

EFFECTIVENESS OF USING A BIRTH BALL WITH CLASSICAL MUSIC THERAPY ON THE PAIN LEVEL OF MOTHERS IN THE 1ST STAGE OF BIRTH

Sharfina Haslin¹, Dhea Agatha Pasaribu²

^{1,2}Program Studi Sarjana Kebidanan, Sari Mutiara Indonesia University, Medan
email : sharfinahaslin97@gmail.com

ABSTRACT

Childbirth is the process of expelling a full-term baby, and physiological labor pains accompany the placenta. Labor pain can cause complications in the mother and fetus, such as increased pain intensity, stuck/long partus, distress in the fetus, which leads to fetal asphyxia, bleeding, and death of the mother and baby. Birth ball and classical music therapy are nonpharmacological methods that can reduce labor pain. The study aimed to determine the effectiveness of using birth balls with classical music therapy on the pain stage 1 of maternity mothers at Tanjung Clinic. This study used the quasy experiment method with a sampling technique using total sampling with a sample of 16 primigravida mothers, 8 people getting birth ball intervention and 8 people getting classical music therapy intervention by collecting data using observation sheets. The results showed that the use of a birth ball was more effective than classical music therapy with a difference in score of 7.75 and the results of statistical tests obtained p-value = 0.001 ($p < 0.05$) so it can be concluded that there is effectiveness of using a birth ball with classical music therapy on the pain stage 1 of maternity mothers at Tanjung Clinic. This nonpharmacological method is expected to be applied in obstetric service facilities to reduce labor pain.

Keywords : Birth Ball, Classical Music Therapy, The Pain Stage 1, Primigravida

INTRODUCTION

Childbirth is a series of events when a full-term baby is expelled, followed by the expulsion of the placenta and fetal membranes from the mother's body through the birth canal or other means, taking place with or without help (the mother's strength) (Kemenkes, 2019). During the birth process, the mother will experience physiological labor pain. Labor pain accompanied by uterine contractions appears in the 1st stage of labor in the latent and active phases, which gets stronger over time and reaches its peak at complete dilatation, namely 10 cm.

The intensity of pain during labor will affect the psychological condition of the mother, the labor process, and the well-being of the fetus, such as causing stress and excessive release of hormones, such as adrenaline, steroids, and catecholamines. This hormone can cause tension in smooth muscles and vasoconstriction in the blood vessels so that uterine inertia occurs and causes uterine ischemia which causes pain impulses to increase.

Labor pain can also cause complications during the delivery process, including stuck/long labor and, distress in the fetus which leads to fetal asphyxia, bleeding due to uterine atony, and leads to the death of the mother and baby (Sulistiawati & Ningrum, 2020).

Based on the collection of research by several previous researchers, from 17 respondents 2 maternity mothers felt mild pain, 8 maternity mothers felt moderate pain and 7 maternity mothers felt severe pain in childbirth (Mawaddah, 2020), in addition to the study conducted on 14 maternity mothers, it was found that as many as 85.7% of mothers experienced severe pain with 4 pregnant women who experienced severe pain controlled and moderate pain as many as 5 people (Haslin, 2018).

According to the Directorate General of Public Health, Ministry of Health of the Republic of Indonesia 2022, the coverage of

Indonesian labor in healthcare facilities in 2021 exceeded the 2021 RENSTRA target, which is 89% to 90.9% and the province of North Sumatra covers 84.6%, although the percentage of labor helped by health workers decreased in 2022 from 95.93% to 95.79% (Health Indicator Data, 1995-2022, BPS). Referring to the data above, in the Health Profile in 2021, data was found according to the Directorate General of Public Health, Ministry of Health of the Republic of Indonesia, 2022, the number of maternal death cases is 1,309 cases with other causes, one of which is longed labor or old labor in 2021.

The number of infant death cases aged 0-28 days out of a total of 20,154 cases in Indonesia and 79,1% occurred at the age of 0-6 days and there were 484 cases of neonatal deaths aged 0-6 days in North Sumatra. Based on the data, asphyxia is the second cause of neonatal deaths in 2021, which is 27.8%, and in the North Sumatra region, there are 168 cases of asphyxia (Directorate General of Public Health, Ministry of Health Republic of Indonesia, 2022).

Reducing the labor pain experienced by the mother is one of the duties of health workers, especially midwives so that they can create a safe and comfortable birth for the mother. Various methods of labor pain management were discovered and given to mothers, such as pharmacological and non-pharmacological methods. Non-pharmacological methods are effective without side effects, including hot and cold therapy, touch therapy, massage, reflexology, relaxation, sugar-free chewing gum, transcutaneous or subcutaneous nerve stimulation, water therapy, use of birth balls, music therapy, acupuncture and aromatherapy (Wahyuni et al., 2019).

The use of a birth ball to relieve labor pain by increasing joint mobilization between the sacroiliac and lumbosacral

bones and providing positive affirmations for the mother to reduce anxiety. One of the movements on a birth ball, namely sitting on the ball and shaking the pelvis, provides a feeling of comfort helps open the cervix through gravity, and increases the release of endorphins because the flexible material of the birth ball stimulates the receptors in the pelvis (Shirazi et al., 2019).

Based on the results of previous research, before being given the birth ball intervention, 7 respondents (53.8%) felt very mild pain and 6 respondents felt mild pain. After being given the birth ball intervention, 10 respondents who gave birth felt very light pain and 3 respondents who gave birth felt mild pain (Ulfa, 2021).

Apart from the birth ball, classical music therapy also relieves labor pain by calming it or is called an audio-analgesic because classical music therapy has a soft rhythm so it can stimulate brain waves with deep delta frequencies, stimulating the pituitary to release endorphin hormones which can reduce labor pain (Anggraini, 2020). The results of research conducted by Mawaddah (2020), after being given classical music therapy, 10 respondents (58.82%) felt mild pain, 6 respondents (35.29%) felt moderate pain and 1 respondent (5.88%) felt severe pain.

The results of an initial survey conducted by researchers at Tanjung Clinic through interviews with 20 mothers in labor, 12 mothers admitted to feeling labor pain, such as pain in the back, cramps in the stomach and pressure in the abdomen, pelvis and vagina. Based on this background, the author is interested in researching the effectiveness of using a birth ball with classical music therapy on the level of pain of mothers in the 1st stage of labor at Tanjung Clinic.

METHOD

This type of research is quantitative research with a quasi-experiment research design, through this research it can explain or describe the differences in the effectiveness of using a birth ball and classical music therapy in reducing labor pain in the 1st stage. The sample in this study is primigravida inpartu mothers in the 1st stage of the active phase with date Interpretation at the Tanjung Clinic were 16 primigravida inpartu mothers in the 1st active phase. The sampling technique used total sampling with a division of 8 people given birth ball intervention and 8 people given classical music therapy intervention. The instruments used in this research were an observation sheet, birth ball, headset, and headphones with the Spotify application containing 1 Beethoven music album. After the researchers identified potential respondents who met the inclusion criteria and exclusion criteria that had been applied, the researchers carried out initial observations (pretest) to determine the pain level of mothers in the 1st stage of labor before giving birth ball intervention and classical music therapy to both groups. Group 1 was given birth ball intervention with pelvic rock movements for 30 minutes and group 2 was given classical music therapy intervention for 30 minutes. Before collecting data, researchers carried out ethical procedures and obtained an ethical certificate with number 2240/F/KEP/USM/VII/2023. After the researcher had finished collecting data, the variables were analyzed statistically using the *dependent t-test* and *independent t-test* with a CI of 95%.

RESULT AND DISCUSSION

After the data was obtained, statistical analysis was carried out and the following results were obtained:

Table 1. Pain Levels of Mothers in the 1st Stage of Labor Before and After Giving Birth Ball Intervention with Classical Music Therapy

Variabel	N	Sig.
Birth Ball		
Pain level before intervention	8	0,012
Pain level after intervention	8	
Classical Music Therapy		
Pain level before intervention	8	0,015
Pain level after intervention	8	

Based on Table 1, in the birth ball intervention, the p-value was found to be 0.012 and in the classical music therapy intervention the p-value was 0.015, both p-values were smaller than the value $\alpha=0.05$, meaning there was a difference in the level of maternal pain. 1st stage of labor due to the influence of using a birth ball with classical music therapy 1 at Tanjung Clinic with the conclusion that classical music therapy is more effective than a birth ball.

So Ha's conclusion is accepted, namely that there is effectiveness of using a birth ball with classical music therapy on the pain level of mothers in the 1st stage of labor at Tanjung Clinic. Before using the birth ball, 6 respondents experienced controlled levels of severe pain and 2 respondents experienced moderate pain, while after using the birth ball there was a decrease in the level of pain, namely 5 respondents experienced mild pain and 3 people experienced moderate pain.

Using a birth ball can increase self-efficacy or self-belief that one will succeed in doing or overcoming something because it is a coping mechanism that helps overcome pain (Shirazi et al., 2019). The results of this research are in line with

research (Sari, 2019) that the shape of the birth ball which adapts to the mother's body shape makes the mother more comfortable because the muscle ligaments become looser and reduces pressure on the sacroiliac, vessels around the uterus, bladder, back, waist, tailbone and perineum so the pain is reduced.

Using a birth ball can reduce pain after 20-90 minutes of use. The birth ball helps increase the speed of labor because it helps the pelvis open, increases blood circulation to the uterus, placenta and fetus and reduces pressure and increases the pelvic outlet by 30%, creates a comfortable feeling in the knee and ankle area, provides back pressure in the perineum area and thighs. . The gravitational force on the birth ball also encourages the baby to descend so that the birth process is faster (Ajeng et al., 2023).

The results of this study are supported by a systematic review conducted by (Grenvik et al., 2022), the use of a birth ball can reduce labor pain and is effective for mothers who choose not to have anesthesia (epidural) because the administration of anesthesia causes the mother to lie on her back, resulting in decreased mobility. in the lower extremities and the risk of postural or

orthostatic hypotension (a condition where blood pressure drops rapidly when moving from a sitting or lying position to a standing position). Gravitational force can affect the heart, when the mother is in a supine position due to the administration of wool anesthesia and blood pressure is distributed evenly throughout the body so that when the mother stands up the gravitational force works so that blood accumulates in the lower extremities due to high venous compliance and ultimately there is a decrease in stroke volume due to the Frank mechanism. - Starling reduces blood flow in the brain and can cause the mother to faint (Dumalang et al., 2022).

Classical music therapy can stimulate pleasant sensory stimuli resulting in the release of endorphin hormones which can reduce anxiety and pain as well as increase feelings and reduce the hormone cortisol using the distraction method (Sanfilippo et al., 2021), the results of this study are in line with research (Mawaddah, 2020) which shows a decrease in pain levels when using classical music therapy.

When someone listens to classical music, the harmonies in classical music will enter the ears in the form of audio which will vibrate the eardrum, shake the fluid in the inner ear and vibrate the hair cells in the cochlea, then through the cochlear nerve to

the brain and create imagination in the right brain. and the left brain so that it can provide comfort and change feelings because classical music can reach the left region of the cerebral cortex. The auditory pathway then passes to the hypothalamus to the reticular formation to transmit impulses to the autonomic fibers which have two nervous systems, namely the sympathetic and parasympathetic nerves. Musical sound waves delivered to the brain in the form of electrical energy will generate brain waves with frequencies alpha (evoking relaxation), beta (mental activity), tetha (stressful situations, depression and creative efforts), and delta (drowsy situations). Classical music has alpha and tetha frequency categories of 5000-8000 Hz so that it stimulates the brain to produce serotonin and endorphin hormones which cause the body to relax and make the heart rate stable (Fatmawati, 2020)

The results of this study are in line with research conducted by (Guo et al., 2022), music therapy can reduce labor pain, duration of labor and postpartum bleeding as well as reduce the risk of tears in the perineum and when combined with free positioning it can increase uterine contractility and pelvic floor muscles. and extremities because both have distraction methods that can reduce the perception of labor pain so that they can relieve discomfort and anxiety which influence labor pain.

Table 2. Effectiveness of Using a Birth Ball with Classical Music Therapy on the Pain Level of Mothers in the 1st Stage of Birth

	Pain Level After Intervention		
	N	Mean	p-value
Birth Ball	8	3,38	0,000
Classical Music Therapy	8	6,25	0,000

Based on Table 2, the results of this study show that the use of classical music therapy is more effective than a

birth ball on the level of pain of mothers giving birth in the 1st stage. Independent T test results show that the p-value is

0.000, meaning that there is effectiveness of using birth balls with classical music therapy on the level of pain of mothers giving birth. stage 1 with a difference value of 2.87, where the use of classical music therapy is more effective than birth ball.

The results of this research are in line with research (Lubis, 2021), namely the use of a birth ball as a pain distraction that helps mothers relax, the rounded shape of the ball and adapting to the mother's body shape can stimulate receptors in the pelvis to secrete endorphins and reduce pressure on muscles and joints. sacroiliacs, uterine vessels, perineum and organs around the pelvis. Birth ball in this study uses a pelvic rocking movement which is done by shaking the pelvis and waist to the front, back, left and right which aims to train the abdominal, hip and waist muscles so that it can reduce pressure on the blood vessels in the uterus and urinary bladder, reducing pain during the first stage of labor and stimulates the release of the hormone oxytocin (Audina et al., 2022).

Labor pain can be influenced by the characteristics of the respondent, such as age, ethnicity and mother's occupation. Psychological conditions at a young age which still tend to fluctuate and lack of experience with pain as well as immature reproductive organs cause the pain felt to be more severe compared to mothers who give birth at a healthy reproductive age (Lubis, 2021). Ethnicity plays a very important role in a person's response to pain because the cultural and cultural backgrounds in each tribe in Indonesia have their own characteristics to shape a person's character so that the way they respond to pain is different (Rejeki, 2018). Likewise with age, the occupation of respondents in this study does not affect the level of pain of mothers in the first

stage of labor because the average respondent's occupation is housewife (IRT). Maternal work can be associated with fatigue due to activities outside of household work.

According to research (Rantala et al., 2022), it was found that often health workers, especially midwives, are not active in responding to mothers experiencing labor pain, giving rise to the mother's perception that giving birth quickly is not as comfortable as possible. This is what causes the mother's pain level to increase due to stress due to enduring pain so that mothers giving birth, especially primigravidas who choose to undergo anesthesia or are referred to the hospital for a cesarean section, some health facilities, especially hospitals, rarely provide non-pharmacological methods to reduce pain. painful. Apart from midwives' inactivity in dealing with labor pain, ANC activities aimed at increasing knowledge, such as dealing with labor pain, are rarely carried out due to the increasing number of internet sources, even though if knowledge from the internet is combined with practices carried out with health workers, it will make it easier for mothers to deal with labor pain. Health workers often explain that labor pain is natural, making labor pain a trivial matter, resulting in fewer ANC class participants at the end of pregnancy, so many mothers in labor expect to be given anesthesia or have a cesarean section (Pietrzak et al., 2023).

The use of classical music therapy is more effective than a birth ball because classical music therapy can affect the sympathetic nerves which cause anxiety so that blood pressure and heart rate increase and affect the level of labor pain. This is what caused the level of pain in respondents to the classical music therapy intervention to decrease more than in respondents to the birth ball intervention.

The birth ball can provide comfort to the mother to carry out self-efficacy so that she can control her own pain, such as when the mother starts to feel pain, the mother can start doing pelvic rock movements on the birth ball and when the mother feels the pain starts to decrease and the mother feels weak, she can rest for a moment (Fernández-Arranz et al., 2019).

The use of classical music therapy can reduce anxiety which can increase labor pain produced by catecholamine hormones which will inhibit the function of the oxytocin hormone which is needed in childbirth. In research (Howlin et al., 2023) it is said that music can be an alternative in reducing pain because music can provide a feeling of comfort depending on the type of music and the character of the respondent. Boredom appears after listening to music for some time because the feeling of comfort is only temporary so that the respondent The classical music therapy intervention in this study experienced a slight decrease in pain levels due to the characteristics of respondents who did not like music and the feeling of boredom that appeared suddenly. Based on research results (Gao C, Fillmore P, 2021), classical music therapy can reduce pain but is temporary if given within 15 minutes. This method is quite effective when compared by gender, where women recognize and feel music more easily than men. Apart from that, the tempo of classical music does not match the theta frequency and is more effective during sleep. Classical music therapy is more effective in reducing

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anxiety than pain (Son et al., 2019).

According to theory, music can quickly attract listeners, but music itself cannot cause listeners to act, meaning that music can provide benefits if the mother is interested and chooses the music (Suciati et al., 2020).

According to researchers' assumptions, respondents to classical music therapy intervention experienced a significant reduction in pain compared to birth balls because classical music therapy can be done anywhere and at any time just by using a cellphone containing classical music so it is more economical than birth balls which take up space because of their large shape and low price. more expensive than classical music.

CONCLUSION

In this research, it was found that the value of the pain level of mothers in the 1st stage of labor in the birth ball group before the intervention was mostly found in the controlled severe pain group, while after the intervention the majority was found in the mild pain group with a value of $p=0.012$, and it was found that the value of the pain level of mothers in the first stage of labor in the classical music therapy group before the intervention was mostly in the controlled severe pain group, whereas after the intervention the majority was in the moderate pain group with a value of $p=0.015$. There is an effectiveness of using a birth ball with classical music therapy on the level of pain of mothers in the 1st stage of labor at Tanjung Clinic with a value of $p=0.000$.

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