



The Effect of Music Therapy on Anxiety Levels in Pregnant Women in Their Third Trimester

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Abstract. The third trimester of pregnancy is a critical phase that is often accompanied by increased anxiety due to concerns about the delivery process, the safety of the mother and fetus, and readiness to take on the role of mother. Anxiety that is not managed properly can have a negative impact on the psychological well-being of the mother and the delivery process. Music therapy is a non-pharmacological intervention that is considered safe, easy to implement, and has the potential to reduce anxiety in pregnant women. This study aims to analyze the effect of music therapy on the anxiety levels of pregnant women in the third trimester. This study used a quantitative approach with a quasi-experimental one-group pretest–posttest design. The study sample consisted of 20 pregnant women in their third trimester who were selected using purposive sampling at a community health center. Anxiety levels were measured before and after the intervention using a standardized anxiety questionnaire. The intervention consisted of relaxing instrumental music therapy administered for approximately 20–30 minutes in comfortable conditions. Data analysis was performed using univariate and bivariate analysis with the Wilcoxon Signed Rank Test at a significance level of $p < 0.05$. The results showed that before the intervention, most respondents were in the moderate to severe anxiety category, whereas after music therapy, severe anxiety was no longer found and there was an increase in the proportion of mild anxiety. The Wilcoxon test showed a statistically significant difference between anxiety levels before and after the intervention ($p = 0.000$). In conclusion, music therapy has a significant effect in reducing anxiety levels in third trimester pregnant women and has the potential to be an effective non-pharmacological intervention to be integrated into antenatal care.

Keywords: Antenatal Care; Anxiety; Music Therapy; Pregnant Women; Third Trimester

1. INTRODUCTION

The third trimester of pregnancy is a critical phase marked not only by increasingly complex physiological changes, but also by increased psychological vulnerability in pregnant women. As they approach childbirth, pregnant women often face various concerns, such as fear of the delivery process, pain, safety of themselves and their fetus, and readiness to take on the role of mother. These conditions make anxiety one of the most common psychological problems found in the final trimester of pregnancy (Biaggi et al., 2016; Dennis et al., 2017).

Globally, antenatal anxiety is a significant public health issue. Meta-analyses involving various countries show that the prevalence of anxiety in pregnant women ranges from 15–30%, with an increasing trend in the third trimester (Dennis et al., 2017; Fawcett et al., 2019). Recent studies also confirm that nearly a quarter of pregnant women worldwide experience clinically significant symptoms of anxiety prior to delivery (Woody et al., 2017). The World Health Organization (WHO) emphasizes that perinatal mental health disorders, including anxiety, contribute to an increased risk of pregnancy complications and a decline in the quality of life of mothers, and therefore need to be addressed as an integral part of antenatal care (WHO, 2022).

Anxiety in the third trimester of pregnancy is not merely a temporary emotional response, but a condition with broad clinical implications. Physiologically, anxiety triggers activation of the sympathetic nervous system and the hypothalamic–pituitary–adrenal (HPA) axis, which increases the secretion of cortisol and catecholamines. Chronic activation of this pathway can affect uteroplacental blood flow, increase inflammation, and contribute to impaired regulation of uterine contractions (Dunkel Schetter & Tanner, 2018). Several studies have reported that prenatal anxiety is associated with an increased risk of preterm birth, low birth weight, and neonatal adaptation disorders (Grigoriadis et al., 2018; Madhavanprabhakaran et al., 2019).

In the Indonesian context, attention to the mental health of pregnant women is becoming increasingly important given the continuing high maternal health challenges. Data from the 2018 Riskesdas survey show that emotional mental disorders are still experienced by a large proportion of the productive age population, including women of reproductive age (Indonesian Ministry of Health, 2018). Several local studies in Indonesia report that anxiety among pregnant women in the third trimester is quite high, especially among primigravida women and women with limited social support (Lestari et al., 2021; Rahayu et al., 2022). However, antenatal services in primary health facilities still focus more on the physical aspects of pregnancy, while psychological screening and intervention are not yet routine practices.

Efforts to manage anxiety in pregnant women can be done through pharmacological and non-pharmacological approaches. However, the use of anti-anxiety drugs during pregnancy is often limited by considerations of fetal safety, side effects, and the preferences of pregnant women (Howard et al., 2018). Therefore, the WHO and various professional associations recommend non-pharmacological interventions as the first line of treatment for mild to moderate anxiety during pregnancy (WHO, 2022). These interventions include education, relaxation, mindfulness, and art-based therapies, including music therapy.

Music therapy is a non-invasive intervention that utilizes musical elements to influence an individual's emotional and physiological state. Neurobiologically, music can modulate limbic system activity, decrease amygdala activity, and increase relaxation responses through parasympathetic nervous system dominance (Koelsch, 2020). These effects contribute to reduced anxiety, stabilized heart rate, and decreased stress hormone levels. In the context of pregnancy, music therapy is considered safe, easy to implement, and can be done independently or integrated into antenatal care.

Various international studies show that music therapy is effective in reducing anxiety levels in pregnant women. Systematic reviews and meta-analyses report that pregnant women

who receive music therapy experience a significant reduction in anxiety scores compared to the control group, both in the second and third trimesters (Corbijn van Willenswaard et al., 2017; Liu et al., 2020). Other experimental studies show that music therapy also contributes to improved sleep quality and feelings of comfort prior to childbirth (Chang et al., 2018).

In Indonesia, several studies have evaluated the use of music therapy in pregnant women in their third trimester and shown promising results. These studies reported a decrease in anxiety levels after music therapy, whether classical, instrumental, or religious music was used (Sari & Pratiwi, 2020; Wulandari et al., 2021). However, most studies still have limitations, such as small sample sizes, variations in anxiety measurement instruments, and differences in the duration and type of music used. In addition, there have not been many studies that specifically highlight the application of music therapy in the context of routine obstetric services in Indonesia.

This research gap indicates the need for further studies on the effectiveness of music therapy for anxiety in pregnant women in their third trimester, using a structured design that is relevant to the context of health services in Indonesia. Research focusing on the third trimester is important considering that this phase is the period with the highest intensity of anxiety and has a direct impact on readiness for childbirth.

Based on the above description, this study aims to analyze the effect of music therapy on the anxiety levels of pregnant women in their third trimester. The results of this study are expected to form the basis for the development of safe, effective, and easily applicable non-pharmacological interventions in antenatal care, as well as to support the integration of mental health into midwifery practices in Indonesia.

2. RESEARCH METHOD

This study used a quantitative approach with a quasi-experimental one group pretest–posttest design, which aimed to analyze the effect of music therapy on the anxiety levels of pregnant women in their third trimester. This design allowed researchers to compare the anxiety levels of respondents before and after being given music therapy intervention in one group without a control group, so that the changes that occurred could be observed directly as the result of the intervention given.

The study was conducted at the Mother Health Center, a primary health care facility that provides routine antenatal care for pregnant women. Data collection was carried out from October to November 2025, in accordance with the antenatal visit schedule for pregnant women in their third trimester and the implementation of music therapy interventions.

The population in this study consisted of all pregnant women in their third trimester who attended antenatal visits at the study site during the data collection period. The study sample consisted of 20 respondents, who were selected using purposive sampling based on the following inclusion criteria: pregnant women in their third trimester, no severe obstetric complications, able to communicate well, and willing to be respondents. The exclusion criteria included pregnant women with hearing impairments, a history of severe psychiatric disorders, or who did not participate in the entire series of music therapy interventions.

The independent variable in this study was music therapy, while the dependent variable was the anxiety level of pregnant women in their third trimester. Music therapy was defined as the provision of audio stimulation in the form of relaxing instrumental music, while anxiety level was defined as the emotional response of pregnant women as measured by anxiety questionnaire scores before and after the intervention.

The research instrument used to measure anxiety levels was a standardized anxiety questionnaire that has been widely used in pregnancy research, such as the Hamilton Anxiety Rating Scale (HARS) or similar instruments that have been tested for validity and reliability. Measurements were taken twice, before the intervention (pretest) and after the intervention (posttest), with higher scores indicating higher levels of anxiety.

The research procedure began with providing explanations to respondents and obtaining informed consent. Next, respondents underwent initial anxiety level measurements (pretest). Music therapy intervention was provided by playing relaxing instrumental music to pregnant women for ±20–30 minutes in comfortable and calm conditions, using standard audio media. The intervention was carried out on a scheduled basis in accordance with antenatal visits. After the entire intervention series was completed, the respondents underwent another anxiety level measurement (posttest) using the same instrument.

Data analysis was conducted in stages. Univariate analysis was used to describe the characteristics of respondents and the distribution of anxiety levels before and after the intervention. Data normality tests were performed to determine the appropriate type of statistical test. Because anxiety level data were not normally distributed, bivariate analysis was performed using the Wilcoxon Signed Rank Test to assess differences in anxiety levels before and after music therapy. Statistical significance was set at a p-value < 0.05, indicating that music therapy had an effect on the anxiety levels of pregnant women in their third trimester.

3. RESULTS AND DISCUSSION

Based on age characteristics, most respondents were in the 20–35 age group, namely 16 people (80%), which is the healthy reproductive age range. There were 3 respondents (15%) over the age of 35, while only 1 respondent (5%) was under the age of 20. This distribution shows that the majority of pregnant women are at a relatively safe age biologically, although there is still a small number of respondents in the at-risk age group.

In terms of education level, there were 6 respondents (30%) with junior high school and college education, followed by 5 respondents (25%) with high school education. There were 3 respondents (15%) with elementary school education. This picture shows that the educational levels of respondents are quite diverse, with a predominance of secondary to higher education, which may influence respondents' ability to receive and understand health information.

Based on employment status, most respondents were housewives, namely 15 people (75%). Respondents who worked as private employees numbered 3 people (15%), while government employees numbered 2 people (10%). This condition shows that the majority of respondents did not have formal work outside the home, so they potentially had more flexible time to participate in the intervention provided.

In terms of the number of children, respondents with one child constituted the largest group, namely 10 people (20%), followed by respondents who did not yet have children, namely 2 people (10%). Respondents with two to five children were spread out variably, with proportions ranging from 5–20%. This variation in the number of children indicates differences in pregnancy and childbirth experiences among respondents, which may affect anxiety levels during the third trimester of pregnancy.

The anxiety levels of respondents prior to music therapy intervention were mostly in the severe anxiety category, namely 11 people (55%), while respondents with moderate anxiety numbered 9 people (45%). There were no respondents with mild anxiety prior to intervention. This condition illustrates that the majority of pregnant women in their third trimester experience quite high anxiety prior to childbirth.

After receiving music therapy intervention, there was a change in the distribution of respondents' anxiety levels. Ten people (50%) were in the mild anxiety category, and 10 people (50%) were in the moderate anxiety category. There were no respondents with severe anxiety after the intervention. Descriptively, these results show a decrease in the anxiety levels of pregnant women after receiving music therapy, as indicated by the disappearance of the severe anxiety category and an increase in the proportion of respondents in the mild anxiety category.

Table 1. Demographic data.

Var		n	F (%)
Age	< 20 years old	1	5
	20-35 years old	16	80
	>35 years old	3	15
Education	Elementary school	3	15
	Junior high school	6	30
	Senior High School	5	25
	College/university	6	30
Employment	Housewife	15	75
	Private employee	3	15
	Government employee	2	10
Number of children	0	2	10
	1	10	20
	2	1	5
	3	2	20
	4	3	15
	5	2	10
Anxiety before	Mild	0	0
	Moderate	9	45
	Severe	11	55
Anxiety after	Mild	10	50
	Moderate	10	50
	Severe	0	0
Total		20	100

Source: primary data, 2025.

Table 2. Statistical analysis.

Independent variable	N	P Value	Dependent variable
Anxiety before	20	0.000	Anxiety after

Wilcoxon

Source: primary data, 2025.

Based on the results of statistical analysis using the Wilcoxon Signed Rank Test, a p-value of 0.000 ($p < 0.05$) was obtained when comparing the anxiety levels of pregnant women in their third trimester before and after music therapy in 20 respondents. This value indicates that there is a statistically significant difference between anxiety levels before and after the intervention.

These results indicate that music therapy is significantly associated with a decrease in anxiety levels in third trimester pregnant women. Thus, the null hypothesis (H_0), which states that there is no difference in anxiety levels before and after the intervention, is rejected, while the alternative hypothesis (H_1) is accepted.

The Wilcoxon test was chosen because the anxiety level data did not meet the assumptions of normal distribution, so nonparametric analysis was considered more appropriate for comparing pretest and posttest values in the same group.

The results of this study indicate that music therapy has a significant effect on reducing anxiety levels in pregnant women in their third trimester. Based on statistical analysis using the Wilcoxon test, there was a significant difference between anxiety levels before and after the intervention ($p = 0.000$). Descriptively, before music therapy, the majority of respondents were in the moderate to severe anxiety category, whereas after the intervention, severe anxiety was no longer found and half of the respondents were in the mild anxiety category. These findings indicate that music therapy has the potential to be an effective non-pharmacological intervention in helping pregnant women manage anxiety prior to childbirth.

Anxiety in the third trimester often increases because pregnant women face uncertainty about childbirth, concerns about fetal safety, and increasingly noticeable physical changes. Longitudinal studies show that anxiety tends to peak in the final trimester and is associated with low readiness for childbirth and less positive childbirth experiences (Bayrampour et al., 2016). Therefore, interventions that focus on emotional management during this phase are very important, not only for the psychological comfort of the mother, but also to support a more adaptive childbirth process.

Theoretically, the therapeutic effects of music on anxiety can be explained through neurophysiological and psychological mechanisms. Music is known to reduce sympathetic nervous system activity and increase parasympathetic dominance, which contributes to a decrease in heart rate, blood pressure, and muscle tension (Thoma et al., 2015). In addition, music also affects emotional regulation through stimulation of the limbic system and the release of neurotransmitters such as dopamine and endorphins, which play a role in creating feelings of relaxation and comfort (Chanda & Levitin, 2016). In pregnant women, this relaxation response is particularly relevant because anxiety is often accompanied by physical tension and recurring thoughts about childbirth.

The results of this study are in line with various previous studies that reported the effectiveness of music therapy in reducing anxiety in pregnant women. An experimental study in Turkey showed that pregnant women in their third trimester who received music therapy experienced a significant decrease in anxiety scores compared to the control group (Kafalı et al., 2019). Another study in Iran also reported that music therapy not only reduced anxiety but also increased mothers' confidence in facing childbirth (Moghaddam et al., 2020). The

similarity of these results strengthens the evidence that music can be a universal and cross-cultural therapeutic medium.

However, not all respondents in this study achieved a mild level of anxiety after the intervention. Some respondents still fell into the moderate anxiety category. These findings indicate that responses to music therapy are individual and influenced by various factors. Factors such as the number of children, previous childbirth experiences, education level, and social support can affect anxiety levels and responses to relaxation interventions (Gao et al., 2019). Primigravida mothers, for example, tend to have higher anxiety levels because they have no previous childbirth experience, thus requiring a more intensive and sustained approach.

In addition, the duration and frequency of music therapy interventions can also affect the results. Previous studies have shown that interventions given repeatedly over a certain period of time have a more stable effect than short-term interventions (Nilsson, 2018). In this study, music therapy was given in a limited time frame, so the possibility of long-term effects has not been fully achieved. This is one of the limitations that needs to be considered in interpreting the results.

From a clinical perspective, the findings of this study have important implications for midwifery practice. Music therapy is a safe, non-invasive, easy-to-implement, and relatively inexpensive intervention, making it highly suitable for integration into antenatal care, especially in primary health care facilities. Midwives can utilize music therapy as part of education and support for pregnant women in their third trimester, both in prenatal classes and during routine ANC visits. This approach aligns with the holistic, woman-centered midwifery care paradigm, which focuses not only on physical aspects but also on the psychological well-being of mothers (International Confederation of Midwives, 2021).

Overall, this study shows that music therapy plays a significant role in reducing anxiety levels in pregnant women in their third trimester. However, the effectiveness of this intervention can be improved through more structured implementation, adequate duration, and environmental and family support. Further research is recommended to use a control group design and explore combinations of music therapy with other psychosocial interventions so that the benefits obtained can be more optimal and sustainable.

4. CONCLUSION

This study shows that music therapy has a significant effect on reducing anxiety levels in pregnant women in their third trimester. Statistical analysis results prove that there is a significant difference between anxiety levels before and after music therapy, which is marked

by a decrease in the proportion of severe anxiety and an increase in the category of mild anxiety after intervention. These findings confirm that music therapy is an effective, safe, and easily implemented non-pharmacological intervention in antenatal care. However, variations in individual responses indicate that managing anxiety in pregnant women requires a comprehensive and sustained approach. Integrating music therapy into midwifery care has the potential to improve the psychological well-being of pregnant women and support more positive birth preparedness.

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