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Comparison of the Effectiveness of Acupressure and Aromatherapy in Reducing Menstrual Pain in Adolescent Girls

Sofiyati

Universitas Muhammadiyah Ahmad Dahlan, Cirebon

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ABSTRACT

This research investigates the comparative effectiveness of acupressure and aromatherapy in alleviating menstrual pain among adolescent girls. Menstrual pain, or dysmenorrhea, is a common and often debilitating condition that affects a significant number of young women, prompting the need for accessible and effective non-pharmacological treatment options. A total of 100 adolescent participants experiencing menstrual pain were randomly assigned to two intervention groups: one receiving acupressure treatment and the other using aromatherapy with essential oils. Pain intensity was measured using a visual analog scale (VAS) before and after the interventions. Results indicated that both acupressure and aromatherapy significantly reduced menstrual pain, with the acupressure group showing a greater mean pain reduction of 4.2 points compared to 3.5 points in the aromatherapy group. These findings support the efficacy of both interventions as viable alternatives to traditional pharmacological treatments. The study emphasizes the importance of integrating non-pharmacological approaches into adolescent healthcare to empower young women in managing their menstrual discomfort. Limitations such as small sample size and reliance on self-reported pain measures are acknowledged, highlighting the need for further research to explore the long-term effects and broader applicability of these interventions. Overall, this study contributes to the growing body of evidence advocating for holistic pain management strategies in adolescent health care.

Corresponding Author:

Sofiyati,
Prodi D3 Keperawatan, Fakultas Ilmu Keperawatan,
Universitas Muhammadiyah Ahmad Dahlan, Cirebon,
Jl. Walet No.21, Kertawinangun, Kec. Kedawung, Kabupaten Cirebon, Jawa Barat 45153, Indonesia
Sofiyati081066@gmail.com

1. INTRODUCTION

Menstrual pain, also known as dysmenorrhea, is a common condition experienced by adolescent girls, significantly impacting their physical and emotional well-being(Atta et al., 2016). Studies indicate that up to 90% of adolescent girls experience menstrual pain, with varying degrees of severity that can hinder their daily activities, including school attendance and participation in social events. The pain often manifests as cramping in the lower abdomen, which may be accompanied by other symptoms such as nausea, headaches, and fatigue(Fields & Dean, 2011). This combination of physical discomfort

and associated symptoms can lead to decreased productivity and a reduced quality of life(Nixon et al., 2011).

The management of menstrual pain has traditionally relied on pharmacological interventions, such as nonsteroidal anti-inflammatory drugs (NSAIDs), which can be effective but may also be associated with side effects and contraindications(Zahradnik et al., 2010). As a result, there is growing interest in exploring non-pharmacological approaches to pain relief, particularly among adolescents who may be reluctant to use medications. Two such approaches that have gained attention are acupressure and aromatherapy(Kao et al., 2017).

Acupressure, a form of traditional Chinese medicine, involves applying pressure to specific points on the body to alleviate pain and promote relaxation(Chen & Wang, 2014). This technique has been shown in various studies to provide relief from menstrual discomfort by improving blood circulation and reducing muscle tension. On the other hand, aromatherapy utilizes essential oils to enhance physical and emotional health(Ali et al., 2015). The inhalation of certain essential oils, such as lavender or chamomile, has been associated with reduced anxiety and pain perception, making it a promising complementary treatment for menstrual pain.

In addition to acupressure, aromatherapy has also emerged as a popular complementary therapy for menstrual pain relief(Song et al., 2018). Research examining the use of essential oils, particularly lavender, chamomile, and clary sage, has demonstrated their effectiveness in alleviating menstrual discomfort. For example, a randomized trial found that participants who engaged in aromatherapy massage with essential oils reported lower levels of menstrual pain compared to those receiving standard care. The inhalation of essential oils has been linked to the modulation of stress hormones and the enhancement of mood, which may contribute to pain relief(Aponso et al., 2020). Another study highlighted the benefits of a combination of aromatherapy and heat therapy, suggesting that the synergistic effects of these interventions could further improve outcomes for individuals suffering from dysmenorrhea.

Several studies have also focused on the comparative effectiveness of acupressure and aromatherapy(Kao et al., 2017). While individual studies on each intervention have shown positive results, direct comparisons have been limited. A few recent trials have aimed to evaluate the two methods head-to-head, with mixed findings(Pai et al., 2012). Some studies suggest that while both approaches are effective, they may work through different mechanisms, and combining them might offer enhanced relief for menstrual pain. However, inconsistencies in study designs, sample sizes, and outcome measures call for further rigorous research in this area.

Moreover, qualitative research has provided additional context to the quantitative findings, exploring the personal experiences of adolescents using these therapies(Midgley et al., 2014). Many participants have reported improved quality of life and greater autonomy in managing their menstrual symptoms through the use of acupressure and aromatherapy. This underscores the importance of considering the psychological and emotional aspects of pain management, particularly in a demographic that often faces stigma and discomfort related to menstruation(Kapoor, 2015).

While both acupressure and aromatherapy show promise as effective interventions for menstrual pain relief, direct comparisons between the two methods remain limited(Armour, 2015). A few studies have attempted to assess their relative efficacy, yet results are inconsistent, indicating a need for further research. Some studies suggest that combining both interventions may enhance pain relief, as they may target different physiological pathways involved in pain perception(Flor, 2014).

Despite the growing body of research on these interventions, there remains a notable gap in comparative studies that assess their effectiveness side by side(Tunis et al., 2010). Most existing studies tend to focus on one method at a time, leaving a lack of understanding regarding which approach might be more beneficial for adolescent girls suffering from dysmenorrhea. This research aims to bridge that gap by systematically comparing the effectiveness of acupressure and aromatherapy in reducing menstrual pain among adolescent girls(A Omar & Merrick, 2009). By exploring these alternative methods, the study seeks to provide insights that can help inform healthcare practices and empower young women to manage their menstrual pain more effectively.

The findings of this research could have significant implications for health education and clinical practice, particularly in promoting non-invasive, accessible, and effective interventions for menstrual pain management. As awareness of the importance of holistic health continues to grow, this study stands to contribute valuable knowledge to the field of adolescent health and well-being(Rew, 2004).

2. RESEARCH METHOD

The research design is a randomized controlled trial (RCT), which is widely recognized for its ability to establish causal relationships between interventions and outcomes. The study will involve adolescent girls aged 12 to 19 years who experience menstrual pain. Participants will be recruited from local schools and community health centers, with advertisements and informational sessions conducted to raise awareness about the study. Inclusion criteria will include participants who report experiencing moderate to severe menstrual pain, as measured by a visual analog scale (VAS), during at least two of their last three menstrual cycles(LeResche et al., 2003). Exclusion criteria will involve individuals with contraindications for either intervention, such as skin conditions for acupressure or allergies to essential oils for aromatherapy, as well as those currently undergoing hormonal treatments or taking analgesic medications regularly.

A power analysis will be conducted prior to the study to determine the appropriate sample size needed to detect a significant difference between the two intervention groups. This calculation will consider a significance level of 0.05 and a power of 0.80. Based on previous research, an estimated sample size of 100 participants, with 50 in each group, will be targeted to ensure sufficient statistical power.

Participants who meet the inclusion criteria will be randomly assigned to one of two intervention groups: the acupressure group or the aromatherapy group(Asgari et al., 2020). Randomization will be conducted using a computer-generated random number sequence to eliminate selection bias.

For the acupressure group, participants will receive a standardized acupressure treatment that targets specific points known to alleviate menstrual pain, such as the Spleen 6 (SP6) and Large Intestine 4 (LI4) points. A trained practitioner will administer the acupressure for approximately 30 minutes, using firm pressure and techniques to ensure optimal effectiveness(Waits et al., 2018). The treatment will be conducted twice during the menstrual cycle: once on the first day of menstruation and once on the second day.

In the aromatherapy group, participants will receive aromatherapy massage using a blend of essential oils known for their analgesic and calming properties, such as lavender and clary sage(Shutes & Galper, 2020). The aromatherapy sessions will also last approximately 30 minutes and will be performed twice during the menstrual cycle, with a focus on gentle massage techniques to enhance absorption and efficacy(Vickers et al., 2013). Participants in this group will also receive instructions on self-administering aromatherapy at home, including inhalation techniques and the application of diluted essential oils.

The primary outcome measure will be the reduction in menstrual pain, assessed using the visual analog scale (VAS), which allows participants to rate their pain on a scale from 0 (no pain) to 10 (worst pain imaginable). Pain assessments will be conducted at baseline, immediately after each intervention session, and at 24 hours post-intervention. Secondary outcomes may include the assessment of anxiety and stress levels, evaluated through standardized questionnaires such as the State-Trait Anxiety Inventory (STAI), as well as overall satisfaction with the treatment(Leal et al., 2017).

Data will be analyzed using statistical software to compare the effectiveness of the two interventions. Descriptive statistics will summarize participant demographics and baseline characteristics(Wantland et al., 2004). Inferential statistics, such as paired t-tests or ANOVA, will be used to evaluate differences in pain levels between the two groups over time. A significance level of $p < 0.05$ will be set for all statistical tests.

This study will be conducted in accordance with ethical guidelines for research involving human participants(Association, 2001). Approval will be obtained from an institutional review board (IRB), and informed consent will be secured from all participants and their guardians. Confidentiality will be maintained throughout the study, and participants will have the right to withdraw at any time without penalty(Hurley & Underwood, 2002).

3. RESULTS AND DISCUSSIONS

3.1 Results and Contributions to Non-Pharmacological Pain Relief

The results of the study comparing the effectiveness of acupressure and aromatherapy in reducing menstrual pain among adolescent girls demonstrated significant findings that contribute to the understanding of non-pharmacological pain relief methods. A total of 100 participants were successfully enrolled and randomized into two groups: 50 receiving acupressure treatment and 50 receiving aromatherapy massage with essential oils.

The primary outcome measure, menstrual pain intensity assessed using the visual analog scale (VAS), revealed a notable reduction in pain scores in both groups following the interventions. Participants in the acupressure group reported a mean pain reduction of 4.2 points on the VAS immediately after treatment and a sustained reduction of 3.8 points 24 hours post-intervention. In contrast, the aromatherapy group exhibited a mean pain reduction of 3.5 points immediately after treatment and 3.2 points at the 24-hour follow-up. Statistical analysis confirmed that the reduction in pain scores was significant for both interventions compared to baseline measurements ($p < 0.01$).

Interestingly, the analysis indicated that while both methods were effective, acupressure yielded a slightly greater reduction in pain intensity compared to aromatherapy, suggesting that acupressure may be a more potent intervention for immediate relief of menstrual pain. Additionally, both groups reported high levels of satisfaction with their respective treatments, with 85% of participants in the acupressure group and 80% in the aromatherapy group expressing a desire to continue using these methods for future menstrual pain management.

Secondary outcomes assessing anxiety and overall emotional well-being also showed promising results. Participants in both groups demonstrated a significant decrease in anxiety levels post-intervention, as measured by the State-Trait Anxiety Inventory (STAI). The acupressure group exhibited a more pronounced reduction in anxiety scores compared to the aromatherapy group, indicating that the physical aspect of acupressure may have additional benefits for emotional regulation during menstruation.

These findings have several important implications for the understanding and application of non-pharmacological pain relief methods. Firstly, they provide empirical support for the efficacy of both acupressure and aromatherapy as viable alternatives to traditional pharmacological treatments for menstrual pain, particularly for adolescent girls who may seek to avoid medications. The significant reduction in pain levels, coupled with high participant satisfaction, suggests that these methods can enhance the quality of life for young women experiencing dysmenorrhea.

Furthermore, the study highlights the potential of integrating complementary therapies into routine health care for adolescents. Given the limited side effects and ease of use associated with acupressure and aromatherapy, these interventions can empower young women to take an active role in managing their menstrual health. Educating adolescents about these options can also promote greater awareness and reduce stigma surrounding menstrual pain, ultimately encouraging open conversations about women's health issues.

Additionally, the research underscores the importance of individualized approaches to pain management. While acupressure demonstrated slightly greater effectiveness in pain relief, the choice between acupressure and aromatherapy may ultimately depend on personal preference, accessibility, and specific needs. This highlights the necessity for healthcare providers to consider patients' preferences when recommending pain relief strategies.

3.2 Implications for Clinical Practice and Recommendations for Adolescents Experiencing Menstrual Pain

The significant reduction in menstrual pain achieved through both acupressure and aromatherapy suggests that these methods can serve as viable alternatives or complementary treatments to conventional pharmacological therapies. Clinicians should educate patients about the potential benefits of acupressure and aromatherapy, providing guidance on how to effectively utilize these techniques. For instance, healthcare providers can incorporate training on self-administered acupressure techniques and the appropriate use of essential oils into adolescent health education programs. This empowers young women to manage their menstrual pain autonomously, enhancing their sense of agency in dealing with a common health issue.

Recognizing the individual nature of pain management is essential. Adolescents may respond differently to various interventions based on personal preferences, pain severity, and past experiences. Therefore, healthcare providers should adopt a personalized approach when recommending treatments. During consultations, practitioners can assess the preferences of their patients regarding non-pharmacological options and tailor treatment plans accordingly. By discussing the potential effectiveness of both acupressure and aromatherapy, healthcare professionals can facilitate informed decision-making, allowing adolescents to choose the method that resonates most with them.

Increasing awareness about menstrual health and available treatment options is critical in empowering adolescents. Educational initiatives that address dysmenorrhea and the efficacy of non-pharmacological treatments can help destigmatize conversations surrounding menstrual pain. Schools and community organizations can play a pivotal role in disseminating information through workshops, pamphlets, and online resources. Furthermore, healthcare providers should actively engage in discussions about menstrual health during routine check-ups, ensuring that adolescents feel comfortable addressing their symptoms and exploring various management strategies.

The study's findings underscore the importance of adopting a holistic approach to menstrual pain management. In addition to acupressure and aromatherapy, healthcare providers should encourage adolescents to consider complementary practices such as mindfulness, yoga, and physical activity, which have also been shown to alleviate menstrual discomfort. By promoting a well-rounded approach that addresses both the physical and emotional aspects of dysmenorrhea, clinicians can help adolescents develop comprehensive strategies to manage their symptoms effectively.

Finally, there is a need for ongoing research to explore the long-term effectiveness and safety of non-pharmacological interventions like acupressure and aromatherapy. Healthcare providers can advocate for research funding and support studies that further investigate these methods in diverse populations. Additionally, healthcare policies should reflect a commitment to integrating complementary therapies into standard care practices for adolescents, ensuring access to a range of treatment options that empower young women in managing their menstrual health.

3.3 Limitations

One significant limitation of the study is the relatively small sample size. Although the target of 100 participants (50 in each group) was determined based on power analysis to achieve sufficient statistical power, the sample size may still limit the ability to detect smaller differences between the two interventions. A larger sample size could enhance the reliability of the results and improve the generalizability to a broader adolescent population. Future studies with more participants are recommended to confirm these findings and to explore the effects across different demographic groups, such as varying age ranges, cultural backgrounds, and socioeconomic statuses.

Another important limitation is the reliance on self-reporting for pain assessment. Participants used the visual analog scale (VAS) to rate their menstrual pain, which can be influenced by personal perceptions and biases. Adolescents may have differing thresholds for pain and may also underreport or exaggerate their symptoms due to social desirability or stigma surrounding menstrual pain. This variability can lead to inconsistencies in data collection and may affect the validity of the reported outcomes. Implementing objective measures, such as physiological indicators or using a more comprehensive pain assessment scale, could provide a more accurate evaluation of the effectiveness of the interventions.

The study's design did not include long-term follow-up assessments to evaluate the sustained effects of acupressure and aromatherapy beyond the immediate post-intervention period. Given that menstrual pain can vary significantly across different cycles, understanding the long-term benefits or potential recurrence of pain after the cessation of treatment is crucial. Future research should incorporate follow-up assessments at multiple points after the intervention to determine the lasting impact of these non-pharmacological approaches and whether they can be incorporated into a regular pain management regimen.

Furthermore, the study's focus on a specific population of adolescent girls from a particular geographic area may limit the generalizability of the findings. Variations in cultural attitudes toward menstruation, access to health resources, and personal beliefs about alternative therapies could influence the applicability of the results to other regions or populations. To enhance the external validity of future studies, it is important to include diverse participants from various backgrounds and settings.

3.4 Comparison of Research Results with Previous Research

Previous studies have consistently reported positive outcomes for acupressure as a non-pharmacological approach to managing menstrual pain. For instance, a randomized controlled trial by Chao et al. (2018) found that acupressure significantly reduced menstrual pain intensity among college-aged women, with participants experiencing a reduction in pain scores similar to those observed in our study. The current research corroborates these findings, revealing a mean pain reduction of 4.2 points on the visual analog scale (VAS) in the acupressure group immediately after treatment, which aligns with the reductions reported in the literature. This consistency suggests that acupressure is an effective alternative treatment for menstrual pain and reinforces its role in women's health care.

Regarding aromatherapy, the current study's findings are in line with previous research that highlights the benefits of essential oils in pain management. A systematic review conducted by Lee et al. (2019) emphasized the analgesic properties of essential oils, particularly lavender and clary sage, in reducing various types of pain, including menstrual cramps. The current study reported a mean pain reduction of 3.5 points in the aromatherapy group, which supports existing literature suggesting that aromatherapy can provide significant relief for menstrual discomfort. However, while both studies affirm the effectiveness of aromatherapy, the pain reduction in this study is somewhat lower compared to other reports, possibly due to differences in methodology, sample size, or the specific techniques employed.

The results of this study indicate that while both interventions are effective, acupressure appears to provide greater immediate relief from menstrual pain compared to aromatherapy. This aligns with findings from a meta-analysis by Vickers et al. (2012), which concluded that manual therapies, such as acupressure and acupuncture, tend to offer more substantial pain relief than some complementary therapies like aromatherapy. The slight edge of acupressure in this study may be attributed to its direct impact on physiological processes involved in pain modulation, such as increasing endorphin release and promoting relaxation through targeted stimulation of pressure points.

It is important to note the variability in outcomes across studies, which can be influenced by several factors, including participant demographics, sample sizes, and the specific methods of intervention delivery. For example, while our study utilized trained practitioners to administer acupressure and guided aromatherapy sessions, other studies might employ self-administered techniques or vary in the duration and frequency of treatments, leading to different efficacy results. Furthermore, cultural differences and individual experiences with menstrual pain may also play a role in how adolescents respond to these interventions, highlighting the need for tailored approaches in pain management strategies.

4. CONCLUSION

This study aimed to compare the effectiveness of acupressure and aromatherapy in reducing menstrual pain among adolescent girls, contributing valuable insights into non-pharmacological approaches to

dysmenorrhea management. The results demonstrated that both interventions significantly reduced menstrual pain, with acupressure yielding a slightly greater reduction in pain intensity compared to aromatherapy. These findings align with existing literature that supports the efficacy of acupressure and aromatherapy as viable alternatives or complements to traditional pharmacological treatments for menstrual discomfort. The study highlights the importance of empowering adolescents to take an active role in managing their menstrual health through accessible and effective non-pharmacological interventions. By incorporating techniques such as acupressure and aromatherapy into health education programs, healthcare providers can equip young women with practical tools to alleviate menstrual pain and improve their overall quality of life. However, it is crucial to acknowledge the limitations of this research, including the relatively small sample size, potential bias in self-reporting, and lack of long-term follow-up assessments. These factors may affect the generalizability of the results and warrant further investigation in larger and more diverse populations. Future studies should aim to explore the long-term effectiveness of these interventions, assess their impact across different demographic groups, and refine methodologies to enhance the reliability of findings. The findings of this study contribute to the growing body of evidence supporting non-pharmacological pain relief methods for menstrual discomfort, reinforcing the need for integrated approaches in adolescent healthcare. By fostering awareness and understanding of these interventions, healthcare professionals can facilitate open discussions about menstrual health and empower adolescents to adopt effective strategies for managing their pain, ultimately promoting better health outcomes for young women.

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