

## EARLY MENTAL HEALTH SCREENING THROUGH THE MENTARI APPLICATION AND CLASSICAL MUSIC THERAPY

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### ABSTRACT

**Background:** Anxiety is commonly experienced by final-year nursing students due to academic workload, clinical practice, and thesis completion demands. Early mental health screening combined with non-pharmacological interventions is needed to support students' psychological well-being. **Objective:** This study aimed to analyze the effectiveness of classical music therapy integrated into the MENTARI application for reducing anxiety among nursing students. **Methods:** This study used a quantitative approach with a quasi-experimental one-group pretest-posttest design. Participants were selected using purposive criterion sampling based on anxiety screening results. Anxiety levels were measured using the Mini MindHEAR Youth Scale Version 1 (MMYS V.1). Respondents received Mozart classical piano music therapy for 10–15 minutes daily for seven consecutive days through the MENTARI application. **Results:** The intervention showed a decrease in anxiety scores after therapy, indicating improved emotional relaxation among students. **Conclusion:** The MENTARI application integrated with classical music therapy has potential as an accessible digital intervention for early mental health screening and anxiety management among nursing students.

**Keywords:** anxiety, classical music therapy, MENTARI application, mental health screening, nursing students

### INTRODUCTION

Anxiety is one of the most common psychological problems experienced by university students, particularly final-year nursing students who face academic pressure, clinical practice responsibilities, and thesis completion demands (Boateng K et al., 2025). Final-year students often encounter difficulties in time management, data collection, scientific writing, and adapting to academic expectations, which may trigger stress and anxiety (Sun et al., 2021). Anxiety not only affects emotional well-being but also decreases concentration, motivation, academic performance, and social functioning (Solekha, 2024). According to the World Health Organization, anxiety disorders affect millions of young adults worldwide, including university students who are vulnerable to academic stressors (Asia & Annual, 2024).

Indonesia is one of the developing countries with a considerable number of mental health patients. Various biological, psychological, and social factors, coupled with the population diversity, contribute to the increasing number of mental health cases. Indonesia, sebagai bagian dari komunitas global, juga menghadapi tantangan serupa. Based on the 2023 Indonesian Health Survey (SKI), the prevalence of depression among individuals aged  $\geq 15$  years was recorded at 1.4%, with West Java Province showing the highest prevalence at 3.3%. Meanwhile, more concerning data emerged among adolescents aged 15–24 years, where 61% reported experiencing depression and having suicidal thoughts within the last month (Kemenkes, 2023).

Nursing students have a higher risk of experiencing anxiety because nursing education integrates cognitive, affective, and psychomotor competencies simultaneously (Bahar et al.,

2022). Students are required to complete theoretical learning, laboratory practice, clinical placement, and scientific research within a limited period (Wang et al., 2022). These academic and professional demands frequently become psychological stressors, particularly during the final stage of study. Previous studies reported that anxiety among nursing students may manifest physically, cognitively, and emotionally, including sleep disturbance, excessive worry, decreased concentration, irritability, and emotional tension (Bahar et al., 2022).

Recent developments in mental health interventions emphasize the importance of non-pharmacological and digital-based approaches to support psychological well-being among adolescents and young adults (Alagarajah et al., 2024). One intervention widely used to reduce anxiety is classical music therapy (Asri, 2024). Classical Mozart music with slow tempo and piano instrumental rhythm can stimulate relaxation responses, improve emotional regulation, and decrease stress hormones through activation of the limbic system and endorphin release (Duan, 2025). Several previous studies have shown that classical music therapy effectively reduces anxiety and stress among students and other populations (Lopez-Valverde et al., 2024).

In addition to music therapy, digital mental health screening applications have become increasingly important in supporting early detection and mental health management among young populations (Hertini et al., 2024). The MENTARI application was developed as a digital platform for early mental health screening and psychological support. The application integrates mental health assessment using the Mini MindHEAR Youth Scale Version 1 (MMYS V.1) with supportive features such as relaxation interventions and emotional self-management. Digital interventions are considered more accessible, flexible, and suitable for university students who frequently use mobile technology in their daily activities (Hertini et al., 2026).

However, despite the increasing use of digital mental health approaches, previous studies mostly focused on conventional music therapy interventions without integrating them into digital mental health applications (Marciano et al., 2023). Several studies also focused only on stress rather than anxiety, used non-nursing populations, or did not specifically involve final-year students (Kheirinejad, 2024). Furthermore, limited studies have integrated classical music therapy into digital mental health screening systems among nursing students (Marciano et al., 2023).

This gap indicates the need for innovative mental health interventions that combine early digital screening with non-pharmacological therapy to improve emotional well-being among nursing students. Therefore, this study integrates classical music therapy into the MENTARI application as a digital intervention for anxiety screening and management. This integration is expected to provide practical, accessible, and effective psychological support for final-year nursing students.

The objective of this study was to analyze the effectiveness of classical music therapy integrated into the MENTARI application for reducing anxiety among final-year nursing students. This study is expected to contribute to the development of digital mental health interventions in nursing education and provide evidence-based recommendations for anxiety management among students.

The hypothesis of this study was that classical music therapy integrated into the MENTARI application significantly reduces anxiety levels among final-year nursing students.

## **METHOD**

### **1. Participant Characteristics and Research Design**

This study used a quantitative approach with a quasi-experimental one-group pretest-posttest design to evaluate the effectiveness of classical music therapy integrated into the MENTARI application for reducing anxiety among final-year nursing students. The study

population consisted of third-year Diploma Nursing students. Participants were selected based on anxiety screening results using the Mini MindHEAR Youth Scale Version 1 (MMYS V.1).

The inclusion criteria were: (1) final-year nursing students, (2) students with mild to severe anxiety scores based on MMYS V.1 screening, (3) willingness to participate and sign informed consent, (4) not currently receiving other psychological interventions or music therapy, and (5) owning a device compatible with the MENTARI application. Exclusion criteria included students without anxiety symptoms and those unwilling to participate in the study.

The study was conducted in the nursing academic environment where students experienced academic stressors related to clinical practice, thesis preparation, and academic workload. Ethical principles including voluntary participation, confidentiality, and informed consent were applied throughout the research process.

## **2. Sampling Procedures**

The sampling technique used in this study was purposive criterion sampling. This technique was selected to ensure that participants met specific criteria related to anxiety symptoms and relevance to the intervention. The total population consisted of 41 students, and participants who met the inclusion criteria were included in the study.

Data collection was conducted in the educational setting of nursing students. Participants completed the pretest anxiety assessment using MMYS V.1 before receiving the intervention. Classical music therapy sessions were conducted through the MENTARI application for seven consecutive days. Posttest measurements were collected after completion of the intervention period.

## **3. Sample Size, Power, and Precision**

The intended sample size was determined using the Slovin formula with a 5% margin of error. Based on a population of 41 students, the calculated sample size was 39 respondents. No interim analysis or stopping rules were applied because the study used a single-group intervention design with a short intervention duration. The final sample size was considered adequate to evaluate changes in anxiety levels before and after intervention.

## **4. Measures and Covariates**

The primary outcome measured in this study was anxiety level. Anxiety was assessed using the Mini MindHEAR Youth Scale Version 1 (MMYS V.1), a six-item screening questionnaire designed to identify anxiety and depressive symptoms among adolescents and young adults. The anxiety domain consisted of three questions with dichotomous responses (“Yes” scored 1 and “No” scored 0).

The intervention variable was classical music therapy using Mozart piano instrumental music integrated into the MENTARI application. Participants listened to classical music for approximately 10–15 minutes daily for seven consecutive days.

The MMYS V.1 instrument used in this study was adopted from previous validated instruments for adolescent mental health screening. Data collection procedures were standardized by providing the same instructions and intervention duration to all participants to enhance measurement consistency and reliability.

## **5. Data Analysis**

Data analysis was performed using descriptive and inferential statistical analysis. Descriptive statistics were used to identify respondent characteristics and anxiety level distribution before and after intervention. Inferential analysis was conducted to compare pretest and posttest anxiety scores following classical music therapy intervention.

The analysis aimed to determine whether there was a significant reduction in anxiety levels after participants received classical music therapy integrated into the MENTARI application. The findings were interpreted to evaluate the effectiveness of digital-based non-pharmacological interventions for mental health support among nursing students.

## RESULTS AND DISCUSSION

This study involved 39 final-year nursing students who met the inclusion criteria based on anxiety screening results using the Mini MindHEAR Youth Scale Version 1 (MMYS V.1). The respondents participated in classical music therapy integrated into the MENTARI application for seven consecutive days.

The descriptive analysis showed that most respondents experienced moderate anxiety before the intervention. Anxiety symptoms reported by participants included excessive worry, difficulty concentrating, emotional tension, and sleep disturbances related to academic workload and thesis completion. After receiving classical music therapy through the MENTARI application, respondents demonstrated lower anxiety scores and improved emotional relaxation.

**Table 1.** Distribution of Anxiety Levels Before and After Intervention

Anxiety Level	Pretest	n (%)	Posttest	n (%)
Mild Anxiety	10	25.6	21	53.8
Moderate Anxiety	22	56.4	14	35.9
Severe Anxiety	7	17.9	4	10.3
<b>Total</b>	<b>39</b>	<b>100</b>	<b>39</b>	<b>100</b>

The table shows that the proportion of respondents with moderate and severe anxiety decreased after the intervention, while the proportion of mild anxiety increased. These findings indicate that classical music therapy integrated into the MENTARI application contributed to anxiety reduction among nursing students.

Inferential statistical analysis demonstrated differences between pretest and posttest anxiety scores following the intervention. The reduction in anxiety scores indicated that classical music therapy had a positive effect on emotional regulation and relaxation among respondents.

**Table 2.** Comparison of Anxiety Scores Before and After Intervention

Variable	Mean ± SD	p-value
Pretest Anxiety Score	2.31 ± 0.67	
Posttest Anxiety Score	1.42 ± 0.58	0.001*

Notes:  $p < .05$

The statistical analysis showed a significant reduction in anxiety scores after the intervention ( $p < .05$ ), indicating that classical music therapy integrated into the MENTARI application effectively reduced anxiety levels among final-year nursing students.

## Discussion

The findings of this study demonstrated that classical music therapy integrated into the MENTARI application reduced anxiety levels among final-year nursing students (Wani et al., 2024). The reduction in anxiety scores after the intervention suggests that digital-based non-

pharmacological interventions can support emotional regulation and psychological well-being in academic settings (Duan, 2025)

Academic stressors experienced by final-year nursing students, including thesis completion, clinical practice responsibilities, and academic workload, contribute significantly to anxiety symptoms. These findings are consistent with previous studies reporting that nursing students are vulnerable to psychological distress because of the complex demands of nursing education (Sonmez et al., 2023).

The effectiveness of classical music therapy observed in this study is supported by previous literature stating that Mozart classical music can stimulate relaxation responses, reduce sympathetic nervous system activity, and increase endorphin release (Duan, 2025). Music with slow tempo and stable rhythm may influence the limbic system and create calming emotional effects (Yang et al., 2025).

The results are also consistent with previous studies conducted by Asri, 2024 and Duan, 2025 which reported that classical music therapy reduced anxiety among students (Asri, 2024) (Duan, 2025). However, the present study contributes additional evidence by integrating classical music therapy into a digital mental health screening application. Unlike previous studies that used conventional face-to-face interventions, this study utilized the MENTARI application as a digital platform combining anxiety screening and therapeutic intervention.

This digital integration provides practical advantages because students can access interventions independently through mobile devices (Ramshaw et al., 2023). Digital mental health interventions are increasingly important among adolescents and university students because they offer flexibility, accessibility, and early psychological support (Marciano et al., 2023). The MENTARI application may therefore function not only as a screening tool but also as a supportive intervention for anxiety management.

The study findings indicate a potential contribution to nursing and mental health science, particularly in the development of accessible digital interventions for student mental health support. Integrating early mental health screening with classical music therapy may become an innovative strategy for preventing psychological distress among nursing students.

Despite these findings, this study had several limitations. The study used a single-group design without a control group, which limited comparison with other interventions. The relatively small sample size and short intervention duration may also affect the generalizability of results. Future studies are recommended to involve larger samples, randomized controlled designs, and longer intervention periods to strengthen evidence regarding digital music therapy interventions for mental health management.

## LIMITATION OF THE STUDY

This study had several limitations that should be considered when interpreting the findings. First, the study used a quasi-experimental one-group pretest-posttest design without a control group, which limited the ability to compare the effectiveness of the intervention with other anxiety management approaches. Second, the sample size was relatively small and limited to final-year nursing students from one institution, which may reduce the generalizability of the findings to broader student populations. Third, the intervention period was conducted for only seven consecutive days, so the long-term effects of classical music therapy integrated into the MENTARI application could not be fully evaluated. In addition, anxiety levels were measured using self-reported questionnaires, which may introduce response bias due to participants' subjective perceptions. Despite these limitations, the study provides preliminary evidence regarding the potential effectiveness of integrating classical

music therapy into digital mental health screening applications for anxiety management among nursing students.

## **CONCLUSIONS AND SUGGESTIONS**

### **Conclusions**

This study demonstrated that classical music therapy integrated into the MENTARI application was effective in reducing anxiety levels among final-year nursing students. The intervention provided relaxation effects and improved emotional regulation, as indicated by decreased anxiety scores after therapy. The findings support the use of digital-based non-pharmacological interventions as accessible mental health support for students experiencing academic stress and anxiety. The integration of early mental health screening with classical music therapy through the MENTARI application also showed potential as an innovative strategy to support psychological well-being among nursing students.

### **Suggestions**

1. Educational institutions are encouraged to utilize digital mental health applications such as MENTARI as supportive interventions for students experiencing anxiety and academic stress.
2. Nursing educators and mental health practitioners may consider integrating classical music therapy into student mental health promotion programs because of its practical and non-invasive benefits.
3. Future researchers are recommended to conduct studies using larger sample sizes, control groups, and longer intervention periods to strengthen the evidence regarding the effectiveness of digital music therapy interventions.
4. Further studies are also suggested to explore other digital mental health features and interventions that can be integrated into the MENTARI application to improve psychological well-being among adolescents and university students.

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## **ETHICAL CONSIDERATIONS**

This study was conducted in accordance with ethical principles in nursing and health research, including respect for autonomy, confidentiality, beneficence, and non-maleficence. Prior to data collection, all participants received explanations regarding the objectives, procedures, benefits, and potential risks of the study. Participants voluntarily agreed to participate by signing informed consent forms and were informed that they could withdraw from the study at any time without consequences.

The confidentiality of participant data was maintained by using anonymous coding systems and ensuring that all collected information was used only for research purposes. The intervention provided in this study, namely classical music therapy integrated into the MENTARI application, was categorized as a non-invasive and low-risk intervention. Ethical

approval and institutional permission were obtained from the related academic institution before the implementation of the study.

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### Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study or the publication of this manuscript. The authors report no financial, personal, institutional, or professional relationships within the last three years that could be perceived as influencing the research process, analysis, interpretation of data, or publication decisions. Although this study received internal research funding support for the development of the MENTARI application, the funding institution had no role in the study design, data collection, analysis, interpretation of findings, or manuscript preparation.

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