

Mental Recovery and Healthy Lifestyle Behaviors in Individuals with Kidney Disease: A Cross-sectional Study

Abstract

Background: Nurses provide psychosocial care through individualized and recovery-oriented approaches and play a critical role in supporting patients' mental recovery and promoting adherence to healthy lifestyle behaviors among individuals with kidney disease. Kidney disease affects psychological well-being, yet the concept of mental recovery and its relationship with healthy lifestyle behaviors remains understudied.

Aim: This study aimed to investigate mental recovery and healthy lifestyle behaviors in patients with kidney disease.

Methods: This descriptive and correlational study was conducted between January and September 2023. A total of 138 patients completed a demographic information form, the Mental Recovery Scale (MRS), and the Health Promoting Lifestyle Profile II (HPLP II). Data were collected through face-to-face surveys. Descriptive statistics, Pearson correlation, and simple and multivariate regression analyses were used to analyze the data.

Results: The mean age of participants was 49.59 ± 12.54 years, 52.9% were male, and the mean duration of diagnosis was 42.74 ± 52.23 months. The mean scores were 85.04 ± 8.14 for the MRS and 135.70 ± 18.43 for the HPLP II. The results indicated a positive and significant relationship between the total MRS score and the HPLP II subscales—Health Responsibility, Nutrition, Spiritual Growth, Interpersonal Relationships, and Stress Management. Mental recovery was significantly predicted by health responsibility, nutrition, spiritual growth, interpersonal relationships, stress management, and overall health-promoting lifestyle behaviors.

Conclusion: Mental recovery was found to be moderately high and closely linked to health-promoting lifestyle behaviors. These findings suggest that promoting healthy lifestyle behaviors may enhance mental recovery in individuals with kidney disease and support more holistic psychosocial care.

Keywords: *Healthy lifestyle, kidney, mental recovery, nurse*

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Introduction

Globally, chronic kidney disease (CKD) affects over 800 million people—more than 10% of the world's population.¹ Despite clinical guidelines recommending that patients adhere to a healthy diet, engage in at least 150 minutes of physical activity per week, maintain a healthy body weight, avoid tobacco use, and limit alcohol consumption, international studies report that most individuals with CKD do not meet these lifestyle targets.^{2,3} Importantly, this suboptimal adoption of health-promoting behaviors has been shown to hinder the recovery process and may exacerbate both clinical and psychological outcomes in this population.⁴ While clinical recovery in chronic kidney disease has been extensively examined using physiological indicators such as laboratory findings and dialysis outcomes, the mental dimension of recovery remains underexplored.^{2,3} Previous studies have primarily focused on mental disorders such as depression and anxiety in patients with kidney disease.^{5,6} Erbay et al.⁷ reported that individuals on the kidney transplant waiting list exhibited high levels of depression, which were significantly associated with maladaptive coping strategies. However, the holistic concept of mental recovery has often been overlooked.^{8,9}

Mental recovery refers to a subjective and dynamic process that encompasses essential components for adapting to chronic illness, such as personal empowerment, hope, finding meaning, and social support.¹⁰ Patients actively participate in the mental recovery process by recognizing and mobilizing their strengths.⁸ This process involves making autonomous decisions about how to live with and adapt to the illness.⁷ Finding meaning plays a central role in the process of mental recovery, as individuals reinterpret their experiences by re-evaluating their lives, setting goals, adopting coping strategies, and developing a spiritual perspective.^{7,10} Hope also represents another important component of this process, characterized by belief in the possibility of recovery and an optimistic outlook toward future outcomes.^{7,11} Developing emotionally supportive relationships with family members, peers, and healthcare providers further promotes mental recovery.¹⁷ The mental recovery process of individuals with kidney disease aligns with health promotion and recovery-oriented models.^{12–15} In this context, one of the important factors that may support mental recovery is the adoption of health-promoting lifestyle behaviors.¹⁶

This finding indicates that health can be enhanced by integrating mental recovery with lifestyle behaviors. Within this context, theoretical frameworks such as Pender's Health Promotion Model provide a robust foundation for interpretation and application.^{14,15} The Health Promotion Model aims to support individuals in achieving optimal

Cite this article as: Doğan R, Mercan N, Yüksel Ç. Mental Recovery and Healthy Lifestyle Behaviors in Individuals with. J Educ Res Nurs. 2025;22(4):1-5.

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Received: July 03, 2025
Accepted: October 19, 2025
Publication Date: December 01, 2025



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levels of health. According to this model, health-promoting lifestyle behaviors can lead to significant improvements in both physical and mental health.¹⁷ Health responsibility, nutrition, and interpersonal relationships are particularly important for individuals with chronic diseases.¹⁴ While some studies suggest that health-promoting lifestyle behaviors improve both physical and mental outcomes in kidney patients,^{3,14} Choi et al.² provided supporting evidence for this association. They demonstrated that higher levels of health-promoting behaviors were significantly associated with improved physical functioning and reduced psychological distress among hemodialysis patients. However, the specific relationship between these behaviors and mental recovery remains unclear.^{2,3}

Nurses must possess adequate knowledge to provide professional and effective biopsychosocial care. To achieve this, nursing practices should be restructured and sustained through individualized and recovery-oriented approaches.¹⁸ Given the emphasis on holistic, biopsychosocial care in nursing, understanding how mental recovery is shaped and how it relates to lifestyle factors in individuals with chronic kidney disease is essential.¹⁹ Therefore, further research on this relationship is anticipated to provide valuable guidance for psychosocial care within nursing practice. This study aimed to determine the levels of mental recovery and health-promoting lifestyle behaviors among individuals with kidney disease and to examine the relationship between them.

Research Questions

1. Is there a relationship between healthy lifestyle behaviors and mental recovery among individuals with kidney disease?
2. Do healthy lifestyle behaviors significantly predict mental recovery in individuals with kidney disease?

Materials and Methods

Study Design and Sample

This study employed a descriptive and correlational design. It was conducted in the nephrology clinic and hemodialysis unit of a training and research hospital in the capital of Türkiye between January and September 2023. The study population consisted of patients receiving treatment in the clinic and the unit. Based on a 95% confidence level and an estimated population of 200 patients treated in the previous year, the required sample size was calculated as 132 using Raosoft's online calculator.²⁰ To account for potential non-responses and incomplete data, 138 patients were recruited. Inclusion criteria were: being between 18–65 years of age, having a diagnosis of kidney disease, being able to communicate in Turkish, and agreeing to participate in the study. Exclusion criteria included the presence of physical conditions that could interfere with data collection, such as severe fatigue or intense pain. In addition, individuals with psychiatric disorders not in remission were excluded, as active psychiatric symptoms could impair the reliability of self-reported responses.

Data Collection Tools

Three data collection tools were used in the study: the *Introductory Information Form*, the *Mental Recovery Scale* [MRS], and the *Health Promoting Lifestyle Profile II* [HPLP II].

Introductory Information Form

This form was prepared by the researchers based on a review of the literature.^{4,21} It consisted of eight items, including questions on age, gender, and similar characteristics, as well as the duration of illness and the presence of comorbid physical and mental disorders.

Mental Recovery Scale (MRS)

The scale, developed by Doğan¹⁰ in 2021, is used to assess mental recovery in individuals who experience physical illness. It is a single-factor, 24-item, five-point Likert type scale developed in the Turkish language. Items 4, 8, and 9 of the scale are reverse-scored. A high total score on the scale indicates a high level of mental recovery. The Cronbach's alpha coefficient of the scale is 0.95. In this study, the Cronbach's alpha value of the scale was 0.70.

Health Promoting Lifestyle Profile II (HPLP II)

This scale was developed by Walker et al.²² in 1996 to assess individuals' health-promoting behaviors. It is a 52-item, four-point Likert-type scale with a six-factor structure. An increase in the total score of the scale indicates a higher level of engagement in healthy lifestyle behaviors adopted by the individual. The Turkish va-

lidity and reliability study was conducted by Bahar et al.,¹⁷ who reported Cronbach's alpha values ranging from 0.64 to 0.80 for the six factors and 0.92 for the overall scale. In this study, the Cronbach's alpha value of the scale was found to be 0.92.

Data Collection

Data collection was carried out between January and September 2023. All patients who were hospitalized in the clinic where the study was conducted or who received outpatient treatment in the hemodialysis unit of the same clinic were approached for participation. Patients who met the predefined inclusion criteria were referred to the researcher by nurses not involved in the research process in order to reduce selection bias. After informing the patients about the purpose and procedures of the study, data were collected through face-to-face interviews conducted by the researcher. A total of 142 patients were approached, and 138 agreed to participate, resulting in a response rate of 97.2%. Each interview lasted approximately 20–25 minutes and was conducted in a private setting within the clinic or dialysis unit.

Data Analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences version 26.0 (IBM, New York, USA). The dataset was checked for missing data, and none were found. Numbers, percentages, means, standard deviations, and minimum-maximum values were used for descriptive variables. The Kolmogorov-Smirnov test and skewness-kurtosis coefficients were analyzed to assess the normal distribution of the patients' scale scores. Skewness and kurtosis coefficients were within the range of ± 1.5 .²³ The correlations between the scale scores were analyzed using the Pearson test, a parametric test. The effects of predictor variables on the predicted variable were examined through simple and multivariate regression analyses. Data were analyzed at a 95% confidence interval, with statistical significance set at $p < 0.05$.

Ethical Considerations

The compliance of the study with ethical principles was evaluated by the University of Health Sciences Gülhane Training and Research Hospital Clinical Research Ethics Committee [Approval Number: 2022/3, Date: 09.02.2022]. Informed consent was read to the patients, and their verbal and written consent was obtained. The study was conducted in accordance with the principles outlined in the Declaration

Table 1. Sociodemographic and disease characteristics of the participants (n=138)

Sociodemographic and disease characteristics of the participants	n	%
Age (mean±SD)	49.59±12.54	
Gender		
Female	65	47.1
Male	73	52.9
Marital status		
Married	101	73.2
Single	37	26.8
Employment status		
Working	41	29.7
Not working	97	70.3
Education status		
Primary school graduate	60	43.5
High school graduate	45	32.6
Bachelor's/Master's/PhD graduate	33	23.9
Duration of diagnosis (months)	42.74±52.23	
Comorbid physical illness		
Yes	92	66.7
No	46	33.3
Comorbid mental illness		
Yes	16	11.6
No	122	88.4

SD: Standard deviation

Table 2. Descriptive findings and correlation matrix

Scales and subscales	1	2	3	4	5	6	7	8	Mean±SD	Min-max
1. Health responsibility										
r	–	0.37	0.57	0.55	0.74	0.52	0.84	0.39	24.50±4.27	11–33
p			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
2. Physical activity										
r		1	-0.02	0.6	0.46	0.34	0.61	0.07	12.52±4.03	8–25
p				0.76	<0.001	<0.001	<0.001	<0.001	0.37	
3. Nutrition										
r			1	0.19	0.52	0.41	0.60	0.44	26.03±4.35	15–32
p					0.02	<0.001	<0.001	<0.001	<0.001	
4. Spiritual growth										
r				1	0.77	0.54	0.81	0.43	26.13±4.13	18–35
p						<0.001	<0.001	<0.001	<0.001	
5. Interpersonal relationships										
r					1	0.65	0.92	0.57	26.19±4.51	13–34
p							<0.001	<0.001	<0.001	
6. Stress management										
r						1	0.73	0.40	20.33±2.94	10–28
p							<0.001	<0.001		
7. HPLP II total										
r							1	0.51	135.70±18.43	85–175
p								<0.001		
8. MRS total										
r								1	85.04±8.14	65–104
p										

SD: Standard deviation; HPLP II: Health promoting lifestyle profile II; MRS: Mental recovery scale.

of Helsinki. Permission to use the HPLP II was obtained from the original authors via e-mail correspondence prior to data collection. The MRS was developed by the first author in a previous doctoral dissertation study. Therefore, since the scale was created by the researcher, no additional permission was required for its use.

Results

The mean age of the patients was 49.59±12.54 years; 52.9% were male, and 73.2% were married. A total of 70.3% of the patients were not employed, and 43.5% were primary school graduates. The mean duration of diagnosis was 42.74±52.23 months. In addition, 66.7% of the patients had a physical illness accompanying kidney disease, and 11.6% had a mental illness (Table 1).

The mean total score of the MRS was 85.04 (min=65, max=104, standard deviation [SD]=8.14), and the mean total score of the HPLP II was 135.70 (min=85, max=175, SD=18.43). The total MRS score showed a significant positive correlation with all subdimension scores of the HPLP II, excluding physical activity. A significant positive correlation was also found between the total MRS score and the total HPLP II score ($r=0.51$; $p<0.05$) (Table 2).

In this study, the regression model examined the predictors of mental recovery among patients with kidney disease. Each subdimension of health-promoting behaviors that demonstrated significant correlations, as well as the total score, was analyzed separately by constructing individual models with mental recovery as the dependent variable. Subsequently, all significant subdimensions were entered into a multiple regression model. This approach aimed to evaluate changes in their individual effects when considered together with other subdimensions and to identify variables with truly independent and unique contributions. In addition, the overall

explanatory power of these variables was determined when examined collectively. Table 3 shows that when the five healthy lifestyle behaviors (health responsibility, nutrition, spiritual growth, interpersonal relationships, and stress management) were simultaneously included in the regression model, they explained 35% of the variance in mental recovery. In addition to the subdimensions of health responsibility ($\beta=0.39$, $R^2=0.14$), nutrition ($\beta=0.44$, $R^2=0.19$), spiritual growth ($\beta=0.43$, $R^2=0.18$), interpersonal relations ($\beta=0.57$, $R^2=0.32$), and stress management ($\beta=0.40$, $R^2=0.15$), the total score of the Healthy Lifestyle Behaviors Scale ($\beta=0.51$, $R^2=0.25$) was also found to be a significant predictor of the total score of the Mental Recovery Scale (Table 3).

Discussion

Addressing mental recovery in individuals with kidney disease is critically important for improving psychosocial care. In this study, mental recovery was found to be at a moderate level among patients with kidney disease. This finding is consistent with existing literature, which highlights the presence of various psychological problems such as depression, anxiety, and psychological distress in this population.^{2,24} However, this study conceptualizes mental recovery as a subjective and multidimensional process that differs from clinical recovery [e.g., reduction of symptoms or return to pre-illness functioning] or the mere absence of psychological problems.¹⁰ The finding of moderate mental recovery suggests that patients may find some meaning in their illness, maintain hope, and receive support from their environment, yet the recovery process may not be fully internalized or experienced. The lack of holistic and recovery-oriented care approaches in both clinical settings and the broader community where the study was conducted may also contribute to this outcome. Therefore, nurses should focus on psychosocial care that includes the assessment and enhancement of mental recovery in patients with kidney disease.

Table 3. The effect of healthy lifestyle behaviors on mental recovery: Regression analysis

Model	Predictors	Unstandardized		Standardized	t	F	Adjusted R ²
		B	SE	β	p		
Model 1	Health responsibility	0.74	0.15	0.39	4.937 <0.001	24.37	0.14
Model 2	Nutrition	0.83	0.14	0.44	5.789 <0.001	33.51	0.19
Model 3	Spiritual growth	0.84	0.15	0.43	5.574 <0.001	31.07	0.18
Model 4	Interpersonal relationships	1.03	0.12	0.57	8.174 <0.001	66.82	0.32
Model 5	Stress management	1.11	0.21	0.40	5.161 <0.001	26.63	0.15
Model 6	HPLP II total	0.22	0.03	0.51	6.988 <0.001	48.82	0.25
Model 7	Health responsibility	-0.36	0.20	-0.18	-1.733 0.08	15.81	0.351
	Nutrition	0.50	0.17	0.27	2.896 0.004		
	Spiritual growth	0.19	0.23	0.09	0.818 0.41		
	Interpersonal relationships	0.86	0.27	0.48	3.165 0.002		
	Stress management	0.06	0.25	0.02	0.251 0.80		

All regression models were statistically significant [F-test, $p < 0.001$]. B: Unstandardized regression coefficient; β: Standardized regression coefficient; SE: Standard error; F: F-statistic [ANOVA F-test value]

In this study, Model 1 indicated that health responsibility accounted for 14% of the variance in mental recovery. A higher sense of health responsibility among these patients may enhance their perceived control over their health status and enable them to participate more consciously and effectively in the recovery process.³ Nielsen et al.²⁵ found that kidney patients in the transplant process began to accept their illness as they took responsibility for their treatment and care. In the study by Jenkins et al.,²⁶ one of the modules in a psychosocial program designed for individuals with chronic kidney disease was titled “I Can.” This module aimed to help patients recognize their strengths, thereby facilitating their ability to cope with the disease. Acceptance of the illness and approaches that direct individuals toward their internal resources are considered fundamental elements of mental recovery.

In this study, Model 2 showed that nutrition explained 19% of the variance in mental recovery. Healthy lifestyle behaviors such as healthy nutrition contribute to positive health outcomes in patients with kidney disease.² Healthy nutrition enhances physical well-being, which may strengthen patients' positive expectations for the future.²⁷ Patients who adhere to disease-appropriate dietary plans are more likely to engage actively in the treatment process. These effects may facilitate patients' mental recovery and help explain the relationship observed in this study.

Although previous studies have demonstrated the positive effects of physical activity on both physical and mental health, its role in mental recovery was not found to be statistically significant in this study's analyses, which is a noteworthy finding.^{2,28} It is recommended that the relationship between physical activity and mental recovery be examined using different scales and in different populations.

According to the results, spiritual growth contributed to 18% of the variance in mental recovery in Model 3. Studies conducted with hemodialysis patients have shown that spirituality is associated with lower levels of depression and higher quality of life,²⁹ as well as reduced suicide risk and better mental health outcomes.³⁰ During the recovery process, patients may feel the need to surrender control to a higher power. In this context, finding meaning in the illness experience supports mental recovery.¹⁰

The analysis showed that in Model 4, interpersonal relations accounted for 32% of the variance in mental recovery. In fact, interpersonal relations were found to be the strongest lifestyle predictor of mental recovery in this study, highlighting the importance of building and maintaining supportive social connections for mental recovery. Patients are not alone in the recovery process; relationships and support systems play a critical role.²⁴ Kapadi et al.¹¹ demonstrated the positive impact of practical and emotional support received from loved ones, healthcare professionals, and peers on the psychosocial adjustment of individuals undergoing hemodialysis.

This study also demonstrated that in Model 5, stress management explained 15% of the variance in mental recovery. Considering the relationship between stress management and mental recovery in this study, it can be suggested that effective stress management may contribute positively to the mental recovery process. Kidney-related diseases are significant stressors and require effective management. Wen et al.⁴ reported that a healthy coping style was associated with better mental health among hemodialysis patients. Optimism, as a coping strategy, may reduce stress levels and facilitate mental recovery.^{4,14}

In the present study, it was observed that in Model 7, healthy lifestyle behaviors—excluding physical activity—collectively explained 35% of the variance in mental recovery. This finding suggests that adopting healthy lifestyle behaviors is essential for promoting mental recovery among patients with kidney disease. Therefore, it is recommended that healthcare professionals consider these results when planning interventions aimed at improving patients' psychological well-being. While the importance of healthy lifestyle behaviors in the recovery process has been acknowledged in the literature, their specific effects on mental recovery have not been sufficiently clarified.³ As a novel contribution, this study highlights the significant impact of healthy lifestyle behaviors on mental recovery. These results underscore the critical importance of incorporating healthy lifestyle behaviors into care practices, particularly when focusing on the mental dimension of recovery.

Limitations and Strengths

This study has both strengths and limitations. One strength is that, to our knowledge, this was the first study to examine the concept of mental recovery rather

than mental ill health in kidney patients. One limitation of this study is its single-center design, which may constrain the generalizability of the findings. Secondly, the limited number of similar studies on this topic posed a challenge in evaluating and interpreting the findings in relation to the existing literature. Future research is recommended to investigate mental recovery and its influencing factors in this or similar populations.

Conclusion

This study highlights the importance of addressing mental recovery as an integral component of holistic psychosocial care in individuals with kidney disease. The findings revealed that patients exhibited a moderate level of mental recovery, which was significantly associated with health-promoting lifestyle behaviors. In particular, interpersonal relationships emerged as the strongest predictor of mental recovery, emphasizing the critical role of social connection and support in the recovery process. Health-promoting lifestyle behaviors may serve as supportive pathways for strengthening mental recovery. These findings demonstrate that mental recovery is a multidimensional construct influenced not only by clinical outcomes but also by lifestyle-related factors. The findings of this study highlight the potential to integrate a mental recovery perspective into nursing care plans, thereby enhancing the overall well-being of this population. Subdimensions of a healthy lifestyle should be incorporated into all interventions targeting mental recovery. Mental recovery can be facilitated by promoting health responsibility through providing education about the illness and treatment process, as well as by providing tailored nutritional counseling. Furthermore, nurses, as leaders in psychosocial care, should design key interventions for mental recovery by teaching stress management strategies and emphasizing spirituality as a source of empowerment. Finally, the results underscore the critical role of interpersonal relationships. Nurses can support mental recovery by implementing interventions that reduce feelings of isolation, such as support groups, communication skills training, and family involvement. Future research should employ longitudinal and interventional designs in diverse populations to better understand the underlying mechanisms of these relationships. Additional factors that may influence the variables affecting mental recovery identified in this study should be examined, and new models should be developed in future research. Finally, studies with larger samples and the use of advanced modeling techniques, such as structural equation modeling (SEM), are also recommended.

Ethics Committee Approval: The study was approved by the University of Health Sciences Gülhane Training and Research Hospital Clinical Research Ethics Committee [Approval Number: 2022/3, Date: 09.02.2022].

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declare that this study received no financial support.

Author Contributions: Concept – R.D., N.M., Ç.Y.; Design – R.D., N.M., Ç.Y.; Supervision – N.M., Ç.Y.; Resource – R.D.; Materials – R.D.; Data Collection and/or Processing – R.D.; Analysis and/or Interpretation – R.D., N.M.; Literature Review – R.D., N.M.; Writing – R.D., N.M., Ç.Y.; Critical Review – N.M., Ç.Y.

Acknowledgments: The authors thank all participants for their valuable contributions.

Peer-review: Externally peer-reviewed.

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