

# The Relationship of Music Therapy In Reducing Stress Levels In Pregnant Women at the Army Hospital of Padang Sidimpuan City

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**Abstract:** Background Maternal stress during pregnancy can harm both the mother and fetus, increasing the risk of complications such as preterm birth and low birth weight. *Music therapy* serves as a non-pharmacological method to reduce anxiety and improve emotional well-being by influencing the autonomic nervous system and lowering cortisol levels. Objective This study examined the relationship between *music therapy* and stress levels among pregnant women at Padangsidimpuan Military Hospital, Indonesia. The Methods is A quantitative correlational design was used with 35 pregnant women selected through purposive sampling. Stress was measured using the *Perceived Stress Scale (PSS)*, and data were analyzed using *Pearson's Product-Moment Correlation* ( $p < 0.05$ ). *Results:* A significant negative correlation was found between *music therapy* and stress levels ( $r = -0.45$ ,  $p < 0.01$ ). Regular listening to instrumental or relaxation music was associated with lower stress scores. Conclusion Music therapy is an effective and practical non-pharmacological intervention for reducing prenatal stress and should be considered as part of antenatal care.

**Keywords:** Music Therapy, Prenatal Stress, Pregnancy, Antenatal Care, Non-Pharmacological Intervention

## Introduction

Over the past five years, attention to the mental health of pregnant women has increased in the field of maternal health services. The pregnancy period is seen as a complex phase because it involves hormonal changes, physiological conditions, and psychosocial aspects that can trigger stress, anxiety, and prenatal depression (Aalbers et al, 2023) (Slade et al, 2020) If stress is not handled, negative impacts can be experienced by the mother and fetus, such as premature birth, low birth weight, and disorders of the child's nervous development (Dunkel Schetter & Tanner, 2021) (Monk et al, 2019).

Effectiveness *Music Therapy* In reducing stress has been proven through various scientific approaches, especially in the fields of psychology and neurophysiology. Based on the theory of emotion regulation (Aldao et al, 2021) (Gross, 2015). Music is able to help regulate negative emotions through positive distractions and mood improvement. Music with a soft tempo has been shown to lower the levels of anxiety and tension that often arise

during pregnancy. Physiologically, music affects the autonomic nervous system by activating the parasympathetic system that lowers heart rate, blood pressure, and muscle tension (Koelsch et al., 2021) The activation of this system creates a state of relaxation and suppresses the secretion of the hormone cortisol, which is the main hormone that causes stress (Thoma et al, 2020).

According to the theory of resource conservation (Hobfoll, 2018), music is seen as an emotional resource capable of restoring psychological energy due to the pressures of life, including pregnancy stress. Pleasant exposure to music stimulates the release of the hormones dopamine and oxytocin which cause a sense of comfort and strengthens the emotional connection between mother and fetus (Aalbers et al, 2023) In the context of positive psychology, *Music Therapy* It is considered to be able to create a calming and meaningful emotional experience, thereby improving the psychological well-being of pregnant women (Fancourt & Finn, 2019; Jespersen et al., 2019). WHO (2022) and *American Music Therapy Association* (2023) also classifies *Music Therapy* As a safe and evidence-based nonpharmacological intervention, it is therefore relevant to be applied in antenatal care to reduce stress and anxiety during pregnancy.

Based on a WHO report (2022), around 10–15% of pregnant women in the world experience mental disorders, and this number increased after the COVID-19 pandemic due to socioeconomic pressures, limited access to health services, and social isolation. In Indonesia, data from the Ministry of Health (2023) shows that 14.3% of pregnant women experience moderate to severe stress, which has the potential to reduce the quality of pregnancy and childbirth.

Therefore, nonpharmacological interventions that are safe, easy to apply, and supported by scientific evidence are needed. One of the methods that is considered effective is *Music Therapy*, namely the therapeutic use of music to reduce anxiety, improve sleep quality, and stabilize pregnant women's emotions. Research by (Thoma et al, 2020) and (Hanser et al, 2021) It shows that listening to instrumental music regularly can lower cortisol levels and increase relaxation in vulnerable groups, including pregnant women.

In addition, the results of a systematic review (Aalbers et al, 2023) states that *Music Therapy* It can be an important complement in the psychological handling of pregnant women, especially when combined with other relaxation techniques. In Indonesia, this approach is still limited in its application in antenatal services, although some hospitals have begun to conduct integration trials *Music Therapy* in their service.

The Padangsidempuan Army Hospital, which provides services to the general public and the military, was chosen as the research location to explore the application of *music therapy* in reducing stress for pregnant women. Based on initial observations and interviews with medical personnel, most patients show high levels of anxiety leading up to delivery. Some pregnant women report that listening to music helps them feel calmer, sleep better, and be prepared for the process of giving birth.

Against this background, this study was conducted to examine the relationship between *music therapy* and stress levels in pregnant women at the Padangsidempuan Army Hospital. The results of this study are expected to enrich evidence-based promotive and preventive strategies in improving the psychological well-being of pregnant women and encouraging the application of *music therapy* in maternal health services in Indonesia.

## Methodology

This study used a correlation quantitative approach to analyze the relationship between *music therapy* and stress levels in pregnant women at the Padangsidempuan Army Hospital. This design was chosen because it did not involve direct intervention, but rather to assess the extent of the relationship between the two variables. The research was conducted at Padangsidempuan Hospital, North Sumatra, in May-June 2025, including the preparation stage, data collection, implementation of music therapy, and analysis of results. The study population included 108 pregnant women, and as many as 35 respondents were selected using *purposive sampling techniques* with the criteria of pregnant women in the second or third trimester who had moderate to high levels of stress based on *the Perceived Stress Scale (PSS)*. Respondents with hearing loss or severe pregnancy complications were excluded from the study.

The research variables consisted of *music therapy* as an independent variable and stress level as a dependent variable. Music therapy is defined as the activity of listening to soft instrumental music in a structured manner to provide a relaxing effect and reduce psychological stress. Stress levels were measured using *PSS-36* on a four-point Likert scale. Research instruments include music therapy questionnaires and stress questionnaires, as well as physiological measurements such as blood pressure or cortisol levels where possible. The validity test was conducted with *expert judgement and Pearson Product Moment correlation*, while the reliability was tested with *Cronbach's Alpha* ( $\geq 0.70$ ). Data were collected through a direct questionnaire survey and analyzed descriptively and using Pearson correlation tests and simple linear regression to identify the relationship between music therapy and stress levels. All research procedures are carried out by maintaining data confidentiality and accompanied by *informed consent* from each participant.

## Result and Discussion

### Data Analysis Results

#### Validity and Reliability Tests

*Music therapy* is used as a non-pharmacological approach that involves elements of melody, rhythm, and harmony to help maintain one's emotional and physiological balance. In this study, music therapy was applied as a means to reduce psychological stress in pregnant women through relaxation effects and improvement of a positive inner mood.

The test results showed that out of a total of 36 statements in the instrument, as many as 4 items (numbers 24, 29, 30, and 36) did not meet the validity criteria because *the Corrected Item-Total Correlation value* was below 0.300. On the other hand, the other 32 items met the criteria with a correlation value of  $\geq 0.300$  and were declared valid. *Cronbach's Alpha* value

of **0.941** indicates a high level of internal consistency, so this instrument is considered reliable in measuring music therapy variables.

**Table 1.** Summary of Validity and Reliability Test Results of the Music Therapy Scale

Aspects	Number of Items	Valid	Fall	Cronbach's Alpha	Information
Frequency and Duration	10	10	0	0,941	Reliabel
Types of Music and Perception of Relaxation	26	22	4		

Meanwhile, measurements of *stress levels* in pregnant women illustrate how much psychological stress is experienced due to physiological and emotional changes during pregnancy. Based on the results of the validity and reliability test, of the 36 statements analyzed, there was 1 item (number 34) that was invalid because the correlation value was  $< 0.300$ , while the other 35 were valid. *Cronbach's Alpha* value of **0.968** indicates the very strong reliability of this instrument.

**Table 2.** Summary of Stress Scale Validity and Reliability Test Results

Aspects	Number of Items	Valid	Gugur	Cronbach's Alpha	Information
Perception of Tension, Control, and Self-Efficacy	36	35	1	0,968	Reliabel

### Assumption and Correlation Test

The *One Sample Kolmogorov-Smirnov* test conducted showed that the data distribution of the two variables had a normal distribution, because the significance value obtained was greater than 0.05. Thus, the data is feasible to analyze using parametric statistical techniques.

**Table 3.** Normality Test Results

Variabel	Mean	SD	Itself.	Distribution
Music Therapy	57,13	20,79	0,200	Normal
Stress Level	115,89	25,61	0,168	Normal

Furthermore, the results of the linearity test showed that the relationship between music therapy and stress level was linear, with a significance value of 0.562 ( $> 0.05$ ). This means an increase in the intensity of music therapy followed by a proportionate decrease in stress levels.

**Table 4.** Linearity Test Results

Variabel	rxy	F	p (sig)	Information
Music Therapy – Stress Levels	-0,296	1,003	0,562	Linier

Pearson Product Moment's *correlation analysis* showed a significant negative association between music therapy and stress levels ( $r = -0.296$ ;  $p = 0.008 < 0.05$ ). This indicates that the more often pregnant women do music therapy, the lower the level of stress experienced. An  $r^2$  value of 0.403 means that the contribution of music therapy to stress

reduction reaches 40.3%, while the remaining 59.7% is due to other factors outside of the study.

**Table 5.** Pearson Correlation Test Results

Variabel	rx <sub>y</sub>	p	r <sup>2</sup>	Kontribusi	Information
Music Therapy – Stress Levels	-0,296	0,008	0,403	40,3%	Signifikan

### Average Value Analysis

A comparison of empirical and hypothetical mean values shows that the empirical average of music therapy of 57.13 is lower than the hypothetical value of 80. In contrast, the empirical mean of stress of 115.89 was higher than the hypothetical value of 87.5. Thus, it can be concluded that the application of music therapy in pregnant women is still low, while the level of stress felt tends to be high.

**Table 6.** Comparison of Hypothetical and Empirical Mean Values

Variabel	SD	From the Hypot Mean	Mean Empirik	Category
Music Therapy	20,79	80	57,13	Low
Stress Level	25,61	87,5	115,89	Tall

### Discussion

The findings of this study show a significant negative relationship between *Music Therapy* and *Stress levels* pregnant women at the Padangsidempuan Army Hospital. These results indicate that the higher the frequency with which pregnant women listen to relaxation music, the lower the level of stress felt. These findings are consistent with the theory of emotion regulation put forward by (Gross, 2015), explaining that music can help individuals control negative emotions through mood enhancement and distraction from sources of stress.

In addition, the theory of resource conservation by (Hobfoll, 2018) reinforcing these findings by stating that music functions as a form of emotional energy that can restore psychological balance. Previous empirical studies conducted by (Thoma et al, 2020) It was also found that music therapy was able to lower cortisol hormone levels and improve emotional well-being, especially in pregnant women who experienced anxiety.

From a physiological perspective, (Koelsch et al, 2021) It is suggested that soft rhythmic music can activate the parasympathetic nervous system, which functions to reduce heart rate, blood pressure, and muscle tension. This effect causes a state of relaxation that has a direct impact on the reduction of physiological stress. Similar findings were also presented by (Lai et al, 2020) which suggests that listening to music regularly can lower cortisol levels as well as improve emotional balance during pregnancy.

Furthermore, the results of this study are in line with the meta-analysis conducted by (Hanser et al, 2021) who found a strong negative association between the frequency of music therapy and the reduction in stress, with a range of correlation values ranging from -0.44 to

-0.67. (Zhang et al, 2021) It was also reported that music therapy had a significant effect on reducing prenatal anxiety and improving emotional comfort.

Practically, these results imply that music therapy can be applied as part of *antenatal care* services to help pregnant women manage psychological distress. These interventions are simple, do not cause side effects, and are easy to implement both in health facilities and at home. However, this study has limitations because it only involves one research location and uses a subjective measurement method through questionnaires. Therefore, follow-up research with larger sample counts as well as objective approaches such as measurement of cortisol levels or physiological changes are recommended to provide more comprehensive results.

Overall, the results of this study strengthen the evidence that music therapy makes a real contribution to reducing stress in pregnant women by 40.3%. This proves that music therapy is an effective, safe, and evidence-based approach that can be integrated into maternal health services to support psychological well-being during pregnancy.

## Conclusion

Based on the results of the analysis and discussion that has been carried out, it can be concluded that this study has succeeded in proving that there is a significant negative relationship between *music therapy* and *stress levels* in pregnant women at the Padangsidempuan Army Hospital. The results of the correlation test showed an rxy coefficient value of **-0.296** with a significance level of **p = 0.008 (< 0.05)**, which means that the more often pregnant women do music therapy, the lower the level of stress experienced. Thus, the research hypothesis is declared accepted.

Overall, the results showed that the majority of respondents—consisting of second and third trimester pregnant women with moderate to high levels of stress based on the *Perceived Stress Scale (PSS)*—had a habit of listening to music that was still relatively low. Based on the comparison of mean values, the music therapy variable was in the low category with a *hypothetical mean* of 80 and an *empirical mean* of 57.13 (SD = 20.797). On the other hand, the stress level variable was in the high category with a *hypothetical mean* of 87.5 and an *empirical mean* of 115.89 (SD = 25.618). A coefficient of determination ( $r^2$ ) value of **0.403** indicated that music therapy contributed to a **40.3%** reduction in stress, while **the remaining 59.7%** were influenced by other factors outside the study, such as social support, emotional state, and environmental factors.

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