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THE EFFECT OF MEDITATION SUPPORT ON STRESS LEVELS AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING HEMODIALYSIS

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ABSTRACT

Background: Chronic kidney disease (CKD) is a progressive disease requiring lifelong hemodialysis. Patients undergoing hemodialysis frequently experience psychological stress due to long-term treatment, dependence on dialysis machines, lifestyle changes, and physical and emotional limitations. Unmanaged stress may reduce quality of life and treatment adherence. Meditation support has been recognized as a complementary nursing intervention to reduce stress by promoting relaxation and emotional regulation.
Methods: This study employed a quantitative pre-experimental design using a one-group pretest–posttest approach. A total of 36 patients with chronic kidney disease who were undergoing routine hemodialysis were selected through purposive sampling.
Results: Stress levels were assessed using the Perceived Stress Scale (PSS-10) before and after a five-session meditation support intervention. Data were analyzed using the Wilcoxon Signed Rank Test. Before the intervention, 32 participants (88.9%) experienced moderate stress, 2 (5.6%) experienced mild stress, and 2 (5.6%) experienced severe stress. After the intervention, 32 participants (88.9%) experienced mild stress, while 4 participants (11.1%) remained in the moderate stress category. The median stress score decreased from 20 to 12. The Wilcoxon Signed Rank Test showed a statistically significant reduction in stress levels ($Z = -5.239$; $p = 0.001$). Meditation support significantly reduced stress levels among patients with chronic kidney disease undergoing hemodialysis.
Conclusion: Meditation support may be considered an effective complementary nursing intervention to enhance psychological support and holistic nursing care for patients undergoing hemodialysis, thereby improving their overall well-being.
Keywords: chronic kidney disease, hemodialysis, meditation support, stress

INTRODUCTION

Chronic kidney disease (CKD) is a progressive and irreversible condition characterized by a gradual decline in kidney function that may ultimately progress to end-stage renal disease (ESRD), requiring renal replacement therapy such as hemodialysis. Hemodialysis is the most commonly used renal replacement therapy for patients with advanced CKD and is typically performed two to three times per week, with each session lasting several hours. Although this therapy is essential for maintaining fluid balance, electrolyte homeostasis, and the elimination of metabolic waste products, it also imposes substantial physical, psychological, social, and economic burdens on patients (Daugirdas et al., 2015; Tchape et al., 2018).

The global burden of CKD continues to increase and has become a major public health challenge. The rising prevalence of diabetes mellitus, hypertension, obesity, and population aging has contributed to a substantial increase in the number of patients requiring long-term dialysis therapy. In many developing countries, including Indonesia, hemodialysis

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remains the primary treatment modality for patients with ESRD. Consequently, the number of individuals living with the physical and psychological consequences of lifelong dialysis continues to rise, making comprehensive management increasingly important (Tchape et al., 2018).

Patients undergoing hemodialysis commonly experience stress due to prolonged treatment, dietary and fluid restrictions, uncertainty regarding disease progression, dependence on dialysis therapy, and substantial psychosocial burdens. Persistent psychological stress has been associated with poor treatment adherence, reduced quality of life, increased emotional distress, and unfavorable clinical outcomes. Therefore, effective stress management has become an essential component of comprehensive nursing care for patients with chronic kidney disease undergoing maintenance hemodialysis (García-Martínez et al., 2021; Rikos et al., 2023).

Stress can be understood as a physiological and psychological response that occurs when environmental demands exceed an individual's adaptive and coping resources. According to the transactional model of stress, stress is influenced not only by external stressors but also by the individual's perception of those stressors and the coping strategies available to manage them. Patients receiving hemodialysis frequently encounter chronic and uncontrollable stressors, including lifelong treatment schedules, physical symptoms, dietary restrictions, and uncertainty regarding prognosis, which may overwhelm their coping capacity and contribute to chronic psychological distress (Koolhaas et al., 2011; Obbarius et al., 2021).

Chronic stress has important biological consequences. Prolonged activation of the sympathetic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis increases the secretion of stress hormones, particularly cortisol and catecholamines. Sustained elevation of these hormones may contribute to autonomic dysregulation, impaired immune function, sleep disturbances, fatigue, emotional instability, and increased vulnerability to anxiety and depression (Belujon & Grace, 2017). Psychological distress among patients undergoing hemodialysis has also been widely documented in Indonesia, with studies reporting high prevalence rates of depression and anxiety associated with long-term dialysis, illness uncertainty, and psychosocial adaptation challenges (Marthoenis et al., 2021).

Given the substantial psychological burden experienced by patients with CKD, effective non-pharmacological interventions are increasingly needed. Various approaches have been developed to manage psychological stress in patients with chronic diseases, including relaxation techniques, cognitive-behavioral therapy, mindfulness-based interventions, and meditation. Meditation has received increasing attention because it is relatively inexpensive, easy to implement, and associated with minimal adverse effects (Babos et al., 2025).

Meditation is more than a simple relaxation technique. It is a consciously directed mental practice involving sustained attention and non-judgmental awareness of internal and external experiences. Through focused attention and emotional awareness, individuals may become less reactive to distressing thoughts, emotions, and physical sensations. Regular meditation practice has been associated with improved emotional regulation, enhanced cognitive control, greater self-awareness, and increased psychological resilience, making it particularly relevant for patients with chronic illnesses who face ongoing physical and emotional challenges (McGEE, 2008; Boison & Masino, 2016).

The physiological mechanisms of meditation further support its therapeutic potential. Meditation has been shown to enhance parasympathetic nervous system activity while reducing sympathetic activation, thereby inducing the relaxation response. This process is associated with reductions in heart rate, blood pressure, respiratory rate, and circulating

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cortisol levels. In addition, meditation may improve autonomic regulation, attentional control, and adaptive coping responses, contributing to better stress management and psychological adaptation (Buttle, 2015; Babos et al., 2025).

A growing body of evidence has demonstrated the benefits of meditation in patients with chronic diseases. Systematic reviews and meta-analyses have reported that meditation-based interventions can reduce stress, anxiety, and depressive symptoms while improving psychological well-being and quality of life. Among patients with CKD undergoing hemodialysis, meditation interventions have been associated with reduced psychological distress, improved comfort during dialysis sessions, better sleep quality, and enhanced quality of life (Gautam & Kiran, 2024; Kim et al., 2022).

Despite these promising findings, evidence regarding structured meditation support interventions among patients with CKD undergoing maintenance hemodialysis remains limited, particularly in Indonesian clinical settings. Most previous studies have evaluated general meditation or mindfulness-based interventions that often emphasize mindfulness awareness, present-moment attention, or acceptance-based practices. In contrast, the meditation support intervention in the present study was designed as a structured, guided meditation intervention focused on relaxation and stress reduction and delivered as a complementary nursing intervention. This distinction is important because meditation support emphasizes guided relaxation and practical stress management that can be incorporated into routine nursing care, rather than primarily focusing on mindfulness-based psychological processes. Furthermore, few studies have specifically evaluated changes in stress levels before and after a structured meditation support intervention using standardized psychological assessment instruments.

Therefore, this study aimed to evaluate the effect of meditation support on stress levels among patients with chronic kidney disease undergoing hemodialysis. It was hypothesized that a structured meditation support intervention would significantly reduce perceived stress levels among patients receiving maintenance hemodialysis. The findings of this study are expected to provide evidence supporting the integration of meditation support into complementary nursing interventions for patients with chronic kidney disease and to contribute to the development of holistic, evidence-based nursing care.

RESEARCH METHOD

This study employed a quantitative pre-experimental design using a one-group pretest-posttest approach to evaluate the effect of a meditation support intervention on stress levels among patients with chronic kidney disease undergoing maintenance hemodialysis. The one-group pretest-posttest design allows the assessment of changes in stress levels within the same participants before and after the intervention, making it suitable for evaluating the preliminary effectiveness of a nursing intervention in a clinical setting. This design has been widely used in nursing intervention studies to assess changes in psychological outcomes following structured therapeutic interventions.

The study was conducted at the Hemodialysis Unit of PKU Muhammadiyah Temanggung Hospital, Central Java, Indonesia, from May to June 2026. The target population consisted of adult patients diagnosed with chronic kidney disease who were undergoing routine maintenance hemodialysis at the hospital. Patients receiving regular hemodialysis were considered eligible because they experience repeated exposure to dialysis-related stressors and require continuous adaptation to long-term treatment.

A total of 36 participants were recruited using purposive sampling based on predetermined inclusion and exclusion criteria. The sample size was determined for paired repeated-measures comparisons with a 95% confidence level ($\alpha = 0.05$) and 80% power. Purposive sampling was selected to ensure that participants met the clinical and psychological characteristics required for the intervention.

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The inclusion criteria were: (1) adults aged 18 years or older; (2) diagnosed with chronic kidney disease and undergoing routine maintenance hemodialysis; (3) fully conscious and able to communicate effectively; and (4) willing to participate and provide written informed consent. The exclusion criteria included: (1) failure to complete all meditation support sessions; (2) current use of psychotropic medications; and (3) medical instability that could interfere with participation in the intervention.

Participants received a structured meditation support intervention consisting of five guided meditation sessions. Each session lasted approximately 15–20 minutes and was conducted individually in a quiet area within the hemodialysis unit before the dialysis procedure. The intervention was delivered by the principal researcher following a standardized meditation protocol to ensure consistency across participants.

The meditation support program consisted of five sequential components: (1) preparation of a calm and comfortable environment; (2) positioning the participant in a relaxed sitting posture; (3) guided diaphragmatic breathing; (4) focused attention and body awareness; and (5) positive affirmation and gradual session closure. During the sessions, participants were encouraged to focus on their breathing, observe bodily sensations without judgment, and cultivate a relaxed, accepting awareness of the present moment. In addition to guided meditation, participants received emotional encouragement and therapeutic support from the researcher throughout the intervention process. This supportive approach was intended to enhance engagement, relaxation, and adherence to the meditation practice.

Stress levels were assessed using the Perceived Stress Scale-10 (PSS-10), a widely used instrument for measuring perceived psychological stress. The PSS-10 consists of ten items that assess the degree to which individuals perceive situations in their lives as stressful during the previous month. Each item is rated on a five-point Likert scale from 0 (never) to 4 (very often), yielding a total score from 0 to 40.

Higher scores indicate higher levels of perceived stress. For descriptive analysis, stress levels were categorized based on established PSS-10 score classifications: low/mild stress (0–13), moderate stress (14–26), and high/severe stress (27–40). Stress assessments were conducted twice: immediately before the first meditation support session (pretest) and after completion of the fifth session (posttest).

Eligible participants were identified through the hemodialysis unit schedule and approached by the researcher during routine dialysis visits. After receiving a detailed explanation of the study objectives, procedures, benefits, and potential risks, participants who agreed to participate signed written informed consent. Baseline demographic and clinical characteristics were collected before administration of the PSS-10 questionnaire.

Following the baseline assessment, participants underwent the five-session meditation support intervention over the study period. Attendance at each session was documented, and participants who did not complete the intervention protocol were excluded from the final analysis according to the predefined exclusion criteria. The posttest PSS-10 assessment was administered after completion of the final meditation session.

Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics were used to summarize participants' demographic and clinical characteristics, including age, gender, educational level, duration of hemodialysis, family support, and medical history. Categorical variables were presented as frequencies and percentages, while continuous variables were summarized using medians and ranges because the stress score distribution was not normally distributed.

The normality of stress score distributions was assessed prior to inferential analysis. Because the pretest and posttest stress scores did not meet the assumption of normality, differences in stress levels before and after the intervention were analyzed using the Wilcoxon Signed-Rank Test. Statistical significance was established at $p < 0.05$.

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This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Health Research Ethics Committee of Poltekkes Kemenkes Semarang, Indonesia (Ethical Approval No. 698/EA/F.XXIII.38/2026) on 20 May 2026. All participants provided written informed consent before enrollment in the study. Participants were informed that their participation was voluntary, that they could withdraw from the study at any time without affecting their medical treatment, and that all personal information would be kept confidential and used solely for research purposes. The inclusion of ethical approval and informed consent procedures is consistent with international reporting standards for clinical and nursing intervention studies.

RESULTS

The results of the study on characteristics by age and gender are shown in the table below: gender, education, age, duration of hemodialysis, frequency of hemodialysis, hemodialysis-related fatigue, medical history, and family support.

Table 1. Frequency Distribution of Respondent Characteristics

Variable	Frequency (n)	Percentage (%)
Gender		
Male	18	50.0
Female	18	50.0
Education		
Elementary School	10	27.8
Junior High School	9	25.0
Senior High School	9	25.0
D3/S1/S2/S3	8	22.2
Age		
18-25 years	1	2.8
26-45 years	15	41.7
46-65 years	20	55.6
Duration of hemodialysis		
<6 months	8	22.2
6 months–1 year	14	38.9
1–3 years	10	27.8
>3 years	4	11.1
Hemodialysis-related fatigue		
Never	2	5.6
Rarely	31	86.1
Sometimes	3	8.3
Medical history		
Hypertension	9	25.0
Diabetes mellitus	9	25.0
Other	18	50.0
Family Support		
Poor	1	2.8
Fair	24	66.7
Good	10	27.8
Very good	1	2.8

As shown in Table 1, the respondents were evenly split by gender (50.0% male, 50.0% female). Most participants were aged 46–65 years (55.6%), had undergone hemodialysis for 6 months to 1 year (38.9%), and reported fair family support (66.7%).

Having established the demographic and clinical characteristics of the participants, the next analysis focused on their baseline psychological condition prior to receiving the

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meditation support intervention. Assessing the initial stress level was important to determine the distribution and severity of perceived stress before the intervention was introduced. The stress levels of patients with chronic kidney disease undergoing hemodialysis before the meditation support intervention are presented in Table 2.

Table 2. Stress Levels in Patients with Chronic Kidney Disease Undergoing Hemodialysis Before Meditation Support

		n (%)	IK 95%
Stress levels before the meditation support intervention	Mild stress	2 (5,6)	0,0-13,1
	Moderate stress	32 (88,9)	78,6-99,2
	High stress	2 (5,6)	0,0-13,1
	Total	36 (100,00)	

Before the intervention, 32 participants (88.9%) experienced moderate stress, while 2 participants (5.6%) had mild stress and 2 participants (5.6%) had severe stress. Following the assessment of participants' baseline stress levels, the distribution of stress was reassessed after completion of the five-session meditation support intervention. This post-intervention assessment was conducted to identify changes in the severity of perceived stress and to provide an initial descriptive comparison with the pre-intervention condition. The stress levels of patients with chronic kidney disease undergoing hemodialysis after the meditation support intervention are presented in Table 3.

Table 3. Stress Levels in Patients with Chronic Kidney Disease Undergoing Hemodialysis After Meditation Support

		n (%)	IK 95%
Stress levels before the meditation support intervention	Mild stress	32 (88,9)	78,6-99,2
	Moderate stress	4 (11,1)	0,8-21,4
	High stress	0 (0,0)	0,0-0,0
	Total	36 (100,00)	

After the intervention, 32 participants (88.9%) were categorized as having mild stress, while 4 participants (11.1%) remained in the moderate stress category. No participants experienced severe stress.

The descriptive findings in Tables 2 and 3 indicate a shift in the distribution of stress levels following the meditation support intervention. To determine whether the observed change was statistically significant, stress scores before and after the intervention were subsequently compared using an appropriate paired statistical analysis. The median stress scores and results of the Wilcoxon Signed-Rank Test are presented in Table 4.

Table 4. Results of an Analysis of the Effect of Meditation Support on Stress Levels in Patients with Chronic Kidney Disease Undergoing Hemodialysis Before and After the Meditation Support Intervention

	Median (Minimum–Maximum)	z-Score	p-Value
Before the meditation support intervention, n=36	20 (12-27)	-5,239	0,001
	12 (10-19)		

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After the meditation support intervention, n=36

The median stress score decreased from 20 (12–27) before the intervention to 12 (10–19) after the intervention. The Wilcoxon Signed Rank Test showed a statistically significant reduction in stress levels ($Z = -5.239$; $p < 0.001$), indicating that the meditation support intervention significantly reduced stress among patients undergoing hemodialysis.

DISCUSSION

The findings of this study demonstrated that a structured meditation support intervention significantly reduced stress levels among patients with chronic kidney disease undergoing maintenance hemodialysis. Most participants experienced moderate stress before the intervention, whereas the majority reported mild stress after the intervention. The reduction in the median PSS-10 score from 20 to 12 and the statistically significant Wilcoxon Signed Rank Test result indicate that meditation support was associated with a meaningful improvement in psychological well-being among patients receiving long-term hemodialysis.

Most participants were aged 46–65 years and had undergone hemodialysis for 6 months to 1 year. This finding is consistent with the clinical characteristics of patients receiving maintenance hemodialysis, who commonly require long-term adaptation to repeated treatment sessions and associated lifestyle changes. Patients in middle and older adulthood may experience additional challenges related to physical functioning, family responsibilities, and adjustment to chronic illness. These factors may increase psychological vulnerability during long-term dialysis treatment (Jung et al., 2021).

The majority of participants also reported fair family support. Family support may play an important role in helping patients adapt to chronic kidney disease and maintenance hemodialysis. Emotional encouragement, practical assistance, and interpersonal support may strengthen patients' coping resources and reduce the psychological burden associated with long-term treatment. Therefore, the relatively adequate level of family support observed in this study may have contributed to participants' ability to engage with the meditation support intervention and manage dialysis-related stress.

Before the intervention, most participants experienced moderate stress, with 32 participants (88.9%) categorized as having moderate stress. This finding demonstrates the substantial psychological burden experienced by patients undergoing maintenance hemodialysis. Repeated dialysis sessions, dietary and fluid restrictions, dependence on dialysis technology, physical symptoms, and uncertainty regarding disease progression may become persistent sources of stress. Tchape et al. (2018) similarly reported that patients undergoing hemodialysis experience physiological and psychosocial stressors related to treatment limitations, physical symptoms, and uncertainty regarding their health condition. Rosyanti et al. (2023) also identified stress, anxiety, and depression as important psychological problems among patients with chronic kidney disease undergoing hemodialysis. These findings support the need for psychological interventions alongside routine physiological management.

These findings are consistent with previous research demonstrating that psychological distress is common among patients undergoing hemodialysis because of the substantial physical, emotional, and social burdens associated with chronic kidney disease. Tchape et al. (2018) reported that hemodialysis patients frequently experience stress resulting from treatment-related limitations, physical symptoms, and uncertainty regarding their health condition. Similarly, Rosyanti et al. (2023) identified psychological disorders, including

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stress, anxiety, and depression, as common problems among patients with chronic kidney disease undergoing hemodialysis.

After completion of the meditation support intervention, most participants were categorized as having mild stress, and no participants remained in the severe stress category. This shift suggests that the intervention was associated with a substantial improvement in psychological well-being. Guided meditation may help patients achieve a relaxed physiological state, reduce emotional tension, and improve their ability to regulate psychological responses to chronic illness.

The reduction in stress observed in this study may be related to the ability of meditation support to promote relaxation and improve patients' emotional regulation. Through guided practice, participants were encouraged to focus their attention on breathing and present-moment experiences, which may have helped them manage distressing thoughts and emotional responses associated with long-term hemodialysis. This process may have supported more adaptive coping with dialysis-related stressors and contributed to the reduction in perceived stress observed after the intervention (Goyal et al., 2014; Kim et al., 2022)

The most important finding of this study was the significant reduction in stress levels following the meditation support intervention. The median PSS-10 score decreased from 20 before the intervention to 12 after the intervention, and the Wilcoxon Signed Rank Test showed a statistically significant difference between pretest and posttest scores ($Z = -5.239$; $p < 0.001$). These findings indicate that meditation support was effective in reducing perceived stress among patients with chronic kidney disease undergoing maintenance hemodialysis.

The results are consistent with previous evidence demonstrating the psychological benefits of meditation-based interventions. Goyal et al. (2014) reported that meditation programs produce significant improvements in psychological stress and emotional well-being across various clinical populations. In patients undergoing hemodialysis, Abu Maloh et al. (2024) concluded that relaxation-based meditation interventions effectively reduce stress and improve psychological comfort during long-term dialysis treatment.

Despite the overall reduction in stress levels, four participants (11.1%) remained in the moderate stress category after completing all five meditation support sessions. This finding suggests that the response to meditation support may vary between individuals and that participation in all intervention sessions does not necessarily result in the same degree of psychological improvement. Clinically, persistent moderate stress may be related to the continued presence of chronic and uncontrollable stressors associated with maintenance hemodialysis, including dependence on regular dialysis treatment, dietary and fluid restrictions, physical symptoms, financial concerns, family responsibilities, and uncertainty regarding long-term health outcomes. These stressors cannot be completely eliminated through a brief non-pharmacological intervention and may continue to influence patients' perceived stress even when they have developed improved relaxation and coping skills.

Individual differences in psychological adaptation may also contribute to the persistence of moderate stress. Patients may differ in their coping resources, illness acceptance, previous psychological experiences, perceived social support, and ability to apply relaxation techniques outside the intervention sessions. In addition, five meditation sessions may be sufficient to produce short-term improvement but may not be sufficient for all patients to achieve a sustained change in their perception of chronic illness-related stress. Therefore, the persistence of moderate stress in four participants should not necessarily be interpreted as a failure of the intervention, but rather as an indication that meditation support may have a variable effect depending on individual clinical and psychosocial circumstances. Patients who continue to experience moderate stress may

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require continued meditation practice, individualized psychological support, therapeutic communication, family involvement, or referral for further psychological assessment when clinically indicated.

The effectiveness of meditation support may be explained by both psychological and neurophysiological mechanisms. Psychologically, meditation encourages mindfulness, emotional regulation, cognitive reappraisal, and acceptance, which may reduce maladaptive responses to chronic illness. Neurophysiologically, meditation modulates autonomic nervous system activity, reduces HPA axis activation, and decreases cortisol secretion, thereby reducing physiological arousal associated with chronic stress (Babos et al., 2025).

The reduction in stress levels observed in this study may also be interpreted within the context of psychological adaptation to long-term hemodialysis. Patients with chronic kidney disease frequently experience a prolonged adaptation process involving acceptance of illness, adjustment to lifestyle changes, and development of new coping strategies. During the early stages of hemodialysis, patients often encounter uncertainty, fear of disease progression, dependence on dialysis machines, and concerns regarding employment, family responsibilities, and future health outcomes. These challenges may initially result in moderate to severe psychological stress. However, supportive interventions that strengthen adaptive coping mechanisms may facilitate psychological adjustment and improve emotional resilience (Marthoenis et al., 2021).

Meditation support may contribute to this adaptation process by helping patients reinterpret their illness experience and reduce maladaptive cognitive responses to chronic stressors. The intervention encourages awareness of present-moment experiences, acceptance of difficult emotions, and non-judgmental observation of physical symptoms. These psychological processes may reduce catastrophizing, rumination, and anticipatory anxiety, thereby enabling patients to respond more adaptively to the ongoing demands of maintenance hemodialysis. Improved psychological adaptation may subsequently enhance treatment adherence, self-management behaviors, and engagement with healthcare providers.

The beneficial effects of meditation support may be explained through integrated psychological and neurophysiological mechanisms. From a psychological perspective, meditation enhances mindfulness, attentional regulation, emotional awareness, and cognitive flexibility. These processes may improve patients' ability to recognize stress reactions without becoming overwhelmed by them, thereby reducing perceived stress and emotional reactivity. Mindfulness-based practices have been associated with improvements in self-regulation, emotional acceptance, and adaptive coping, which are particularly important for individuals living with chronic illnesses requiring lifelong treatment (Goyal et al., 2014; Kim et al., 2022).

Neurophysiologically, meditation has been shown to influence autonomic nervous system regulation by increasing parasympathetic activity and reducing sympathetic nervous system activation. This autonomic modulation contributes to reductions in heart rate, blood pressure, respiratory rate, and circulating stress hormones, particularly cortisol. Meditation may also influence brain regions involved in emotional regulation and stress processing, including the prefrontal cortex, anterior cingulate cortex, and insula, resulting in improved emotional regulation and reduced physiological arousal (Sezer & Sacchet, 2025; Babos et al., 2025). These mechanisms provide a plausible biological explanation for the substantial reduction in PSS-10 scores observed after the intervention.

The findings of this study have important implications for clinical nursing practice. Patients undergoing maintenance hemodialysis require comprehensive care that addresses not only physiological complications but also psychological and emotional well-being.

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Psychological stress is closely associated with treatment adherence, quality of life, symptom perception, and overall patient outcomes. Therefore, integrating structured meditation support into routine hemodialysis care may represent a practical and cost-effective strategy for improving patient-centered care (Bakhsh & Mahallawi, 2025).

Meditation support can be implemented by trained nurses during pre-dialysis preparation or while patients are receiving hemodialysis treatment. Because the intervention requires minimal equipment and relatively short implementation time, it has the potential to be incorporated into routine nursing workflows without substantially increasing clinical workload. Furthermore, the intervention aligns with holistic nursing principles that emphasize the integration of physical, psychological, social, and spiritual dimensions of health. By providing guided meditation and therapeutic emotional support, nurses may help patients develop more effective coping strategies, reduce psychological distress, and improve overall treatment experiences (Benítez-Agudelo et al., 2025).

The present findings also support the growing recognition of complementary and integrative nursing interventions in chronic disease management. As the prevalence of chronic kidney disease continues to increase, interventions that improve psychological well-being may become increasingly important components of comprehensive renal care programs. Incorporating meditation support into nursing practice may contribute to improved patient satisfaction, enhanced therapeutic relationships, and better long-term psychosocial outcomes among patients undergoing maintenance hemodialysis.

An important aspect of this study is that the intervention involved not only meditation practice but also supportive therapeutic guidance throughout the intervention sessions. Emotional support and therapeutic interaction may enhance participants' engagement, sense of safety, and willingness to participate actively in the meditation process. This supportive approach may strengthen the effectiveness of meditation by facilitating adherence and reinforcing adaptive coping responses.

From a nursing perspective, these findings have important clinical implications. Meditation support is a simple, inexpensive, non-pharmacological intervention that can be integrated into routine nursing care in hemodialysis units. Because patients receive dialysis several times per week, meditation support can be delivered before or during dialysis sessions with minimal disruption to routine clinical care. Incorporating meditation support into holistic nursing practice may help improve psychological well-being, reduce stress, and enhance patients' overall quality of life.

Nevertheless, this study has several limitations. The one-group pretest-posttest design without a control group limits causal inference because external factors may have influenced changes in stress levels. The relatively small sample size and single-center setting may also limit the generalizability of the findings. Future studies should employ randomized controlled trials or quasi-experimental designs with larger multicenter samples and longer follow-up periods to evaluate the long-term effectiveness of meditation support interventions among patients undergoing maintenance hemodialysis.

CONCLUSION

This study demonstrated that a structured meditation support intervention significantly reduced stress levels among patients with chronic kidney disease undergoing maintenance hemodialysis. Most participants experienced moderate stress before the intervention, whereas the majority reported mild stress after the intervention. The median PSS-10 score decreased from 20 to 12, and the Wilcoxon Signed-Rank Test indicated a statistically significant reduction in stress levels ($Z = -5.239$, $p < 0.001$). These findings indicate that meditation support is an effective complementary nursing intervention for reducing psychological stress among patients undergoing long-term hemodialysis. Integrating

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meditation support into routine hemodialysis care may contribute to improved psychological well-being and strengthen holistic, patient-centered nursing care for individuals with chronic kidney disease. Future studies should employ randomized controlled trials with larger multicenter samples and longer follow-up periods to evaluate the long-term effectiveness of meditation support and its impact on other psychological outcomes, including anxiety, depression, coping ability, and quality of life.

RECOMMENDATIONS

Meditation support may be considered as a complementary non-pharmacological nursing intervention to help reduce psychological stress among patients with chronic kidney disease undergoing maintenance hemodialysis. Hemodialysis units are encouraged to incorporate structured meditation support sessions into routine nursing care to enhance psychological well-being and support holistic patient management. Future research should employ more rigorous study designs, such as randomized controlled trials or multicenter quasi-experimental studies, with larger sample sizes and longer follow-up periods. Further studies are also recommended to evaluate the effects of meditation support on additional psychological and clinical outcomes, including anxiety, depression, coping ability, sleep quality, treatment adherence, and quality of life. Such research would provide stronger evidence on the long-term effectiveness and clinical applicability of meditation-support interventions for patients undergoing maintenance hemodialysis.

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