

# EVIDENCE BASED CASED REPORT THE EFFECT OF MUSIC THERAPY ON PAIN INTENSITY DURING LABOR

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## **Abstract**

Labor describes a situation where the intensity of pain increases so that the mother can feel it. The pain felt during contractions is related to the degree and uniformity of cervical dilatation and the lower segment of the uterus which can cause interference in the progress of labor. Various types of non-pharmacological pain management such as music therapy can distract and provide a relaxing effect that is useful for reducing pain in labor. The writing of this article on the effect of music therapy on laboring mothers. EBCR writing is by searching for evidence through databases from PUBMED and Google Scholar. The keywords used were "Effect", "Music Therapy", "Labor Pain". The search for articles was limited by the inclusion criteria of articles published in the last 10 years, RCTs, Meta-Analysis, in the form of full text articles, and in accordance with clinical statements. This evidence-based report aims to determine the effect of music therapy on pain intensity in laboring mothers at the Garuda Health Center. Two research articles were found using the randomized control trial (RCT) and Meta-Analysis methods by Annarita, et al and Rocio, et al that met the inclusion criteria and were screened and critically analyzed. Based on two journals that both show 2 evidence that music therapy has an effect in reducing labor pain. After a critical review, the research was declared valid and could be applied to patients. Music therapy is applied to women in labor phase I latent phase and it is found that the intensity of pain is reduced using the VAS scale from 7 to scale 4, then given back music therapy in the active phase and the results of the VAS scale are on a scale of 7 to scale 6. Music therapy can be used as a distraction, relaxation, and a sense of comfort and can change the way mothers perceive pain during labor. The application of music therapy can be an effective complementary therapy to help reduce pain in labor. The use of music therapy is recommended as an alternative in overcoming pain in laboring mothers.

**Keywords:** Music Therapy, Labor Pain, Midwifery Care

## **Introduction**

Labor is a series of events in which the baby comes out of the womb, followed by the release of the placenta and fetal membranes from the mother's body. (Nurwiandani, 2020) Normal labor is the process of exiting the fetus at full term pregnancy (37-42 weeks), born spontaneously with a back of the head presentation that lasts within 18 hours, without causing complications to the mother or fetus. (Prawirohardjo, 2018)

The labor process describes a situation where the intensity of pain increases so that the mother can feel it. The intense fear and anxiety felt towards things that add to the mother's pain during childbirth. Anxiety causes anxiety in the body, especially in the mother's uterus. This condition can limit normal birthing techniques, prolong the labor process, and cause severe pain. In the first stage of labor, pain is caused by dilatation of the cervix and lower segment of the uterus, as well as further stretching, stretching and trauma to the muscle fibers, ligaments that support these structures. The pushing process in the first stage of labor moves from the chest to the lumbar spine to the posterior nerve root ganglia. The pain can spread in the pelvic region to the center, upper thighs and the middle of the sacrum. The pain felt during contractions is related to the degree and uniformity of cervical dilatation and the lower segment of the uterus, which as the labor process progresses can achieve development, an increase in the intensity of contractions causes an increase in the intensity of pain that is more extensive.(Nufra, 2019)

Most women experience pain during labor, but the intensity of pain varies from woman to woman. This is often influenced by the mother's psychology at the time of delivery, namely fear and trying to fight labor and whether or not there is support from people around during the delivery process. Labor pain must be managed properly and not cause complications that can hinder the labor process. There are several techniques to reduce labor pain, namely pharmacological and non-pharmacological.(Astuti, n.d.) Based on the obstetric information center for hospital delivery data throughout Indonesia, it is known that 15% of mothers in Indonesia experience labor complications and 21% report that their labor is painful because they feel pain, while 63% do not have information about preparations that must be made to reduce pain during labor.(Dewi, 2015) Labor pain must be managed properly and not cause complications that can hinder labor.

Various types of non-pharmacologic pain management such as acupuncture, breathing techniques and acupressure, music therapy, massage therapy and hydrotherapy. With the help of music therapy, through sensory distraction, the mother's focus on labor pain can be reduced, thus reducing anxiety and pain.(Taghinejad, H., Delpisheh, A., & Suhrabi, 2010) One of the non-pharmacological methods that can reduce labor pain is music therapy. Music therapy is calming, meaning it can distract attention which is useful in reducing physiological pain, anxiety, stress, and more. Based on the background of the problem, the authors are interested in knowing the effect of Music Therapy on reducing pain and anxiety in laboring mothers

## Case Scenario

The case presented is the result of midwifery care carried out at the Garuda Health Center as follows. The patient named Mrs. F, 26 years old, came to the Health Center on March 16, 2023 at 07.35 WIB. Mom complained of feeling heartburn getting stronger and more frequent. Contractions that are felt regularly and have come out mucus mixed with blood but the release of water that is not retained is denied by the mother. Fetal movement can still be felt. The patient felt uneasy with the pain felt. This was her first pregnancy and she had never miscarried before. The gestational age was 39-40 weeks. The patient's medical history has never suffered or had chronic or infectious diseases before or during this pregnancy. During pregnancy the patient had never been hospitalized and had never used contraceptives before. The patient's general condition was good with composmentis consciousness. Vital signs examination with Blood Pressure 110/70 mmHg, Pulse 80x/min, Respiration 22x/min and Temperature 36.5<sup>0</sup>C. Physical examination of the face is not pale or oedema, eyes conjunctiva pink and white sclera, Palpation of the abdomen: TFU: 33 cm head percentage has entered the upper door of the pelvis (Divergent), FHR 142x/min, contractions 2x/10'/30". Vaginal touche: Portio thick soft, opening 2-3 cm, amniotic fluid (+), head percentage, left occiput anterior (LOA), station -1 and moulage negative. Before treatment using music therapy, the pain scale was measured using the VAS (Visual Analog Scale) measuring scale. The pain that the mother feels from a scale of 1-10 is 7 (very painful). After care using music therapy with the music the mother wants through the youtube platform for 30 minutes and every contraction. Mom can do it well and cooperatively. Then measured again with VAS with a scale value of 4 (moderate pain). The formulation of a clinical statement, based on the case is whether there is an effect of music therapy on the intensity of labor pain inpartu kala I?

P: Labor Pain

I : Music Therapy

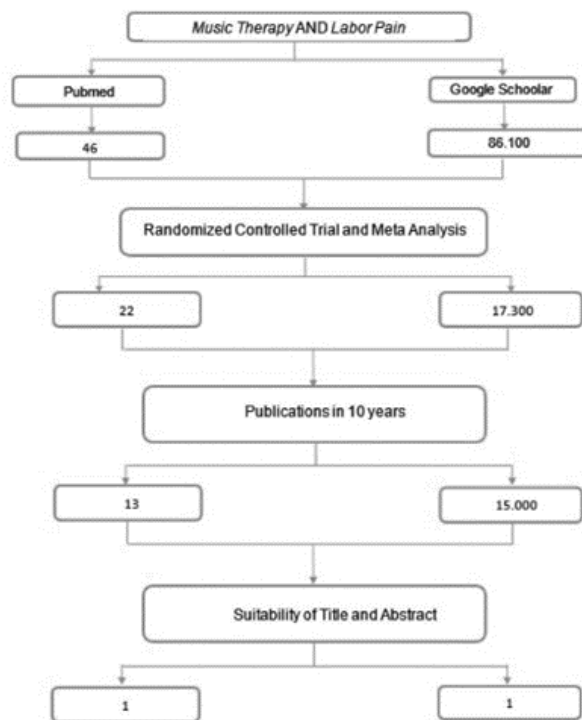
C: No intervention and comparator

O: Decreased pain in labor.

## Materials and Methods

The journal search was conducted on the date of the E-data based PubMed and Google Scholar. The search used Boolean operators with the keywords Music Therapy and Labor Pain. Article searches were limited by inclusion criteria, namely international journals published in the last

ten years (2013-2023), full text, research design is RCT, Meta-Analysis in English and suitability of clinical statements. Exclusion criteria were inappropriate titles and abstracts. The selected articles were then critically reviewed using the VIA (Validity, Importance, and Applicability) method or relevance to the problem.



**Journal Review**

No	Jurnal	Validity	Importance	Applicability
1	<i>Efect of music on labor and delivery in nulliparous singleton pregnancies: a randomized clinical trial</i>	<p>This journal is a type of research with the design of Parallel Group Non Blinded Randomized Controlled Trial</p> <p>A sample of 30 pregnant women who fit the inclusion criteria.</p> <p>Inclusion criteria were nulliparous women with singleton pregnancy and head presentation who were admitted to the delivery room and delivered between 37-42 weeks gestation for active phase of labor. Exclusion criteria were multiparous women, multiple pregnancies, preterm labor, post-term</p>	<p>Pain level during the active phase of labor was scored as 8.8±0.9 in the music group, and 9.8±0.3 in the control group. (MD 1, 00 points, 95% CI 1.48 to 0,52; P&lt;0,01). With a value less than 0.05 indicates significant.</p>	<p>Pregnant women in the intervention group were given music during the labor process, which was listened to through speakers. Pregnant women could choose the music they wanted to listen to. Mothers in the control group received the same care during labor as in the intervention group, with no music during labor or delivery. The effects of the intervention were reported comprehensively.</p>

No	Jurnal	Validity	Importance	Applicability
	<p>Annarita Buglione, Gabriele Saccone, Marta Mas, Antonio Rafone, Lavina Di Meglio, Letizia di Meglio, Paolo Toscano, Antonio Travaglino, Rosanna Zappa rella, Marzia Duval1 Mariavittoria Locci</p> <p><b>Journal Archives of Gynecology and Obstetrics 301 (3), 693 - 698, 2020</b></p> <p>Source: PubMed</p>	<p>labor, premature rupture of membranes, previous cesarean section, induction of labor with oxytocin or cervical ripening, and high-risk pregnancies, including hypertensive disorders of pregnancy, diabetes, intrauterine growth restriction, fetal abnormalities and were subsequently excluded from the study.</p> <p>Eligible participants were randomly allocated in a 1:1 ratio to listen to music. Randomization used a web-based system (randomization.com) to receive the intervention or control. The trial coordinator did not have access to the randomization sequence. The trial was open-label but the data analysis did not know which treatment group was allocated until all analyses were completed.</p> <p>Pain scores were recorded using the visual analog scale (VAS).</p> <p>In this method, pain is quantitatively assessed mapped on a horizontal analog linear scale of 0 (no pain) to 10 cm (intolerable pain). The effect of using music during labor on each outcome was measured as mean difference (MD) with 95% confidence interval (CI). The effect of using music during labor on each outcome was measured as mean difference (MD) with 95% confidence interval (CI). The validity of the evidence was good. Due to limiting the inclusion and exclusion criteria, as well as in the study analyzing the data was not informed in the administration of the intervention so as to minimize bias in the study.</p>		<p>This study has more benefits than risks in its application. The characteristics given are also in accordance with the characteristics that will be applied to patients in the puskesmas environment.</p> <p>Music therapy can be used as an inexpensive and low-risk complementary therapy to reduce pain during labor.</p> <p>This intervention can be done because it is procedurally easy to do and there are no side effects or special training. Also, the application of this intervention does not require much cost.</p>

No	Jurnal	Validity	Importance	Applicability
2	<p data-bbox="231 264 501 443"><i>Music Therapy In Pain And Anxiety Managemen During Labor”: A Systematic Riview and Meta-Analysis</i></p> <p data-bbox="231 813 501 931">Rocio Santiváñez Acosta, Elena de las Nieves Tapia López and Marilina Santero</p> <p data-bbox="231 1115 501 1146"><b>Journal Medicina 2020</b></p> <p data-bbox="231 1272 501 1328">Source : Google Scholar</p>	<p data-bbox="528 264 836 931">This journal is a type of research with a systematic review and meta-analysis design. In this systematic review and meta-analysis, PubMed/Medline, Lilacs, Cochrane, Tripdatabased e, and Google Scholar databases were searched, covering everything published from 2003 to June 2018, using keywords related to the purpose of this review to access randomized control trials published in English and Spanish. Inclusion criteria in this study were Full-text articles. using an English-language RCT research design over 10 years.</p> <p data-bbox="528 965 836 1574">The subjects used were primigravida and multi-gravida laboring mothers. Exclusion criteria for this study were articles with research that did not use RCT research designs. This study used PICO in formulating the research problem. Population = laboring mothers, Intervention = provision of aromatherapy and music therapy, Comparison = not given aromatherapy and music therapy, Outcome = decreased labor pain.</p> <p data-bbox="528 1608 836 1998">Research instruments using I2 and chi-square test to measure heterogeneity. Inclusion criteria of this systematic review and meta-analysis published in English and Spanish, women without health problems, and no difference in the number of pregnancies, age, type of pregnancy (single or multiple), or delivery method (vaginal or cesarean section).</p>	<p data-bbox="868 264 1123 409">Meta analysis showed a significant difference in VAS scores, favoring music therapy in pain intensity.</p> <p data-bbox="868 443 1123 1417">An analysis of 91 articles was identified using the search strategy, of which 62 were excluded and 12 studies met all criteria (all in English). Studies only included primiparous women, the results highlighted the benefits of music therapy over standard therapy, although interventions should be heterogeneously measured. Nonetheless, the meta-analysis showed significant differences in VAS scores, favoring music therapy in latent pain intensity (MD: -0.73; 95% CI -0.99; -0.48); in the active phase (MD: -0.68; 95% CI -0.92; -0.44) overall or during the first phase (MD: -1.71; 95% CI -2.65; -0.77) and second hour post intervention (MD: -2.90; 95% CI -3.79; -2.01).</p>	<p data-bbox="1155 264 1428 533">The music used in this study is music that is liked by laboring mothers. And easily found on Youtube or other music platforms so that this intervention can be easily given to a laboring mother.</p> <p data-bbox="1155 566 1428 689">The research is similar to people in my environment and can be applied.</p> <p data-bbox="1155 723 1428 1272">This research has more benefits than risks in its application. The characteristics given are also in accordance with the characteristics that will be applied to patients in the health center environment. This intervention is feasible because it is procedurally easy to do and there are no side effects or special training. In addition, the application of this intervention does not require much cost.</p>

## Results and Discussion

Based on the journal research conducted, several journals were found that were suitable for the research conducted and then made in the form of an Evidence-Based Case Report (EBCR). The search results were obtained from 2 articles Randomized Control Trial and Meta-Analysis. In Annarita's research, et al. conducted research on 30 primiparous women who fit the inclusion and exclusion criteria. There were two intervention groups in this study, namely using music therapy and not using music therapy. Pain scores were recorded using Visual Analog Scale (VAS). (Buglione et al., 2020)

According to research conducted by Rocio SantivSebuahez-Acosta<sup>1</sup>, Elena de las Nieves Tapia-LHaipez and Marilina Santero (2020) on the effect of music therapy on anxiety and pain during labor from 2003 to June 2018, the search strategy identified 91 studies. Of these, 62 studies were excluded and 12 studies met all criteria (all in English). More than half of the patients (9/12, 58.3%) evaluated had normal labor. Most studies were found to be of moderate to low quality, with an uncertain degree of bias, as concealment and randomization procedures were generally not described. With respect to studies that evaluated only primiparous women, the results highlighted the benefits of music therapy, compared to standard therapy, although interventions should be measured heterogeneously. Nonetheless, the meta-analysis showed a significant difference in VAS scores, favoring music therapy in pain intensity. (Santiváñez-Acosta et al., 2020)

Labor pain is a major concern for all pregnant women as it has a significant impact on the outcome of labor if not managed properly. Labor pain can be one of the causes of stress and the decision to have a caesarean section. (Miladinia et al., 2017) Pain during labor is necessary to detect uterine contractions during labor. However, if the mother is in constant pain, this can have pathological consequences. This can reduce uterine contractions and make labor too long or prolonged which can be bad for both mother and fetus. (Rahman et al., 2017) Stress produces physiological and biochemical responses that are unique to the individual with respect to their duration, intensity, and overall effect, and can cause hypertension and increased heart rate by activating the adrenal hypothalamic pituitary hormone axis and sympathetic nervous system, and by enhancing the cardiovascular.

By using distraction, relaxation and comfort, music can change the way we perceive pain. The perception and feeling of pain can be reduced with music, and both acute and chronic pain can be tolerated more easily. Patients can avoid discomfort by listening to music, which also helps break the cycle of fear and worry that aggravates pain reactions. The release of endorphins, which have a very supportive effect. Music with a slow, relaxing and soothing nature with little variation in tempo or volume is helpful for laboring women especially in the early stages of labor to reduce labor pain.

Light music can have a calming effect through interaction with the autonomic nervous system. Since all people are not inclined to choose one style of music due to age and cultural differences, the patient's choice of music will be very important in music therapy. Quiet music without fast rhythms and tempos, with slow rhythms and level tones is more appropriate for music therapy. (Rahayu & Kurniawati, 2020)

Based on midwifery care that has been provided by the author to Mrs. F, the author will discuss midwifery care management that has been provided in the form of music therapy conducted on March 16, 2023 at the Garuda Health Center. Evaluation of the results of music therapy interventions, there is a decrease in pain during contractions, where in the intervention Mrs. F was examined at 07.35 WIB with the results of cervical dilatation 2-3 cm and a total VAS pain score of 7 and uterine contractions 2x10'30" indicating Mrs. F was in the latent phase. Then the author performed midwifery care by providing music therapy for 30 minutes. During the first 30 minutes the mother felt a decrease in the pain experienced by the mother. The mother said the pain decreased after being given music therapy, the mother felt the pain was distracted because of the strains of music that could calm the mother. Then the mother was given a break. Post-test using Visual Analogue Scale was conducted after 30 minutes, and the mother said that the mother's pain was slightly reduced, the pain before the intervention was at number 7, in the post-test the mother said the pain was at number 4, which means the mother has decreased the degree of pain. And in the active phase I which was given back the music therapy intervention, the mother said that the pain in the mother was reduced. The pre-test was carried out in the active phase with the intervention of listening to music for 30 minutes, then resting again. Post-test using Visual Analogue Scale was done after 30 minutes of intervention, and the mother said that the pain she felt was not so significantly decreased but the mother still enjoyed the strains of the song which made the mother distracted with her pain. In the active phase of pain after previously being at number 7, in the post-test the mother said the pain was at number 6, which meant that the mother experienced a decrease in the degree of pain in her labor process.

According to research by Yutsef, et al 2019, Distraction mechanism during labor is a process where a woman distracts her attention from labor pain by using stimulating substances from the surrounding environment. Gate control theory, the dorsal horn of the spinal cord functions as a gate and plays a dynamic role in the process of transmitting pain to the brain. Transmission of pain stimuli is carried out by substantia gelatinosa (SG) cells, dorsal horns, and T cells in the spinal cord. SG cells in the dorsal horn transmit stimuli to T cells, and pain stimuli are sent to the brain. According to the gate control theory, thin A-delta fibers and unmyelinated C fibers are responsible for pain transmission. Thin myelinated A-delta fibers facilitate pain transmission by inhibiting SG cells; in



other words, they open the gate and allow painful stimuli to reach the cognitive level. Thick, unmyelinated C-fibers inhibit pain transmission by stimulating SG cells, they prevent painful stimuli from reaching the cognitive level by closing the gate. If the mother receives music therapy by listening to music that she wants, the gates on the dorsal horn will be closed thus preventing the transmission of pain by focusing the cerebral cortex on the stimuli.(Yurtsev & Sahin, 2021)

Music used as a form of therapy to reduce labor pain is also discussed in this journal, including classical music and religious music. The music in this journal can easily be given to mothers entering labor so that they can feel more relaxed and ideally experience less pain. This type of music is usually easy to find on YouTube channels or other music platforms. mechanisms along the nervous system in this journal can be easily given to mothers going through labor to make them feel more relaxed and hopefully reduce their pain. Pain management during labor is the main goal of midwifery care.

Physical, mental, emotional, and spiritual health can all be improved, restored, and maintained with the help of music therapy. Because it is often used as an alternative to accelerate the healing process, music therapy in medical science is also referred to as complementary medicine therapy which is used to reduce pain, namely music therapy because this therapy is widely used as an alternative to accelerate the healing process, this therapy can also bring peace and calm someone whose heart is feeling anxious and restless.(Wulan, 2019)

## **Conclusion**

From the evidence-based results, it is proven that the application of Music Therapy as a non-pharmacological method is effective in reducing pain in labor. With the use of effective distraction strategies, music therapy will make labor pain can be reduced. Music therapy is a tool for relaxation techniques used in midwifery practice. In addition, music serves as a controller and a tool to create a relaxing environment in the delivery room while the mother is in labor.

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