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The Effect of Lullaby Music Therapy on the CTG Rhythm of Pregnant Women in the Third Trimester

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Abstract

Introduction: CTG is a tool used to monitor fetal activity and heart rate, as well as uterine contractions while the baby is in the womb. Through this examination, the doctor can evaluate whether the fetus is healthy before delivery.
Objective: To determine the effect of lullaby music therapy on CTG rhythm in third-trimester pregnant women.
Method: The design used in this research is pre-experimental. This research was conducted at Bina Husada Hospital with a research period of December 2021-January 2022. The population in this study was 15 third-trimester pregnant women who underwent CTG. The sample in the research consisted of 15 respondents. The instrument used is an observation sheet. Statistical testing with Paired Sample Test.
Results: The results of statistical tests show that the p-value is 0.036, meaning P<0.05.
Conclusion: There is an influence of lullaby music therapy on CTG rhythm in third-trimester pregnant women.

Keywords: ctg, lullaby, music

Introduction

The infant mortality rate is an important indicator in determining the level of public health because it can describe the general health of the population. This figure is very sensitive to changes in levels of health and well-being. The infant mortality rate can be defined as deaths that occur between the time after the baby is born and the baby is not exactly one year old. Neonatal Mortality is the number of deaths of neonates aged < 28 days (0 - 28 days) per 1,000 live births in a year.[1] Neonatal mortality can describe the level of maternal and child health services including pregnancy, intrapartum and postnatal examinations. If the neonatal mortality rate (AKN) increases, the level of maternal and child health services will decrease.[2]

Monitoring fetal well-being is something that needs to be done during pregnancy,

especially during delivery, to know the development of the fetus. Childbirth trauma and infectious diseases are the causes of high perinatal mortality rates in developing countries. The way to reduce perinatal mortality is to monitor the well-being of the fetus in the womb. The components that can be used as measurements to determine fetal well-being are fetal movement, breathing movements, fetal tone, fetal heart rate, amniotic fluid volume.[3]

General fetal well-being, namely normal fetal development, is characterized by the absence of disturbances during examinations and/or the absence of complaints felt by the mother. Factors that cause disturbances in fetal well-being include genetic factors, inadequate maternal weight gain or inadequate nutrition during pregnancy, chronic maternal diseases, infections during pregnancy, exposure to carcinogens, placental implantation and placental abruption.[4] The impact of impaired fetal well-being, namely (PJT) inhibited fetal growth, teratoma, patau syndrome, thalassemia, congenital hypothyroidism, craniorachiscission, intrapartum asphyxia and even birth with (LBW) low birth weight (death in the womb).[5]

CTG is a tool used to monitor fetal activity and heart rate, as well as uterine contractions while the baby is in the womb. Through this examination, the doctor can evaluate whether the fetus is healthy before and during delivery. If there are changes in the fetal heart rate or uterine contractions in pregnant women, doctors and midwives can be more alert and can provide immediate help. Monitoring the well-being of the fetus is an important supervision for the fetus during pregnancy and childbirth, the quality of health services and technology that supports the mother's hope for a normal birth. There are many ways to monitor the well-being of the fetus, including ultrasound, monitoring the fetal heart rate (DJJ), monitoring the daily movements of the fetus, and measurement of the height of the uterine fundus in centimeters.[6]

One effective way aimed at providing early stimulation to the fetus to avoid delays in fetal growth and development is by providing music therapy to the fetus. The baby's biological and physiological factors can be formed while the fetus is still in the womb. The mother's voice and classical music have a comforting effect on the fetus who hears it, including the mother who is carrying it. This condition influences the fetus to grow and develop in a relatively calm atmosphere so that the development process takes place optimally.[7]

Music therapy is material that can influence a person's condition both physically and mentally. Music stimulates the growth of brain functions such as memory, learning, hearing, speaking as well as intellectual analysis and consciousness functions. Music provides an entertaining atmosphere, creating a calming and pleasing atmosphere for a person.[8] Lullaby music is often used in multimodal stimulation. Lullaby music includes classical Brahm or Mozart music, regional music or mother's singing which can regulate the baby's behavior to be able to focus on himself and also calm which is communicated emotionally.[9] The relationship between music therapy is that it will affect the fetal heart rate, namely that when listening to music, the brain processes what it hears, the heart rate tends to follow or synchronize with the speed of the music. When you hear music with a low tempo, your heart rate will slow down and your body will relax. This relaxed state will facilitate blood circulation between the mother and fetus through the placenta. The fetus' heartbeat will synchronize with the mother's heartbeat as the first source of music that the fetus hears in the womb. However, in this study, after giving slow rhythmic music therapy, the fetal heart rate tended to increase. This increase in fetal heart rate occurs because after giving music therapy the mother is in a less relaxed state and the mother feels tired, which will affect the fetal heart rate.[10]

Based on Jiarti's research, this research aims to determine the effect of music therapy on fetal well-being. The results of this study were that there were 9 respondents or 60% of respondents whose fetal movement assessment results were in the sufficient category, while

the results of the FHR measurements from 15 respondents (100%) were normal. Based on the results of the Paired Sample T-test statistical test, shows that there is a significant influence before and after giving music therapy on fetal well-being.[10]

This study aimed to determine the effect of lullaby music therapy on CTG rhythm in third-trimester pregnant women.

Method

The design used in this research is pre-experimental. 11 This research was conducted at Bina Husada Hospital with a research period of December 2021-January 2022. The population in this study was 15 third-trimester pregnant women who underwent CTG. The sample in the research consisted of 15 respondents. The instrument used is an observation sheet. Statistical testing with Paired Sample Test.[12] This research has passed the ethical test at the Stikim Ethics Commission with number: 093/Sket/Ka-Dept/RE/STIKIM/XII/2022.

Results

Table 1. Description of CTG Rhythm Before and After Lullaby Music Therapy in Pregnant Women in the Third Trimester (N=15)

Frequency	Pre-test	Pre-test
Mean	173,80	171,46
Median	175	171
Minimum	165	160
Maximum	180	179

Table 1 shows the description of the CTG rhythm before and after carrying out lullaby music therapy on pregnant women in the third trimester in Room E of Bina Husada Hospital in 2021. Based on the pre-test results, the mean value (average) before was 173.80 and after it was 171.46, the median value before is 175 and after is 171, the minimum value before is 165 and after is 160 and the maximum value before is 180 and after is 179.

Table 2. Effect of Lullaby Music Therapy on CTG Rhythm in Third Trimester Pregnant Women (N=15)

Lullaby Music Therapy	N	Mean Differences	Correlation	P-value
Pre-test and Post-test	15	2,333	0,740	0,036

Based on Table 2, it is known that the CTG rhythm in pregnant women seen from the Mean Differences value between the Pre-test and Post-test results is 2.333, meaning it is positive, so there is a tendency to decrease the CTG rhythm in pregnant women by 2.333. Based on the results of the correlation test, it is known that the correlation coefficient value is 0.740, meaning that the influence of lullaby music therapy on CTG rhythm in third-trimester pregnant women in Room E of Bina Husada Hospital in 2021 is 74%. The statistical test results show that the p-value is 0.036, which means $P<0.05$, so it can be concluded that there is an influence of lullaby music therapy on CTG rhythm in third-trimester pregnant women in Room E at Bina Husada Hospital in 2021.

Discussion

Description of CTG Rhythm Before Carrying Out Lullaby Music Therapy for Pregnant Women in the Third Trimester

Based on the research results, it shows that the CTG rhythm picture before carrying out lullaby music therapy in third-trimester pregnant women in Room E of Bina Husada Hospital

in 2021 is at the abnormal limit, namely in the tachycardia category, namely DJJ (160-180 times/minute) with an average value of 173 .80, the median value before is 175, the minimum value before is 165 and the maximum value before is 180.

This research is not in line with Kusbandiyah's research, it is known that before the music therapy research was carried out, it was known that the average DJJ score was 136.27, so out of 15 respondents (100%) it was normal (120-160 times/minute).[10] Likewise with Fatmawati's research, the classical music group had a mean value: of 134.8, standard deviation of 1.858, minimum DJJ of 132 and maximum of 138.[13] Based on the theory, CTG is measured along a horizontal line, namely the average heart rate during the first 10 minutes with the following results: Normal: 110-160 beats per minute, Tachycardia: pulse > 160 beats per minute which lasts > 10 minutes. The most common causes are maternal fever and bradycardia: pulse < 110 beats per minute lasting > 10 minutes. A heart rate of 100-110 can be obtained under normal conditions, especially in post-term fetuses. Causes of bradycardia include maternal hypothermia, and fetal arrhythmia.[14]

According to researchers, before lullaby therapy was carried out, it was known that the CTG rhythm seen from the DJJ was very high, namely an average of around 170, which was an abnormal limit. In reality, pregnant women who undergo CTG examinations are pregnant women who have pregnancy problems so they are expected to carry out a CTG to determine what actions should be taken for the pregnant mother and fetus. If we look at the theory, a high DJJ value is included in Tachycardia: pulse > 160 beats per minute. Therefore, it should be treated immediately because this condition can potentially cause the fetus' health to decline and even the fetus to die in the womb.

Description of CTG Rhythm after Lullaby Music Therapy for Pregnant Women in the Third Trimester

Based on the research results, it shows that the CTG rhythm after carrying out lullaby music therapy in third-trimester pregnant women in Room E at Bina Husada Hospital in 2021 experienced a decrease in the DJJ value but was still in the abnormal limit, namely in the tachycardia category, namely DJJ (160-180 times/minute) with an average value of 171.46, a median value after that of 171, a minimum value after that of 160 and a maximum value after that of 179.

This research is not in line with Kusbandiyah's research, it is known that after conducting music therapy research, it was found that the average DJJ score was 141.47, so out of 15 respondents (100%) it was normal (120-160 times/minute).[10] Similarly, research by Fatmawati in the classical music group showed that the fetal heart rate after being stimulated by classical music had a mean value: of 139.9, standard deviation of 8.45, min 128 and maximum of 154.[13] After giving music therapy, the fetal heart rate tends to decrease and approaches normal limits. This is by the theory which states that when listening to music, the brain processes what it hears, the heart rate tends to follow or synchronize with the speed of the music. When you hear music with a low tempo, your heart rate will slow down and your body will relax. This relaxed state will facilitate blood circulation between the mother and fetus through the placenta. The fetus' heartbeat will synchronize with the mother's heartbeat as the first source of music that the fetus hears in the womb.[15] This balance must be maintained from stress, both physical and psychological so that the fetus does not experience growth disorders while in the uterus and does not become a problem for the pregnant mother during pregnancy until delivery.[14]

According to researchers, after lullaby therapy, DJJ's condition decreased, although the decrease was not too much, there were benefits after lullaby music therapy. According to the

theory when listening to music, the brain processes what it hears, the heart rate tends to follow or synchronize with the speed of the music. When you hear music with a low tempo, your heart rate will slow down and your body will relax. This relaxed state will facilitate blood circulation between the mother and fetus through the placenta. For this reason, if pregnant women experience tension or stress, they are expected to listen to lullaby music.

The Effect of Lullaby Music Therapy on CTG Rhythm in Third-Trimester Pregnant Women

Based on the research results, it is known that the CTG rhythm in pregnant women, seen from the Mean Differences value between the Pre-test and Post-test results, is 2.333, meaning it is positive, so there is a tendency to decrease the CTG rhythm in pregnant women by 2.333. Based on the results of the correlation test, it is known that the correlation coefficient value is 0.740, meaning that the influence of lullaby music therapy on CTG rhythm in third-trimester pregnant women in Room E of Bina Husada Hospital in 2021 is 74%. The statistical test results show that the p-value is 0.036, which means P<0.05, so it can be concluded that there is an influence of lullaby music therapy on CTG rhythm in third-trimester pregnant women in Room E at Bina Husada Hospital in 2021.

In line with Kusbandiyah's research, it is known that the results of the paired sample T-test show that the P-value (0.000) < a (0.05) so that there is an influence of music therapy on the frequency of DJJ.[10] In line with Fatmawati's research, the classical music group showed that the results of bivariate analysis with dependent T-test concluded that there was a significant effect of music therapy on MAP (p-value = 0.031).[13] In theory, one effective way aims to provide early stimulation to the fetus so that there is no delay in fetal growth and development, namely by providing music therapy to the fetus. The baby's biological and physiological factors can be formed while the fetus is still in the womb. The mother's voice and classical music have a comforting effect on the fetus who hears it, including the mother who is carrying it. This condition influences the fetus to grow and develop in a relatively calm atmosphere so that the development process takes place optimally.[7] Music therapy is material that can influence a person's condition both physically and mentally. Music stimulates the growth of brain functions such as memory, learning, hearing, speaking as well as intellectual analysis and consciousness functions. Music provides an entertaining atmosphere, creates a calming and pleasing atmosphere for a person.[8]

The relationship between music therapy is that it will affect the fetal heart rate, namely that when listening to music, the brain processes what it hears, the heart rate tends to follow or synchronize with the speed of the music. When you hear music with a low tempo, your heart rate will slow down and your body will relax. This relaxed state will facilitate blood circulation between the mother and fetus through the placenta. The fetus' heartbeat will synchronize with the mother's heartbeat as the first source of music that the fetus hears in the womb. However, in this study, after giving slow rhythmic music therapy, the fetal heart rate tended to increase. This increase in fetal heart rate occurs because after giving music therapy the mother is in a less relaxed state and the mother feels tired, which will affect the fetal heart rate.[10]

According to the researchers, this study concluded that after giving music therapy it was found that the CTG rhythm of the DJJ frequency tended to decrease towards the normal limit, namely 110-160. By that theory. When you hear music with a low tempo, your heart rate will slow down and your body will relax. This relaxed state will facilitate blood circulation between the mother and fetus through the placenta. The fetus' heartbeat will synchronize with the mother's heartbeat as the first source of music that the fetus hears in the womb. For this reason, it is recommended that when carrying out a CTG for pregnant women, lullaby music is

included to relax the mother during the CTG examination.

Conclusion

Based on research that has been carried out regarding the effect of lullaby music therapy on CTG rhythm in third-trimester pregnant women, the results of statistical tests show that the p-value is 0.036, meaning P<0.05, so it can be concluded that there is an influence of CTG rhythm in third-trimester pregnant women. before and after lullaby music therapy.

Conflict of Interest

This research is not bound by any interests.

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