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Effectiveness of Mozart Classical Music Therapy in Reducing Stress Levels Among Final-Year Medical Students at Nusa Cendana University

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ABSTRACT

Background: Stress is common among final-year medical students due to academic demands, thesis preparation, and clinical responsibilities. Mozart classical music therapy may serve as a simple non-pharmacological relaxation method to reduce stress.

Objective: To determine the effectiveness of Mozart classical music therapy in reducing stress levels among final-year medical students at Nusa Cendana University.

Methods: This quasi-experimental study used a one-group pretest-posttest design. Respondents were final-year students of the Medical Education Study Program, Faculty of Medicine and Veterinary Medicine, Nusa Cendana University. Stress levels were measured using the Perceived Stress Scale-10 before and after Mozart classical music therapy. The intervention was given for 15 minutes daily for seven consecutive days. Pretest and posttest stress scores were analyzed using a paired t-test.

Results: Before the intervention, most respondents had moderate stress (89.1%), followed by mild stress (7.3%) and severe stress (3.6%). After the intervention, mild stress increased to 30.9%, moderate stress decreased to 63.6%, and one respondent (1.8%) reported no stress. A significant reduction in stress level was found after therapy ($p < 0.001$).

Conclusion: Mozart classical music therapy significantly reduced stress levels among final-year medical students.

KEYWORDS: Mozart Classical Music, Music Therapy, Medical Students, PSS-10, Stress

INTRODUCTION

Stress is a physical and psychological response that occurs when individuals perceive that environmental demands exceed their ability to cope, resulting in emotional tension and disruption of daily functionin g.[1,2] Stress can occur in various populations, including university students, and is commonly reported among final-year students because of academic pressure, thesis preparation, clinical responsibilities, and uncertainty regarding future career development.[2,3] Among medical students, prolonged academic demands may increase vulnerability to psychological distress and may interfere with concentration, motivation, learning performance, and quality of life.[3,4]

The prevalence of stress among university students remains high. Previous studies have reported that the proportion of students experiencing stress ranges from 38% to 71% globally, 39.6% to 61.3% in Asia, and 36.7% to 71.6% in Indonesia.[5] Studies involving final-year students have also shown considerable stress burdens, particularly among those completing undergraduate theses.[3,6] In the medical education setting, a previous study conducted among students of the Faculty of Medicine, Nusa Cendana University, found that most students experienced moderate stress, indicating that stress is a relevant mental health issue in this academic population.[7] If not properly managed, stress may negatively affect academic performance, emotional stability, physical health, and future professional functioning.[4,8]

Several approaches may be used to reduce stress, including pharmacological and non-pharmacological interventions. Music therapy is one of the non-pharmacological relaxation methods that has been widely studied because it is simple, accessible, inexpensive, and relatively safe.[9] Listening to music may promote relaxation by modulating emotional responses, stabilizing heart rate, and stimulating neurohormonal changes related to serotonin, endorphins, and melatonin pathways.[9,10] Classical music is frequently used in therapeutic settings because of its soft rhythm, regular structure, and calming tempo, which may help reduce sympathetic activity and induce relaxation.[11]

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Mozart classical music has received particular attention as a therapeutic auditory stimulus because its rhythm, melody, and frequency pattern are considered capable of influencing cognitive and emotional processes.[11,12] Previous studies have reported that music therapy may reduce stress and improve psychological well-being among students.[13,14] However, findings remain inconsistent, as some studies have shown a significant reduction in stress after classical music therapy, while others found no statistically significant effect.[15,16] These differences highlight the need for further research in specific academic populations, particularly among final-year medical students who are exposed to high academic demands.

Based on this background, this study aimed to determine the effectiveness of Mozart classical music therapy in reducing stress levels among final-year students of the Medical Education Study Program at Nusa Cendana University.

METHODS

This study employed a quasi-experimental design with a one-group pretest-posttest approach. The study was conducted at the Medical Education Study Program, Faculty of Medicine and Veterinary Medicine, Nusa Cendana University, Kupang, Indonesia, from 7 to 13 November 2022. The study population consisted of all final-year medical students from the 2019 cohort, with a total population of 59 students. Participants were selected using total sampling because the population size was less than 100.

Eligible participants were final-year students of the Medical Education Study Program, Nusa Cendana University, who agreed to participate until the end of the study by completing an informed consent form. Students with a history of hearing impairment or incomplete and irrelevant questionnaire responses were excluded. Participants were considered dropouts if they could not be contacted during the study process, did not complete either the pretest or posttest questionnaire, or did not follow the intervention according to the predetermined schedule. Four students dropped out because they did not complete the full intervention, leaving 55 respondents for final analysis.

The independent variable was Mozart classical music therapy, while the dependent variable was stress level. Stress was assessed using the Perceived Stress Scale-10 (PSS-10), a standardized questionnaire consisting of 10 items that measures perceived stress. Each item is scored from 0 to 4, with total scores categorized as mild stress, moderate stress, and severe stress.

Before the intervention, respondents completed the pretest questionnaire through Google Forms to determine baseline stress levels. The intervention consisted of listening to Mozart classical music for 15 minutes per day for seven consecutive days through an online Zoom meeting. The music pieces used were Sonata for Two Pianos in D Major, K.448/375a: II. Andante and Piano Sonata No. 5 in G Major, K.283: II. Andante. On the final day of the intervention, respondents completed the posttest questionnaire through Google Forms.

Data were processed and analyzed using JASP software. Univariate analysis was performed to describe respondent characteristics and the distribution of stress levels before and after the intervention. The normality of the data was assessed using the Shapiro-Wilk test. Because the data were normally distributed, differences in pretest and posttest stress scores were analyzed using the paired t-test. A p-value of <0.05 was considered statistically significant. All participants provided informed consent, and the confidentiality of respondent data was maintained throughout the study.

RESULTS

A total of 59 final-year medical students were initially recruited in this study. Four participants dropped out because they did not complete the intervention for seven consecutive days. Therefore, 55 respondents were included in the final analysis.

The characteristics of the respondents are presented in Table 1. Most respondents were female, with 38 respondents (69.1%), while 17 respondents (30.9%) were male. Based on age distribution, most respondents were 20 and 21 years old, with 20 respondents (36.4%) in each age group. All respondents were students from the 2019 cohort.

Table 1. Demographic characteristics of respondents (n=55)

Characteristic	Category	n	%
Sex	Male	17	30.9
	Female	38	69.1
Age	18 years	1	1.8

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	19 years	1	1.8
	20 years	20	36.4
	21 years	20	36.4
	22 years	12	21.8
	23 years	1	1.8
Cohort	2019	55	100.0

The distribution of stress levels before and after Mozart classical music therapy is shown in Table 2. Before the intervention, most respondents experienced moderate stress, with 49 respondents (89.1%), followed by mild stress in 4 respondents (7.3%) and severe stress in 2 respondents (3.6%). After the intervention, moderate stress decreased to 35 respondents (63.6%), while mild stress increased to 17 respondents (30.9%). One respondent (1.8%) was categorized as having no stress after the intervention, while 2 respondents (3.6%) remained in the severe stress category.

Table 2. Distribution of stress levels before and after intervention

Stress level	Pretest, n (%)	Posttest, n (%)
No stress	0 (0.0)	1 (1.8)
Mild stress	4 (7.3)	17 (30.9)
Moderate stress	49 (89.1)	35 (63.6)
Severe stress	2 (3.6)	2 (3.6)
Total	55 (100.0)	55 (100.0)

The mean stress score decreased after Mozart classical music therapy, from 20.2 before the intervention to 15.7 after the intervention. The paired t-test showed a statistically significant difference between pretest and posttest stress scores ($p < 0.001$), indicating that Mozart classical music therapy significantly reduced stress levels among final-year medical students.

Table 3. Comparison of stress scores before and after intervention

Group	n	Mean pretest score	Mean posttest score	p-value
Intervention	55	20.2	15.7	<0.001*

*Paired t-test, significant at $p < 0.05$.

DISCUSSION

This study found a significant reduction in stress levels after seven days of Mozart classical music therapy among final-year medical students. Before the intervention, almost all respondents were in the moderate stress category. After the intervention, the proportion of respondents with moderate stress decreased, while mild stress became more frequent. The mean stress score also decreased from 20.2 to 15.7, with a statistically significant difference between pretest and posttest scores ($p < 0.001$). These findings suggest that Mozart classical music therapy had a positive effect on reducing perceived stress in this population.

Stress among final-year medical students is closely related to academic pressure, thesis completion, clinical preparation, and uncertainty about future professional responsibilities.[1,3] These conditions may contribute to psychological tension, reduced concentration, sleep disturbance, and decreased academic performance.[2,4] The predominance of moderate stress before the intervention in this study reflects the psychological burden commonly experienced by students in the final stage of medical education.

The decrease in stress after the intervention may be related to the relaxing effect of classical music on emotional and physiological responses. Calm music can help reduce sympathetic activity, stabilize heart rate, and create a more relaxed state.[9,10] Music is also thought to influence neurochemical pathways associated with comfort and emotional regulation, including serotonin and endorphin

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activity.[9,11] Mozart classical music, with its soft tempo, regular rhythm, and harmonious melody, may provide auditory stimulation that supports relaxation and reduces perceived tension.[11,12]

The results of this study are in line with previous research showing that music therapy can reduce stress and improve psychological well-being among students.[13,14] Rosanty reported a significant reduction in stress levels among students working on their thesis after receiving classical music therapy.[15] Similar findings have also been reported in studies evaluating music therapy as a relaxation intervention in academic settings.[13] However, not all studies have shown consistent results. Therisa et al. found no significant effect of classical music therapy on student stress levels.[16] These differences may be influenced by variations in the type of music used, duration of intervention, baseline stress level, participant adherence, and environmental conditions during therapy.

In this study, the intervention was given for 15 minutes per day for seven consecutive days. This duration was relatively short, but it was sufficient to produce a measurable reduction in stress scores. The use of an online Zoom meeting also made the intervention easier to implement because respondents could participate from their own location. However, this method may have allowed differences in listening conditions, such as environmental noise, device quality, internet connection, and respondent focus during the session. These factors may have influenced the effect of the intervention.

Although the overall stress level decreased, two respondents remained in the severe stress category after the intervention. This finding indicates that Mozart classical music therapy may be useful as a supportive relaxation method, but it may not be adequate as a single intervention for students with more severe stress. Students who continue to experience severe stress may need additional support, such as counseling, academic guidance, structured stress management, or professional psychological assessment when necessary.

This study has several limitations. First, the one-group pretest-posttest design did not include a control group, so other factors outside the intervention may have contributed to the decrease in stress scores. Second, stress was assessed using a self-reported questionnaire, which may be influenced by the respondent's perception and condition at the time of filling out the form. Third, the intervention was conducted online, so the listening environment could not be fully controlled. Lastly, the study was limited to final-year medical students from one institution, which may affect the generalizability of the findings.

CONCLUSION

Mozart classical music therapy significantly reduced stress levels among final-year medical students at Nusa Cendana University. After seven days of intervention, the mean stress score decreased, and a shift was observed from moderate stress toward milder stress categories. These findings suggest that Mozart classical music therapy may be used as a simple, accessible, and low-cost complementary method to help manage stress among medical students, particularly during the final stage of academic study.

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