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The Application of Mozart Music Therapy (Mozart Effect) in Reducing Anxiety Levels among Hemodialysis Patients in the Hemodialysis Unit of Dr. M. Haulussy Regional General Hospital, Ambon

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A R T I C L E I N F O

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A B S T R A C T

Chronic kidney failure patients undergoing hemodialysis often experience anxiety due to their dependence on the therapy and changes in their condition. If left unaddressed, this issue can compromise comfort during the dialysis process. Mozart music therapy is an effective non-pharmacological intervention to alleviate this anxiety. This nursing clinical project (KIAN) aimed to evaluate the therapy at the Hemodialysis Unit of Dr. M. Haulussy Regional General Hospital (RSUD) in Ambon. Prior to the intervention, four patients were assessed as having moderate anxiety, with ZSAS scores of 50, 52, 54, and 58, respectively. After listening to Mozart's music, their anxiety scores decreased significantly to 31, 29, 20, and 31—levels classified as mild anxiety. In conclusion, Mozart music therapy proved effective in reducing patient anxiety levels and is suitable for enhancing calmness and comfort during hemodialysis.

INTRODUCTION

Hemodialysis is one of the therapies used to replace kidney function. Other kidney replacement therapies include peritoneal dialysis and kidney transplantation (Rahman, 2023). Hemodialysis is a treatment that patients with chronic kidney disease (CKD) often need to undergo regularly. This treatment affects not only their physical health but also their psychological well-being. For patients with CKD, hemodialysis helps prevent death. However, it does not cure or restore kidney function. Patients may continue to experience various problems and complications, as well as changes in the structure and function of different body systems (Kurniawati, 2025).

According to the World Health Organization (WHO), approximately 10% of the global population has chronic kidney disease (CKD), with around 1.5 million patients worldwide undergoing hemodialysis. The prevalence of CKD is estimated to increase by approximately 8% annually (WHO, 2023). The prevalence of CKD among patients undergoing hemodialysis in Asia is also high. An estimated 434.3 million adults in Asia have CKD, including approximately 65.6 million with advanced CKD (Abdu et al., 2024, as cited in Ikhwan et al., 2026). In Indonesia, chronic kidney disease remains a growing public health concern. Data from the 2023 Indonesian Health Survey (Survei Kesehatan Indonesia/SKI) indicate that there were 638,178 cases of CKD, accounting for approximately 0.18% of the total population, with 21.11% of patients receiving hemodialysis therapy (SKI, 2023, as cited in Karlina et al., 2026). According to the 2018 Basic Health Research Survey (Riset Kesehatan Dasar/RISKESDAS), there were 499,800 people with CKD in Indonesia, representing a prevalence of 2%. The highest prevalence was reported in Maluku, with 4,351 people (0.47%) affected by CKD (Eka, 2020, as cited in Sosebeko, 2023).

Based on data from Dr. M. Haulussy Regional General Hospital (RSUD Dr. M. Haulussy) in Ambon, chronic kidney disease was among the ten most common diseases treated at the hospital. The number of cases was 578 in 2023, 610 in 2024, and 618 in 2025. During the three-month period from September to November, the data showed variations in the number of patients with uncomplicated and complicated CKD. In September, there were 23 patients with uncomplicated CKD, consisting of 12 males and 11 females, while 83 patients had complications. In October, there were 2 female patients with uncomplicated CKD, while 60 patients had complications. In November, there were 4 patients with uncomplicated CKD, consisting of 2 males and 2 females, while 83 patients had complications (Lellotery, 2026).

Most patients who are about to undergo hemodialysis experience anxiety. This is supported by a study entitled Prevalence of Depression and Anxiety in Chronic Kidney Disease Patients on Hemodialysis, which found that 47.36% of patients experienced mild anxiety, 28.94% experienced moderate anxiety, and 23.68% experienced severe anxiety. Similarly, a study conducted by Juliant et al. (2014), entitled Factors Associated with Anxiety Levels Among Hemodialysis Patients at Dr. Pirngadi Hospital, Medan, involving 62 respondents, found that 6 respondents (9.7%) experienced mild anxiety, 32 respondents (51.6%) experienced moderate anxiety, and 24 respondents (38.7%) experienced severe

anxiety (Mevi, 2023). Anxiety in patients with CKD can cause substantial changes in their physical and psychological conditions. Patients with CKD who are about to undergo hemodialysis frequently experience anxiety (Rahman, 2023).

Depression and anxiety are among the most common psychological disorders experienced by patients undergoing hemodialysis. These conditions may arise because patients are unable to cope with their circumstances, have limited hope for the future, experience frustration, or face life-threatening situations that lead to psychological distress (Rahman & Badayai, 2020, as cited in Atimah & Lilla Maria, 2022). According to research conducted by Nurlela Saragih (2022), lifelong dependence on hemodialysis machines, changes in social roles, loss of employment, and reduced income are stressors that can contribute to depression among hemodialysis patients, with a reported prevalence ranging from 15% to 69%. Anxiety is defined as a feeling of fear or a lack of confidence regarding an uncertain future, which causes a person to feel restless and worry that something bad may happen (A. Haidara & N. Mardianab, 2025).

Anxiety in patients with kidney failure can be caused by several factors. Behavioral factors associated with physical threats include physiological disturbances that may occur and a reduced ability to perform daily activities. These anxiety-provoking stressors may threaten an individual's identity, self-esteem, and social functioning. Anxiety can be understood as a response to frustration arising from circumstances that interfere with an individual's ability to achieve desired goals (Lestari et al., 2022, as cited in Ainun & Gustiani, 2025). Anxiety levels are influenced by various biological and physiological factors, both internal and external, including patients' acceptance of hemodialysis, socioeconomic status, age, physical condition, and the duration and frequency of hemodialysis treatment. Anxiety develops when patients perceive a threat, resulting in observable psychological and behavioral responses. In hemodialysis patients, perceived threats may originate from interactions with healthcare providers, interactions with the surrounding environment, and exposure to the medical equipment used during treatment (Uswatun Hasanah, 2022, as cited in Ainun & Gustiani, 2025).

Stress can be managed through appropriate pharmacological and non-pharmacological approaches. Non-pharmacological interventions include exercise, proper nutrition and diet, adequate rest, and relaxation techniques such as deep-breathing exercises, meditation, yoga, and classical music therapy (Nur et al., 2022, as cited in Elisa Purwaningsih, 2025). Music therapy is considered an effective non-pharmacological intervention for reducing anxiety without the need for medication. Music has therapeutic potential to enhance, restore, and maintain physical, spiritual, emotional, and psychological well-being. One form of music therapy involves listening to instrumental classical music composed by Wolfgang Amadeus Mozart, without vocals or lyrics. This instrumental music is intended to stimulate physical and psychological responses in listeners (Yusli et al., 2019, as cited in Andri Purwandari, 2025).

Listening to Mozart's classical music is believed to stimulate hypothalamic activity and suppress the release of corticotropin-releasing factor (CRF), thereby inhibiting the release of adrenocorticotropic hormone (ACTH) from the pituitary

gland. This process may subsequently reduce the secretion of cortisol, adrenaline, and noradrenaline by the adrenal glands. The production of thyroxine by the thyroid gland may also be suppressed. Elevated thyroxine levels may contribute to fatigue, excessive worry, restlessness, and difficulty sleeping. Therefore, listening to calming and soothing music may promote relaxation, create a sense of tranquility, and reduce stress (Kinasih et al., 2021, as cited in Elisa Purwaningsih, 2025).

According to Agustin (2024), a reduction in anxiety levels was observed in both subjects after receiving Mozart music therapy for three days, with their anxiety levels decreasing from moderate to mild. Similarly, a study by Huwaida et al. (2026) found that Mozart classical music therapy was effective in reducing anxiety levels among patients with CKD undergoing hemodialysis. This was demonstrated by a statistically significant difference in anxiety levels before and after the intervention, with a reported p-value of 0.000 ($p < 0.05$). Most respondents experienced a reduction in anxiety levels after receiving Mozart classical music therapy.

A preliminary study conducted by the researcher on Monday, July 27, 2026, involved interviews with two nurses working in the hemodialysis unit at Dr. M. Haulussy Regional General Hospital in Ambon. The interviews indicated that no previous research had been conducted in the unit regarding the application of Mozart music therapy to reduce anxiety levels among hemodialysis patients. Furthermore, patients undergoing hemodialysis reported that this was their first experience receiving music therapy. They were therefore unfamiliar with Mozart music therapy and did not understand how it could help reduce their anxiety levels.

Based on the background described above, the researcher is interested in conducting a study entitled "The Application of Mozart Music Therapy (Mozart Effect) to Reduce Anxiety Levels in Hemodialysis Patients in the Hemodialysis Unit of Dr. M. Haulussy Regional General Hospital, Ambon."

LITERATURE REVIEW

Definition of Anxiety

Anxiety originates from the Latin words angustus, meaning rigid or tight, and ango, meaning to choke or strangle. It can be defined as a feeling of insecurity, worry, or fear associated with the anticipation of danger or a threat, the cause of which is often unclear or unknown (Anipah et al., 2024). According to the American Psychological Association (APA), anxiety is defined as an emotional state that arises when a person experiences stress and is characterized by mental tension, worry, and physical responses. Anxiety is a psychological condition accompanied by feelings of distress, fear, and perceived threats from external sources. It is also experienced when a person anticipates an unpleasant event that may occur in the future (Syarifah & Juwita, 2023).

Anxiety is an uncomfortable emotional state characterized by worry and fear that something dangerous or threatening may occur. Its cause is often unclear or unknown. Anxiety also involves emotional distress and fear associated with the anticipation of danger or threats. In other words, anxiety is a feeling of fear whose cause is not clearly understood or identified (Anipah et al.,

2024). Based on these explanations, it can be concluded that anxiety is a condition in which a person experiences fear, restlessness, discomfort, and worry about uncertainty and the anticipation of potential threats.

Levels of Anxiety

According to Hidayat et al. (2024), anxiety can be classified into the following levels:

1. Mild Anxiety

   Mild anxiety is associated with tension in everyday life. It makes a person more alert and increases their perceptual awareness. Mild anxiety can motivate learning and promote personal growth and creativity.
2. Moderate Anxiety

   Moderate anxiety enables a person to focus on important matters while disregarding less relevant information. As a result, the person experiences selective attention but can still perform activities in a more directed manner.
3. Severe Anxiety

   Severe anxiety significantly narrows a person's perceptual field. The individual tends to focus on minor details while ignoring other aspects of the situation. The ability to think clearly becomes impaired, and the person requires substantial guidance and direction.
4. Panic

   Panic is associated with intense shock, fear, and terror. The individual's perceptual field becomes severely impaired, making it difficult to maintain self-control or perform activities, even when guidance or direction is provided.

Definition of Kidney Failure

Kidney failure is a decline in kidney function that can be classified into acute kidney failure, which involves a rapid decline in kidney function, and chronic kidney failure, which involves a prolonged and generally irreversible decline in kidney function. In addition to acute and chronic kidney failure, there is a condition known as acute-on-chronic renal failure, in which kidney function deteriorates suddenly in a patient who already has chronic kidney failure.

In patients with chronic kidney disease, dialysis may not yet be necessary when approximately 25% of kidney function remains. At this stage, conservative treatment may be provided, including a low-protein diet and medication. However, when kidney function declines to approximately 5% or the kidneys can no longer function adequately, hemodialysis may be required (Kalonio et al., 2024, as cited in Sonita, 2024).

According to Kalonio et al. (2024, as cited in Sonita, 2024), kidney failure is classified into two types:

1. Acute Kidney Failure (AKF)

   Acute kidney failure is a syndrome resulting from metabolic or pathological damage to the kidneys. It is characterized by the presence or

absence of oliguria, which can lead to the loss of the kidneys' ability to maintain the body's homeostasis, including fluid and electrolyte balance.

2. Chronic Kidney Disease (CKD)

   Chronic kidney disease is a progressive and irreversible impairment of renal function in which the body's ability to maintain metabolism and fluid and electrolyte balance gradually deteriorates. This condition can lead to uremia, which is characterized by the accumulation of urea and other nitrogenous waste products in the blood. CKD is a long-term condition involving structural and functional abnormalities of the kidneys and may require hemodialysis or dialysis treatment.

Definition of Hemodialysis

Hemodialysis (HD) is a kidney replacement therapy in which blood is circulated through an artificial kidney, known as a dialyzer, to remove protein metabolism waste products and correct electrolyte imbalances between the blood and dialysate compartments through a semipermeable membrane. Hemodialysis is generally performed several times per week, depending on the patient's remaining kidney function. Most patients undergo treatment three times per week, with each session lasting at least three to four hours (Amalia et al., 2021, as cited in Fahruddin, 2023).

Objectives of Hemodialysis

The primary objective of hemodialysis is to replace the excretory function of the kidneys by removing metabolic waste products from the body, such as urea, creatinine, and other metabolic waste substances. Hemodialysis also replaces the kidneys' function of removing excess body fluid that would normally be excreted as urine when the kidneys are functioning properly (Lolowang et al., 2020, as cited in Maulida, 2024).

According to Lenggoni (2023, as cited in Sonita, 2024), the objectives of hemodialysis are as follows:

1. To correct fluid and electrolyte imbalances.
2. To remove toxins and metabolic waste products.
3. To help control blood pressure.
4. To remove protein metabolism waste products, including urea, creatinine, and uric acid.
5. To remove excess fluid from the body.
6. To restore and maintain electrolyte balance in the body.
7. To improve the patient's health status.

Mozart Music Therapy

Classical music associated with Mozart refers to compositions created by the renowned composer Wolfgang Amadeus Mozart, whose full baptismal name was Johannes Chrysostomus Wolfgangus Gottlieb Mozart. Wolfgang Amadeus Mozart is widely regarded as one of the most important and celebrated composers in the history of European classical music (Alhogbi, 2017, as cited in Hardina, 2023).

Mozart, who made significant contributions to music during his lifetime, demonstrated remarkable versatility as a composer by creating works across various musical genres of his era. These included symphonies, operas, solo concertos, piano sonatas, and choral music. Mozart played an important role in the development and popularization of the piano concerto during its early stages. According to Alhogbi (2017, as cited in Hardina, 2023), Mozart also contributed to the development of various lighter musical genres, including religious music, dance music, nocturnes, and other forms of entertainment.

The distinctive characteristics of Mozart's music are evident throughout his compositions. His works consistently demonstrate clarity, balance, and transparency, sometimes incorporating straightforward melodic elements. When listening to Mozart's compositions, individuals may appreciate the artistic brilliance reflected in the deliberate selection of each musical note. Mozart effectively conveys strong emotions through compositions that combine energetic and tranquil elements. Maros and Juniar (2016) stated that these compositions aim to emphasize auditory patterns experienced by a fetus in the womb.

Mozart's classical music is characterized by gentle melodies that can create a sense of calm in listeners. Classical music may also help reduce anxiety and stress because its harmonious musical scales can make listeners feel comfortable and relaxed (Yuspitasari, Rahmawati, & Dalimunthe, 2020). According to Faradisi (2012, as cited in Abalorna et al., 2023), classical music may alleviate anxiety because its harmonies are received through the ears, transmitted through the inner ear and cochlear nerve, and conveyed to the brain, where they can influence emotional responses. According to Ganong (2012, as cited in Abalorna et al., 2023), these emotional changes occur because classical music harmonies reach the left cerebral cortex, ultimately promoting relaxation. This relaxation stimulates the brain's emotional centers, resulting in a sense of calm.

Classical music therapy is a therapeutic approach intended to calm the mind and facilitate emotional release. It utilizes organized tempo, rhythm, melody, and harmony, which may stimulate alpha and beta brainwave activity through auditory stimulation. These effects may promote calmness, prepare the brain to receive new information, induce relaxation, and facilitate sleep (Nuseha & Djaafar, 2010, as cited in Imran, 2019).

Objectives of Music Therapy

Music therapy may have different meanings for different individuals; however, its general objectives are the same. These include:

1. Helping individuals express their feelings.
2. Supporting physical rehabilitation.
3. Positively influencing mood and emotional well-being.
4. Improving memory.
5. Providing unique opportunities for interaction.
6. Encouraging interpersonal engagement.
7. Building emotional connections.
8. Helping reduce stress, prevent illness, and alleviate pain.

Through listening to music, composing music, playing musical instruments, moving to rhythms, discussing or expressing thoughts and feelings, and producing music, patients participating in music therapy are encouraged to improve their communication, cognitive, motor, emotional, and social abilities. Music is selected according to the therapeutic objectives established for each patient (Endeh Nurgiwiati, DPN, SKM, 2015, as cited in Hardina, 2023).

Effects of Mozart Music Therapy on Anxiety

The effects of classical music therapy on anxiety include diverting attention away from anxiety-provoking thoughts, reducing anxiety and pain, stimulating a more regular breathing rhythm, reducing physical tension, promoting positive mental imagery, encouraging relaxation, and improving mood. Music therapy may also encourage positive health behaviors and support patients' progress during treatment and recovery (Schou, 2008, & Mahanani, 2013, as cited in Bayu, 2018).

According to the American Music Therapy Association (2011, as cited in Yulian, 2021), music can influence several physiological systems in the body, as follows:

1. Brain Waves

   Music with a strong beat can stimulate faster brainwave activity, potentially improving mental alertness, concentration, and awareness. In contrast, music with a slow tempo may promote calmness and relaxation.
2. Respiration and Heart Rate

   Respiration and heart rate are regulated by the autonomic nervous system. Changes in brainwave activity may influence the autonomic nervous system, potentially slowing breathing and heart rate and promoting relaxation.
3. Blood Pressure

   Another potential benefit of music is a reduction in blood pressure, which may help reduce the risk of stroke and other cardiovascular complications.

Mechanism of Action of Mozart Music

Sedative music does not merely function as a distraction; it may also help inhibit the perception of anxiety (Alexander, 2001). Music is believed to stimulate the release of endorphins (Wilgram, 2002; Nilson, 2009; & Chiang, 2012, as cited in Bayu, 2018).

Endorphins are associated with feelings of relaxation and calmness. The midbrain is involved in the release of gamma-aminobutyric acid (GABA), a neurotransmitter that inhibits the transmission of electrical impulses between neurons at synapses. The midbrain also releases enkephalins and beta-endorphins, which may produce relaxing effects. These substances may help modulate neurotransmission associated with anxiety in the brain's sensory perception and interpretation centers, thereby reducing anxiety (Guyton & Hall, 2008, as cited in Bayu, 2018).

Procedures for Administering Classical Music Therapy

There is currently no universally established recommendation regarding the optimal duration of music therapy. Sessions commonly last 20–30 minutes, while music therapy for certain health conditions may be administered for 30–45 minutes. During the session, clients are encouraged to lie down in a comfortable position. The music should have a relatively slow tempo of approximately 50–70 beats per minute and a calming rhythm (Schou, 2008, & Mahanani, 2013, as cited in Bayu, 2018).

Music therapy may be administered for at least 30 minutes daily until the reported pain has completely subsided and does not recur. When music is played as pain begins, the pain may decrease or even disappear completely (Eka, 2009, as cited in Bayu, 2018).

Implementation of Mozart Music Therapy

Before implementing Mozart music therapy, the researcher will conduct an initial screening by distributing the Zung Self-Rating Anxiety Scale (SAS) questionnaire to the respondents to determine their baseline anxiety levels. After the screening process, the researcher will explain the intervention to the respondents to ensure that they understand the procedure and its purpose.

Following this explanation, the researcher will administer Mozart classical music therapy to the respondents for 30–45 minutes per session. The intervention will be implemented over three consecutive days. After completing the three-day intervention, the researcher will reassess the respondents' anxiety levels using the Zung Self-Rating Anxiety Scale questionnaire. This reassessment aims to determine whether the respondents experience a reduction in anxiety levels following the implementation of Mozart music therapy.

RESEARCH RESULT

The results of the anxiety assessment conducted before the implementation of Mozart music therapy, using the Zung Self-Rating Anxiety Scale (ZSAS) instrument, are presented below.

Table 1. Anxiety Levels Before and After Mozart Music Therapy

Respondent	Before Intervention	After Intervention
Patient 1	50 (Moderate Anxiety)	31 (Mild Anxiety)
Patient 2	52 (Moderate Anxiety)	29 (Mild Anxiety)
Patient 3	54 (Moderate Anxiety)	20 (Mild Anxiety)
Patient 4	58 (Moderate Anxiety)	31 (Mild Anxiety)

Based on Table 4.1, there was a considerable difference in anxiety scores before and after the administration of Mozart music therapy. Before the intervention, Patient 1 had an anxiety score of 50, indicating moderate anxiety. After the intervention, the score decreased to 31, indicating mild anxiety. Patient 2 had a pre-intervention anxiety score of 52, indicating moderate anxiety, which decreased to 29 after the intervention, indicating mild anxiety. Patient 3 had a pre-intervention anxiety score of 54, indicating moderate anxiety, which

decreased to 20 after the intervention, indicating mild anxiety. Similarly, Patient 4 had a pre-intervention anxiety score of 58, indicating moderate anxiety, which decreased to 31 after the intervention, indicating mild anxiety.

Following the Mozart music therapy intervention, Patients 1–4 reported that their anxiety had begun to decrease, pain associated with the insertion of dialysis access had diminished, feelings of restlessness had subsided, and they felt calmer and more comfortable. The patients' vital signs also showed improvement, with a pulse rate of 85 beats per minute and a respiratory rate of 18 breaths per minute, while their facial expressions appeared more relaxed.

DISCUSSION

Before the Implementation of Mozart Music Therapy

Patient 1

On Monday, July 27, 2026, the first day of the study, Patient 1 was less cooperative. The patient had been undergoing hemodialysis for one year and six months. The pre-intervention anxiety questionnaire score was 50, indicating moderate anxiety. Before the therapy, the patient's blood pressure was 160/85 mmHg, and the pulse rate was 80 beats per minute. The patient reported pain during the insertion of dialysis access and fear that the hemodialysis procedure might not proceed smoothly. Consequently, the patient was always accompanied by their child during dialysis sessions.

Patient 2

On Monday, July 27, 2026, the first day of the study, Patient 2 was less cooperative. The patient had been undergoing hemodialysis for three years. The pre-intervention anxiety score on the Mozart music therapy questionnaire was 52, indicating moderate anxiety. Before the therapy, the patient's blood pressure was 160/90 mmHg, and the pulse rate was 90 beats per minute. The patient reported occasionally experiencing palpitations during hemodialysis, feeling anxious about the possibility of bleeding if the tubing became disconnected from the arteriovenous shunt (AV shunt), and experiencing pain when the needle was inserted.

Patient 3

On Thursday, July 30, 2026, the first day of the study involving Mr. I, the patient had been undergoing hemodialysis for two weeks and three days. The pre-intervention anxiety score on the Mozart music therapy questionnaire was 54, indicating moderate anxiety. Before the therapy, the patient's blood pressure was 157/85 mmHg, and the pulse rate was 90 beats per minute. The patient reported fear during the placement of hemodialysis equipment and pain when the needle was inserted. The patient also appeared restless and was accompanied by their child during the procedure.

Patient 4

On Thursday, July 30, 2026, the first day of the study involving Mrs. R, the pre-intervention anxiety questionnaire score was 58, indicating moderate anxiety. The patient's blood pressure was 122/65 mmHg, and the pulse rate was

90 beats per minute. The patient was less cooperative because they reported pain when connected to the dialysis machine and discomfort in the lower back. The patient was always accompanied by their mother during hemodialysis because of fear that the procedure might not proceed smoothly. The patient also reported having undergone hemodialysis for approximately two weeks and not yet being accustomed to the procedure. During treatment, the patient appeared restless, showed signs of pain, and had a grimacing facial expression.

After the Implementation of Mozart Music Therapy

Patient 1

After receiving Mozart music therapy for 24 minutes per day over three days, Patient 1 reported that their anxiety had begun to decrease. The pain associated with the insertion of dialysis access had also diminished, with the patient describing it as feeling like an ant bite. The patient appeared more enthusiastic about undergoing hemodialysis, and their facial expression appeared calmer. The post-intervention anxiety questionnaire score was 31, indicating mild anxiety. This demonstrated a reduction in anxiety from moderate to mild.

Patient 2

After receiving Mozart music therapy for 24 minutes per day over three days, Patient 2 reported experiencing less pain during needle insertion and no longer experiencing intense palpitations. The post-intervention anxiety questionnaire score was 29, indicating mild anxiety. This represented a reduction in anxiety from moderate to mild. The patient's blood pressure was 130/80 mmHg, and the pulse rate was 78 beats per minute.

Patient 3

After receiving Mozart music therapy for 24 minutes per day over three days, Patient 3 reported experiencing less pain during needle insertion and appeared more relaxed while undergoing hemodialysis. The post-intervention anxiety questionnaire score was 20, indicating mild anxiety. This demonstrated a reduction in anxiety from moderate to mild. The patient's blood pressure was 150/80 mmHg, and the pulse rate was 90 beats per minute.

Patient 4

After receiving Mozart music therapy for 24 minutes per day over three days, Patient 4 reported feeling calmer and more comfortable. The post-intervention anxiety questionnaire score was 31, indicating mild anxiety. This demonstrated a reduction in anxiety from moderate to mild. The patient's blood pressure was 120/75 mmHg, and the pulse rate was 85 beats per minute.

Implementation of Mozart Music Therapy

The results of the study conducted in the Hemodialysis Unit of Dr. M. Haulussy Regional General Hospital in Ambon from July 27 to August 6, 2026, showed that Patients 1–4 experienced moderate anxiety before receiving Mozart

music therapy. After receiving the intervention for three days, their anxiety levels were reassessed on the third day.

The results showed that Patient 1's anxiety score decreased from 50 (moderate anxiety) before the intervention to 31 (mild anxiety) afterward. Patient 2's score decreased from 52 (moderate anxiety) to 29 (mild anxiety). Patient 3's score decreased from 54 (moderate anxiety) to 20 (mild anxiety). Meanwhile, Patient 4's score decreased from 58 (moderate anxiety) to 31 (mild anxiety).

The reduction in anxiety was also supported by the patients' statements following the Mozart music therapy intervention. All four patients reported reduced anxiety, decreased pain during the insertion of dialysis access, less restlessness, and increased feelings of calmness and comfort. Their clinical observations also indicated a pulse rate of 85 beats per minute and relaxed facial expressions.

Several factors may contribute to anxiety during hemodialysis, including psychological conditions, the treatment environment, family support, and the duration of hemodialysis treatment. This is consistent with the study by Dame et al. (2022, as cited in Wahyuningsih, 2024), which identified age, educational level, sex, duration of hemodialysis, and family support as factors associated with anxiety among hemodialysis patients. Based on the findings of the present study, psychological and physiological factors appeared to play important roles in the patients' anxiety.

The anxiety levels of all four patients decreased following the intervention. Mozart music therapy may promote relaxation, allowing patients to feel calmer during hemodialysis. This finding is consistent with the study by Muzaenah et al. (2018, as cited in Huwaida et al., 2026), which reported that Mozart classical music therapy could promote relaxation and help patients reduce emotional tension during hemodialysis. Classical music with a stable tempo and rhythm may provide positive stimulation to the central and autonomic nervous systems, potentially reducing sympathetic nervous system activity associated with stress and anxiety responses.

The administration of Mozart music therapy for 24 minutes per day over three days is also consistent with the study by Kurniawan (2023), who administered Mozart music therapy for 10–30 minutes, three times daily, and found that it could help reduce patients' anxiety levels. As anxiety decreases, patients may become more relaxed and cooperative and experience greater mental calmness. These changes may support the achievement of planned nursing care goals.

The factors contributing to anxiety varied among the four patients. Patient 1 experienced anxiety primarily due to psychological factors, particularly the fear that the dialysis procedure might not proceed smoothly. This fear led the patient to seek continuous companionship from their child during treatment.

Patient 2's anxiety was primarily associated with physiological concerns, including fear of bleeding if the tubing became disconnected from the AV shunt and pain during needle insertion.

Patient 3's anxiety appeared to be associated with both physiological and psychological factors, as well as family support. The patient continued to

experience fear during the placement of hemodialysis equipment and pain during needle insertion. The patient also appeared restless and was accompanied by their child during treatment.

Patient 4's anxiety was associated with psychological and physiological factors. The patient experienced pain at the central dialysis catheter (CDL) insertion site but reportedly tolerated the discomfort. The patient also experienced pain when connected to the dialysis machine and discomfort in the lower back. The patient's mother remained present during hemodialysis because the patient feared that the procedure might not proceed smoothly. Furthermore, the patient had only been undergoing hemodialysis for approximately two weeks and had not yet become accustomed to the treatment.

Based on these findings, anxiety among patients undergoing hemodialysis may also be influenced by the duration of treatment and sex. Patients who had recently started hemodialysis had higher anxiety scores than those who had undergone treatment for a longer period. Specifically, Patients 3 and 4, who had undergone hemodialysis for approximately two weeks, had moderate anxiety scores of 54 and 58, respectively. Patient 4, who was female, had a higher anxiety score than the male patients.

These findings are consistent with the study by Dame et al. (2022, as cited in Rifqanti et al., 2025), which suggested that women may be more susceptible to anxiety because they may experience greater difficulty finding ways to cope with stressful situations, whereas men may respond to problems more rationally. According to Puspanegara (2019, as cited in Rifqanti et al., 2025), patients who have recently started hemodialysis may experience anxiety when seeing blood flowing through the dialysis catheter tubing, hearing the dialysis machine alarm, or wondering how long they will need to undergo treatment. Similarly, Agustyowati et al. (2023, as cited in Rifqanti et al., 2025) stated that patients who have recently started hemodialysis may experience moderate anxiety to panic because of the prolonged treatment process and the belief that hemodialysis will cure their disease.

The researcher also assumes that continuous family presence during hemodialysis may help reduce patients' anxiety. All four patients in this study received companionship and support from their respective family members. Optimal family support can motivate patients to remain strong and enthusiastic about continuing hemodialysis treatment.

This is consistent with Wahyuningsih (2024), who reported a positive influence of family support on patients undergoing hemodialysis. Strong family support may help reduce anxiety among hemodialysis patients. As family members become more accepting of the patient's condition, their affection and support may increase. Patients may feel that their lives remain meaningful because their families still need and value their presence. Adequate family support also contributes significantly to improved self-care management among hemodialysis patients, thereby helping them achieve better health outcomes.

Classical music therapy may help hemodialysis patients feel more relaxed and comfortable, thereby reducing their anxiety. The process may begin when patients listen to classical music, which can stimulate specific neural pathways in

several brain regions, including the limbic system associated with emotional behavior. Activation of this system through music listening may promote relaxation. Consequently, classical music therapy may help patients undergoing hemodialysis feel calmer and more comfortable, potentially reducing their anxiety (Lina et al., 2020, as cited in Agustin, 2024).

Music may also stimulate the release of endorphins, which are associated with relaxation. In addition, music may reduce sympathetic nervous system stimulation, potentially decreasing adrenaline activity, reducing neuromuscular tension, and increasing the threshold for awareness of discomfort. Although various types of music may be used therapeutically, music with a tempo of approximately 60 beats per minute and a calming character is commonly recommended. Classical music, including compositions by Wolfgang Amadeus Mozart, is often selected to help reduce stress and anxiety. Mozart's compositions, characterized by a broad range of pitches, varied musical dynamics, and distinctive melodies, are believed to offer potential benefits for human well-being. Furthermore, Mozart's slow-tempo music, which may be perceived as compatible with the heart's rhythm, has been proposed to stimulate serotonin release and promote feelings of comfort and happiness (Widiyono et al., 2022).

Music can create a calming atmosphere, elevate one's spirits, and influence mood. These effects may partly be associated with the tempo of music, particularly music ranging from 60 to 80 beats per minute, which is relatively close to the resting heart rate of some individuals. In hemodialysis patients, music therapy may influence perception through distraction by redirecting attention away from anxiety and pain toward more pleasant experiences. Music may also support the recovery process. Therefore, music therapy can be considered a nursing intervention that may help reduce anxiety levels in patients undergoing hemodialysis (Agustin, 2024).

The overall findings indicate that all four patients experienced a substantial reduction in anxiety scores, moving from moderate to mild anxiety. In addition to Mozart music therapy, other factors that may have contributed to the reduction in anxiety included family support, a comfortable and conducive treatment environment, and the patients' positive expectations regarding the effectiveness of Mozart music therapy. These findings are consistent with Rifqanti et al. (2025), who reported that adequate family support can facilitate the treatment process and hemodialysis therapy by addressing patients' physical and psychological needs.

The findings of this case study are consistent with Agustin (2024), who implemented Mozart's Piano Sonata No. 16 in C Major music therapy. Both subjects experienced a decrease in anxiety scores from moderate to mild anxiety after the intervention.

The findings are also consistent with Huwaida et al. (2026), who reported changes in anxiety levels among patients with chronic kidney disease undergoing hemodialysis following Mozart classical music therapy. Before the intervention, among 23 respondents, 9 experienced severe anxiety, 8 experienced moderate anxiety, and 6 experienced mild anxiety. After the intervention, the

number of patients experiencing severe anxiety decreased to 6, those experiencing moderate anxiety decreased to 3, those experiencing mild anxiety increased to 11, and 3 respondents reported no anxiety.

CONCLUSIONS AND RECOMMENDATIONS

The anxiety levels of patients 1–4 undergoing hemodialysis were assessed using the Zung Self-Rating Anxiety Scale (ZSAS) questionnaire before and after receiving Mozart music therapy for 24 minutes per day over three sessions. The results showed that all four patients experienced moderate anxiety before the implementation of Mozart music therapy. Patient 1 had a pre-intervention anxiety score of 50 (moderate anxiety), Patient 2 scored 52 (moderate anxiety), Patient 3 scored 54 (moderate anxiety), and Patient 4 scored 58 (moderate anxiety).

Following the implementation of Mozart music therapy, all four patients experienced a reduction in their anxiety levels. Patient 1's anxiety score decreased to 31 (mild anxiety), Patient 2's score decreased to 29 (mild anxiety), Patient 3's score decreased to 20 (mild anxiety), and Patient 4's score decreased to 31 (mild anxiety).

Therefore, it can be concluded that the implementation of Mozart music therapy was associated with a reduction in anxiety levels among patients undergoing hemodialysis.

ADVANCED RESEARCH

This study has several limitations, as it was conducted at only one research site, namely Dr. M. Haulussy Regional General Hospital in Ambon. Furthermore, the number of respondents was relatively small, involving only four patients. Therefore, future research is recommended to involve a larger number of respondents and explore other aspects, such as comparing the effects of Mozart music therapy with other types of music. Future studies could also incorporate additional objective indicators, including blood pressure, heart rate, and oxygen saturation during hemodialysis. In addition, researchers could compare the effects of passive music listening with combined psychosocial interventions, such as music therapy combined with other independent nursing interventions aimed at reducing anxiety levels in hemodialysis patients. These approaches are expected to provide more comprehensive findings regarding the effectiveness of Mozart music therapy in reducing anxiety among patients undergoing hemodialysis.

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