

THE EFFECT OF RELAXATION MUSIC ON PAIN LEVELS IN THE FIRST STAGE OF ACTIVE LABOR AT THE KARTIKA HUSADA CLINIC

Diyah Sulistyawati ^{1*}, Rosyidah Alfitri ²

¹² Undergraduate Midwifery Study Program, Faculty of Health Sciences, Institute of Technology, Science and Health, Dr. Soepraoen Hospital, Kesdam V/ Brawijaya, Malang

¹ diyahsulistyawati17@gmail.com

² rosyidahalfitri@itsk-soepraoen.ac.id

* Corresponding Author

Received: 03-05-2026	Revised: 17-06-2026	Approved: 24-06-2026
----------------------	---------------------	----------------------

ABSTRACT

Labor pain in the active phase of the first stage of labor is a physiological condition caused by uterine contractions and cervical dilation, which may lead to discomfort and increased maternal anxiety. One non-pharmacological intervention that can be used to reduce labor pain is relaxation music therapy using the sound of trickling water, which has a calming effect. This study aimed to determine the effect of trickling water music therapy on reducing pain levels during the active phase of the first stage of labor. This study employed a quantitative method with a quasi-experimental design using a Posttest-Only Control Group Design approach. The sample consisted of 30 mothers in the active phase of the first stage of labor, divided into an intervention group (n = 15) and a control group (n = 15), selected through purposive sampling. Pain intensity was measured once after the intervention using the Numeric Rating Scale (NRS). The intervention group received trickling water music therapy, while the control group received standard care. The results showed that pain levels in the intervention group were lower than those in the control group. Statistical analysis using the Mann-Whitney U Test revealed a significant difference between the two groups ($U = 6.000$; $Z = -4.491$; $p < 0.001$). The intervention group had a lower mean rank (8.40) compared to the control group (22.60), indicating lower pain intensity following the intervention. The study concludes that trickling water music therapy is effective in reducing labor pain during the active phase of the first stage of labor.

Keywords: Water Flow, Active Phase of Labor, Non-Pharmacological, Pain, Music Therapy

INTRODUCTION

Labor is a physiological process that occurs at the end of pregnancy, characterized by uterine contractions that cause cervical dilation and descent of the fetus into the birth canal. The labor process is divided into four stages: stage I, stage II, stage III, and stage IV. Stage I is the initial stage of labor, starting from the occurrence of adequate uterine contractions until the cervix is completely dilated (10 cm). This stage is the longest phase of the labor process and plays a crucial role in determining the smoothness of the subsequent labor process [1]. Stage I of labor is divided into two phases: the latent phase and the active phase. The latent phase is characterized by slow cervical dilation, while the active phase is characterized by increased frequency, duration, and intensity of contractions that cause cervical dilation to occur more quickly. In the active phase, cervical dilation generally starts from 4 cm to reach complete dilation. This condition causes the mother to experience increasing discomfort and pain that becomes

more intense as labor progresses [2] . First-stage labor pain is a physiological response caused by uterine contractions, cervical dilation, and stretching of surrounding tissues. This pain is subjective and influenced by various factors, such as the mother's physical condition, anxiety level, previous labor experiences, and environmental support. During the active phase, pain tends to be more intense and frequent, which can affect the mother's psychological state, such as increased anxiety and tension [3] .

Globally, labor pain is an experience experienced by nearly all women giving birth. Data from *the World Health Organization* (WHO) shows that approximately 90% of women experience pain and anxiety during labor, particularly during the first stage, which is characterized by increased uterine contractions. Uncontrolled pain can lead to physical exhaustion, stress, and psychological distress in women giving birth [4] . At the national level (in Indonesia), labor pain is also a significant problem. Data shows that approximately 21% of mothers report that their labor was very painful, and most mothers have not received sufficient information regarding labor pain management. Furthermore, poorly managed labor pain can contribute to labor complications [5] . At the local level, including in healthcare facilities such as private midwife practices and maternity clinics, pain in the active stage of labor is still common and high in intensity. Research shows that most women experience severe pain during the active stage, which is influenced by factors such as age, parity, and support during labor.

Labor pain during the first active phase of labor is an unavoidable condition for laboring mothers, but high pain intensity often causes various impacts, both physiologically and psychologically. Uncontrolled pain can cause an increase in stress hormones such as catecholamines, which influence uterine contractions to become ineffective, potentially prolonging the labor process. In addition, this condition can also cause fatigue in the mother and increase anxiety during the labor process [3] . Efforts to manage labor pain can be done through pharmacological and non-pharmacological methods. Pharmacological methods such as analgesics have a fast effect, but have the potential to cause side effects for both the mother and the fetus. Therefore, a non-pharmacological approach is a safer alternative and is widely used in obstetric practice. This method is considered effective because it does not cause side effects and can increase maternal comfort during the labor process [6] .

One non-pharmacological method that can be used is relaxation music therapy. Music therapy works by providing a distraction effect, diverting the mother's attention from pain, and providing a relaxing effect that can reduce muscle tension. Furthermore, music can stimulate the production of endorphins, which act as natural analgesics in the body, thereby reducing the perception of pain in laboring mothers [2] . Several studies have shown that relaxation music therapy is effective in reducing the intensity of labor pain, especially during the active phase of the first stage. In theory, relaxation music therapy, particularly natural sounds such as trickling water, can provide a calming effect by reducing sympathetic nervous system activity and increasing body relaxation [7] . However, the application of music therapy in health care facilities, especially in maternity clinics, is still not optimal and has not become a routine intervention

in labor pain management. This indicates a gap between theory and practice in the field that requires further research [8] . Based on this description, the researcher is interested in conducting research on the effect of relaxation music therapy on pain levels in the active phase of first stage labor at the Kartika Husada Clinic, in order to determine the effectiveness of this intervention as a non-pharmacological method in reducing labor pain.

RESEARCH METHODS

The method used in this study was quantitative research with a quasi-experimental design approach. The type of research used was a Posttest-Only Control Group Design, which involves two groups: an intervention group and a control group, without any initial measurements (pretest), but only measurements after treatment (posttest).

The population in this study were all mothers giving birth in the active phase of the first stage of labor at the Kartika Husada Clinic. The sample size in this study was 30 respondents who were divided into two groups, namely 15 respondents as the intervention group and 15 respondents as the control group. The sampling technique used purposive sampling with a non-random sampling approach, namely the deliberate selection of samples based on inclusion and exclusion criteria that have been determined by the researcher. The inclusion criteria in this study include: 1) mothers giving birth in the active phase of the first stage, 2) willing to be respondents, 3) not experiencing labor complications, and 4) able to communicate well. While the exclusion criteria include: 1) mothers with severe obstetric complications, 2) mothers who received pharmacological analgesics during the study, and 3) mothers with hearing impairments.

This study was conducted during the active phase of the first stage of labor. The intervention group received relaxation music therapy, playing soothing music using audio devices (headsets/speakers) during contractions according to established procedures. The audio stimuli used were recordings of natural sounds, such as trickling water, intended to promote relaxation. The control group received no relaxation music intervention (standard care).

Pain level measurement was carried out once (posttest) in both groups using a pain scale instrument after administering the intervention in the intervention group and at the same time in the control group.

The independent variable in this study was relaxation music therapy, while the dependent variable was the level of pain during the active phase of first stage of labor. Data were collected through observation and respondents completed a pain assessment form. The instrument used was the Numeric Rating Scale (NRS) to measure pain levels.

Data analysis in this study used the Independent T-Test (if the data were normally distributed) or the Mann-Whitney U Test (if the data were not normally distributed) using SPSS. This test was used to determine differences in pain levels between the intervention and control groups.

RESULTS AND DISCUSSION

Research result

A. General Data of Respondents

Table 1 Frequency Distribution of Respondent Characteristics (Age, Pregnancy, and Occupation)

Variables	Category	Intervention (n=15)	%	Control (n=15)	%
Age	Late Teenagers	5	33.3	4	26.7
	Early Adulthood	10	66.7	11	73.3
	Total	15	100	15	100
Pregnancy to-	1st	6	40.0	6	40.0
	2nd	6	40.0	6	40.0
	The 3rd	3	20.0	3	20.0
	Total	15	100	15	100
Work	Housewife	11	73.3	11	73.3
	Work	4	26.7	4	26.7
	Total	15	100	15	100

Table 1 shows that the characteristics of respondents in the intervention and control groups were relatively similar. Regarding age, the majority of respondents were in the early adulthood category, with 10 respondents (66.7%) in the intervention group and 11 respondents (73.3%) in the control group.

Based on the 1st pregnancy, both the intervention and control groups were dominated by the 1st and 2nd pregnancies, with 6 respondents (40.0%) each, while the 3rd pregnancy was dominated by 3 respondents (20.0%).

Based on occupation, the majority of respondents in both groups were housewives (IRT), namely 11 respondents (73.3%), while 4 respondents (26.7%) worked.

This shows that the characteristics of respondents in both groups are relatively homogeneous, so that differences in research results can be influenced by the provision of intervention.

B. Respondent Specific Data

Table 2 Distribution of Pain Levels in the First Stage of Labor, Active Phase in the Intervention and Control Groups

Pain Level	Intervention (n=15)	%	Control (n=15)	%
Light	8	53.3	0	0
Currently	7	46.7	8	53.3
Heavy	0	0	7	46.7
Total	15	100	15	100

Based on Table 2 , it shows that the distribution of pain levels in the first stage of labor during the active phase in the intervention group was mostly in the mild pain category with 8 respondents (53.3%) and moderate pain with 7 respondents (46.7%), and there were no respondents with severe pain.

Meanwhile, in the control group, most respondents experienced moderate pain, as many as 8 respondents (53.3%) and severe pain, as many as 7 respondents (46.7%), and there were no respondents with mild pain.

These results show that the pain level in the intervention group tends to be lighter compared to the control group, which indicates that providing relaxation music therapy can help reduce the level of pain in the first stage of labor during the active phase.

C. Normality test analysis

Table 3 Results of the Normality Test for Labor Pain Level Data

Variables	Group	Shapiro-Wilk (Sig.)	Information
Pain Level	Intervention	0.025	Abnormal
Pain Level	Control	0.042	Abnormal

The data normality test in this study was conducted using the Shapiro-Wilk test because the sample size was less than 50 respondents. Based on the results of the normality test, the significance value obtained for the intervention group was 0.025 and for the control group was 0.042.

Because both significance values are less than 0.05 ($p < 0.05$), it can be concluded that the data on the level of labor pain in both groups are not normally distributed.

Therefore, data analysis was continued using the non-parametric *Mann-Whitney U Test* to determine the difference in pain levels between the intervention group and the control group.

D. Results of the Mann-Whitney Test for Differences in Labor Pain Levels

Table 4. Results of the Mann-Whitney Test for Differences in Labor Pain Levels

Variable	Group	n	Mean Rank	Mann-Whitney U	Z	p-value
Post-Test Pain	Intervention	15	8.40	6.000	-4.491	<0.001
	Control	15	22.60			

Based on the results of the statistical test using the Mann-Whitney U Test, the Mann-Whitney U value was 6.000 with a Z value of -4.491 and a significance value (Asymp. Sig. 2-tailed) of 0.000. Because the p-value of 0.000 is smaller than 0.05 ($p < 0.05$), it can be concluded that there is a significant difference between the level of labor pain in the active phase of the first stage of labor in the intervention group and the control group.

These results indicate that providing relaxation music therapy has an effect on reducing the level of labor pain during the active phase of the first stage of labor in mothers giving birth at the Kartika Husada Clinic.

Based on the results of the general data study, it shows that the distribution of the level of labor pain in the first active phase in the intervention group was mostly in the mild pain category with 8 respondents (53.3%) and moderate pain with 7 respondents (46.7%), and there were no respondents with severe pain.

Meanwhile, in the control group, most respondents experienced moderate pain, as many as 8 respondents (53.3%) and severe pain, as many as 7 respondents (46.7%), and there were no respondents with mild pain.

These results indicate that the level of pain in the intervention group tends to be lighter compared to the control group, which indicates that providing relaxation music therapy can help reduce the level of pain in the first stage of labor during the active phase. Research shows that the perception of pain in pregnant women is influenced by individual factors such as physical, psychological conditions, and previous experiences [9] . In addition, physical activity during pregnancy has been shown to reduce the intensity of pain and discomfort in pregnant women [10] . Other studies have shown that physical activity can also increase pain tolerance in pregnant women, thereby helping them adapt to discomfort during pregnancy [11] . In addition, changes in body perception during pregnancy also affect how mothers feel pain and discomfort [12] . Recent research also shows that pain in pregnancy is related to psychological factors such as anxiety and fear of facing childbirth [13] . Researchers believe that the predominance of respondents in early adulthood indicates that most mothers are in optimal biological condition for pregnancy. However, pregnancy experience remains important, with first-time mothers tending to be more sensitive to pain due to their lack of prior experience. Furthermore, the majority of respondents are housewives, which may allow for more flexible rest periods, but a lack of structured physical activity can contribute to discomfort such as pain in the third trimester.

The results of the study showed that the distribution of the level of labor pain in the first active phase in the intervention group was mostly in the mild pain category with 8 respondents (53.3%) and moderate pain with 7 respondents (46.7%), and there were no respondents with severe pain.

Meanwhile, in the control group, most respondents experienced moderate pain, as many as 8 respondents (53.3%) and severe pain, as many as 7 respondents (46.7%), and there were no respondents with mild pain.

In addition, based on the results of the Mann-Whitney U Test, the Mann-Whitney U value was 6.000 with a Z value of -4.491 and a significance value (Asymp. Sig. 2-tailed) of 0.000.

Because the p-value of 0.000 is smaller than 0.05 ($p < 0.05$), it can be concluded that there is a significant difference between the level of labor pain in the active phase of the first stage of labor in the intervention group and the control group.

Pain in the third trimester of pregnancy is a physiological response due to anatomical and hormonal changes, where the enlargement of the uterus, changes in the body's center of gravity, and an increase in the hormone relaxin cause stretching of muscles and ligaments, causing discomfort and musculoskeletal pain [14] . In addition, pain is defined as an unpleasant sensory and emotional experience that involves complex processes ranging from transduction,

transmission, perception to modulation, where each individual has a different pain response depending on biological, psychological, and social factors [15] . Pain in the third trimester of pregnancy is also related to musculoskeletal conditions that increase with increasing gestational age, where pressure on the back and pelvic area can cause increasingly intense pain [16]. Non-pharmacological interventions have been proven effective in reducing pain in pregnant women, where techniques such as massage, relaxation, and sensory stimulation can reduce pain intensity through mechanisms of increasing endorphins and muscle relaxation [17] In addition, natural therapies such as non-pharmacological pain management are also associated with reducing anxiety in pregnant women, where reducing anxiety will have a direct impact on reducing the perception of pain felt. Pain in the third trimester of pregnancy is also influenced by changes in the body's biomechanics which cause increased pressure on the spine and pelvis, so that pregnant women often experience lower back pain which increases as the gestational age increases [18] Other research shows that environmental support and the mother's emotional condition greatly influence pain perception, where mothers who receive good social support tend to be better able to control the pain they feel during pregnancy [19] .

In addition, relaxation-based interventions such as music therapy or natural sounds have been shown to reduce sympathetic nervous system activity and increase parasympathetic activity [20] , so that the body becomes more relaxed and pain intensity can decrease significantly [21] . The decrease in pain scale after the intervention shows that the therapy provided is able to work through physiological and psychological mechanisms simultaneously, where the body experiences relaxation, decreased sympathetic nervous activity, and increased endorphin hormones which act as natural analgesics in suppressing pain sensations.

In addition, based on the theory of pain processes and modulation mechanisms, researchers argue that intervention in the form of music therapy with the sound of trickling water can provide an effective distraction effect, thereby diverting respondents' attention from pain stimuli and helping to "close the gate to pain" in accordance with the concept of gate control theory.

Thus, researchers argue that the intervention provided not only has a physical effect in reducing pain intensity, but also provides a psychological effect in the form of a sense of calm and comfort, so it is highly recommended as a safe and effective non-pharmacological method to reduce pain in pregnant women in the third trimester.

CONCLUSION

Based on the research results, it can be concluded that the level of labor pain in the active phase of the first stage of labor in mothers who were given relaxation music therapy with the sound of trickling water tended to be lower compared to mothers who were not given intervention.

Relaxation music therapy provides a calming effect that can help mothers reduce the perception of pain during the labor process.

The analysis showed a significant difference between the intervention and

control groups. Therefore, relaxation music therapy with the sound of trickling water proved effective in reducing pain levels during the active phase of first-stage labor.

BIBLIOGRAPHY

- [1] PA Oktariyanti, "Application of Instrumental Music Therapy for Pain in the First Stage of Labor in the Active Phase for Mrs. R at TPMB Emalia, SKM South Lampung. 2024," vol. 24, pp. 2023–2024, 2024.
- [2] YD Siregar and Haji, "Indonesian Scientific Health Journal," vol. 8, no. 2, pp. 195–199, 2023.
- [3] M. Ulfah and D. Hidayanti, "THE EFFECT OF MUSIC THERAPY ON REDUCING LABOR PAIN: EVIDENCE BASED CASE REPORT The Effect of Music Therapy To Reduce Labor Pain," pp. 758–766, 2022.
- [4] EK Simamora, "OVERVIEW OF PRIMIGRAVID PREGNANT WOMEN'S KNOWLEDGE ABOUT THE PAIN OF THE FIRST STAGE OF LABOR," vol. 8, no. 1, pp. 47–53, 2023.
- [5] N. Aisyiyah, YM Sari, and A. Waluyo, "The Relationship between Age, Parity, Knowledge and Husband's Support with the Pain Scale of the First Stage of Active Phase of Labor in Independent Midwife Practice in 2023," vol. 14, no. 3, pp. 250–259, 2024.
- [6] V. Kolinug, B. Suba, and A. Meylani, "EFFECTIVENESS OF MUSIC THERAPY ON PAIN AND ANXIETY DURING LABOR: A SYSTEMATIC REVIEW," vol. 5, no. 1, pp. 1–8, 2025.
- [7] D. Shipman, "A Prescription for Music Lessons," no. February, pp. 9–11, 2016.
- [8] N. Sulistyowati, "Music Therapy Reduces Pain In Labor," vol. 14, no. 02, pp. 940–943, 2023.
- [9] K. Le, P. Godlewska, A. Lubkowska, M. Chudecka, R. Santos-rocha, and A. Szumilewicz, "Individual Characteristics and Pain Sensitivity during Pregnancy — A Cross-Sectional Study in Pregnant and Non-Pregnant Women," 2022.
- [10] S. Miguel, TS Nagpal, D. Zhang, and C. Silva-jose, "The Influence of Physical Activity during Pregnancy on Maternal Pain and Discomfort : A Meta-Analysis," 2024.
- [11] K. Le, A. Gasiorowska, M. Pawlak, A. Ja, and A. Maciejewska-skrendo, "Changes in pain perception during pregnancy after one-time maximal physical exertion and an 8-week high-intensity interval training," no. December, pp. 1–8, 2023, doi: 10.3389/fphys.2023.1304534.
- [12] Z. Sohrabi, A. Kazemi, Z. Farajzadegan, and M. Janighorban, "Body perception in pregnant women : a qualitative study," pp. 1–7, 2023.
- [13] C. Garcia-lucas *et al.* , "Association between lumbopelvic pain in pregnancy and fear of childbirth : a multicenter cross-sectional case-control study," 2025.
- [14] Murbiah, "Factors Affecting Back Pain in Pregnant Women in the Third Trimester: Literature Review," *Int. J. Heal. Sci.* , pp. 467–478, 2025.
- [15] AK Malviya, A. Gupta, V. Kumar, J. Gupta, and P. Khanna, "Effect of pregnancy hormones on pain perception in the peripartum period : A

- narrative review," pp. 396–403, 2025, doi: 10.4103/joacp.joacp.
- [16] DN Lilis, L. Artikasari, Y. Sukmawati, P. Kesehatan, K. Jambi, and J. Kebidanan, "THE EFFECT OF HYDROTHERAPY ON LABOR PAIN IN THE ACTIVE PHASE OF MATERNITY IN THE ACTIVE PHASE," vol. 3, no. 1, 2021.
- [17] SDA DindaRegina PratjnaPramita, RahajengSiti NurRahmawati, "Differences in Pain Intensity of Warm Water Compress and Rose Aromatherapy Techniques for Women in the First Stage of Labor in the Active Phase," vol. 6, no. 1, pp. 90–100, 2017.
- [18] A. Devie *et al.* , "COVID-19 : A qualitative chest CT model to identify severe forms of the disease," vol. 102, pp. 77–84, 2021, doi: 10.1016/j.diii.2020.12.002.
- [19] I. Ubah *et al.* , "Effectiveness of Music Therapy in Reducing Anxiety in Mothers in Labor During the First Stage of Labor," vol. 5, no. 4, 2025, doi: 10.59818/jpm.v5i4.1697.
- [20] Tasri, "THE EFFECTIVENESS OF MUSIC AS A MANAGEMENT OF ANXIETY TOWARDS REDUCING PAIN DURING LABOR," 2020.
- [21] DP Hati, "The Effect of Combination Therapy of Natural Music and Flute on the Anxiety Levels of Mothers in the First Stage of Labor," vol. 6, 2025.