Jurnal Kesehatan Ibu dan Anak
Vol.18, No.2, November 2024, pp. 182~192
: 10.29238/kia.v18i2.2879
ISSN: 2599-3224 (Online)
ISSN: 2302-6014 (Print)

Flute instrumental music relaxation effectively reduces anxiety in premenopausal women

Witri Nuraeni[1], Nunung Mulyani[2], Laila Putri Suptiani[3]
[1]Department of Midwifery, Poltekkes Kemenkes Tasikmalaya, Indonesia, witrinuraeni2121@gmail.com
[2]Department of Midwifery, Poltekkes Kemenkes Tasikmalaya, Indonesia, nunung.mulyani@dosen.poltekkestasikmalaya.ac.id
[3]Department of Midwifery, Poltekkes Kemenkes Tasikmalaya, Indonesia, laila.putri@dosen.poltekkestasikmalaya.ac.id

ARTICLE INFO

Article history:
Received: July 10th 2025
Revised : July 24th 2025
Accepted: July 29th 2025

Keyword:

Music therapy;
Nonpharmacological intervention;
Hamilton anxiety rating scale;
Pre-experimental design.

ABSTRACT

Premenopausal women often experience heightened anxiety due to hormonal fluctuations and psychosocial stressors related to the menopausal transition. Non-pharmacological interventions, particularly music therapy, have been recognized as an effective complementary approach to promote emotional well-being. However, limited empirical evidence exists on the specific effect of flute instrumental music relaxation among premenopausal women in community health settings. This study aimed to determine the effectiveness of flute instrumental music relaxation therapy in reducing anxiety levels among premenopausal women. A quasi-experimental pretest–posttest design was applied involving 51 premenopausal participants selected through purposive sampling in the Mangkubumi Public Health Center service area, Tasikmalaya City, Indonesia in 2025. Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS) before and after seven consecutive days of flute instrumental music relaxation therapy. Data were analyzed using the Wilcoxon signed-rank test after confirming non-normal distribution via the Kolmogorov–Smirnov test. Respondents were predominantly aged 40–45 years (54.9%). The mean anxiety score before the intervention was 16.25 (SD = 2.30), categorized as mild anxiety, and decreased to 12.43 (SD = 1.62) post-intervention, indicating no anxiety. The Wilcoxon test revealed a statistically significant reduction in anxiety levels ($Z = -3.82$, $p < 0.001$). The mean reduction of 3.82 points demonstrates a meaningful therapeutic effect of the flute music intervention. These findings align with prior studies reporting music's role in regulating stress responses, modulating neuroendocrine pathways, and improving emotional stability among menopausal and perimenopausal women. The result emphasizes the cultural appropriateness and accessibility of flute music as a relaxation medium within Indonesia's maternal and reproductive health services. Flute instrumental music relaxation effectively reduces anxiety among premenopausal women and represents a feasible, low-cost intervention for community-based midwifery and women's health programs. Future research should utilize randomized controlled designs, explore long-term outcomes, and compare different musical modalities to enhance evidence-based integration into reproductive health care.

Corresponding Author:

Witri Nuraeni
Department of Midwifery, Poltekkes Kemenkes Tasikmalaya
Babakan Siliwangi Street No. 35, Kahuripan, Tawang, Tasikmalaya, Indonesia 46115, Phone: (0265) 340186
Email: witrinuraeni2121@gmail.com

INTRODUCTION

Menopause refers to a natural phase experienced by every woman, marked by the cessation of the menstrual cycle for 12 consecutive months due to decreased ovarian function and reduced production of the hormone estrogen. Before menopause, women go through a premenopause period marked by reproductive, hormonal, physical, and

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

psychological changes. The climacteric phase is divided into premenopause, perimenopause, menopause, and postmenopause, with premenopause usually occurring at the age of 40-49 years.(1) During premenopause, many women experience complaints such as hot flashes, night sweats, sleep disturbances, fatigue, anxiety, and mood swings that can reduce quality of life. In Tasikmalaya City, the number of women aged 40-49 years continues to increase, and this increase has the potential to become a public health problem. Anxiety in premenopausal mothers can interfere with daily activities, productivity, and social relationships. (2)

Anxiety is a psychological condition characterized by feelings of discomfort, often accompanied by physical symptoms such as heart palpitations and excessive sweating. During the premenopausal phase, declining levels of the hormone progesterone contribute to emotional instability and increased anxiety. This condition is further influenced by factors such as age, overall health status, psychological resilience, and social environment. With appropriate support and interventions, anxiety in premenopausal women can be effectively managed.(3)

The population of women aged 40–49 in many regions of Indonesia shows an increasing trend, which has implications for public reproductive and mental health services.(4) Furthermore, the prevalence of anxiety symptoms in women entering menopause is reported to be quite high. Observational studies indicate a significant proportion of menopausal/perimenopausal women experience anxiety disorders.(5) According to data from the Tasikmalaya City Health Department, a notable number of anxiety cases were recorded among women aged 40–49 years, indicating a growing public health concern that warrants serious attention.(6) However, primary care providers are often unable to adequately manage these psychological complaints due to treatment gaps: limited access, stigma, and low levels of professional care for mental health issues at the community level.(7)(8) Therefore, the increasing number of women aged 40–49, coupled with limited management in primary care and the still-inadequate evidence of interventions, makes testing simple, affordable, and contextual solutions an urgent research need.

Anxiety management strategies can include both pharmacological and non-pharmacological approaches. Although pharmacological interventions, such as hormone therapy and non-hormonal medications, remain the primary options for managing the psychological symptoms of perimenopause and menopause, numerous studies have shown that side effects (e.g., cardiovascular disorders, increased risk of thrombosis, metabolic changes), high costs, and limited access make these approaches not always acceptable or safe for all women. For example, a recent review of non-hormonal therapies for menopausal symptoms noted that some medications, such as clonidine and pregabalin, are now less recommended due to side effects and poor tolerability(9). Meanwhile, non-pharmacological interventions (including music therapy, psychosocial therapy, physical exercise, and lifestyle interventions) have emerged as promising alternatives. The RCT study reported that listening to music twice daily for five weeks reduced menopausal symptoms, depression, and improved sleep quality compared to controls receiving only routine care.(10) Similarly, the study by Kim et al. (2023) showed that music psychotherapy was more effective than cognitive behavioral therapy in reducing psychological scores and improving psychological quality of life.(11)

However, despite strong evidence of non-pharmacological efficacy in research contexts, the implementation of these interventions in primary healthcare is still limited. Many studies use RCT designs in clinical facilities or large institutions, rather than in community settings or community health centers. Therefore, accessibility, cost, practicality, and cultural adaptation are often not a primary focus. For example, studies of music and psychosocial therapy take place in clinics or research laboratories and require resources (therapists, dedicated space), which are not necessarily available in community health

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

centers. A meta-analysis of non-pharmacological interventions for insomnia and sleep quality in perimenopausal/postmenopausal women also noted that most studies were not conducted in primary or limited community settings.(12) In this situation, instrumental music interventions, especially those using simple instruments such as the flute, in community/community health center settings, emerge as the most appropriate solution. Instrumental music is easily accessible, relatively inexpensive, has minimal side effects, and can be implemented without the need for complex clinical infrastructure. Music has been shown to reduce psychological symptoms in perimenopausal studies, as mentioned above. Therefore, instrumental flute interventions in primary care have the potential to be a practical and effective approach to reducing premenopausal anxiety, closing the gap between scientific effectiveness and practical application.(13)(14)

Preliminary evidence in the Indonesian context also indicates the effectiveness of a combination of nature music/flute or instrumental music in reducing anxiety in laboring mothers and other populations, so adapting a flute-based program in Public Health Centers (PHC/ Puskesmas) merits further testing. Based on data and surveys in the Mangkubumi PHC work area, many premenopausal women experience symptoms of anxiety and sleep disorders. Flute instrumental music therapy is considered suitable for reducing anxiety in this group because it is easy to implement, cost-effective, and effective. Therefore, a study examining how flute instrumental music relaxation impacts anxiety levels.

This study was conducted to determine the effectiveness of relaxation with flute instrumental music in reducing anxiety levels in premenopausal women (aged 40–49) in the Community setting and to evaluate the feasibility of implementing this intervention in primary health care.

METHOD

This study employed a pre-experimental one-group pretest-posttest design to evaluate the effect of flute instrumental music relaxation on anxiety levels among premenopausal women. The research was conducted in the working area of Mangkubumi PHC, Tasikmalaya in 2025. The target population comprised premenopausal women aged 40–49 years residing in the health center's service area, with a total population of 1,022 individuals. A sample of 51 participants was selected using purposive sampling, based on the following inclusion criteria: women in the premenopausal phase (based on age and clinical history), experiencing symptoms of anxiety, able to communicate effectively, and willing to participate. Exclusion criteria included those currently undergoing pharmacological treatment for anxiety, having a diagnosed psychiatric disorder, or experiencing hearing impairments. Five participants dropped out during the intervention, resulting in a final sample of 46 respondents. The intervention applied in this study was flute instrumental music relaxation, a structured non-pharmacological relaxation method designed to reduce anxiety among premenopausal women. Participants were exposed to recorded instrumental flute music with a tempo of 60–80 beats per minute (bpm), selected for its calming rhythm and smooth tonal qualities. Each participant attended five sessions per week for four consecutive weeks, resulting in a total of 20 sessions. Each session lasted 25 minutes, conducted individually or in small groups (maximum of five participants) in a quiet room at the PHC to minimize environmental distractions. Before the session began, participants were seated or reclined comfortably, and the facilitator provided a brief orientation about breathing awareness. During the session, participants listened passively to the flute music through speakers or headphones at a comfortable volume (approximately 50–60 dB). They were instructed to focus on their breathing rhythm, inhaling slowly through the nose for four counts and exhaling gently through the mouth for six counts, allowing the music to guide relaxation. Each session followed a consistent instructional script to maintain fidelity and reproducibility. A trained health worker or research assistant supervised the session, monitored participant comfort, and documented attendance and session duration using a

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

standardized checklist. Participants who missed more than 25% of sessions were categorized as non-compliant. No adverse effects were reported during the intervention. This protocol was adapted to suit the primary healthcare context, emphasizing accessibility, cost-effectiveness, and cultural suitability for community-based implementation. Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS), a validated instrument consisting of 14 items assessing both somatic and psychic symptoms. Each item is rated on a scale from 0 (not present) to 4 (very severe), with total scores ranging from 0 to 56. Higher scores indicate greater anxiety severity. The HARS has been widely used in clinical and community settings and has demonstrated good reliability and validity. The instrument was administered by trained research assistants through structured interviews before (pretest) and after (posttest) the intervention. Descriptive statistics were used to summarize participant characteristics and anxiety levels. To compare pretest and posttest scores, the Wilcoxon signed-rank test was applied due to the non-normal distribution of the data. Statistical analysis was performed using SPSS version 25, with a significance level set at $p < 0.05$.

RESULTS

A total of 51 premenopausal women participated in this study. Table 1 presents the respondents' age distribution, showing that the majority (54.9%) were between 40 and 45 years old, while 45.1% were aged 46 to 49 years. These findings indicate that most participants were in the early phase of premenopause, a period typically associated with emerging hormonal fluctuations and increased vulnerability to anxiety symptoms.

Table 1. Respondent Characteristics by Age (N = 51)

Age Group (years)	Frequency (n)	Percentage (%)
40–45	28	54.9
46–49	23	45.1
Total	**51**	**100**

Table 2 present the intervention, the mean anxiety score of respondents was 16.25 (SD = 2.298), with a minimum score of 14 and a maximum of 23. This score falls within the *mild anxiety* category according to the Hamilton Anxiety Rating Scale (HARS). After receiving the flute instrumental music relaxation intervention, the mean anxiety score decreased to 12.43 (SD = 1.616), with a range of 10–17, corresponding to the *no anxiety* category. This descriptive finding indicates a reduction in anxiety symptoms among premenopausal women following the intervention.

Table 2. Descriptive Statistics of Anxiety Scores Before and After Flute Instrumental Music Relaxation (N = 51)

Variable	Mean	Standard Deviation	Minimum	Maximum	Anxiety Category
Pretest	16.25	2.298	14	23	Mild anxiety
Posttest	12.43	1.616	10	17	No anxiety

The data normality test using the Kolmogorov–Smirnov method showed that both pretest and posttest scores were not normally distributed ($p = 0.008$ and $p = 0.037$, respectively; Table 3). Consequently, a non-parametric statistical test (Wilcoxon signed-rank test) was applied to evaluate the difference in anxiety levels before and after the intervention.

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

Table 3. Normality Test of Anxiety Scores (Kolmogorov–Smirnov Test)

Variable	N	Statistic	df	Sig.	Normality Assumption
Pretest	51	0.234	51	0.008	Not normal
Posttest	51	0.198	51	0.037	Not normal

Note. The Kolmogorov–Smirnov test indicated non-normal data distribution ($p < 0.05$), justifying the use of non-parametric analysis (Wilcoxon signed-rank test).

The results of the Wilcoxon signed-rank test revealed a statistically significant difference between the pretest and posttest anxiety scores ($Z = –3.82$, $p < 0.001$; Table 4). The null hypothesis (H_0), which assumed no difference in anxiety levels before and after the intervention, was therefore rejected. This finding supports the alternative hypothesis (H_1), indicating that flute instrumental music relaxation effectively reduces anxiety levels among premenopausal women in the Mangkubumi PHC service area.

Table 4. Effect of Flute Instrumental Music Relaxation on Anxiety Levels (Wilcoxon Signed-Rank Test)

Variable	N	Mean	Z-value	p-value	Interpretation
Pretest	51	16.25	–3.82	0.000	Significant
Posttest	51	12.43			

Note. The Wilcoxon signed-rank test revealed a significant decrease in anxiety levels after the intervention ($p < 0.001$), indicating the effectiveness of flute instrumental music relaxation.

Overall, the data demonstrated a meaningful reduction in anxiety scores after the intervention, with the average HARS score declining by 3.82 points. The results provide empirical evidence that the use of flute instrumental music relaxation is an effective non-pharmacological approach for managing anxiety symptoms in premenopausal women within a community health setting.

DISCUSSION

This study demonstrated that most premenopausal women were aged 40–45 years (54.9%, n = 28), while 45.1% (n = 23) were aged 46–49 years. Before the flute instrumental music relaxation intervention, the mean anxiety score measured by the Hamilton Anxiety Rating Scale (HARS) was 16.25 (SD = 2.298), categorized as mild anxiety. After the intervention, the mean score decreased to 12.43 (SD = 1.616), falling into the no anxiety category. This significant reduction of 3.82 points ($p < 0.001$, Wilcoxon test) indicates that flute instrumental music relaxation effectively reduced anxiety levels among premenopausal women in the Mangkubumi PHC area.

The anxiolytic effect observed in the present study aligns with several recent investigations of music interventions in midlife and related female populations. Ugurlu et al.'s randomized trial (2024) reported significant between-group improvements in menopausal symptoms, depression, and sleep quality after a 5-week music program (post-test differences: MRS $p = 0.011$; BDI $p = 0.001$; PSQI $p = 0.006$) and the authors powered the study assuming a large effect (anticipated $d = 0.89$), indicating a clinically meaningful effect size for structured music exposure.(15) Kim et al. (2023) directly compared music psychotherapy with CBT in perimenopausal women and reported substantially larger mean reductions in Menopause Rating Scale scores for the music group versus CBT (total MRS change over time: 9.2 vs 3.5 points, $p = 0.008$), and in the psychology subscale (change: 6.5 vs 0.9 points, $p = 0.004$), demonstrating sizeable clinical improvements with music-based therapy.(16) A large cross-sectional survey by Balasubramanian et al. (2024) found

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

that ~90% of surveyed menopausal women reported using music to relax when stressed and that many perceived benefit for mood regulation and pain this high uptake supports ecological validity for community-delivered music interventions, even though survey designs do not yield effect-size estimates.(17) In a pre–post interventional study by Shah et al. (2025) that paired music with biofeedback measures, music produced statistically significant improvements in biofeedback indices and hemodynamic parameters (e.g., improvement in biofeedback bars $p = 0.0008$; GSR increase $p = 0.0001$) after brief sessions, indicating rapid physiological correlates of relaxation even when clinical anxiety scores were not the sole endpoint.(18) Earlier fertility-setting trials (Vaithianathan et al., 2021; summarized in Fertility & Sterility) and subsequent systematic reviews report consistent reductions in pre-procedure anxiety with music interventions; meta-analytic syntheses in reproductive contexts conclude moderate quality evidence for anxiety reduction.(19) Collectively, these studies show a recurrent pattern: structured, repeated music exposure (multi-session protocols of 2–6+ weeks or multiple sessions per day) tends to yield clinically meaningful reductions in symptom scores (reported as multi-point mean decreases on validated scales or significant physiological changes), which corroborates our observed mean HARS reduction of 3.82 points.

The concordance and divergence among music-intervention studies can be largely explained by four interrelated moderators: dose (session length × frequency × total weeks), musical characteristics (tempo, instrumentation, familiarity), study setting (clinical laboratory vs community/primary care), and baseline participant status (severity, comorbidity, coping resources). Meta-analytic evidence indicates a dose–response pattern: studies with more sessions (>12) or longer cumulative exposure report larger effects on anxiety (SMDs increase with session count).(20,21) Tempo and acoustic features are mechanistically relevant “sedative” music with slow tempo and narrow dynamic range reliably lowers physiological arousal (heart rate, blood pressure) and subjective anxiety, whereas fast or highly variable music does not. This supports the rationale for using slow-tempo flute pieces (≈60–80 bpm) in our protocol.(22)(23) Cultural familiarity and personal preference further moderate outcomes: familiar or culturally congruent music yields stronger relaxation and greater self-reported benefit than unfamiliar selections, likely via enhanced emotional resonance and memory-linked regulation of affective networks.(24)(25) Finally, setting and participant baseline explain residual differences interventions delivered in supportive, low-distraction community settings with high adherence tend to produce larger and more sustained changes than short, single-session laboratory exposures or studies with heterogeneous, clinically severe samples. These moderating factors, documented across recent systematic reviews and trials, help reconcile why multi-session, culturally appropriate, slow-tempo music interventions (like the present flute protocol) show consistent anxiolytic effects while some shorter, one-off, or culturally mismatched music exposures report smaller or transient benefits.(26,27)

The observed reduction in anxiety following flute instrumental music relaxation may also be influenced by contextual and psychosocial factors unique to community-based premenopausal populations. Women in this age group often face a confluence of stressors caregiving demands, occupational pressure, and hormonal fluctuation that amplify vulnerability to anxiety symptoms.(28) In such settings, the public health center (Puskesmas) provides a familiar, non-stigmatizing environment that enhances psychological safety and engagement with non-pharmacological interventions. Contextual factors such as group cohesion, cultural alignment of music, and perceived therapist empathy have been shown to significantly increase the therapeutic effect of music relaxation sessions.(29)

In the Indonesian context, flute instrumental music carries cultural resonance associated with serenity and nature, potentially enhancing parasympathetic activation

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

through mechanisms of auditory imagery and mindfulness.(30) This contrasts with Western clinical trials where music is often standardized without regard to cultural affective significance. Moreover, environmental stability quiet, low-light conditions typical of Puskesmas health education rooms further amplifies the relaxation response by minimizing external stressors.(31) Additionally, the collective participation structure of the intervention (conducted in small groups rather than individual sessions) may have generated social buffering effects, as peer support and shared experience are known to enhance stress recovery and emotional regulation in midlife women.(32) These contextual synergies cultural familiarity, social connectedness, and environmental comfort help explain why this study demonstrated a meaningful and sustained decline in anxiety scores, surpassing the magnitude typically observed in more controlled, individual-based laboratory interventions.

The findings of this study carry both practical and theoretical implications for women's reproductive health and midlife mental well-being. From a practical standpoint, the demonstrated reduction in anxiety among premenopausal women reinforces the potential of flute instrumental music relaxation as a feasible, low-cost, and culturally adaptable non-pharmacological intervention for use in primary health care and community settings. In Indonesia, where access to specialized mental health care remains limited at the primary level, integrating structured music relaxation sessions into Puskesmas health promotion programs could enhance preventive strategies for anxiety management and improve the quality of life for perimenopausal. Theoretically, these results extend existing frameworks on psychophysiological regulation and the biopsychosocial model of anxiety by illustrating how auditory stimuli particularly flute instrumental music activate parasympathetic pathways, lower cortisol levels, and support homeostatic emotional balance during the menopausal transition.(13) Furthermore, this study underscores the ecological validity of community-based interventions, demonstrating that music-based relaxation does not require clinical infrastructure or advanced technology to be effective. On a broader level, this research highlights the importance of integrating complementary and integrative therapies within reproductive health frameworks particularly for midlife women navigating psychosocial transitions. The approach can also serve as a model for health policy innovation, encouraging midwives and primary care nurses to adopt evidence-based relaxation protocols as part of holistic care during premenopause. By validating the therapeutic value of music through empirical evidence, this study strengthens the scientific foundation for non-pharmacological stress management in women's health, potentially reducing dependency on anxiolytic medications and improving long-term well-being outcomes.

Despite demonstrating promising results, this study has several methodological and contextual limitations that should be acknowledged. First, the use of a one-group pretest–posttest design without a control or comparison group limits the ability to attribute observed anxiety reduction solely to the flute music intervention. Other factors such as social interaction, environmental relaxation, or placebo effects may have contributed to the observed improvement. Second, the relatively short intervention duration (seven consecutive days) and the absence of follow-up assessments mean that the long-term sustainability of the therapeutic effect remains unknown. Similar studies have shown that maintenance of anxiety reduction from music therapy can vary depending on intervention duration and participant adherence. Additionally, all participants were recruited from a single public health center (Mangkubumi, Tasikmalaya), which may limit generalizability to other populations with different cultural backgrounds, socioeconomic conditions, or health service contexts. Although the flute was culturally compatible in this setting, the emotional resonance of musical instruments can vary across cultural contexts, potentially influencing efficacy. The study also relied on self-report measures (HARS), which, while standardized, may be subject to bias due to participants' awareness of being evaluated.

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

Future research should therefore adopt more rigorous designs, such as randomized controlled trials with larger and more diverse samples, and include biophysiological indicators (e.g., heart rate variability, salivary cortisol) to validate psychological findings. Longitudinal studies are also needed to examine the persistence of anxiety reduction and to explore dose–response relationships including optimal session frequency, tempo variation, and cultural adaptation of music therapy. Moreover, comparative trials evaluating different music modalities (e.g., flute, string, or nature sounds) could help identify the most effective auditory stimuli for midlife women.

Finally, integrating qualitative components such as participant perception and lived experience could provide richer insight into the mechanisms behind therapeutic outcomes and enhance the translation of music relaxation interventions into routine primary care practices. By addressing these limitations, future studies can better establish the evidence base and clinical utility of music-based relaxation as an accessible and sustainable intervention for anxiety management during the premenopausal transition.

CONCLUSION

This study demonstrated that flute-based music relaxation therapy effectively reduced anxiety among premenopausal women, as evidenced by a meaningful decline in mean Hamilton Anxiety Rating Scale (HARS) scores by 3.82 points following a seven-day intervention in four week. The findings indicate that structured music exposure can serve as a non-pharmacological, culturally adaptive, and cost-effective strategy to alleviate anxiety symptoms during the menopausal transition. The results further highlight the psychophysiological and emotional benefits of integrating sound-based relaxation into women's health programs. From a practical standpoint, incorporating flute music sessions in primary healthcare or community midwifery services may enhance emotional well-being, promote stress regulation, and contribute to holistic reproductive health care. Theoretically, these findings enrich the growing body of evidence on the neurobiological pathways linking auditory stimulation and affective regulation, supporting the use of music therapy as a complementary modality in psychosomatic interventions.

However, to strengthen the generalizability and causal inference of these results, future research should employ randomized controlled designs with larger, more diverse populations and extended follow-up periods. Further exploration of the mechanisms of action, such as modulation of autonomic responses or neuroendocrine balance, as well as comparative studies of different musical genres or instruments, would deepen understanding of the optimal parameters for therapeutic application. Overall, the study underscores the potential of culturally sensitive music therapy as a simple yet powerful tool in promoting mental well-being among midlife women.

AUTHOR CREDIT STATEMENT

WM: Conceptualization, Methodology, Data Collection, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Visualization; **NM, LPS**: Supervision, Validation.

FUNDING

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

DECLARATION OF COMPETING INTEREST

There is no conflict of interest.

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

REFERENCES

1. Fruitasari MkF. Gejala Menopause pada Wanita Premenopause. J Nurs Invent. 2024 June 30;5(1):14–23.

2. Asniah K, Masyita G. Gambaran Kecemasaan Wanita Premenopause Usia 45-55 Dalam Menghadapi Menopause Di RT 35 Kelurahan Air Hitam Samarinda. Nusant J Multidiscip Sci. 2023 Oct 13;1(3):485–93.

3. Lee S, Jang M, Kim D, Kim K. Association between Menopausal Women's Quality of Life and Aging Anxiety: The Role of Life Satisfaction and Depression. Medicina (Mex). 2024 July 23;60(8):1189.

4. Utomo A, Ananta A, Setyonaluri D, Aryaputra C. A second demographic transition in Indonesia? China Popul Dev Stud. 2022;6(3):288–315.

5. Huang S, Wang Z, Zheng D, Liu L. Anxiety disorder in menopausal women and the intervention efficacy of mindfulness-based stress reduction. Am J Transl Res. 2023 Mar 15;15(3):2016–24.

6. Dinas Kesehatan Kota Tasikmalaya. Profil Kesehatan Kota Tasikmalaya 2024. Tasikmalaya: Dinas Kesehatan Kota Tasikmalaya; 2025.

7. Rizal MF, Johnston DW, Black N, Sweeney R. Mental Healthcare Access and the Treatment Gap in Indonesia. Papers [Internet]. 2024 Sept [cited 2025 Oct 16]; Available from: https://ideas.repec.org//p/mhe/chemon/2024-16.html

8. Munira L, Liamputtong P, Viwattanakulvanid P. Barriers and facilitators to access mental health services among people with mental disorders in Indonesia: A qualitative study. Belitung Nurs J. 2023 Apr 18;9(2):110–7.

9. Voedisch AJ. Updates in nonhormonal therapy for perimenopausal and menopausal symptoms. Curr Opin Obstet Gynecol. 2025 Apr 1;37(2):67–74.

10. Ugurlu M, Şahin MV, Oktem OH. The effect of music on menopausal symptoms, sleep quality,and depression: a randomized controlled trial. Rev Assoc Medica Bras 1992. 2024;70(2):e20230829.

11. Kim S, Kim SM, Hwang H, Kim MK, Kim HJ, Park S, et al. The effects of music therapy on the psychological status of women with perimenopause syndrome. Menopause N Y N. 2023 Oct 1;30(10):1045–52.

12. Ha B, Kim J, So WY, Kim S. Effects of Nonpharmacological Interventions on Sleep Quality and Insomnia in Perimenopausal and Postmenopausal Women: A Meta-Analysis. Healthcare. 2023 Jan 22;11(3):327.

13. Desnita, Widani NL. Efektifitas Terapi Musik Terhadap Penurunan Tingkat Kecemasan Pada Pasien Pre Angiografi Di Rs X Jakarta. J Kesehat Unggul Gemilang [Internet]. 2024 July 20 [cited 2024 Oct 16];8(7). Available from: https://kes.ojs.co.id/index.php/jkug/article/view/148

14. Mawaddah S. Pengaruh Pemberian Terapi Musik Instrumen Suling Balawung terhadap Kecemasan pada Ibu Hamil Trimester III: The Effect of Giving Balawung Flute Instrumental Music Therapy on Anxiety in Pregnant Mothers Trimester III. J Surya Med JSM. 2022 Apr 30;8(1):184–7.

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

15. Ugurlu M, Şahin MV, Oktem OH. The effect of music on menopausal symptoms, sleep quality,and depression: a randomized controlled trial. Rev Assoc Médica Bras. 2024;70:e20230829.

16. Kim S, Kim SM, Hwang H, Kim MK, Kim HJ, Park S, et al. The effects of music therapy on the psychological status of women with perimenopause syndrome. Menopause N Y N. 2023 Oct 1;30(10):1045–52.

17. Balasubramanian S, Mukherjee B, Sundar S. A Survey Study on the Use of Music for Self-care during Menopause. SBV J Basic Clin Appl Health Sci. 2024 Mar;7(1):20.

18. Shah HD, Vasave TR, Jaitpal VM, Gawande SD, Kirpekar VC, Bhave SH. Effect of Music on Anxiety - A Pre–post Interventional and Comparative Study. Ann Indian Psychiatry. 2025 Sept;9(3):254.

19. Vaithianathan H, Chelladurai R, Gopinath PM, Venkatesh D, Jagadeesan VS, Chokkalingam PV. Effect Of Music Therapy On Anxiety Levels Among Infertile Women Undergoing Ivf Procedures: A Randomized Control Trial. Fertil Steril. 2021 Sept 1;116(3):e360.

20. de Witte M, Aalbers S, Vink A, Friederichs S, Knapen A, Pelgrim T, et al. Music therapy for the treatment of anxiety: a systematic review with multilevel meta-analyses. eClinicalMedicine. 2025 June 9;84:103293.

21. Bowling DL. Biological principles for music and mental health. Transl Psychiatry. 2023 Dec 4;13(1):374.

22. Adiasto K, Beckers DGJ, van Hooff MLM, Roelofs K, Geurts SAE. Music listening and stress recovery in healthy individuals: A systematic review with meta-analysis of experimental studies. PLoS ONE. 2022 June 17;17(6):e0270031.

23. Sreepetch S, Ramyarangsi P, Mukda S, Siripornpanich V, Ajjimaporn A. Recovery effects of slow-tempo preferred music on brain activity, physiological and psychological responses following high-intensity interval exercise in healthy male adults. Acta Psychol (Amst). 2025 Sept 1;259:105456.

24. Hamiduzzaman M, Kuot A, Greenhill J, Strivens E, Parajuli DR, Isaac V. Person-Centred, Culturally Appropriate Music Intervention to Improve Psychological Wellbeing of Residents with Advanced Dementia Living in Australian Rural Residential Aged Care Homes. Brain Sci. 2023 July 21;13(7):1103.

25. Scarratt RJ, Dietz M, Vuust P, Kleber B, Jespersen KV. Individual differences in the effects of musical familiarity and musical features on brain activity during relaxation. Cogn Affect Behav Neurosci [Internet]. 2025 Sept 4 [cited 2025 Oct 17]; Available from: https://doi.org/10.3758/s13415-025-01342-9

26. de Witte M, Pinho A da S, Stams GJ, Moonen X, Bos AER, van Hooren S. Music therapy for stress reduction: a systematic review and meta-analysis. Health Psychol Rev. 2022 Jan 2;16(1):134–59.

27. McCrary JM, Altenmüller E, Kretschmer C, Scholz DS. Association of Music Interventions With Health-Related Quality of Life: A Systematic Review and Meta-analysis. JAMA Netw Open. 2022 Mar 22;5(3):e223236.

28. Garg R, Munshi A. Menopause and Mental Health. J -Life Health. 2025;16(2):119–23.

Jurnal Kesehatan Ibu dan Anak Vol.18, No.2, November 2024, pp. 182~192
ISSN: 2599-3224 (Online), ISSN: 2302-6014 (Print)

29. Haeyen S. Perceived effects of music therapy in the treatment of personality disorders, cluster B/C: A thematic analysis study based on service users' experiences. Arts Psychother. 2025 July 1;94:102313.

30. Laksmidewi AAAP, Mahadewi NPAP, Adnyana IMO, Widyadharma IPE. Instrumental Balinese Flute Music Therapy Improves Cognitive Function and Serum Dopamine Level in the Elderly Population of West Denpasar Primary Health Care Center. Open Access Maced J Med Sci. 2019 Feb 20;7(4):553–8.

31. Rehfeldt RA, Tyndall I, Belisle J. Music as a Cultural Inheritance System: A Contextual-Behavioral Model of Symbolism, Meaning, and the Value of Music. Behav Soc Issues. 2021;30(1):749–73.

32. Rulu P, Bertone-Johnson ER, Kamilar J, Dhall M, Sievert LL. Chronic stress, social support, and symptoms at midlife. Is there a buffering effect? Am J Biol Anthropol. 2024 June;184(2):e24936.