**Journal of Innovative and Creativity**
Journal Homepage: https://joecy.org/index.php/joecy
e-mail: journaljoecy@gmail.com

Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2775-771X (Online)
**ISSN** 2962-570X **(Printed)**
5 (3) 2025, Page : 33111-33117

# The Effect of a Childbirth Environment Model Using Complementary Therapy (Lavender Aromatherapy and Music) on Reducing Pain During the First Stage of Active Labor

**Indra Yulianti**
Bachelor of Midwifery Study Program_PPNI Mojokerto Bina Sehat University
Corresponding Author Indra, E-Mail: indray85@gmail.com

Published: November, 2025

## ABSTRACT

Childbirth is the process of expelling the products of conception. Pain during labor is a physiological condition commonly experienced by almost all mothers giving birth. The active phase of labor occurs when the cervix opens from 4 to 10 cm, accompanied by the descent of the fetal head. This phase is usually accompanied by increased pain caused by stronger and more regular uterine contractions. Labor pain can lead to increased activity of the sympathetic nervous system, resulting in physiological changes in the body, including increased blood pressure, heart rate, and respiratory rate. If not addressed promptly, this condition will increase anxiety, tension, fear, and stress. Implementing a labor environment with complementary therapy is expected to help mothers reduce the intensity of pain during the active phase of the first stage of labor. The purpose of this study was to determine the effectiveness of implementing a labor environment with complementary therapy in reducing the intensity of pain during the active phase of the first stage of labor. The study design was a pre-experimental design with a static group comparison approach . The study population was all pregnant women who gave birth at the PMB Puri Mojokerto Health Center in January - July 2025, while the sample was 30 mothers who gave birth in August - November 2025, divided into an experimental group and a control group. The sampling technique used Purposive Sampling. The data collection technique used Verbal Descriptor Scale . Data analysis used the Wilcoxon test. The results of the study showed that most mothers in the experimental group experienced moderate pain levels in the active phase of Stage I labor, namely 80%, while in the control group more than half of the respondents experienced severe pain (60%). Comparison of labor pain levels between the experimental group and the control group, there were 3 mothers giving birth in the experimental group stating labor pain at a severe pain level than mothers giving birth in the control group, there were 7 mothers giving birth feeling the same labor pain, both in the experimental group and the control group and there were 10 mothers giving birth in the experimental group feeling labor pain in the moderate pain category than mothers giving birth in the control group. There was no difference in the intensity of labor pain between mothers giving birth who were given the application of a labor environment with complementary therapy and mothers giving birth who were not given the application of a labor environment with complementary therapy, P value = 0.052 (p> 0.05). The results of the study are expected to enable health workers to use a labor environment using complementary therapy as an alternative to reduce labor pain in the Active Phase of Stage I..

**Keywords**: Complementary Therapy, Labor Pain.

© The Author(s). 2021 Open Access This article is licensed under a Creative Commons Atibution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0

## INTRODUCTION

Childbirth is a time eagerly awaited by pregnant women to gain experience and feel happiness. On the other hand, during labor, obstacles are often encountered that can affect the health of both mother and baby. During labor, uterine contractions cause pain. Although pain is a physiological process, if not immediately addressed, it will have a negative impact on the mother and baby (Romdhani & Suhartini, 2022) . Physiologically, labor pain begins to appear in the first stage of labor, the latent and active phases. In the active phase, the dilation ranges from 4 to 10 cm. In primigravida, the first stage of labor can last approximately 20 hours. Pain is caused by uterine contractions and

cervical dilation. As time goes on, the pain becomes more intense, peaking in the active phase, when the dilation reaches 10 cm. The intensity of pain during labor affects the mother's psychological condition, the labor process , and the well-being of the fetus (Lawoyin, 1993) .

Every mother responds differently to childbirth. Pain, tension, and fear can produce excessive levels of catecholamines (stress hormones) such as epinephrine and norepinephrine (Memarian et al., 2019) . High blood levels of catecholamines can prolong labor by reducing the efficiency of uterine contractions and can harm the fetus by reducing blood flow to the placenta. This can lead to poorly managed labor and potentially lead to trauma to the baby (Gavhale et al., 2020) .

Pain can also cause uncoordinated uterine activity, which can lead to prolonged labor. Severe and prolonged labor pain can affect circulation and metabolism, which must be addressed immediately because it can have psychological effects, such as anxiety, which can then lead to prolonged labor, reducing the mother's strength (pushing power) during labor. Severe and prolonged labor pain can affect circulation and metabolism, leading to fetal death, and a weakened uterus can lead to labor hemorrhage. Therefore, proper labor pain management is essential to prevent labor complications (Wilbeck & Schorn, 2013) .

The application of a labor environment with complementary therapies (aromatherapy, music therapy, and relaxation therapy) is expected to reduce labor pain in the active phase of the first stage of labor (Wahyuningsih et al., 2023) . Cervical dilation during labor is usually accompanied by pain. Labor pain is a physiological condition that begins to appear in the latent phase of the first stage of labor, and effective distraction is creating a labor environment with complementary therapies, namely a therapy that creates a comfortable and relaxing labor environment using aromatherapy and therapy. Music has been shown to reduce anxiety and depression, relieve pain, lower blood pressure, and lower heart rate. Aromatherapy can have a direct effect on the body, such as overcoming emotional problems, stress, or depression (Tempest et al., 2020).

## MATERIALS AND METHODS

The research design was pre-experimental design with a static group comparison approach. The research design was carried out by grouping members into a control group and an experimental group (Skogley & Sawyer, 2015) . In the experimental group, an intervention was carried out in the form of implementing a social environment with complementary therapy (lavender aromatherapy and music therapy) after 2 hours from the first examination, then a post-test was carried out on both groups. The research was carried out in The research design was a pre-experimental design with a static group comparison approach . The study population was all pregnant women who gave birth at the PMB Puri Mojokerto Health Center in January - July 2025, while the sample was 40 mothers who gave birth in August - November 2025, divided into an experimental group and a control group. The sampling technique used Purposive Sampling. The data collection technique used Verbal Descriptor Scale. Data analysis used the Wilcoxon test. The sample size in this study was 40 mothers giving birth, consisting of 20 mothers giving birth at BPM A as the experimental group, and 20 mothers giving birth at BPM B as the control group, both of which are located in the Puri Health Center area.

The sampling technique used was purposive sampling. The criteria for the sample were mothers giving birth in the active phase of the first stage of labor, willing to be respondents, the families of the mothers giving permission, no abnormalities such as smell or hearing, normal pregnant women or no abnormalities, mothers in the normal first stage of labor without other interventions, multiparous mothers. Data collection was carried out by assessing pain using the Descriptive Pain Scale Sheet (Verbal Descriptor Scale, VDS). Pain measurements were carried out after 4 hours from the basic health examination and the first obstetric examination carried out on both groups of respondents. The statistical analysis used in this study consisted of: (1) Univariable analysis, carried out to describe demographic data or characteristics of mothers giving birth and values before and after being given treatment regarding the intensity of labor pain. This analysis is presented in the form of a frequency distribution. (2) Bivariable analysis, used to determine the effectiveness of applying a birthing environment using lavender aromatherapy and music therapy to reduce the intensity of labor pain in

mothers giving birth in the first active phase. The statistical test used in this study was the Wilcoxon test..

## RESULT AND DISCUSSION

### Univariate Analysis

Table 1 Frequency distribution of research subject characteristics

| Character | F | % |
|---|---|---|
| Age | | |
| <20 Years | 0 | 0 |
| 20-35 Years | 32 | 80 |
| >35 Years | 8 | 20 |
| Education | | |
| Elementary School | 1 | 2.5 |
| Junior high school | 9 | 22.5 |
| Senior high school | 23 | 57.5 |
| PT | 7 | 17.5 |
| Total | 40 | 100 |

Table 2 Distribution of frequency of labor pain levels in the active phase of stage I

| Labor Pain Levels | Experimental Group | | Control group | |
|---|---|---|---|---|
| | f | % | f | 100% |
| No Pain | 0 | 0 | 0 | 0 |
| Mild pain | 0 | 0 | 1 | 5 |
| Moderate pain | 17 | 85 | 8 | 40 |
| Severe pain | 3 | 15 | 11 | 55 |
| Very severe pain | 0 | 0 | 0 | 0 |
| Total | 20 | 100 | 20 | 100 |

Bivariate Analysis

Table 3 Results of Wilcoxon test analysis

| Respondent group | n | Median (Min-Max) | Mean ± sd | Ranks | p |
|---|---|---|---|---|---|
| Experiment | 20 | 3 (3-4) | 3.15±0.36 | 3 (-) | 0.052 |
| Control | 20 | 3.07(2-4) | 3.35±0.58 | 10 (+) | |
| | | | | 7 ties | |

Based on table 3 above shows a comparison of the pain levels of mothers giving birth who were given the application of a birthing environment with complementary therapy with mothers giving birth who were not given the application of a birthing environment with complementary therapy, where 3 mothers giving birth who were given the application of a birthing environment with complementary therapy stated that the labor pain they felt was at a severe level of pain than those who were not given the application of a birthing environment with complementary therapy. There were 7 mothers giving birth who stated that labor pain was at the same level, between mothers giving birth who were given the application of a birthing environment with complementary therapy and mothers giving birth who were not given the application of a birthing environment with complementary therapy. And there were 10 mothers giving birth who were given the application of a birthing environment with complementary therapy stated that labor pain was lighter, namely those who were not given the application of a birthing environment with complementary therapy. Based on the median (middle value) in table 5.4 above, the pain of labor in the first stage of the active phase felt by both groups (experimental and control) was at a moderate level.

The limit of labor pain in the active phase of the first stage felt by respondents in the group of mothers who gave birth who were given the application of a birth environment with complementary therapy stated that the labor pain felt by mothers was at the level of moderate pain to severe pain, while in the group of mothers who did not give the application of a birth environment with complementary therapy stated that labor pain was felt at the level of mild pain to severe pain. The range of labor pain felt by the group of mothers who gave birth who were given the application of a birth environment with complementary therapy was 3.15 while in the group of respondents who were not given the application of a birth environment with complementary therapy was 3.35 which means that in the group of respondents who were not given the application of a birth environment with complementary therapy in feeling labor pain in the active phase of the first stage was more varied than the group of mothers who gave birth who were given the application of a birth environment with complementary therapy. The results of the statistical test using the Wilcoxon test obtained a significance value of 0.052 ($p > 0.05$) which means that there is no significant difference between mothers giving birth who were given the application of a birthing environment with complementary therapy and relaxation therapy with mothers giving birth who were not given the application of a birthing environment with complementary therapy.

**Discussion**

The majority of respondents in this study were of reproductive age. Based on Table 5.1, the majority of respondents were aged 21 to 34 years (80%). Therefore, it can be said that adult respondents are already able to express feelings of pain or discomfort subjectively well. This greatly supports the smoothness of research that requires real and honest expressions of pain feelings so that accurate pain scale measurements can be carried out. This is in accordance with the opinion (Wilbeck & Schorn, 2013) that an adult is able to report pain well. According to (Jiun et al., 2002) argue that young age tends to be associated with psychological conditions that are still unstable, which triggers anxiety, so that the pain felt becomes more severe, tolerance will increase with age and understanding of pain. In addition to age, a person's level of education can also influence communication, opinions, and ways of thinking about problems faced by someone (Hendra, 2018). This is supported by the results of the study in Table 5.1 regarding the description of the characteristics of respondents. Based on table 5.1, the majority of respondents had a high school education (57.5%). According to (Wells et al., 2020), education is a form of learning to improve or develop abilities.

The level of education determines how easily someone absorbs and understands knowledge. In general, the higher the education, the better the knowledge. Conversely, a lack of education will hinder the development of attitudes towards new values that are introduced, resulting in a lack of knowledge. Based on the education of respondents in this study (the majority had a high school education), it is easier for researchers to provide information about labor knowledge such as labor pain in the first stage, what to do about pain in labor, how the pain mechanism occurs, what causes it, and whether this is normal as well as providing information about research procedures and their benefits that can be taken for respondents. This knowledge and information will have a positive impact on pain management experienced by respondents, so that the assessment of labor pain and research procedures can be carried out smoothly, well and correctly in accordance with labor pain assessment guidelines. Pain measurement can be done with an objective approach and the most likely to be used to measure pain using the body's physiological response to pain itself. Pain measurement using an objective approach is in the form of a descriptive scale or Verbal Descriptor Scale (VDS).

VDS is a more objective tool for measuring pain severity. Based on table 5.2 regarding the description of the level of pain of respondents resulting from the VDS assessment, it was found that the results of 20 respondents in the experimental group (the group given treatment in the form of the application of a birthing environment with complementary therapies in the form of aromatherapy, music therapy and relaxation therapy) were mostly felt labor pain at a moderate level of pain, namely 17 respondents (85%), and only 3 respondents (15%) stated that the labor pain they felt was at a severe level. Meanwhile, the 20 respondents in the control group (the group of mothers giving birth who were not given treatment in the form of the application of a birthing environment with complementary

therapies), the majority of respondents felt labor pain at a severe level of pain, namely 11 respondents (55%), only 8 respondents (40%) felt moderate pain. A person's reaction to pain varies from one person to another. Measurement of pain intensity is very subjective and individual, and it is possible that pain at the same intensity is felt very differently by two different people (Tamsuri, 2017). Pain is an integral part of a person's pain expression. Pain is a multifactorial, subjective, personal, and complex phenomenon influenced by psychological, biological, sociocultural, and economic factors (Fraser, 2019). The results of the study in Table 5.2 above support the theory proposed by Fraser (2019), where the pain experienced by respondents varies from one person to another. This is further supported by interventions to reduce labor pain management in the experimental group, namely the application of a labor environment with complementary therapies such as aromatherapy, music therapy, and relaxation therapy.

According to Mander (2014), labor pain management can be carried out using pharmacological and non-pharmacological methods. These non-pharmacological methods include psychological pain modulation (relaxation and psychoprophylaxis) and sensory pain modulation (i.e., music and the environment). Relaxation and psychoprophylaxis have the least non-maternal input because they do not require specialized equipment or personnel. In practice, these methods are predominantly psychological, such as teaching relaxation techniques or deep breathing during contractions, and providing a birth partner to provide support during labor (Henderson, 2016). According to Mander (2014), music can also be used to minimize labor pain. Music can provide energy and convey direction through rhythm, so music with the right tempo helps women regulate their breathing. Several studies have shown that listening to music can reduce tension and emotional or physical pain. Meanwhile, the environment, in the form of the physical environment, also plays a role in reducing pain intensity during labor.

Table 5.4 shows a comparison of labor pain levels between the experimental and control groups. Three mothers who underwent complementary therapy for childbirth reported experiencing more severe pain than those who did not undergo complementary therapy. Seven mothers experienced similar levels of labor pain, regardless of whether they underwent complementary therapy for childbirth or not. Ten respondents who underwent complementary therapy for childbirth reported experiencing milder pain, at a moderate level, than those who did not undergo complementary therapy for childbirth. The results of this study are in line with the results of research presented by (Wahyuningsih et al., 2023) , there is an effect of instrumental music therapy on reducing the intensity of pain behavior in the first active stage of labor ($p = 0.00$), where the level of pain behavior before music therapy was mostly in the category of severe and moderate pain with 16 people (50%) each and after music therapy experienced a decrease in pain with the majority of moderate pain as many as 18 people (56.3%). Music can provide energy and carry commands through rhythm so that music with the right tempo can help someone to regulate their breathing during pain (Di Fraco, 1998 in Mander, 2014).

Music that is often used in pain distraction is classical music. Music can be used to reduce stress that causes pain and relax muscles that tense in reaction to the pain. Music also changes the perception of time, which helps reduce the pain suffered. In addition to music, the physical environment can also influence the reduction of pain intensity in a person. (Mander, 2014). Creating a comfortable birthing environment, combined with the aroma of aromatherapy diffused throughout the delivery room, can impact a person's emotional well-being in coping with pain. Essential oils, to have a healing effect, must be applied to the body. Inhaling essential oils can be done in various ways, such as through olfaction or inhalation. Accessing essential oils through the nose (inhalation) is a much faster route than other methods, as the nose has direct contact with parts of the brain responsible for stimulating effects such as addressing emotional problems (stress and depression) and pain management (headaches). Labor pain is a physiological condition. Physiologically, labor pain begins in the first stage of labor, the latent and active phases. In the latent phase, labor pain reaches 3 cm dilation, and in the active phase, labor pain reaches 4–10 cm. Pain is caused by uterine contractions and cervical dilation, and the pain becomes more intense over time, peaking in the active phase. The intensity of pain during labor affects the mother's psychological state, the labor process, and the well-being of the fetus (Potter and Perry, 2016). According to Fraser (2019), psychological factors also play a role in causing pain during labor,

leading to fear, self-confidence, and cognition in mothers. Each mother has her own interpretation of labor pain, as each person's pain threshold is different and subjective.

The statistical test results using the Wilcoxon test in Table 5.4 obtained a significance value of 0.052 ($p > 0.05$), which means that there is no significant difference between mothers who are given the application of a birthing environment with complementary therapy and mothers who are not given the application of a birthing environment with complementary therapy. This is in line with the results of research (Gavhale et al., 2020) on midwives' actions in reducing pain in the first stage of labor using a quantitative descriptive method, revealing that actions to reduce pain in the first stage of labor are very complex and the pain experienced by mothers varies from one person to another, so the treatment also varies from one person to another. Labor pain management can be combined, separate, or even all labor pain reduction measures are carried out. Labor pain management includes assistance, positioning, relaxation, touch/massage, warm and cold compresses, bathing, visualization, and music. Various responses to pain are a self-protection mechanism from the pain felt, coupled with an environment that is too extreme such as changes in weather, heat, cold, crowds, noise provide stimuli to the body that trigger pain (Mander, 2014). From various opinions expressed by experts, researchers can conclude that every mother I is a phase when the cervix experiences dilation that lasts 6-8 hours from 0 cm to 10 cm dilation. This cervical dilation results in labor pain occurring, so that efforts to overcome pain in labor produce minimal results. This is as expressed in the study of Mulyani (2014) where the level of behavioral pain before music therapy is mostly in the category of severe and moderate pain and after music therapy there is a decrease in pain with the majority of moderate pain.

## CONCLUSION

Most of the mothers giving birth in the experimental group experienced moderate pain levels in the active phase of the first stage of labor, namely 80%, while in the control group more than half of the respondents experienced severe pain (60%). Comparison of labor pain levels between the experimental group and the control group, there were 3 mothers giving birth in the experimental group stating that labor pain was at a severe level of pain than mothers giving birth in the control group, there were 7 mothers giving birth felt the same labor pain, both in the experimental group and the control group and there were 10 mothers giving birth in the experimental group feeling labor pain in the moderate pain category than mothers giving birth in the control group. There was no difference in the intensity of labor pain between mothers giving birth who were given the application of a labor environment with complementary therapy and mothers giving birth who were not given the application of a labor environment with complementary therapy, P value = 0.052 ($p > 0.05$)..

## REFERENCES

Gavhale, P., Moon, S., & Patil, M. (2020). Case report on full term normal delivery. Indian Journal of Forensic Medicine and Toxicology . https://doi.org/10.37506/ijfmt.v14i4.12726

Jiun, H.L., Boon, C.T., Ahmad, E.J., & Symonds, E.M. (2002). Delivery of macrosomic babies: Management and outcomes of 330 cases. In Journal of Obstetrics and Gynecology . https://doi.org/10.1080/01443610220141281

Lawoyin, T. O. (1993). A prospective study on some factors which influence the delivery of large babies. Journal of Tropical Medicine and Hygiene .

Memarian, A., Moosavinezhad Baboli, SH, & Asl, ND (2019). An unusual traumatic delivery malpractice: a case report. Medico-Legal Journal . https://doi.org/10.1177/0025817218808721

Romdhani, RHR, & Suhartini, T. (2022). Baby delivery development by one phase in active primigravidal mothers through Al Qur'an murrotal method. Bali Medical Journal . https://doi.org/10.15562/BMJ.V11I2.3449

Skogley, C.R., & Sawyer, C.D. (2015). Field research. In Turfgrass . https://doi.org/10.2134/agronmonogr32.c17

Tempest, N., Lane, S., Hapangama, D., Bassel, W., Jennifer, T., William, PS, Matthew, P., Dhivya, C., Shailly Sahu, B., Geethanjali, B., Fulva, D., Julie, G., Mohita, G., Cecilia, I., Kate, J., Vijaya, K., Jessica, P., Daxina, B., Zoe, B., … James, T. (2020). Babies in occiput posterior position are significantly more likely to require an emergency cesarean birth compared with babies in occiput transverse position in the second stage of labor: A prospective observational study. Acta Obstetricia et Gynecologica Scandinavica . https://doi.org/10.1111/aogs.13765

Wahyuningsih, S., Hayati, N., Musviro, M., & Ersyad, T. (2023). Uncovering the Characteristics of Low Birth Weight Babies in Agricultural Areas. NurseLine Journal . https://doi.org/10.19184/nlj.v8i2.41266

Wells, P., Taylor, A., Battersby, C., & Singh, C. (2020). Practical considerations for the emergency delivery of babies from mothers with confirmed or suspected COVID-19. Infants .

Wilbeck, J., & Schorn, M. N. (2013). Delivery of Babies in the Emergency Department. In Journal of Emergency Nursing . https://doi.org/10.1016/j.jen.2012.08.007