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The Effect of Classical Lullaby Music Therapy on Anxiety in Primigravida Mothers in Labor

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Abstract:
Anxiety during pregnancy is often intensified by the anticipation of labor and delivery, which can be overwhelming due to a lack of prior experience. The consequences of untreated maternal anxiety extend beyond the mother, potentially affecting fetal growth and long-term child development. This study aims to determine the effect of classical Lullaby music therapy on anxiety in primigravida pregnant women facing childbirth. The research design employed a quasi-experimental pretest-posttest control group design. The total sample in the experimental group was n = 30, and in the control group, n = 30, using a purposive sampling technique. The population in this study consisted of all primigravida pregnant women who visited the antenatal care clinic at the Sananwetan Health Center in March and April 2025. Based on the T-test, the mean data on the pretest is 39.40, and the posttest is 32.43. There is a decrease in the score of 6.967. The significance value (Sig. 2-tailed) is 0.000, which is <0.05, so it can be concluded that there is a significant influence. The test results show that H0 is rejected and H1 is accepted, which means that classical lullaby music therapy is more effective in reducing anxiety levels in primigravida mothers compared to the control group. Therefore, it can be concluded that classical lullaby music has a positive effect on primigravida mothers in facing childbirth. This type of music can be used as a therapeutic option for pregnant women experiencing anxiety.

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INTRODUCTION

Anxiety during pregnancy is a common psychological condition that affects a significant number of expectant mothers, particularly primigravidae—women experiencing their first pregnancy (Astutik & Indarti, 2025). This form of anxiety is often intensified by the anticipation of labor and delivery, which can be overwhelming due to a lack of prior experience. The prevalence of anxiety in pregnancy has been associated with various psychosocial and biological factors, including young maternal age, low educational level, insufficient family support, financial instability, and unintended pregnancies (Chen et al., 2023; Nurhasanah et al., 2024). These stressors can significantly impact both maternal well-being and fetal development, making it crucial to identify effective interventions (Pascal et al., 2022).

Psychological symptoms such as mood swings, irritability, sleep disturbances, and depressive episodes are frequently observed during the first and third trimesters of pregnancy (Răchită et al., 2023). These periods are characterized by substantial hormonal fluctuations and increased physical discomfort, which contribute to emotional vulnerability (McCarthy et al., 2021). Among primigravida mothers, the fear of the unknown related to childbirth—such as pain during labor, complications, or

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concerns about infant health—can further exacerbate anxiety levels. If left unmanaged, this heightened state of stress may lead to adverse perinatal outcomes (Bakhteh et al., 2023).

The consequences of untreated maternal anxiety extend beyond the mother, potentially affecting fetal growth and long-term child development (Naaz & Muneshwar, 2023). Research indicates that chronic maternal stress can increase the risk of preterm birth, low birth weight, and intrauterine growth restriction (Ghimire et al., 2020). Moreover, prenatal anxiety has been linked to neurodevelopmental issues in children, including attention deficits, hyperactivity, and an elevated risk of mental health disorders such as anxiety, depression, and even schizophrenia later in life. Therefore, addressing maternal anxiety is not only essential for maternal health but also for ensuring optimal developmental trajectories for the offspring (Morris et al., 2021).

In managing anxiety during pregnancy, both pharmacological and nonpharmacological approaches are available. However, many pregnant women are reluctant to use pharmacological treatments due to concerns about potential teratogenic effects and harm to the developing fetus (Edinoff et al., 2022). As a result, there is growing interest in safe, non-invasive, and easily accessible alternatives. Nonpharmacological interventions such as relaxation techniques, mindfulness, cognitive-behavioral therapy, and music therapy have gained recognition for their efficacy in reducing stress and promoting emotional well-being during pregnancy (Değirmenci et al., 2025).

Among these, music therapy has emerged as a promising modality, particularly the use of classical lullaby music (Shafqat et al., 2024). Characterized by slow tempo, harmonic melodies, and rhythmic patterns, classical lullabies have a soothing effect on the nervous system, helping to regulate heart rate, lower blood pressure, and reduce cortisol levels (Pingle & Ragha, 2024). Studies have shown that listening to calming music can induce relaxation responses, improve mood, and decrease perceived stress in pregnant women. Additionally, this type of music has been found beneficial not only for infants but also for enhancing maternal psychological comfort and bonding during pregnancy (Konsam et al., 2023).

Classical lullaby music therapy offers a low-cost, non-invasive, and culturally adaptable intervention that can be easily integrated into routine antenatal care (Armakola et al., 2025). Its application requires minimal training and resources, making it suitable for diverse healthcare settings, including those with limited resources. For primigravida mothers who face heightened anxiety due to inexperience and fear of labor, regular exposure to soothing music may serve as a valuable tool in preparing them mentally and emotionally for childbirth (Baltacı & Başer, 2022; Kartaatmaja et al., 2025). Furthermore, the positive auditory environment created by music may also contribute to fetal well-being through improved maternal-fetal physiological synchrony (Pino et al., 2022).

Therefore, this study aims to investigate the effect of classical lullaby music therapy on anxiety levels in primigravida mothers in the late stages of pregnancy as they prepare for labor. By evaluating changes in anxiety before and after music intervention, this research seeks to provide empirical evidence supporting the integration of music therapy into prenatal care programs. The findings may contribute to the development of holistic, patient-centered approaches that prioritize maternal mental health and promote positive birth experiences (Shafqat et al., 2024).

METHOD

This study employed a quantitative research approach with a quasi-experimental design to examine the effect of classical lullaby music therapy on anxiety levels in primigravida mothers. The research was conducted from March 27 to April 18, 2025, at the Sananwetan Community Health Center in Malang, Indonesia. A total of 60 respondents were selected using purposive sampling,

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divided equally into two groups: 30 participants in the experimental group and 30 in the control group. The primary aim was to compare changes in anxiety levels before and after the intervention between the two groups, while controlling for potential confounding variables through standardized procedures and consistent measurement tools.

The experimental group received a seven-day classical lullaby music therapy intervention. On the first day, participants were recruited from the Maternal and Child Health clinic at the Sananwetan Community Health Center and provided with informed consent forms. They administered a pretest to assess baseline anxiety levels using the State-Trait Anxiety Inventory–Trait (STAI-T) questionnaire. Following the pretest, they listened to classical lullaby music for a designated period. They were instructed to continue the intervention daily for six additional days at home, preferably during moments of stress or difficulty sleeping. To ensure compliance, participants were required to send photographic evidence of their daily music listening sessions. On the seventh day, the researcher conducted a home visit to administer the posttest. In contrast, the control group received only health education about nonpharmacological methods to reduce anxiety, without any music intervention.

The inclusion criteria for participants were primigravida mothers in their first or third trimester of pregnancy who regularly received antenatal care at the Sananwetan Community Health Center and who voluntarily agreed to participate in the study. Exclusion criteria included being in the second trimester, being multigravida, not receiving regular antenatal care, currently undergoing family planning visits, postpartum or neonatal care, or unwillingness to participate. These criteria were applied to maintain homogeneity among participants and to focus specifically on primigravida women facing anxiety related to their initial pregnancy experience.

Data collection was carried out using the STAI-T questionnaire, a validated and widely used instrument for measuring trait anxiety in clinical and research settings. The collected data were analyzed using IBM SPSS Statistics version 20. Univariate analysis was performed to describe the frequency distribution of respondent characteristics and anxiety scores. Prior to inferential analysis, normality was assessed using the Shapiro-Wilk test, and homogeneity of variances was evaluated using Levene's Test. Bivariate analysis was conducted using an independent samples t-test to determine whether there were significant differences in anxiety reduction between the experimental and control groups after the intervention.

This study received ethical clearance from the Malang Health Polytechnic Ethics Committee, ensuring that all research procedures adhered to ethical standards for human subject research. Informed consent was obtained from all participants prior to their involvement, and confidentiality of personal information was strictly maintained throughout the study. Participants were informed of their right to withdraw at any time without penalty. By integrating ethical considerations with rigorous methodological design, this research aimed to provide reliable evidence on the effectiveness of classical lullaby music therapy as a safe, accessible, and non-invasive intervention for reducing anxiety in primigravida mothers approaching childbirth.

RESULT

Table 1. Baseline Characteristics of participants

Characteristics	(n=30) Intervention Group		(n=30) Control Group		p-value
	F	%	F	%	
Age					0.620
<20	3	10%	3	10%	
21-29	22	73.3%	23	76.7%	
>30	5	16.7%	4	13.3%	
Formal Education					0.130
Junior High School	1	3.3%			
Senior High School	18	60%	23	76.7%	
Diploma	4	13.3%	2	6.7%	
Undergraduate	7	23.3%	5	16.7%	
Work					0.705
Housewife	19	63.3%	19	63.3%	
Self-employed	1	3.3%	3	10%	
Private Sector Employee	9	30%	6	20%	
Etc.	1	3.3%	2	6.7%	
Income					0.497
No Income	19	63.3%	19	63.3%	
500.000-1.000.000	3	10%	3	10%	
1.000.000-2.000.000	7	23.3%	5	16.7%	
>3.000.000	1	3.3%	3	10%	
Gestational Age					0.064
1-12 weeks	5	16.7%	8	26.7%	
28- 40 weeks	25	83.3%	22	73.3%	
BMI Before Pregnancy					0.346
<18.5	1	3.3%	0	0%	
18.5-24.9	19	63.3%	18	60%	
25-29.9	8	26.7%	8	26.7%	
>30	2	6.7%	4	13.3%	

Table 1 shows the characteristics of the respondents' ages, most of them between 21 and 29 years old, 22 respondents (73.3%) in the experimental group and 23 respondents (76.7%) in the control group, with the results of the homogeneity test p-value of 0.620, which means that both groups have homogeneous age data characteristics. The educational characteristics of most of the high school / vocational high school, as many as 18 respondents (60%) in the experimental group and 23 respondents (76.7%) in the control group, with the results of the homogeneity test p-value of 0.130, which means that both groups have homogeneous education data characteristics. The occupational characteristics of most of the experimental and control groups have the same number, namely 19 respondents (63.3%), with a p-value of 0.705 from the homogeneity test, indicating that both groups have homogeneous occupational data characteristics. The income characteristics of most of the experimental and control groups also have the same number, namely 19 respondents (63.3%), with a p-value of 0.497 from the homogeneity test, indicating that both groups have homogeneous income data characteristics. The following characteristic is that the gestational age is mainly 28-40 weeks, with 25 respondents (83.3%) in the experimental group and 22 respondents (73.3%) in the control group. The results of the homogeneity test show a p-value of 0.064, indicating that both groups have homogeneous gestational age data characteristics. BMI characteristics before pregnancy are mainly within the normal range of 18.5-24.9, with 19 respondents (63.3%) in the experimental group and 18 respondents (60%), as indicated by the results of the homogeneity test

(p-value = 0.346). This suggests that both groups have homogeneous BMI data characteristics before pregnancy.

Table 2. Results of the normality test on the anxiety levels of the intervention group and the control group

Characteristics	Pretest		p-value	Posttest		p-value
	F	%		F	%	
Intervention Group			0.619			0.224
Normal	5	16.7%		13	43.3%	
Mild Anxiety	12	40%		11	36.7%	
Moderate Anxiety	9	30%		6	20%	
Very Worried	4	13.3%		0	0&	
Control Group			0.980			0.944
Normal	7	23.3%		7	23.3%	
Mild Anxiety	12	40%		14	46.7%	
Moderate Anxiety	9	30%		7	23.3%	
Very Worried	2	6.7%		2	6.7%	

Based on Table 2, it is known that the number of respondents in each group is <50, so the Shapiro-Wilk test is used. The significance value (Sig.) is obtained in the distribution of pretest data for the experimental group, p value 0.619, posttest for the experimental group, p value 0.224, pretest for the control group, p value 0.980, and posttest for the control group, p value 0.944, which means >0.05, then the data is usually distributed.

Table 3. Results of the analysis of anxiety levels of primigravida mothers in the intervention group

Anxiety Level	Intervention Group (n=30)		p-value
	pretest	posttest	
Normal	5	13	0.000
Mild Anxiety	12	11	
Moderate Anxiety	9	6	
Very Worried	4	0	

Table 3 shows the frequency distribution of the decrease in anxiety levels in the intervention group given classical lullaby music therapy. Before the treatment, there were five respondents in the normal category, 12 respondents with mild anxiety, nine respondents with moderate anxiety, and four respondents with severe anxiety. After the treatment, there were 13 respondents in the normal category, 11 respondents with mild anxiety, and six respondents with moderate anxiety. The results of the paired samples test showed a p-value of 0.000, which means p-value <0.05, so that H1 is accepted and can be said to be significant. This can be proven if the decrease in anxiety levels in primigravida mothers is decreased after being given classical lullaby music therapy.

Table 4. Results of the analysis of anxiety levels of primigravida mothers in the control group

Anxiety Level	Intervention Group (n=30)		p-value
	pretest	posttest	
Normal	7	7	0.252
Mild Anxiety	12	14	
Moderate Anxiety	9	7	
Very Worried	2	2	

Table 4 shows the frequency distribution of anxiety levels in the control group that was not given treatment. Many pretest and posttest scores remained unchanged, and two respondents reported a decrease in their anxiety levels. The T-test showed a p-value of 0.252, indicating a p-

value greater than 0.05. Therefore, H0 is rejected and can be considered insignificant. So, there was no significant decrease in anxiety level in the control group.

Table 5. Results of the analysis of differences in the reduction in anxiety levels in the intervention group and the control group (posttest)

Anxiety level variables of primigravida mothers	Intervention Group (n=30)		Control Group (n=30)		p-value
Pretest	39.40	9.971	37.40	8.365	0.403
Posttest	32.43	7.537	36.97	8.096	0.029

Table 5 shows a decrease in the average value in the intervention group from 39.40 to 32.43 after the intervention. In the control group, there was only a slight decrease in the average pretest score value, from 37.40 to 36.97, on the posttest score. The results of the independent samples test on the posttest of the experimental group and the control group showed a p value of 0.029, which means the p value <0.05, so that H1 is accepted and can be said to be significant. So it can be concluded that there is a significant difference in the level of anxiety in the experimental group and the control group.

DISCUSSION

Most respondents in both the experimental and control groups were mature enough to conceive. However, some under 20 years of age tended to have higher levels of anxiety than older pregnant women due to less-than-optimal emotional maturity. The older a pregnant woman is, the higher her emotional maturity tends to be (Yeşilçınar et al., 2023). The socioeconomic demographics of the respondents were quite diverse. Pregnant women with an average high school or vocational high school diploma were willing to participate in the study, with one participant having a junior high school diploma. Education level plays a significant role in determining anxiety levels, as pregnant women with higher education generally have better knowledge and thinking skills in dealing with new situations, including pregnancy, and are therefore more mentally prepared (Çankaya & Şimşek, 2021). Most respondents' daily needs are met by their husbands, as the majority are homemakers. This situation also results in limited social interaction and reduced access to information, which can impact mothers' preparedness for childbirth (Bäckström et al., 2021). Most respondents were between 28 and 40 weeks of gestation, or in the third trimester of pregnancy. During the third trimester, maternal anxiety levels increase as labor approaches, leading to a lack of activity, negative thoughts, and increased anxiety. This can lead to increased pain during labor, prolonged labor, and other symptoms (Tan et al., 2021). In terms of nutritional status, most respondents had a pre-pregnancy BMI within the normal range. However, some still had a BMI below normal, which puts them at risk of nutritional disorders and impacts the health of the mother and fetus during pregnancy (Dachew et al., 2021).

Most respondents experienced varying levels of anxiety, ranging from mild to severe. This anxiety was due to several factors, one of which was being a primigravida, or first pregnancy, meaning the mother had no prior pregnancy experience. Many other factors were quite disturbing, such as the mother's young age, which meant she was less prepared for pregnancy, low education levels, which led to a lack of knowledge about pregnancy, and, most often, poverty and lack of support from family, especially partners (Nabwire et al., 2024). These physiological and psychological factors increase the hormones cortisol and adrenaline, which cause stress, leading to worry, fear, and tension. This, in turn, causes pregnant women to overthink and disrupt the quality of their sleep. Excessive anxiety will hurt pregnant women and the fetus (Kaydırak et al., 2025).

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There are two ways to manage anxiety: pharmacological and nonpharmacological therapy. Music therapy is a reasonably effective way to reduce anxiety levels in pregnant women. It is accessible, inexpensive, and offers many positive benefits (Ji et al., 2024). Classical music can reduce Adrenal Corticotropin Hormone (ACTH), which is a stress hormone (Rezaei et al., 2024). Pregnant women can listen to music through digital data, listening to it for 20 minutes in their free time for seven consecutive days. The brain responds to music and produces endorphin hormones, creating a feeling of calm.

Classical lullaby music therapy is quite effective in reducing anxiety levels in pregnant women (Carolan et al., 2012). Classical lullaby music is a type of lullaby that can provide a sense of calm. The proper rhythm and tempo can also help regulate the emotions of pregnant women, thereby reducing their anxiety. Pregnant women who received classical lullaby music therapy reported feeling positive emotions (Hinesley et al., 2020). Based on the research conducted, a parametric test was conducted to determine the effect of classical lullaby music therapy on reducing anxiety levels in primigravida mothers facing childbirth. The parametric test results showed that the experimental group, which received classical lullaby music therapy, had a significant effect compared to the control group that did not receive the intervention.

This study has strengths in its intervention. The classical lullaby music therapy intervention in this study was specifically targeted at primigravida due to their lack of knowledge and experience with pregnancy. This intervention is highly effective in reducing anxiety. The gentle notes and rhythms of lullaby music can have a calming effect, helping to alleviate sleep disorders in pregnant women. This has been widely demonstrated by other researchers and strongly supports the use of nonpharmacological interventions. In this study, many primigravida mothers successfully reduced their anxiety and resolved their sleep disorders through this music therapy. A weakness of this study is that some respondents did not consistently follow the intervention. The intervention was conducted over 7 days, but some respondents only followed it for 3 days or discontinued it altogether. Consequently, some anxiety levels remained stable and did not decrease.

CONCLUSION

The results of the study showed that before therapy, most respondents experienced mild anxiety, while after being given classical lullaby music therapy, most experienced a decrease in anxiety to normal levels. Daily observations revealed that all respondents listened to music on the first and seventh days, while on the second through sixth days, some were inconsistent in their listening habits or listened for less than 20 minutes. Statistical tests showed that H0 was rejected and H1 was accepted, which means that classical lullaby music therapy was effective in reducing anxiety levels in primigravida pregnant women compared to the control group. Thus, this music therapy can be used as a nonpharmacological intervention that is beneficial for pregnant women who experience anxiety before childbirth.

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CONFLICT OF INTEREST

The author declares that he has no conflicts related to the creation of this manuscript.

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