

The effect of guided imagery therapy on anxiety in chronic kidney failure patients undergoing hemodialysis: a quasi-experimental study

Pengaruh Terapi Guided Imagery terhadap Kecemasan Pasien Gagal Ginjal Kronis yang Menjalani Hemodialisis: Quasi Eksperimen

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ABSTRACT

Background: Patients undergoing hemodialysis often experience high levels of anxiety, which negatively impacts their quality of life and adherence to treatment. Guided imagery therapy, as a mind-body relaxation technique, can reduce anxiety.

Objective: This study aimed to evaluate the effectiveness of guided imagery therapy in reducing anxiety in patients with chronic kidney disease undergoing hemodialysis.

Methods: This study used a quasi-experimental design with a control group. A total of 32 patients were recruited and randomly divided into the intervention group (n=16), who received guided imagery therapy for three times a week for one week, and the control group (n=16), who received standard care. The level of anxiety was measured using the State-Trait Anxiety Inventory (STAI) before and after the intervention. Descriptive statistics were used to analyze participant characteristics, and paired t-tests were used to evaluate changes in anxiety scores.

Results: The research results showed that the pre-test data of both groups indicate a high level of anxiety. The average anxiety score in the intervention group before the intervention was 56.20, and after the intervention was 41.13. The average anxiety score in the control group before the intervention was 45.88, and after the intervention was 44.56. Bivariate results showed a significant decrease in anxiety scores after the intervention in the intervention group compared to the control group ($p < 0.05$).

Conclusion: Guided imagery therapy can significantly reduce anxiety levels in patients undergoing hemodialysis. This technique can be easily integrated into routine hemodialysis care as a complementary approach to enhance patients' psychological well-being.

Keywords: anxiety, chronic kidney disease, guided imagery, hemodialysis

ABSTRAK

Latar Belakang: Pasien yang menjalani hemodialisis seringkali mengalami tingkat kecemasan yang tinggi, yang berdampak negatif pada kualitas hidup dan kepatuhan terhadap pengobatan. Terapi guided imagery, sebagai teknik relaksasi pikiran-tubuh dapat mengurangi kecemasan.

Tujuan: Penelitian ini bertujuan untuk mengevaluasi efektivitas terapi guided imagery dalam mengurangi kecemasan pada pasien penyakit ginjal kronis yang menjalani hemodialisis.

Metode: Penelitian ini menggunakan desain quasi-eksperimental dengan kelompok kontrol. Sebanyak 32 pasien direkrut dan secara acak dibagi ke dalam kelompok

intervensi (n=16), yang menerima terapi guided imagery selama 3 sesi dalam waktu satu minggu, dan kelompok kontrol (n=16) yang menerima perawatan standar. Tingkat kecemasan diukur menggunakan State-Trait Anxiety Inventory (STAI) sebelum dan sesudah intervensi. Statistik deskriptif digunakan untuk menganalisis karakteristik peserta, dan uji t-berpasangan digunakan untuk mengevaluasi perubahan skor kecemasan.

Hasil: Hasil penelitian menunjukkan pada data pre-test kedua kelompok menunjukkan tingkat kecemasan yang tinggi. Rerata skor kecemasan pada kelompok intervensi sebelum intervensi adalah 56,20 dan sesudah intervensi 41,13. Rerata skor kecemasan pada kelompok kontrol sebelum intervensi adalah 45,88 dan sesudah intervensi 44,56. Hasil bivariat menunjukkan penurunan signifikan dalam skor kecemasan setelah intervensi pada kelompok intervensi dibandingkan dengan kelompok kontrol ($p < 0,05$).

Kesimpulan: Terapi guided imagery secara signifikan dapat mengurangi tingkat kecemasan pada pasien yang menjalani hemodialisis. Teknik ini dapat dengan mudah diintegrasikan dalam perawatan rutin hemodialisis sebagai pendekatan komplementer untuk meningkatkan kesejahteraan psikologis pasien.

Kata kunci: guided imagery, hemodialisis, kecemasan, penyakit ginjal kronis

INTRODUCTION

Chronic Kidney Disease (CKD) is a progressive and irreversible condition characterized by the gradual decline in renal function over time. In its advanced stages, CKD necessitates renal replacement therapies such as hemodialysis, which, while life-sustaining, introduces profound physiological and psychological burdens for patients. Among these burdens, anxiety has been identified as one of the most prevalent psychological complications in patients undergoing hemodialysis, with significant implications for quality of life, treatment adherence, and overall prognosis.¹

Patients on hemodialysis often face a complex array of stressors, including the uncertainty of disease progression, dietary and fluid restrictions, physical discomfort from the dialysis process, frequent hospital visits, and disruptions to social and occupational roles. These stressors contribute to the high prevalence of anxiety, with some studies indicating that more than 40% of patients undergoing dialysis experience moderate to severe anxiety symptoms.² Anxiety in these patients is not merely an emotional response; it has been linked to poor clinical outcomes, including increased hospitalization rates, cardiovascular complications, and mortality.³

While pharmacological interventions are available for managing anxiety, their use in the CKD population is limited due to potential drug interactions, altered pharmacokinetics, and the risk of side effects such as sedation, hypotension, and dependence.⁴ Consequently, there is a growing interest in non-pharmacological approaches that offer safe, cost-effective, and patient-centered methods for psychological symptom management. Among these, guided imagery (GI) therapy has emerged as a promising intervention.

Guided imagery is a cognitive-behavioral technique that involves the use of directed mental visualization to evoke a relaxed state and reduce stress-related symptoms. It operates by engaging the senses to create vivid mental images, often involving calming natural environments, which can influence physiological responses through the mind-body connection.⁵ The theoretical foundation of guided imagery is rooted in psychoneuroimmunology, suggesting that imagery can alter neuroendocrine responses and modulate stress, thereby impacting physical and emotional health.⁶

Several recent studies have highlighted the potential of guided imagery in reducing anxiety and improving the quality of life in patients with chronic diseases. For instance,⁷ conducted a randomized controlled trial in COVID-19 patients, demonstrating that guided

imagery significantly reduced anxiety, pain, and improved vital signs. Though not specific to renal populations, the findings support the generalizability of GI's anxiolytic effects across various medical conditions. Similarly, a meta-analysis by Bandealy confirmed that guided imagery, as part of mind-body therapies, significantly decreased anxiety in patients with chronic illnesses.⁸

In the context of hemodialysis, Afshar et al. reported that guided imagery improved sleep quality and reduced both state and trait anxiety among patients receiving regular dialysis.⁹ Their study highlighted the practicality of implementing GI during dialysis sessions without disrupting medical routines. Furthermore, guided imagery not only alleviated anxiety and depression but also stabilized physiological parameters such as blood pressure and heart rate, underscoring its holistic benefit.¹⁰

In Indonesia, where the burden of CKD is steadily rising, the effects of guided imagery on fatigue in hemodialysis patients and found a significant reduction in perceived fatigue levels, indicating a broader therapeutic potential of GI in this population.¹¹ However, most existing studies are limited by small sample sizes, short intervention durations, or a lack of follow-up assessments. Moreover, there is limited research incorporating cultural and contextual factors relevant to Southeast Asian populations, which may influence the acceptability and efficacy of guided imagery interventions.

Psychological distress, particularly anxiety, remains an under-recognized and under-treated problem among patients undergoing hemodialysis, despite its well-documented impact on treatment adherence, quality of life, and clinical outcomes. In many clinical settings, especially in Indonesia, psychological care is not routinely integrated into dialysis services, and pharmacological management of anxiety is often limited by side effects and drug interactions. Therefore, research on feasible, low-cost, and non-pharmacological interventions is critically needed.

The novelty of this study lies in the application of guided imagery therapy as an audio-based intervention embedded within routine hemodialysis sessions, allowing implementation without disrupting standard clinical workflows. In addition, this study employs a comprehensive anxiety assessment by measuring both state and trait anxiety using a validated instrument, providing a more holistic understanding of patients' psychological responses. Importantly, this research contributes empirical evidence from an underrepresented population, addressing contextual and cultural gaps in the existing literature.

The added value of this study is its practical relevance for nursing and multidisciplinary care. By demonstrating that guided imagery therapy is effective, simple, and scalable, this study supports its integration into routine hemodialysis care as a complementary approach to improve psychological well-being and promote patient-centered, holistic care. This study aims to provide robust and contextually relevant evidence for the integration of guided imagery into routine dialysis care.

METHODS

Study design

This study employed a quasi-experimental design with a control group and a pre-test–post-test approach to evaluate the effect of guided imagery therapy on anxiety levels in patients with chronic kidney disease (CKD) undergoing hemodialysis. Participants were non-randomly assigned to either the intervention group or the control group. This design was selected due to ethical and practical constraints that limited full randomization among patients undergoing routine hemodialysis.

Data source and sampling procedure

The study was conducted at a hemodialysis unit of RSUP Dr. M. Djamil Padang from February to April 2025. All intervention sessions were carried out within the dialysis unit

while ensuring patients' comfort and safety during hemodialysis. The study population consisted of patients diagnosed with chronic kidney disease (CKD) undergoing regular hemodialysis at the study site. Purposive sampling was used to recruit participants who met predefined inclusion and exclusion criteria. No random sampling was applied.

A total of 32 patients were selected using purposive sampling, with 16 participants allocated to the intervention group and 16 to the control group. This study was conducted in a single hemodialysis unit with a limited number of eligible patients who met the inclusion criteria during the study period. Ethical considerations and clinical constraints also restricted the recruitment of a larger sample, as participants were required to undergo repeated intervention sessions during routine dialysis care. The inclusion criteria for this study were diagnosed with CKD stage 5, undergoing regular hemodialysis (minimum twice a week), age between 18 and 65 years, able to communicate and respond to questionnaires, and scoring ≥ 40 on the State subscale of the State-Trait Anxiety Inventory (STAI-S), indicating moderate anxiety. The exclusion criteria included a history of psychiatric illness or cognitive impairment, use of anxiolytic medication during the study period, and participation in other psychological interventions concurrently.

Variables of the Study

The variables included in this study were classified as independent and dependent variables. The independent variable was guided imagery therapy, defined as a structured, audio-based relaxation intervention involving breathing techniques and visualization of calming mental imagery, delivered for approximately 20-25 minutes per session, three times a week for one week, totaling three sessions. The dependent variable was anxiety level, measured using the State-Trait Anxiety Inventory (STAI), which assesses both situational (state) and general (trait) anxiety. Anxiety scores ranged from 20 to 80 for each subscale, with higher scores indicating greater anxiety.

Data Collection

The intervention consisted of guided imagery therapy delivered through a standardized audio recording. The audio script included breathing relaxation instructions and guided visualization of calming natural environments (forests and mountains), accompanied by soft instrumental background music.

Intervention standardization was ensured by using the same audio recording for all participants, applying consistent duration and frequency of sessions, delivering the intervention at a similar phase of the hemodialysis session.

The intervention was facilitated by the principal investigator, who had completed formal training in relaxation and guided imagery techniques conducted by experienced healthcare professionals. The training included principles of guided imagery, therapeutic communication, and safety considerations for patients undergoing hemodialysis. Although no international certification was held, the intervention followed evidence-based protocols widely reported in the literature.

The control group continued receiving standard hemodialysis care only, without any additional psychological intervention during the study period. The intervention group received guided imagery therapy three times a week for one week, totaling three sessions. Each session lasted approximately 20–25 minutes and was conducted prior to hemodialysis in a quiet, private room. The guided imagery involved listening to an audio recording combining soothing background music with verbal cues prompting relaxation and visualization of peaceful scenes such as gardens and forests.

Several strategies were implemented to minimize potential confounding factors: participants with prior experience in regular meditation or relaxation practices were excluded, participants using sedative or anxiolytic medications were excluded, all participants followed comparable hemodialysis schedules, and standard education and

nursing care were provided equally to both groups. Although family support was not quantitatively measured, all participants were treated within the same healthcare system, thereby reducing variability in external support.

Measurement and instruments

Anxiety was measured using the State-Trait Anxiety Inventory (STAI), a widely used and validated psychological inventory developed by Spielberger et al., which has been widely used in clinical and chronic disease populations. The STAI has also been validated for use in the Indonesian population. Previous studies conducted in Indonesia reported satisfactory psychometric properties, with Cronbach's alpha coefficients ranging from 0.86 to 0.94 for the State Anxiety subscale and 0.84 to 0.92 for the Trait Anxiety subscale, indicating high internal consistency. In the present study, an internal consistency reliability test was conducted to ensure the suitability of the instrument for the study population. Reliability analysis using Cronbach's alpha demonstrated good internal consistency, with alpha values of 0.89 for the STAI-State subscale and 0.91 for the STAI-Trait subscale, exceeding the acceptable threshold of 0.70. These findings indicate that the STAI used in this study was both valid and reliable for assessing anxiety levels among Indonesian patients with chronic kidney disease undergoing hemodialysis.

Each subscale contains 20 items, rated on a 4-point Likert scale. For the State Anxiety subscale, response options range from 1 (Not at all) to 4 (Very much so), reflecting the participant's current emotional state. For the Trait Anxiety subscale, response options range from 1 (Almost never) to 4 (Almost always), indicating the individual's general tendency to experience anxiety. Total scores for each subscale range from 20 to 80, with higher scores indicating greater anxiety. The STAI has been validated in various languages and clinical populations, including those with chronic illnesses. Data were collected in three stages: Pre-test (participants in both groups completed the STAI before the intervention period), intervention period (guided imagery sessions were delivered to the intervention group over one week; the control group received routine care only), and Post-test (after the final session, participants completed the STAI again). Data collection was conducted by trained assistants blinded to group assignment to reduce observer bias.

Ethical considerations

This study was approved by the Ethics Committee of RS M Djamil Padang (Approval No: DP.04.03/D.XVI.10.1/59/2025). Written informed consent was obtained from all participants. They were informed of their right to withdraw at any point and assured of the confidentiality and anonymity of their data.

Data analysis

Data were analyzed using SPSS version 27.0. Descriptive statistics (mean, standard deviation, frequency) summarized demographic and anxiety scores. Inferential statistics included paired sample t-test and independent sample t-test. Normality of data was assessed using the Shapiro–Wilk test. A p-value < 0.05 was considered statistically significant.

RESULTS

The guided imagery intervention was delivered using an audio and video recording containing a structured relaxation script specifically designed for patients undergoing hemodialysis. The audio consisted of calm instrumental background music and a guided voice narration that directed participants to visualize peaceful natural scenes, such as beaches, forests, and mountains. The video used can be seen in the following image :

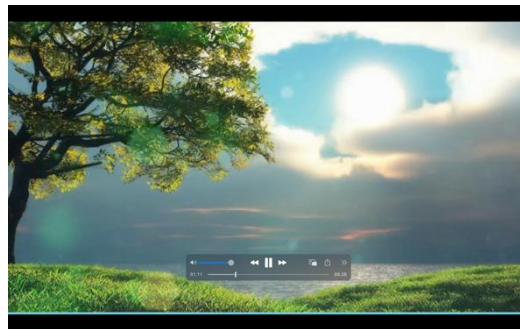


Figure 1. Media Image

A total of 32 respondents participated in this study. The characteristics of respondents were listed in Table 1.

Table 1. Respondent Characteristics (n = 32)

| Characteristics | n | % |
|---------------------|----|-------|
| Gender | | |
| Male | 14 | 43.75 |
| Female | 18 | 56.25 |
| Age | | |
| <60 years | 28 | 87.5 |
| >60 years | 4 | 12.5 |
| Employment status | | |
| Employed | 26 | 81.25 |
| Unemployed | 6 | 18.75 |
| Duration of disease | | |
| ≤ 6 months | 4 | 12.5 |
| > 6 months | 28 | 87.5 |
| Total | 32 | 100 |

According to Table 1, female respondents represent more than half (56.25%). According to age group, the majority of the respondents were under 60 years old (87.5%), and the majority are working (81.25%) and have had CKD for over 6 months (87.5%). Anxiety scores before and after the intervention of guided imagery therapy in the intervention and control groups are shown in Table 2.

Table 2. Anxiety scores before and after the intervention of guided imagery therapy in the intervention and control group (n = 32)

| Group | n | Anxiety Score | Mean ± SD | Min - Max | 95% CI |
|--------------|----|---------------|--------------|-----------|---------------|
| Intervention | 16 | Pre-test | 56.20 ± 9.08 | 43 – 70 | 51.17 – 61.23 |
| | | Post-test | 41.13 ± 8.72 | 28 – 54 | 36.31 – 45.96 |
| Control | 16 | Pre-test | 45.88 ± 5.58 | 34 – 57 | 42.89 – 48.85 |
| | | Post-test | 44.56 ± 5.19 | 37 – 57 | 41.79 – 47.33 |

According to Table 2, the anxiety mean score before intervention of guided imagery therapy in the intervention group was 56.20, and in the control group was 45.88. The anxiety mean score after intervention of guided imagery therapy in the intervention group was 41.13, and in the control group was 44.56. Before the bivariate test, the data normality test was carried out with the Shapiro-Wilk test because the sample was less than 50. Data is normally distributed if the p-value>0.05. The results of the normality test are in Table 3 below.

Table 3. Normality Test of Research Data

| Group | Anxiety Score | n | p-value |
|--------------|---------------|----|---------|
| Intervention | Pre-test | 16 | 0.290 |
| | Post-test | | 0.180 |

| Group | Anxiety Score | n | p-value |
|---------|---------------|----|---------|
| Control | Pre-test | 16 | 0.807 |
| | Post-test | | 0.323 |

The results of the normality test with the Shapiro-Wilk test showed a p-value > 0.05, meaning that the data were normally distributed. Then, the bivariate data analysis of this study was carried out with the paired t-test. Bivariate test results, the effectiveness of guided imagery therapy on reducing anxiety in patients with chronic kidney disease undergoing hemodialysis, are shown in Table 4.

Table 4. Differences in anxiety score before and after the intervention of guided imagery therapy in the intervention and control group (n = 32)

| Group | n | Anxiety Score | Mean ± SD | CI 95% | Mean Differences | t | df | Effect Size | p-value |
|--------------|----|---------------|--------------|---------|------------------|-------|----|-------------|---------|
| Intervention | 16 | Pre-test | 56.20 ± 9.08 | 14.91 – | 15.07 | 36.94 | 14 | 2.63 | 0.000* |
| | | Post-test | 41.13 ± 8.72 | 15.94 | | | | | |
| Control | 16 | Pre-test | 45.88 ± 5.58 | -0.06 – | 1.32 | 2.04 | 15 | 2.57 | 0.059 |
| | | Post-test | 44.56 ± 5.19 | 2.68 | | | | | |

*significant at α=5%

Based on Table 4, in the intervention group (n = 16), the mean anxiety score before the intervention was 56.20, indicating a high level of anxiety at baseline. After receiving guided imagery therapy, the mean anxiety score decreased substantially to 41.13. The mean difference was 15.07 points, with a t value of 36.94 and df = 14, indicating a statistically robust change. The p-value was <0.001, confirming a statistically significant reduction in anxiety following the intervention. Moreover, the effect size was 2.63, which represents a very large effect, suggesting that guided imagery therapy had a strong and meaningful impact on anxiety reduction in the intervention group.

In contrast, the control group (n = 16) showed only a minimal reduction in anxiety scores. The mean anxiety score decreased slightly from 45.88 at pre-test to 44.56 at post-test, with a mean difference of 1.32 points. The statistical analysis yielded a t value of 2.04 with df = 15 and a p-value of 0.059, indicating that the change was not statistically significant. Although the effect size was reported as 2.57, the lack of statistical significance suggests that routine care alone was insufficient to meaningfully reduce anxiety levels.

DISCUSSION

The characteristics of respondents provide essential insight into the context of anxiety experienced by patients undergoing hemodialysis. In this study, the majority of respondents were female (56.25%), under the age of 60 (87.5%), employed (81.25%), and had been diagnosed with chronic kidney disease (CKD) for more than six months (87.5%).

The higher proportion of female participants aligns with recent epidemiological trends in CKD populations, where women are more likely to report psychological symptoms, including anxiety and depression, compared to men.¹² Biological vulnerability, sociocultural roles, and greater willingness among women to report emotional distress may contribute to this difference.¹³ Furthermore, women with CKD have been found to experience a lower quality of life in psychological domains, which can increase anxiety levels during dialysis treatment.¹⁴

The age distribution of the participants under 60 years is also noteworthy. This group often faces the double burden of chronic disease management and maintenance of work and family responsibilities, which may intensify stress and anxiety.³ Moreover, younger hemodialysis patients may have more of a problem with productivity loss, body image, and social function than elderly patients, which may be the explanation

for their vulnerability to anxiety.¹⁵ About employment status, the majority of respondents were employed (81.25%). Even though working might afford financial stability and social contact, it can also represent a possible source of anxiety in the sense that one has to balance work responsibilities against occasional dialysis sessions. Even so, employment has also been associated with better mental health outcomes among CKD patients, possibly due to enhanced perceptions of purpose and self-worth.¹⁶

That most respondents had been living with CKD for more than six months suggests a population well-exposed to the psychological and physical expenses of chronic illness. While some research suggests that illness duration is positively correlated with psychological adaptation, it can also lead to chronic psychological exhaustion, particularly where complications or comorbidities occur.¹⁷ Chronic dialysis is also associated with emotional exhaustion, feelings of dependency, and reduced coping capacity, which are all causative factors for anxiety.

The results of this study indicate that before the guided imagery intervention, the anxiety levels in both the intervention and control groups were very high. This is in line with previous research stating that patients with chronic kidney failure undergoing hemodialysis are highly vulnerable to psychological stress, one of which is anxiety.¹⁴ Several factors can influence the increase in anxiety levels. The process of hemodialysis itself can be a significant psychological burden for patients. Patients typically undergo treatment several times a week, with each session lasting for several hours, which can disrupt daily activities, limit social interactions, and create dependency. Discomfort related to the treatment process, fear of needles, and potential complications such as hypotension or muscle cramps can all contribute to increased situational anxiety.¹⁵

The high anxiety scores in patients can also be caused by the burden of the disease they are suffering from. CKD is a progressive and life-limiting disease, often accompanied by various comorbidities such as hypertension, diabetes, and cardiovascular disease. The uncertainty of disease progression, along with dietary and fluid restrictions, financial burdens, and the potential loss of work roles, can further exacerbate the psychological vulnerability of patients.¹⁸ Many patients with CKD do not receive psychological support as part of their routine care. Mental health services are often underutilized in the integration with dialysis services, despite research showing that psychological symptoms frequently occur in CKD patients and significantly impact their quality of life and medication adherence.¹⁷

Following a guided imagery therapy intervention, the intervention group's anxiety levels significantly decreased, whereas the control group's anxiety ratings barely changed. These results lend credence to the study's concept that hemodialysis patients with chronic kidney disease can experience less anxiety when using guided imagery. The parasympathetic nerve system is impacted, cortisol levels are lowered, and emotional regulation is improved through guided imagery therapy, which uses peaceful and pleasant mental imagery to promote relaxation.⁶ The intervention group experiences less anxiety as a result of these psychological and physiological processes.

The significant anxiety reduction observed in the intervention group can be explained through both physiological and psychological mechanisms. From a physiological perspective, guided imagery activates the parasympathetic nervous system, leading to decreased sympathetic arousal, reduced heart rate, lowered blood pressure, and decreased cortisol secretion. Visualization of calming mental images has been shown to influence the hypothalamic–pituitary–adrenal (HPA) axis, thereby reducing stress hormone release and promoting relaxation. This mechanism is particularly relevant for

hemodialysis patients, who are repeatedly exposed to physiological stressors and invasive medical procedures.¹⁹

From a psychological perspective, guided imagery facilitates cognitive distraction, emotional regulation, and perceived control over stressors.⁵ By redirecting attention away from dialysis-related discomfort and anxiety-provoking thoughts toward positive mental imagery, patients experience reduced anticipatory anxiety and improved coping capacity.

The findings of this study are consistent with prior research demonstrating the effectiveness of guided imagery in reducing anxiety among patients undergoing hemodialysis and those with chronic illnesses. A previous study reported significant reductions in anxiety and stress levels following guided imagery therapy among hemodialysis patients, with moderate to large effect sizes.¹⁹

Notably, the effect size observed in the present study was larger than that reported in some previous studies. This difference may be attributed to several factors, including higher baseline anxiety levels, consistent delivery of the intervention (three sessions), and the use of a standardized audio-based format, which ensured intervention fidelity. Differences in sample characteristics, cultural context, healthcare settings, and study designs may also explain variability in outcomes across studies.

In the context of hemodialysis, patients are exposed to repeated stress and invasive procedures, making guided imagery a practical and safe strategy to reduce emotional pressure. In contrast, the control group, which received standard care without guided imagery, showed no significant improvement in anxiety scores. This suggests that routine hemodialysis treatment alone does not adequately meet the psychological needs of patients. This is a gap in current clinical practice, especially in hemodialysis patients. Anxiety is associated with lower medication adherence, poor dietary compliance, and decreased quality of life,¹⁷ addressing it through interventions such as guided imagery could have wider implications for improving patient health.

Furthermore, guided imagery works best among long-term dialysis patients, such as those in this study, with over six months of living experience with CKD. Maladaptive coping and emotional burnout are typical results of chronic disease, and thus relaxation-based interventions such as guided imagery are vital as the disease progresses.

The strength of evidence in this study is supported by the statistically significant reduction in anxiety, a large effect size, and the use of a validated and reliable instrument (STAI). The inclusion of a control group enhances internal validity by enabling comparison between guided imagery therapy and standard care. Although the quasi-experimental design does not provide the same level of control as a randomized controlled trial, the standardized intervention protocol and efforts to control confounding variables strengthen the credibility of the findings.

CONCLUSION

This study demonstrates that guided imagery therapy significantly reduced anxiety levels among patients with chronic kidney disease undergoing hemodialysis when compared with standard care alone. The most substantial reduction was observed in the intervention group, which received structured, audio-guided imagery sessions, indicating that this intervention had both statistical and clinical relevance in managing anxiety during hemodialysis.

These findings should be interpreted within the context of a quasi-experimental, single-center study with a relatively small sample size. While the results provide strong preliminary evidence of effectiveness, causal inferences and broad generalizations should be made with caution. Nevertheless, the large effect size observed suggests that

guided imagery therapy has meaningful potential as a complementary intervention in similar clinical settings.

From a practical perspective, this study highlights the feasibility and applicability of guided imagery therapy in hemodialysis services. Based on the findings of this study, it is recommended that standardized guided imagery protocols be developed for use in hemodialysis units. These protocols should include structured audio guidance, clearly defined procedures, and safety considerations tailored to the dialysis setting. Guided imagery sessions of approximately 20 minutes, delivered three times per week. Standardization of intervention duration and frequency is essential to ensure consistency and optimize therapeutic outcomes.

Furthermore, guided imagery therapy should be integrated into evidence based hemodialysis care policies as a complementary, non-pharmacological intervention for anxiety management. Training programs for nursing staff are recommended to support effective implementation. Future research should focus on multi-center randomized controlled trials with larger samples and long-term follow-up to strengthen the evidence base and support broader clinical adoption. Further research is needed with a larger and more diverse sample and a longer intervention period to evaluate the effectiveness and long-term sustainability of guided imagery therapy.

This study has several limitations that should be considered when interpreting the findings. The quasi-experimental, non-randomized design may introduce selection bias and limit the ability to draw strong causal conclusions regarding the effectiveness of guided imagery therapy. In addition, the small sample size and single-center setting restrict the generalizability of the results to broader hemodialysis populations.

Furthermore, anxiety was assessed solely through a self-report instrument, which is subject to response and perception bias despite the use of a validated scale. The absence of long-term follow-up prevents conclusions about the sustainability of the observed anxiety reduction. Finally, the study did not control for several psychosocial variables, such as family support or economic burden, which may influence anxiety levels independently of the intervention.

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