarcheal phase is characterized by increased hormonal activity specifically fluctuations in estrogen and prostaglandins which can heighten uterine contractions and pain sensitivity (Soleha et al., 2025). Consequently, interventions that target neuroendocrine regulation, such as acupressure, have the potential to decrease excessive contractions and assist in rebalancing the distribution of pain-inducing prostaglandins (Can et al., 2025).

Thus, acupressure at the SP6 and LI4 points can be regarded as a safe, easy-to-apply, and effective non-pharmacological therapy for reducing menstrual pain among post-menarcheal female adolescents. The analgesic mechanism which involves increasing endorphin levels and improving pelvic blood circulation positions acupressure as a relevant and highly recommended intervention, particularly within the school environment.

4. Conclusion

This study demonstrates that the majority of female adolescents reached menarche at a normal age and experienced moderate menstrual pain prior to the intervention. The administration of acupressure at the SP6 and LI4 points proved effective in significantly reducing the mean menstrual pain scale to the mild pain category. The Wilcoxon test results yielded a p-value of < 0.05, indicating a significant effect of acupressure on reducing menstrual pain. Consequently, acupressure can be utilized as an effective, safe, and easy-to-apply non-pharmacological method for managing dysmenorrhea in female adolescents. Based on these findings, female adolescents are encouraged to practice acupressure techniques independently as an alternative for managing menstrual pain, accompanied by the adoption of a healthy lifestyle. Schools and community health centers (Puskesmas) are expected to integrate acupressure education and training into adolescent health programs. Future research is recommended to utilize more robust study designs with larger sample sizes and to consider other factors such as stress levels, physical activity, and nutritional status to further enrich the scientific evidence regarding the effectiveness of acupressure.

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