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Effect of *Moxibustion* Therapy at SP6 (*Sanyinjiao*) Acupressure Point on Labor Pain Intensity During First Stage Active Phase

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ABSTRACT

The active phase of the initial stage of labor is characterized by escalating pain intensity due to uterine contractions and cervical dilation. Inadequate pain management can lead to significant discomfort and stress for laboring women. Preliminary observations at independent midwifery practices Yulis Indriana indicated that most mothers experienced moderate to severe pain during this phase. Nonpharmacological interventions, such as *moxibustion* therapy at the SP6 (*sanyinjiao*) acupressure point, may reduce pain. This study aimed to analyze differences in labor pain intensity before and after *moxibustion* therapy during the active phase. A quasi-experimental study with a non-equivalent control group design was conducted, involving 32 respondents selected through accidental sampling, with 16 in the intervention group and 16 in the control group. Pain intensity was measured using the Numeric Rating Scale (0-10). Data were analyzed using univariate and bivariate methods with a significance level of $p < 0.05$. The intervention group exhibited a significant reduction in pain intensity from 7.88 ± 0.719 to 5.13 ± 0.957 ($p < 0.001$), whereas the control group showed no significant change, from 7.69 ± 0.873 to 7.75 ± 0.775 ($p = 0.317$). A significant difference between groups was also identified ($p < 0.001$). *Moxibustion* therapy at SP6 may reduce labor pain intensity and can be considered a complementary intervention in midwifery practice.

INTRODUCTION

Childbirth is a physiological process involving the delivery of the fetus through the birth canal, accompanied by cervical dilatation and coordinated uterine contractions. While seen as a natural procedure, labor is often linked to considerable discomfort, especially during the active portion of the first stage[1]. This phase is distinguished by a gradual increase in the strength, frequency, and duration of uterine contractions, as well as cervical dilation, all of which contribute to an increased perception of pain[2]. Inadequately managed labor pain can trigger stress responses, such as elevated catecholamine levels, potentially resulting in maternal exhaustion, anxiety, reduced placental perfusion, and ineffective uterine contractions[3]. Therefore, effective pain management is essential to ensure a safe and comfortable childbirth experience.

Improving labor pain management is also aligned with global health priorities, including the Sustainable Development Goals (SDGs), which aim to reduce maternal mortality to 70 per 100.000 live births[4]. The World Health Organization (WHO) emphasizes the importance of providing supportive care

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during labor as part of quality maternal care. WHO data shows that only about 15% of births occur without or with minimal pain, while most mothers experience moderate to severe pain[5]. In Indonesia, approximately 85–90% of women experience pain, and only 7–15% have pain-free births[6]. This indicates that labor pain remains a significant problem and requires attention.

Labor pain can be managed through pharmacological and nonpharmacological approaches. While pharmacological methods are effective, they may be associated with side effects and are not always feasible in all settings[7]. In contrast, nonpharmacological approaches, such as relaxation techniques, massage, acupressure, and *moxibustion*, are considered safer, with minimal side effects, and are relatively easy to implement in midwifery practice[8]. These approaches are also consistent with the principles of woman-centered care, which emphasize maternal comfort and support.

Moxibustion is a traditional East Asian therapy that involves applying heat generated by burning mugwort (*Artemisia argyi folium*) to specific acupuncture points. Stimulation at the SP6 (*sanyinjiao*) point has been associated with reduced labor pain intensity[3]. Compared with other methods, *moxibustion* offers several advantages, including its simplicity, non-invasiveness, relatively low cost, and ease of application, without requiring complex equipment, making it particularly suitable for midwife-led settings.

Prior research has established the effectiveness of SP6 stimulation in alleviating labor pain; yet, the majority of data has concentrated on acupressure or alternative methods. Consequently, there is insufficient evidence on the effectiveness of *moxibustion* as a form of thermal stimulation, particularly in midwife-led independent practices in Indonesia. Given the high prevalence of labor pain and the limited access to pharmacological analgesia in such settings, identifying safe, cost-effective, and easily applicable nonpharmacological interventions is essential. This study aims to examine the impact of *moxibustion* therapy at the SP6 (*sanyinjiao*) acupressure point on the intensity of labor pain during the active period of the first stage of labor in autonomous midwifery practices in Indonesia.

METHOD

This research utilized a quasi-experimental methodology incorporating a non-equivalent control group with pretest and posttest assessments. Two groups were included: an intervention group undergoing *moxibustion* therapy and a control group receiving conventional care devoid of *moxibustion*. The severity of pain was assessed prior to and following the intervention in both groups.

The research was carried out from January to March 2026 at midwifery practices Yulis Indriana, Malang. From July to September 2025, the population consisted of 60 mothers who were in the active phase of the initial stage of labor. A total of 32 respondents were recruited and allocated into two groups (16 in the intervention group and 16 in the control group). Sample size determination utilised Federer's formula for experimental investigations; however, practical and clinical constraints necessitated the use of accidental sampling. Respondents were chosen based on predefined inclusion and exclusion criteria, which encompassed term pregnancy (37-42 weeks), cervical dilatation of 4-7 cm, cephalic presentation, stable mother and fetal conditions, and willingness to participate. Mothers experiencing obstetric problems, utilising analgesics, suffering from skin issues, or exhibiting foetal distress were excluded. To mitigate selection bias and enhance group comparability, participants were assigned sequentially according to their admission order, and baseline variables (age, education, occupation, and parity) were evaluated to guarantee homogeneity between groups.

The intervention group received *moxibustion* therapy with a moxa stick (*Artemisia vulgaris*) at the SP6 (*sanyinjiao*) acupressure point for 15 minutes, with the device positioned approximately 2-3 cm from the skin surface. The intervention was delivered once during the active phase, given clinical feasibility and prior evidence supporting brief-duration stimulation. To ensure safety, precautions were implemented to prevent burns, including continuous observation of skin responses and maintaining an appropriate distance. All procedures were carried out in accordance with a standardised protocol (SOP) by trained midwives. Meanwhile, the control group received routine midwifery care, including labour

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monitoring, emotional support, and positioning assistance, without any complementary interventions. This design was intended to maintain comparability between groups while isolating the specific effect of *moxibustion* therapy.

Pain intensity was evaluated using the Numeric Rating Scale (NRS) ranging from 0 to 10, a validated and reliable instrument commonly used in clinical pain evaluation. Although pain levels were categorised, the analysis used numerical scores to reflect changes in pain intensity accurately. Data were analyzed with SPSS version 25. Descriptive statistics were utilized to summarize participant characteristics and pain levels. The Wilcoxon Signed Rank Test was used to evaluate within-group differences, whereas the Mann-Whitney U test was employed to compare differences between the intervention and control groups. Statistical significance was established at $p < 0.05$. The Ethics Committee of the Institute of Science and Health Technology, dr. Soepraoen Hospital, Malang (No. KEPK-EC/456/1/2026). Informed consent was acquired from all respondents, and data confidentiality was rigorously upheld during the study.

RESULT AND DISCUSSION

According to the research that has been carried out on 32 participants, the following table presents their demographic information, including age, education level, occupation, and parity:

Table 1. Characteristics of respondent

Characteristics	Frequency	Percentage (%)
1. Age		
20-24 years	13	40.6
25-29 years	10	31.3
30-35 years	9	28.1
Total	32	100
2. Education		
Elementary school	0	0
Junior High School	3	9.4
High School/Vocational School	20	62.5
College	9	28.1
Total	32	100
3. Occupation		
Employed	12	37.5
Unemployed	20	62.5
Total	32	100
4. Parity		
Primigravida	20	62.5
Multigravida	12	37.5
Total	32	100

Table 1 presents the characteristics of 32 respondents in both the intervention and control groups, encompassing age, education, occupation, and parity. Most of the respondents were in the 20-24 age range, namely 13 respondents (40.6%). Respondents aged 25-29 years accounted for 10 respondents (31.3%), while respondents aged 30-35 years accounted for 9 respondents (28.1%). The majority of respondents have completed high school or technical education, totaling 20 respondents (62.5%), while those with a junior high school education comprise 3 respondents (9.4%), and those

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with higher education comprise 9 respondents (28.1%). Based on work status, most respondents did not work 20 respondents (62.5%), while those who worked numbered 12 (37.5%). Based on parity, the majority of respondents were primigravida, 20 respondents (62.5%), while the remaining 12 respondents (37.5%) were multigravida.

The age distribution reveals that most respondents were within the ideal reproductive age range of 20 to 35 years, as the reproductive organs and psychological state of the mother are more developed, hence enhancing preparedness for the delivery process[9]. Educational level and occupation varied across respondents but were relatively comparable between groups. Parity distribution showed a higher proportion of primigravida women. Previous studies suggest that parity may influence pain perception, as primigravida women tend to report higher anxiety and lower pain adaptation compared to multigravida women[10]. The baseline characteristics of the intervention and control groups were similar, showing no significant variations in essential demographic variables that could affect the study outcomes. This criterion enhances the study's internal validity by reducing the likelihood of selection bias.

Table 2. Pretest and posttest labor pain intensity in the intervention and control groups

Group	Variable	n	Median	Min	Max	*p*
Intervention	Pretest	16	8.00	7	9	0.001
	Posttest	16	5.00	4	7	
Control	Pretest	16	8.00	6	9	0.317
	Posttest	16	8.00	7	9	

The analysis presented in Table 2 shows that the intervention group experienced a reduction in labor pain intensity, with the median score decreasing from 8.00 in the pretest to 5.00 in the posttest. This change was statistically significant according to the Wilcoxon Signed Rank test ($p < 0.001$), suggesting that *moxibustion* therapy at the SP6 (*sanyinjiao*) acupressure point may contribute to a decrease in pain perception during the active phase of labor. Clinically, this reduction from severe to moderate pain could indicate a potential improvement in maternal comfort, although this interpretation should be considered cautiously due to the quasi-experimental design and the relatively small sample size (n = 32).

In contrast, the control group exhibited no change in pain intensity, with the median score remaining at 8.00 from pretest to posttest. Statistical analysis indicated no significant difference ($p = 0.317$). These findings suggest that standard obstetric care, without targeted non-pharmacological interventions, may be insufficient to reduce labor pain during the active phase. The persistence of pain in the control group likely reflects the physiological processes of labor. Progressive cervical dilation and increasingly strong uterine contractions elevate nociceptive signaling[11]. Additionally, repeated contractions may induce local tissue hypoxia and increase levels of pain mediators[12]. Psychological factors, such as maternal anxiety, can further amplify pain perception, particularly in primigravida[13].

The reduction in pain observed in the intervention group aligns with previous studies indicating that SP6 point stimulation is associated with decreased labor pain intensity[3]. Mechanistically, *moxibustion* delivers thermal stimulation that activates cutaneous receptors and promotes the release of endogenous analgesics, including endorphins and enkephalins. This process also engages a gate control mechanism at the spinal cord level, modulating the transmission of nociceptive impulses to the central nervous system[14]. In addition to these analgesic effects, SP6 *moxibustion* may enhance uterine blood flow, improve contraction coordination, and elicit a relaxation response, thereby contributing to overall maternal comfort[4].

While within-group comparisons suggest potential benefits, interpretation is constrained without between-group analyses involving the control group. Consequently, additional statistical tests,

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such as the Mann-Whitney test, are necessary to rigorously evaluate the effectiveness of *moxibustion* compared to standard care and to enhance the clinical relevance of the results.

Table 3. posttest pain levels in intervention and control groups

Group	Posttest		*p*
	Median	SD	
Moxibustion Therapy	5.00	0.775	0.001
Standard Treatment	8.00	0.957	

Based on Table 3, the Mann–Whitney U test revealed a statistically significant difference in posttest pain reduction between the intervention and control groups ($p < 0.001$). This indicates that changes in pain levels differed between groups. This finding is consistent with the within-group analysis, which found that only the intervention group experienced pain reduction. Thus, *moxibustion* therapy at point SP6 (*sanyinjiao*) appears to be associated with lower labor pain intensity than standard care alone.

These results align with previous research showing that SP6 point stimulation is associated with reduced labor pain intensity[3]. Theoretically, *moxibustion* provides thermal stimulation that activates skin receptors and facilitates the release of endogenous opioids such as endorphins. It also modulates pain transmission through a gate-control mechanism at the spinal level[14]. In the control group, the lack of pain reduction may be attributed to the physiological progression of labor, characterized by increased intensity and frequency of uterine contractions during cervical dilation[11]. This progression can lead to tissue hypoxia and the release of pain mediators, as well as increased psychological responses such as anxiety, especially in primigravida mothers[13]. These findings suggest that standard obstetric care alone may not be sufficient to reduce labor pain without additional, specialized supportive interventions.

Taken together, these results provide strong evidence for the efficacy of *moxibustion*, as demonstrated by both within-group and between-group comparisons, and demonstrate a clinically significant reduction in labor pain intensity during the active phase. This study extends the existing literature by presenting evidence for the application of *moxibustion*, rather than acupressure, to the SP6 point in midwife-led practice in Indonesia, where such research remains limited. These findings underscore the potential of *moxibustion* as a non-pharmacological strategy for labor pain management and confirm its role as a safe, feasible, and complementary intervention to improve maternal comfort in clinical practice. However, this study did not include effect size estimation or confidence interval analysis, which may limit the interpretation of the magnitude and precision of the observed effects.

CONCLUSION

Application of *moxibustion* at the SP6 (*sanyinjiao*) acupressure point was associated with a reduction in labor pain intensity during the initial active phase. This effect is evidenced by a decrease in median pain scores from 8.00 in the pretest to 5.00 in the posttest within the intervention group, whereas the control group showed no change in median pain scores from 8.00 in the pretest to 8.00 in the posttest. Statistical analyses using the Wilcoxon and Mann-Whitney tests further confirm that *moxibustion* yields greater pain reduction than standard care.

This study's main weaknesses include its quasi-experimental design and limited sample size, which warrant caution when generalizing the findings. The findings endorse *moxibustion* as a safe and effective nonpharmacological method for improving mother comfort and alleviating labor pain during the initial active phase.

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