



**THE INFLUENCE OF MUSIC THERAPY AND MINDFULNESS MEDITATION  
IN REDUCING ANXIETY IN ELDERLY INDIVIDUALS UNDERGOING  
HEMODIALYSIS: A SYSTEMIC REVIEW**

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**ABSTRACT**

Approximately 40-50% of hemodialysis patients are elderly who experience chronic health conditions such as end-stage renal disease. Routine medications, lifestyle changes, and side effects of treatment often cause anxiety. Anxiety is described as a disturbing feeling as a situation of fear or threat. The sensation of anxiety can consist of palpitations, tremors, nervousness, and shortness of breath, interfering with the procedure. hemodialysis. Long duration of treatment and physical discomfort caused by it cause anxiety. Therefore, appropriate and safe non-pharmacological therapy is needed in the elderly. Objective to reduce anxiety in the elderly undergoing hemodialysis. The search was conducted through journal sources from ScienceDirect, ProQuest, EBSCO, and Pubmed (2019-2024) with keywords using medical subject headings (MeSH) "older adults" OR "elderly" OR "geriatrics" AND "music therapy" AND "acoustic therapy" OR "mindfulness" OR "Meditation" from 2899 article, 3 articles reviewed consisting of 1 quasi-experimental article 2 RCT articles it was proven that music therapy has a positive effect and increases satisfaction during hemodialysis as well as mindful meditation has been shown to reduce anxiety. Music therapy as an intervention that is cheap, easy and safe for the elderly can reduce anxiety levels, as well as mindful meditation although more research is still needed to see the evidence base.

Keywords: anxiety; elderly; hemodialysis; mindful

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**INTRODUCTION**

Based on the Indonesian Population Census in 2023, almost 12 percent or around 29 million Indonesians are categorized as elderly. According to the Deputy Minister of Health of the Republic of Indonesia Prof. Dr. Dante Saksono Harbuwono, the number of elderly in Indonesia will continue to increase until 2045. The population of elderly people with End-Stage Renal Disease (ESRD) is increasing. (Marini *et al.*, 2024). *Kidney* disease (CKD) is a progressive condition that affects >10% of the population worldwide or approximately 800 million people. CKD has emerged as one of the leading causes of death worldwide, and is one of a small number of non-communicable diseases that have shown an increase in mortality over the past 2 decades. Based on the results of a study examining the global prevalence of CKD, the total number of individuals affected by CKD stages 1-5 currently worldwide is estimated at 843.6 million (Kovesdy, 2022) (Ahmad, 2024).

Elderly people undergoing hemodialysis usually have chronic health conditions such as end-stage renal disease. Routine medications, lifestyle changes, and side effects of treatment often cause anxiety. Psychological problems that often occur in hemodialysis patients are anxiety. Anxiety during hemodialysis is common, but is often ignored and untreated (WM Siregar *et al.*, 2022). Anxiety is described as a disturbing feeling as a response experienced when

someone is in a situation of fear or threat. The sensation of anxiety can consist of a pounding heart, tremors, nervousness, and shortness of breath (Harijayanti, *et al*, 2022). Anxiety disorders are common in end-stage renal disease, with rates ranging between 12% and 52%. (Ahmad, 2024).

Continuous research on changes in stress and anxiety status felt by PGK patients from the beginning of the determination until the patient finally undergoes HD therapy needs to be carried out. Actions to reduce anxiety include pharmacological therapy and non-pharmacological therapy (Otaghi, Borji, Bastami, & Solymanian, 2016), seen from the effects caused by pharmacological therapy, non-pharmacological methods are more often used to reduce anxiety levels (Anisah & Maliya, 2021).

Music therapy is one of the non-pharmacological therapies that has been proven effective in reducing anxiety levels, including in the elderly undergoing medical treatments such as hemodialysis. (Zidan *et al* ., 2022). According to the American Music Therapy Association (AMTA), "music therapy is the clinical and evidence-based use of music interventions to achieve individual goals in a therapeutic relationship by a credentialed professional who has completed an approved music therapy program.

Mindfulness Meditation is a form of sound healing that requires minimates to meditate, either sitting or standing, as long as the focus of the mind is only on breathing and visualizing each breath as a means of drawing healing energy. (Goldsby *et al*. 2017). This study aims to reduce anxiety in elderly individuals undergoing hemodialysis. Older adults undergoing this treatment often experience anxiety due to various factors, such as changes in health conditions, the duration and frequency of the procedure, and its emotional impact. Therefore, this research focuses on strategies to alleviate anxiety, including psychological approaches, health education, and holistic therapy-based interventions. The findings of this study are expected to contribute to improving the quality of life of elderly patients undergoing hemodialysis and serve as a reference for healthcare professionals in designing more effective interventions.

## **METHOD**

Literature is conducted systematically through the Science Dirick database, proQuest, Pubmed, Ebsco, Wileyonline library and google scholar. The search was conducted using the auxiliary words Science Direct, ProQuest, EBSCO, and Pubmed with the keywords " *older adults* " OR " *elderly* " OR " *geriatrics* " AND " *music therapy* " AND " *acoustic therapy*" OR " *mindfull* " OR' *Meditation* "AND" *healing sound* . " Data is taken with the criteria RESULTS Maximum publication of 5 years (2019-2024) Languages used are English and Indonesian Document Type: Article Publication Form: Journal Article Type: Full Text.

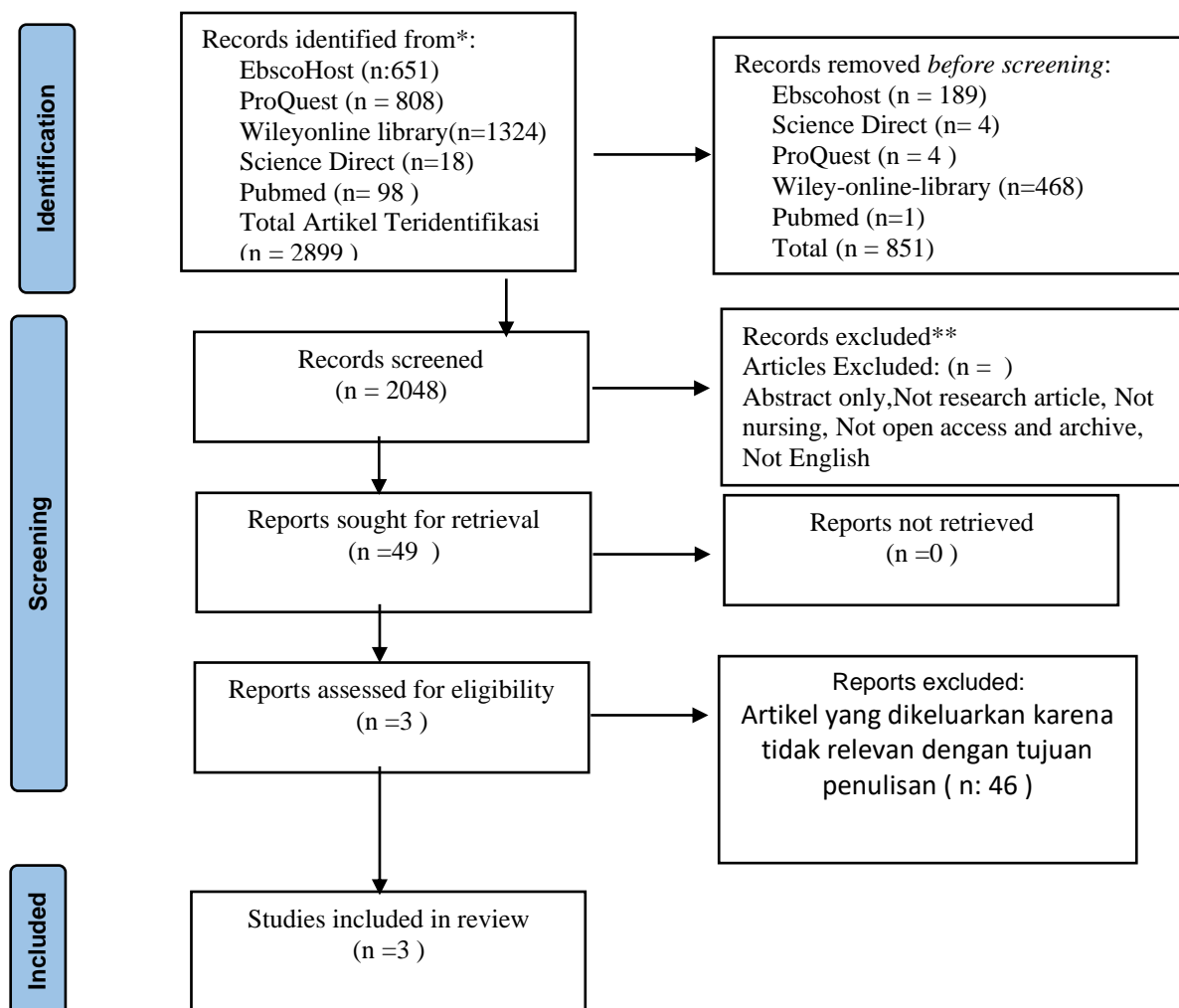


Figure 1. Literature study selection process adapted from PRISMA

**RESULT**

Based on the search results obtained, the total egibility was 49, the analysis method was carried out using PRISMA, the results of data extraction were obtained from 3 journal articles based on *Studies included in the review*. Which will be discussed by the researcher.

Table 1.  
Article Review

Study Citation And country Database	Title and Air	Sample(include size, sampling, methods)	Methods (include procedures, data collection methods instruments)	Key Findings (include statistical findings)	Recommendations
(1)Imani. M,et al,3021  Database : Pubmed	Effect of instrumental music on anxiety and depression among hemodialy	The population was hemodialysis patients in Hamedan in 2017 and 50 patients were selected and randomly divided into experimental and control groups. The	Random Control Trial	The results of the study showed that instrumental music has a positive effect on reducing anxiety and depression in hemodialysis patients. This	Education for nurses of hemodialysis patients to be more aware of anxiety and depression problems by including the

Study Citation And country Database	Title and Air	Sample(include size, sampling, methods)	Methods (include procedures, data collection methods instruments)	Key Findings (include statistical findings)	Recommendations
	sis patients: A randomized controlled trial	duration of each instrumental music intervention for the experimental group was 3 weeks, 3 times a week for 20 minutes.		therapy	application and mechanism of the influence of music therapy on patients can be a consideration for managers and related policy makers.
(2) Chung, WC et al (2022) Journal Sagepub.com	<i>Music Therapy in Access Procedures With Moderate Sedation</i>	30 elderly people underwent surgery/dialysis	Quasi Experiment	Music is a simple, feasible, and inexpensive intervention that can reduce patient anxiety and increase satisfaction during moderate sedation procedures and in the postoperative period./dialysis	Music therapy is used intraoperatively to reduce patient anxiety because it is inexpensive, easy, and feasible to implement.
Database : EbscoHost					
(3) Gönül Akbulut et al, 2024 Faculty of Nursing, İnönü University, Malatya Turkey	<i>the effect of conscious Mindfulness-based informative approaches on managing symptoms in hemodialysis patients</i>	The study population consisted of 160 dialysis patients registered at the Hemodialysis Unit of Atatürk University Research Hospital and the Hemodialysis Unit of Erzurum Health Sciences University Regional Research and Training Hospital.34 elderly	Quasi-experiment	Mindfulness meditation therapy has been shown to be effective in reducing anxiety in patients undergoing hemodialysis.	The need for training and certification in mindfulness meditation therapy, which is a non-pharmacological therapy Which is beneficial for both healthcare professionals and patients as it is a therapeutic approach to reducing anxiety.
Database : Pro Quest					

## DISCUSSION

Based on the search through the PRISMA process, the article identification process was obtained through *EbscoHost*, *ProQuest*, *Wileyonline library*, *Science Direct*, *Pubmed*, a total of 2889 articles, a total of 2048 articles were screened, 5 years of literacy, type of research Quasi experiment or RCT, English, Full text, obtained a total *eligibility of 49*, but only 3 articles are relevant to the purpose of writing. The three articles come from ProQuest, EbscoHost and Pubmed. Anxiety according to the Big Indonesian Dictionary (KBBI) means a feeling of restlessness (because of worry, fear); restless. While anxiety is a matter of anxiety, which is expressed without reason; too anxious, the heart feels very restless (scared, worried). Anxiety is one of the most common mental health problems in the elderly. Anxiety that arises from hemodialysis patients is caused by several physiological factors, psychological factors, socio-economic factors, patient age factors, factors from the duration and frequency of undergoing hemodialysis (Agustiya et al., 2020).

The prevalence of hemodialysis-related anxiety is estimated to be around 13%–52% (Pretto et al., 2020). Another study identified a positive and significant correlation between depression and anxiety with the performance status of hemodialysis patients (Rajan, E.J.E., & Subramanian, S. (2016)(Mushtaque *et al* . 2024). Patients receiving Hemodialysis have a significantly higher mortality than their peers from the general population adjusted for age and sex.(Belloetal.2022). Non-pharmacological management can be defined as a therapy or intervention that does not directly involve medication that seeks to optimize a person's needs or better manage their health. Non-pharmacological interventions are also independent interventions by nurses that are inexpensive and do not cause harmful systemic effects. Hemodialysis patients suffer from mental disorders such as anxiety and one of the non-pharmacological methods known to eliminate these disorders is music therapy. In *Plan the Search Strategy PICO as a comparison* is a mindfulness meditation therapy with sound healing.

Based on the research results (Mohebi et al. 2021) music therapy aims to determine the effect of instrumental music on depression and anxiety in hemodialysis patients. (Chung et al. 2022) Music is an easy, feasible, and inexpensive intervention that can reduce patient anxiety and increase satisfaction during Dialysis procedures. The three articles to be reviewed are articles with research types of 2 quasi-experimental articles, and 1 randomized controlled trial article. A study conducted in Iran, (Mohebi *et al* . 2021) entitled "The effect of instrumental music on anxiety and depression among hemodialysis patients: A test" where the population was hemodialysis patients in Hamedan in 2015, 50 patients were selected and randomly divided into experimental and control groups. The duration of each instrumental music intervention for the experimental group was 3 weeks, 3 times a week for 20 minutes. The data were measured with *the Beck Depression Inventory* and *SpeilBerger State-Trait Anxiety Inventory-YI* before the intervention and immediately after the last intervention and analyzed using *Yates correction, Chi-square test, Mann-Whitney IN- test, independent T-test, and Wilcoxon test* . The results showed a positive effect of instrumental music on reducing anxiety and depression in hemodialysis patients. It is recommended that this therapy be used as a nursing method to reduce anxiety and depression in hemodialysis patients.

The results of the study conducted by (Melo *et al* . 2021) showed a statistically significant increase between groups in the level of anxiety experienced during hemodialysis sessions. The experimental group showed a statistically significant decrease in anxiety scores ( $p = 0.03$ ), systolic blood pressure ( $p < 0.002$ ), diastolic blood pressure ( $p < 0.002$ ), heart rate ( $p < 0.01$ ) and respiratory rate ( $p < 0.006$ ) after listening to music. A randomized clinical trial conducted in three renal replacement therapy clinics. Sixty people with chronic kidney disease undergoing hemodialysis were randomly allocated into the experimental group and the control group, 30 people per group). State anxiety was evaluated in both groups with *the State-Trait Anxiety Inventory*. The t-test was used to verify the effect of experimental manipulation on the variables. This study claims that the physiological effects of music involve sensory, hormonal and physiological-motor reactions, such as metabolic changes, adrenaline release, regulation of respiratory rate, changes in blood pressure, reduction of fatigue and muscle tone, increase in threshold sensory arousal, and improvement of attention and concentration.

Music therapy is an excellent therapeutic tool, easy to use, easy to access, without side effects and applicable in several contexts and for several diseases. This study also has limitations, namely the use of self-report tools, the use of indicators related to major diseases, poor staff cooperation, patient impatience in filling out the questionnaire, covering the ears with headphones when listening to music, and music interference due to headphone manipulation

by patients are among the problems and limitations of this study. (Melo *et al.* 2021) . The conclusion of this study shows that music therapy can reduce anxiety and depression in patients undergoing hemodialysis, this can be done as one of the nursing methods for these patients during hemodialysis, because the application of this method is low-cost, comfortable, and without side effects. , can be chosen as one of the hemodialysis ward therapies. Therefore, educating hemodialysis patient nurses to be aware of anxiety and depression problems that include the application and mechanism of the effects of music therapy on patients can be considered by related managers and policy makers. (Melo *et al.* 2021)

In a study conducted by (Chung *et al.* 2022) explained that music therapy during moderate sedation dialysis access procedures reduces anxiety and satisfaction during dialysis procedures. The method used was 30 patients undergoing moderate sedation for dialysis access procedures were evaluated at one institution. Each patient completed preoperative and postoperative surveys using *the State-Trait Anxiety Inventory (STAI-6) short form*. The patient's preferred music was provided using an MP3 player with noise-canceling headphones. Several limitations are inherent in this study. There was a small sample size of patients used in this pilot study, which could potentially introduce error. In addition, patients used their previous experience without music as a comparison to their current procedural experience with music therapy, which poses a risk of recall bias.

These findings corroborate the existing literature. No prospective studies have investigated the use of music therapy in moderate sedation dialysis access procedures. The results of the analysis of music therapy in patients before dialysis showed a decrease in epinephrine levels compared to those who did not receive music therapy. A decrease in physiological responses to anxiety and stress was further reduced. Data collection was conducted within the first 30 minutes of dialysis therapy. Therefore, further studies with larger sample sizes are needed to better demonstrate the effects of music therapy in this population.

Article 3 is an article written by ( Siltainsuu and Peltola 2024) as *Comparing mindfulness meditation*. Mindfulness meditation therapy is a combination therapy that combines concentration, thought, hearing and sound. The method (Siltainsuu and Peltola 2024) uses a real experimental model with a control group. The study population was 160 hemodialysis patients. The research sample was determined as many as 120 hemodialysis patients, 60 in the experimental group and 60 in the control group, as a result of the power analysis. After the application of the pre-test, a mindfulness-based stress reduction program was applied to the experimental group. In the analysis of data collected in the study, percentages, frequencies, chi-square analysis, T-tests for independent groups, T-tests for dependent groups were used through the SPSS statistical software package for Windows 22.00 . The exercises used are breathing exercises in a comfortable environment, listening exercises in silence. Give and take exercises such as saying wishes such as "I hope you are peaceful, I hope you feel lighter, I hope you are compassionate, I hope you are safe." exercises to see all exercises with full concentration using the five senses. In the sense of hearing, you can use soft music or natural sounds. The results of the study ( Siltainsuu and Peltola 2024) were T-analysis tests on the difference between the pre-test and post-test scores of hemodialysis patients in the experimental group found significant in supporting the post-test.

The similarities between music therapy and mindfulness meditation are that both function to reduce anxiety levels. The difference between the two therapies is that music therapy reduces anxiety physically, emotionally and socially. While in mindfulness meditation which has the effect of the body's physiological response in relaxation, including reducing anxiety involving

the parasympathetic nerves. Research conducted by Tamara *et al* (Goldsby et al. 2017) is an exclusion criterion based on the year obtained. However, it can be used as a scientific reference as *Comparing* . American Psychological Association (2019). This study states that the Mindfulness meditation therapy steps based on the search are first the client lies down and listens to a combination of high-intensity and low-frequency bowl, gong, and bell singing, then sound meditation can induce a deep relaxation response and positively affect mood and feelings and well-being. Sound therapy has been used for centuries and is utilized in psychospiritual well-being, a combination of meditation and using sound instruments. At the end of the meditation, the main musician instructs participants to gently become aware of their surroundings.

Meanwhile, in the two articles above (Chung *et al* . 2022) and (Melo *et al*. 2021) do not discuss the procedural steps for implementing music therapy. The different thing about music therapy is that music therapy does not use special meditation, in principle it is the same as reducing anxiety or tension levels. According to Mindful Meditation Therapy in the search The American Psychological Association (2019) wrote that mindfulness meditation changes our brain and biology in a positive way, improving mental and physical health. Mindfulness meditation therapy based on literacy is widely used in Yoga institutions or clinical psychology as the latest therapy, but there are no specific scientific articles discussing mindfulness meditation therapy which can also be developed into mindfulness meditation with healing sound as a modern intervention, especially in reducing anxiety levels. However, these two therapies are very easy and cheap to recommend and are an alternative non-pharmacological intervention in reducing anxiety levels, especially in the elderly undergoing hemodialysis. . This indicates that this research is still under-published compared to music therapy. Meditation, including systems such as mindfulness-based meditation, has shown promise in inducing a relaxation response and helping to reduce anxiety and improve well-being.

## CONCLUSION

Future research is expected to explore non-pharmacological interventions, such as music therapy and modified modern mindfulness meditation therapy, which can be combined and developed to help reduce anxiety in the elderly. Additionally, more rigorous research designs are needed to better understand the effects of music engagement on the well-being of older adults. The various methods and terms currently available may reduce the comparability of accumulated research findings. In today's reality, where life expectancy is increasing and healthy aging is becoming more common, the role of music in daily life—especially for the elderly with complex diseases that limit the use of pharmacological therapies that may harm the kidneys—is an excellent alternative. Therefore, older adults deserve greater scientific attention.

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