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The Effect of Acupressure on Dysmenorrhea Among Adolescents in the Working Area of Puskesmas Munjul Jaya, West Java

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Abstract

Background: Primary dysmenorrhea is a common menstrual disorder among adolescent girls that can disrupt daily activities and reduce quality of life. One non-pharmacological method to relieve pain is acupressure, which involves applying pressure to specific points on the body to stimulate blood circulation and release endorphins. However, studies on its effectiveness in the working area of Puskesmas Munjul Jaya remain limited. **Purpose:** To determine the effect of acupressure on the level of dysmenorrhea pain among adolescent girls in the working area of Puskesmas Munjul Jaya. **Methods:** This quasi-experimental study employed a pretest-posttest one group design. The sample consisted of 36 adolescent girls with primary dysmenorrhea, selected using purposive sampling. Pain intensity was measured using the Numeric Rating Scale (NRS) before and after acupressure intervention, which was performed for three consecutive days. Data were analyzed using the paired samples t-test. **Results:** The mean pain score before the intervention was 7.11, which decreased to 3.17 after the intervention, with a statistically significant difference ($p < 0.001$). **Conclusion:** Acupressure is effective in reducing dysmenorrhea pain among adolescent girls and can be recommended as a safe and simple alternative therapy.

Keywords: Acupressure, Adolescents, Dysmenorrhea, Menstrual Pain

Introduction

Primary dysmenorrhea is one of the most common menstrual disorders experienced by adolescent girls and significantly impacts their quality of life. This condition is characterized by severe lower abdominal pain that often disrupts daily activities such as studying and social interactions. According to the World Health Organization (WHO, 2016), the global prevalence of dysmenorrhea among adolescent girls ranges from 50% to 90%. In Asia, the incidence ranges between 60% and 85% (Harlow & Campbell, 2017), while in Indonesia, the 2018 Basic Health Research (Riskesdas) reported that approximately 64.25% of adolescent females experience menstrual pain. In West Java Province, more than 60% of junior and senior high school female students report experiencing monthly menstrual pain (West Java Health Office, 2023). In the working area of Munjul Jaya Community Health Center, Purwakarta Regency, complaints of menstrual pain rank among the top five health issues frequently encountered in primary health care facilities.

Dysmenorrhea can cause various negative effects such as fatigue, sleep disturbances, concentration problems, school absenteeism, and even psychological disorders including anxiety and stress (Navarro et al., 2018). Management of dysmenorrhea can be done through pharmacological and non-pharmacological approaches. Pharmacological treatment typically involves the use of nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and mefenamic acid, which effectively inhibit the production of prostaglandins that cause pain. However, long-term use may lead to side effects such as gastric irritation and organ dysfunction (Yousefi et al., 2017). Moreover, some adolescents are reluctant to take medication due to concerns about these side effects.

Non-pharmacological approaches, such as acupressure, offer a safe and practical alternative. Acupressure involves applying pressure to specific points on the body, such as the SP6 (Sanyinjiao) point located on the inner ankle. Stimulation of this point is believed to trigger the release of endorphins and increase blood flow to the reproductive organs, thereby reducing menstrual pain (Lee & Frazier, 2016). Previous research by Dewi & Sari (2019) demonstrated that acupressure effectively decreased the intensity of menstrual pain in senior high school female students within three days of intervention.

Recent studies further support the effectiveness of acupressure in reducing

dysmenorrhea pain intensity. Zhang et al. (2020) found that acupressure applied at the SP6 point significantly reduced pain scores in adolescent females after four menstrual cycles. Similar results were reported by Nuraini et al. (2021), who showed that acupressure decreased menstrual pain and improved quality of life among adolescent girls at a community health center in Central Java. Additionally, research by Kim & Park (2022) confirmed that acupressure therapy is safer and causes minimal side effects compared to pharmacological treatments. A recent study by Sari et al. (2023) also affirmed that acupressure effectively lowers dysmenorrhea pain levels when applied with techniques that can be performed independently. These studies reinforce the role of acupressure as a promising and feasible non-pharmacological therapy for adolescents.

Although there is substantial evidence supporting the effectiveness of acupressure, its implementation in the working area of Munjul Jaya Community Health Center remains very limited. Many adolescent girls experiencing dysmenorrhea have not received adequate education or intervention, often relying solely on rest or enduring the pain. Therefore, this study is important to evaluate the effect of acupressure on reducing dysmenorrhea in adolescents in this area as a promotive and preventive effort to improve adolescent reproductive health.

The purpose of this study is to analyze the effect of acupressure on the level of dysmenorrhea pain among adolescents in the working area of Munjul Jaya Community Health Center, West Java. Specifically, this study aims to measure the pain intensity before and after acupressure intervention and to assess the magnitude of the effect of acupressure in reducing pain intensity. The results are expected to provide scientific evidence for healthcare workers to apply effective and safe non-pharmacological therapies as an alternative management of dysmenorrhea in primary health care settings.

Based on the background and data presented above, the research problem can be formulated as follows: “What is the effect of acupressure on reducing dysmenorrhea pain among adolescents in the working area of Munjul Jaya Community Health Center, West Java?”

Methods

This study employed a quasi-experimental design with a one-group pretest-posttest approach to measure the effect of acupressure on the pain level associated with dysmenorrhea among adolescent girls in the working area of Munjul Jaya Community Health Center, Purwakarta Regency. A purposive sample of 36 adolescent girls aged 15–19 years who experienced primary dysmenorrhea was selected. Pain intensity was measured using the Numeric Rating Scale (NRS) on the first day of menstruation before the intervention and on three consecutive days after the intervention. The intervention involved applying pressure to the SP6 (Sanyinjiao) acupoint located on the inner ankle. The collected data were analyzed descriptively and using a Paired Samples T-Test to determine the difference in pain levels before and after acupressure, with a significance level of $p < 0.05$. This study received ethical approval from the Ethics Committee of Universitas Nasional and Munjul Jaya Community Health Center, with informed consent obtained from participants along with assurances of confidentiality and their freedom to participate or withdraw from the study.

Results

Univariate Results

Table 1
Dysmenorrhea Pain Levels Before and After Acupressure Intervention

Variable	N	Min	Max	Mean	SD
Pretest	36	5	9	7.11	1.036
Posttest	36	2	5	3.17	0.941

Based on Table 1, the mean pain level before acupressure (pretest) was 7.11 with a standard deviation of 1.036, with minimum and maximum values of 5 and 9, respectively. After three consecutive days of acupressure intervention, the mean pain level decreased to 3.17 with a standard deviation of 0.941, and minimum and maximum values of 2 and 5, respectively.

Bivariate Results

Normality Test

Before hypothesis testing, normality tests were conducted using z-Skewness and z-Kurtosis for the pain level variables before and after acupressure. The results are shownin Table 2 below:

Table 2
Normality Test Results of Pain Levels Before and After Acupressure

Variable	z-Skewness	z-Kurtosis
Pretest	-0.178	-0.569
Posttest	0.768	-1.042

All z-Skewness and z-Kurtosis values are within ±1.96, indicating that the data are normally distributed and suitable for parametric analysis.

Paired Samples T-Test

The Paired Samples T-Test showed a significant difference between pain scores before and after acupressure. The test results are presented in Table 3 below:

Table 3
Paired Samples T-Test Results

Variable Pair	Mean Difference	SD	p-value
Pretest – Posttest	3.944	1.170	0.000

A p-value of 0.000 (< 0.05) indicates that the decrease in pain levels after acupressure was statistically significant.

Discussion

Univariate Analysis

Based on the results of the study conducted in the working area of Munjul Jaya Community Health Center, the majority of adolescent girls experienced dysmenorrhea pain with moderate to severe intensity, with an average pain score of 7.11 before the acupressure intervention. This condition indicates a significant disruption in the respondents' daily activities, especially in carrying out study routines and social

activities. This finding aligns with the report by Smith et al. (2021), which stated that the prevalence of dysmenorrhea among adolescent girls ranges from 60% to 85%, with most experiencing moderate to severe pain. A meta-analysis by Chen and colleagues (2022) also confirmed that primary dysmenorrhea is a common complaint negatively affecting the quality of life of adolescent females in various countries.

Pathophysiologically, primary dysmenorrhea is triggered by excessive production of prostaglandins in the endometrial lining, which induces intense contractions of the uterine smooth muscle. These contractions cause vasoconstriction and local ischemia in the myometrium, leading to the characteristic pain (Alifah, 2022; Nugraha & Santoso, 2020). This theory supports the current findings where the pain reported by respondents exhibits characteristics of primary dysmenorrhea. Other risk factors such as early menarche, irregular menstrual cycles, psychological stress levels, low physical activity, and nutritional status also contribute to increasing pain intensity (Fernandez-Martinez et al., 2018; Rahmawati et al., 2023).

Several recent studies reinforce this description. Dewi & Sari (2019) reported that most adolescent girls in Indonesia experience primary dysmenorrhea with considerably disturbing intensity. Hamdiyah (2020) found the incidence of menstrual pain reached 64.25% among adolescent girls, with the majority complaining of mild to severe pain. Furthermore, Rahayuningrum (2019) added that menstrual pain often causes concentration disturbances in learning and daily activities, thus affecting adolescents' quality of life. Based on this context, the researcher assumes that biological, psychological, and social factors contribute to the high pain levels experienced before the intervention.

After three consecutive days of acupressure, there was a significant reduction in the average pain score to 3.17, indicating the therapy's effectiveness in reducing the intensity of dysmenorrhea pain among adolescent girls in the study area. This reduction reflects a tangible improvement in quality of life and the respondents' ability to carry out daily activities without significant disruption due to pain. This finding is supported by statistical data demonstrating clinically and scientifically significant pain reduction.

The mechanism of acupressure is believed to involve activation of the central nervous system, stimulating the release of endorphins and neurotransmitters such as serotonin and norepinephrine, which act as the body's natural analgesics (Zhang et al.,

2021; Lee & Kim, 2020). From the perspective of Traditional Chinese Medicine (TCM), stimulation of acupressure points such as SP6, SP8, LI4, CV4, and LV3 regulates the flow of Qi and improves blood circulation in the pelvic region. This reduces muscle spasms and ischemia, which are the main causes of menstrual pain (Chen & Wang, 2019; Huang et al., 2022).

Recent studies also support these results. Kim and Park (2018) reported that acupressure significantly reduced pain levels while improving the quality of life of primary dysmenorrhea sufferers. A meta-analysis by Garcia et al. (2023) confirmed that acupressure is a safe, effective, and easily applied non-pharmacological therapy, especially for adolescents who tend to avoid medication due to fear of side effects. Local research by Syahfitri (2024) also showed the success of acupressure in reducing dysmenorrhea pain intensity in adolescent girls.

In the context of this study, the researcher assumes that the success of acupressure is influenced not only by physiological effects but also by psychosocial factors such as belief, motivation, and social support from the surrounding environment. These non-medical factors are believed to enhance the positive response to the intervention. Overall, these findings highlight that acupressure is an effective and feasible alternative therapy to be implemented in primary healthcare facilities for managing menstrual pain in adolescent girls.

Bivariate Analysis

Statistical analysis using the Paired Samples Test showed that acupressure had a significant effect on reducing dysmenorrhea pain intensity among adolescent girls in the working area of Munjul Jaya Community Health Center. The mean difference in pain scores before and after acupressure treatment was 3.944 with a standard deviation of 1.170, and a significance value of $p = 0.000$, indicating that the pain reduction experienced by respondents was statistically highly significant. This finding strengthens empirical evidence that acupressure effectively reduces pain experienced during menstruation.

Physiologically, this significant pain reduction can be explained through the mechanism by which acupressure stimulates the central nervous system to release endogenous substances such as endorphins and serotonin, which act as natural analgesics in the body. Additionally, stimulation at specific acupressure points functions

to improve blood circulation and reduce smooth muscle spasms in the pelvic area, which are among the main causes of menstrual pain (Zhang et al., 2021; Chen & Wang, 2019). Through this process, acupressure modifies pain perception, producing a real and sustained analgesic effect for patients.

These findings are consistent with previous studies demonstrating that acupressure is an effective and safe non-pharmacological therapy for managing dysmenorrhea. Kim and Park (2018) reported that acupressure significantly decreased pain scores while improving the quality of life for patients with primary dysmenorrhea. Moreover, a meta-analysis by Garcia et al. (2023) emphasized that acupressure is an easy-to-apply adjunct therapy that is safe and has minimal risk of complications.

The researcher also assumes that the success of acupressure therapy is driven not only by physiological mechanisms but also influenced by psychosocial factors, including respondents' beliefs and motivation towards the treatment method used. Social support and education levels regarding non-pharmacological pain management are believed to play important roles in the positive response to this therapy. These factors enrich the understanding of the variation in acupressure effectiveness among individuals.

Overall, this study provides strong evidence that acupressure plays a significant role in reducing dysmenorrhea pain levels among adolescent girls in the working area of Munjul Jaya Community Health Center. These findings add scientific insight into alternative therapies for menstrual pain management and open opportunities for broader implementation of this therapy as part of adolescent reproductive health services.

Limitation

This study employed a quasi-experimental design without full randomization, which may introduce selection bias affecting the validity and generalizability of the results. Additionally, the sample was limited to adolescent girls in the working area of Munjul Jaya Community Health Center, thus the findings may have limited generalizability to broader populations with different characteristics. Pain intensity was measured using a self-report instrument, the Numeric Rating Scale (NRS), which is subjective and influenced by each respondent's individual perception. Furthermore, the acupressure intervention was conducted only for three consecutive days without long-

term follow-up, so the effectiveness of the therapy over an extended period remains unknown.

Conclusion

This study successfully demonstrates that acupressure is an effective non-pharmacological therapy for reducing the intensity of dysmenorrhea pain in adolescent girls in the working area of Munjul Jaya Community Health Center, West Java. By significantly lowering the average pain score from moderate-to-severe to mild levels, this intervention not only improves the quality of life by enabling adolescents to carry out daily activities without pain disruption but also offers a safe and practical alternative for managing dysmenorrhea. These findings contribute scientific evidence supporting the effectiveness of acupressure therapy and open opportunities for broader implementation in primary healthcare settings, especially in areas with limited access to pharmacological treatments. For future development, further studies with larger sample sizes and longer intervention durations, including long-term evaluations, are recommended to assess the sustained effectiveness and safety of acupressure. Additionally, research exploring the physiological and psychosocial mechanisms underlying the response to acupressure is needed to strengthen understanding and optimize this therapy.

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Universitas Nasional and Munjul Jaya Community Health Center. Prior to the study, all participants were clearly and thoroughly informed about the purpose, procedures, benefits, and risks of the research. Written informed consent was obtained from all respondents or their guardians in the case of minors, with assurances of data confidentiality and the participants' right to withdraw at any time without any consequences. These procedures ensured that the study was conducted in accordance with research ethics principles and the protection of participants' rights.

Conflict of Interest

The authors declare that there are no conflicts of interest related to this study.

Author contribution

The first author was responsible for the study conception, data collection, data analysis, and manuscript writing. The second author provided academic supervision, substantial revisions, and methodological support. All authors have read and approved the final version of the manuscript and take responsibility for the integrity of the work.

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