Original paper

Illness acceptance and functioning of patients undergoing dialysis therapy: a cross-sectional study

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Medical Studies 2026
DOI: https://doi.org/10.5114/ms/220979

Key words: end-stage renal disease, chronic kidney disease, illness acceptance, dialysis patients, Acceptance of Illness Scale.

Abstract

Introduction: Dialysis therapy is a life-sustaining treatment for patients with end-stage renal disease; however, it is associated with substantial somatic, functional, and psychosocial burdens that may hinder adaptation to chronic illness. Illness acceptance is an important psychological resource associated with better well-being and greater engagement in treatment.
Aim of the research: The aim of the study was to assess illness acceptance among dialysis patients in Poland and to examine its associations with functional limitations as well as selected clinical and sociodemographic factors.
Material and methods: This cross-sectional study was conducted in 99 dialysis centers across Poland between 2023 and 2024 and included adult patients receiving hemodialysis or peritoneal dialysis. Illness acceptance was assessed using the Acceptance of Illness Scale (AIS; score range 8–40 points). Self-reported functional limitations were identified from responses to an open-ended question and subsequently categorized using thematic analysis. Statistical analyses were performed using nonparametric tests and Pearson's correlation coefficient.
Results: A total of 887 questionnaires were analyzed. The mean AIS score was 24.84 ±7.71, indicating a moderate level of illness acceptance. Most categories of functional limitations were not significantly associated with AIS. Higher illness acceptance was observed among patients reporting travel limitations. No associations were found between illness acceptance and dialysis modality or vascular access. A weak negative correlation was noted between illness acceptance and dialysis duration. Married participants showed higher acceptance, whereas patients with children reported lower acceptance.
Conclusions: Illness acceptance among dialysis patients in Poland was moderate and showed a slight decline with longer dialysis duration. It was largely unrelated to clinical characteristics but varied according to selected sociodemographic characteristics and perceived functional limitations.

Introduction

Chronic kidney disease (CKD), defined as structural or functional impairment of the kidneys persisting for more than three months and affecting health status [1], represents one of the major challenges of contemporary medicine and public health. According to the most recent epidemiological analyses, kidney function disorders affect approximately 13–15% of the adult population, and the number of patients requiring renal replacement therapy continues to increase systematically [2]. More than 800 million adults worldwide are affected by CKD [3], while in Poland this number is estimated at approximately 4.7 million [4].

The treatment of patients with end-stage renal disease (ESRD) is based on renal replacement therapy, including hemodialysis (HD), peritoneal dialysis (PD), and kidney transplantation (KTx). HD remains the most commonly used modality of renal replacement therapy, accounting for approximately 80% of patients worldwide. This trend is also observed in Poland; according to data from December 2024, out of 20,970 patients treated for ESRD, as many as 20,198 (96%) were undergoing HD [5].

Although HD and PD constitute the fundamental life-sustaining treatments in ESRD, they significantly affect patients' daily functioning in both health-related and psychosocial dimensions [6]. Dialysis therapy imposes numerous limitations on patients, including the need for regular HD or PD sessions, adherence to strict dietary and fluid restrictions, and coping with burdensome somatic symptoms such as chronic fatigue, weakness, pruritus, sleep disturbances, as well as complications related to renal replacement therapy [7].

As a consequence, dialysis patients exhibit one of the lowest levels of quality of life among individuals with chronic diseases [7]. For this reason, increasing attention has been directed toward psychological factors influencing adaptation to illness, including illness acceptance.

Illness acceptance is defined as the acknowledgment of health-related consequences and limitations resulting from the disease and their integration into one's functioning [8]. Research in recent years indicates that a higher level of acceptance among individuals with chronic illnesses is associated with better quality of life, lower levels of stress and depressive symptoms, and greater engagement in the therapeutic process [9]. Among dialysis patients, illness acceptance is particularly important due to the multidimensional burden associated with renal replacement therapy [10].

Despite the growing interest in the quality of life of dialysis patients, relatively few studies focus on analyzing the relationship between the level of illness acceptance and specific limitations experienced in daily functioning, such as mobility restrictions, difficulties in using transportation, limited ability to plan time, and psychosocial constraints.

Moreover, the impact of sociodemographic variables – such as marital status, living alone, or family-related burdens – on the process of illness acceptance has not been clearly defined in the most recent literature [11]. In light of the above, there is a need for up-to-date studies analyzing how specific aspects of functioning among dialysis patients are associated with their ability to accept the disease. A better understanding of these relationships may, in clinical practice, enable the identification of patients particularly vulnerable to adaptation difficulties and provide a foundation for designing targeted interventions supporting psychological and social functioning.

Aim of the research

The aim of the study was to assess the level of illness acceptance among patients undergoing dialysis therapy and to analyze the relationship between illness acceptance, functional limitations, and selected demographic and clinical variables.

Material and methods

Study design, setting, and ethical considerations

This cross-sectional study, using a questionnaire-based survey method, was conducted between August 2023 and December 2024, following the approval of the Bioethics Committee of Andrzej Frycz Modrzewski University in Kraków (approval no. KBKA/34/O/2023). The study was carried out in accordance with the principles of the Declaration of Helsinki (World Medical Association, 2013) and the STROBE guidelines for observational studies [12, 13].

The study was registered in the ClinicalTrials.gov registry on November 19, 2023 (identifier: NCT 06148116).

Survey questionnaires were distributed to 45 public and 54 non-public (private) dialysis centers operating nationwide, representing approximately 38% of all dialysis facilities in Poland. Directors of all participating centers provided consent for inclusion in the study. Currently, a total of 260 dialysis centers – both public and private – operate in Poland under contracts with the National Health Fund. In the private sector, more than 65% of patients with ESRD receive dialysis treatment [14].

Participants – dialysis patients

The inclusion criteria were as follows:

1) patients undergoing renal replacement therapy (RRT) (HD or PD),
2) age ≥ 18 years,
3) provision of informed consent to participate in the study,
4) communicative proficiency in the Polish language as a fundamental requirement.

The exclusion criteria included:

1) the presence of significant cognitive impairment (e.g., diagnosed dementia or delirium) preventing reliable completion of the study instruments,
2) severe hearing, visual, or speech impairments that precluded participation in the questionnaire survey despite possible assistance,
3) refusal to participate in the study or withdrawal of consent at any stage,
4) incomplete data preventing statistical analysis.

Measures

Study instruments

A proprietary research questionnaire was developed by the research team. Its preliminary version was subjected to content validation by three specialists directly involved in the care of dialysis patients: a nephrologist, a transplant surgeon, and a clinical psychologist. Based on their comments and suggestions, selected items were revised.

The validated version of the questionnaire was subsequently pilot-tested in a group of 30 dialysis patients at the County Hospital in Chrzanów to assess the clarity of questions and the appropriateness of the study assumptions [15].

The questionnaire consisted of five distinct sections. The first section collected sociodemographic data, including age, sex, marital status, parenthood, level of education, place of residence, living arrangement (living alone or with others), and employment status.

The second section addressed clinical information, including dialysis modality, current type of dialysis access, duration of dialysis therapy, and the functioning time of the current vascular access. It also included an open-ended question: *"What causes you the greatest difficulty in living with your illness?"* Based on participants' responses, the following thematic

categories were identified: medical and physical aspects, dietary and fluid restrictions, time management and life organization, limitations in activity and work, psychosocial aspects, quality of life and sense of freedom, and functioning of the healthcare system.

The thematic scope of the third, fourth, and fifth sections was developed as part of a separate research project. The third section focused on respondents' knowledge and attitudes toward KTx, as well as the availability of up-to-date information and educational materials in this area. The fourth section included patients who declared willingness to undergo KTx and concerned factors influencing this decision, while the fifth section addressed the assessment of pain-related complaints. Additional questionnaire items were collected for descriptive purposes but were not included in the statistical analysis.

A standardized instrument was also used: the Acceptance of Illness Scale (AIS), adapted by Z. Juczyński. The AIS consists of eight statements describing the consequences of poor health status. The total score ranges from 8 to 40, with higher scores indicating greater acceptance of illness [16]. All questionnaires were completed anonymously.

Outcomes

The primary outcome was the level of illness acceptance, assessed using the AIS. Secondary outcomes included selected sociodemographic and clinical variables.

Data analysis and statistics

Statistical analysis was performed using STATISTICA 13.3 PL (StatSoft, Poland). Quantitative variables were described using descriptive statistics methods: arithmetic mean (M), standard deviation (SD), minimum value (Min), maximum value (Max), and median (Me). Qualitative variables were presented as counts (*n*) and percentages (%). The normality of the distribution of quantitative variables was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests.

As the analyzed variables did not meet the assumptions of normal distribution, non-parametric statistical methods were applied. For comparisons between two independent groups, the Mann-Whitney *U* test was used, whereas comparisons among three or more groups were performed using the Kruskal-Wallis test. Relationships between illness acceptance and selected demographic and clinical variables were assessed using Spearman's rank correlation coefficient (ρ). The statistical significance of the obtained correlation coefficients was verified using Student's *t*-test, and the coefficient of determination (r^2) was additionally calculated to estimate the proportion of variance explained by the analyzed relationship. All statistical tests were two-tailed, and statistical significance was set at $p < 0.05$.

Results

Questionnaires and survey response rate

A total of 4,000 questionnaires were distributed, and 1,958 completed questionnaires were returned, yielding a response rate of 48.9%. For the quantitative analysis, 1,071 questionnaires were excluded due to incomplete data in variables required for statistical analyses, resulting in a final analytical sample of 887 patients. Separately, 636 questionnaires lacked responses to the open-ended question and were therefore excluded from the qualitative analysis of patients' reported difficulties.

Sociodemographic characteristics of the participants

The study group consisted of 887 patients undergoing dialysis therapy. The mean age of the respondents was 58.16 years, with ages ranging from 18 to 90 years. Men constituted slightly more than half of the participants. Most respondents were married and lived in rural areas. Secondary and vocational education predominated in the study population, and the majority of patients were retired or receiving disability pensions. With regard to renal replacement therapy, HD was the most commonly used treatment modality, while the most frequently used vascular access was an arteriovenous fistula. Detailed sociodemographic and clinical characteristics of the study population are presented in Table 1.

Limitations experienced by patients undergoing dialysis therapy

Patients undergoing dialysis therapy reported multiple limitations affecting their daily functioning. The most frequently indicated category concerned time-related and life-organization difficulties associated with regular dialysis sessions, reflecting the substantial time burden imposed by treatment schedules. Another commonly reported group of limitations involved medical and physical symptoms related to the disease and dialysis therapy, including fatigue, weakness, and other treatment-related complications. Additional difficulties reported by the respondents included dietary and fluid restrictions, limitations in physical activity and occupational functioning, as well as psychosocial challenges, such as reduced well-being or social isolation. Some participants also pointed to limitations associated with reduced autonomy and freedom in everyday life, including difficulties with traveling or planning leisure activities. A relatively small proportion of respondents indicated problems related to the functioning of the healthcare system, including difficulties accessing treatment or long waiting times for KTx. The detailed distribution of reported limitations is presented in Table 2.

Table 1. Sociodemographic and clinical characteristics of the study participants (*N* = 887)

Factor	*n*	%
Sex		
Female	380	42.84
Male	507	57.16
Marital status		
Single	293	33.03
Married	577	65.05
Informal relationship	17	1.92
Living arrangement		
Living alone	153	17.25
Living with others	734	82.75
Place of residence		
City	329	37.09
Village	558	62.91
Education		
Primary	96	10.82
Gymnasium (lower secondary)	6	0.68
Vocational education	248	27.96
Secondary	342	38.56
Higher	195	21.98
Occupational status		
Employed	54	6.09
Unemployed	156	17.59
Pensioner	316	35.63
Retired	355	40.02
Student	6	0.68
Having children		
Yes	713	80.38
No	174	19.62
Current dialysis modality		
Hemodialysis	819	92.33
Hemodiafiltration	33	3.72
Continuous ambulatory peritoneal dialysis with manual exchanges (CAPD)	14	1.58
Automated peritoneal dialysis (APD)	14	1.58
Current dialysis access		
Arteriovenous fistula (AV fistula)	552	62.23
Arteriovenous graft (AV graft)	15	1.69
Tunneled (permanent) central venous catheter	265	29.88
Temporary (non-tunneled) central venous catheter	34	3.83
Tenckhoff catheter (for peritoneal dialysis)	21	2.37

	Mean	Median	Min	Max	SD
Age	58.16	59.0	18.0	90.0	14.59
Duration of dialysis therapy	4.59	3.0	0.1	37.0	5.33
Duration of current dialysis access	3.46	2.0	0.0	32.0	4.39

Table 2. Self-reported limitations experienced by patients undergoing dialysis therapy

Main category	Subcategory	Limitations	*n*	%
1. Medical and physical aspects	Physical symptoms/ dialysis-related complications	Fatigue, joint pain, muscle cramps, dyspnea, weakness, blood pressure fluctuations, pruritus, insomnia, vascular access problems	178	20.06
	Comorbidities	Hypertension, diabetes mellitus, atherosclerosis, cardiovascular diseases, amputations	36	2.36
2. Dietary and fluid restrictions	Fluid restriction	Thirst, dry mouth, fluid control	81	5.32
	Diet	Dietary restrictions (phosphorus, potassium, salt, protein)	80	5.25
3. Time management and daily life organization	Dialysis schedule	Three times per week, 4–5 hours per session, loss of time	411	26.99
	Transport and logistics	Commuting, lack of guest dialysis availability, travel organization	28	1.84
4. Limitations in activity and employment	Physical functioning	Limited mobility, difficulties with movement	57	3.74
	Employment	Inability to work, loss of employment	44	2.89
5. Psychosocial aspects	Psychological well-being	Depression, apathy, loss of meaning, stress	16	1.05
	Social relationships	Isolation, loneliness, lack of social interactions	7	0.46
6. Quality of life and sense of freedom	Travel limitations	Lack of vacations, inability to travel abroad	47	3.09
	General limitations in daily life	Need for constant planning, life under control, adaptation to dialysis, limitations in sports, acceptance of the situation	110	7.22
7. Health care system	Access to treatment/ health care system organization	Shortage of donors, waiting for transplantation, lack of diagnostic tests, problems with ambulance transport	15	1.69

**Percentages do not sum to 100% because respondents could report more than one limitation.*

The mean AIS score was 24.84 (SD = 7.71), with a median of 25 and a range from 8 to 40.

The relationship between functional limitations and illness acceptance measured using the AIS is presented in Table 3. Overall, most of the analyzed functional limitations were not significantly associated with the level of illness acceptance. No statistically significant differences were observed in relation to medical and physical aspects, including the presence of dialysis-related symptoms or comorbidities. Similarly, dietary and fluid restrictions were not associated with differences in AIS scores. In the domain of time organization and daily functioning, no significant associations were found between dialysis schedules or transport-related difficulties and illness acceptance. Likewise, limitations in physical capacity and occupational functioning did not significantly affect the level of illness acceptance. In the psychosocial domain, neither psychological well-being nor social relationship difficulties were significantly related to AIS scores. A statistically significant association was identified only for travel limitations within the quality-of-life domain. An unexpected finding was the higher level of illness acceptance among patients reporting travel limitations. Patients reporting difficulties related to travel achieved significantly higher AIS scores compared with those who did not report such limitations ($p = 0.016$). No significant differences in illness acceptance were observed in relation to other quality-of-life difficulties or problems related to the organization of the healthcare system and access to treatment.

No significant association was observed between the dialysis modality currently used by patients and the level of illness acceptance ($p = 0.255$). Similarly, the type of dialysis access did not significantly differentiate the level of illness acceptance in the study group ($p = 0.146$).

Spearman correlation analysis showed no significant relationship between patients' age and illness acceptance ($\rho = -0.02$, $p = 0.473$). Similarly, the duration of dialysis therapy was not significantly correlated with illness acceptance ($\rho = -0.04$, $p = 0.191$). No significant correlation was found between the duration of the currently functioning vascular access and illness acceptance ($\rho = -0.02$, $p = 0.541$).

Table 3. Relationship between functional limitations and illness acceptance (Acceptance of Illness Scale [AIS])

Main category	Subcategory	Presence of limitations	Mean	Median	Min	Max	*p*
1. Medical and physical aspects	Physical symptoms/ dialysis-related complications	No (*n* = 709)	24.9	25.0	8.00	40.0	0.861
		Yes (*n* = 178)	24.6	24.5	8.00	40.0	
	Comorbidities	No (*n* = 851)	24.8	25.0	8.00	40.0	0.938
		Yes (*n* = 36)	25.1	23.5	9.00	40.0	
2. Dietary and fluid restrictions	Fluid restriction	No (*n* = 806)	24.8	25.0	8.00	40.0	0.571
		Yes (*n* = 81)	25.3	26.0	9.00	40.0	
	Diet	No (*n* = 807)	24.1	23.5	9.00	40.0	0.273
		Yes (*n* = 80)	24.9	25.0	8.00	40.0	
3. Time management and daily life organization	Dialysis schedule	No (*n* = 477)	24.62	25.00	8.00	40.00	0.339
		Yes (*n* = 410)	25.10	25.00	8.00	40.00	
	Transport and logistics	No (*n* = 859)	24.8	25.0	8.00	40.0	0.424
		Yes (*n* = 28)	25.5	27.0	8.00	40.0	
4. Limitations in activity and employment	Physical functioning	No (*n* = 830)	24.9	25.0	8.00	40.0	0.179
		Yes (*n* = 57)	23.3	24.0	8.00	40.0	
	Employment	No (*n* = 843)	24.8	25.0	8.00	40.0	0.522
		Yes (*n* = 44)	25.6	25.5	10.0	40.0	
5. Psychosocial aspects	Psychological well-being	No (*n* = 871)	24.9	25.0	8.00	40.0	0.420
		Yes (*n* = 16)	23.6	21.5	10.0	39.0	
	Social relationships	No (*n* = 880)	24.9	25.0	8.00	40.0	0.193
		Yes (*n* = 7)	21.9	21.0	20.0	26.0	
6. Quality of life and sense of freedom	Travel limitations	No (*n* = 840)	24.69	25.00	8.00	40.00	0.016
		Yes (*n* = 47)	27.53	29.00	12.00	40.00	
	General limitations in daily life	No (*n* = 777)	24.9	25.0	8.00	40.0	0.792
		Yes (*n* = 110)	24.6	25.0	10.0	40.0	
7. Health care system	Access to treatment/health care system organization	No (*n* = 872)	24.9	25.0	8.00	40.0	0.134
		Yes (*n* = 15)	21.8	23.0	9.00	40.0	

The relationship between illness acceptance and selected demographic and clinical variables is presented in Table 4. In general, most of the analyzed variables did not significantly differentiate the level of illness acceptance. No significant differences in illness acceptance were observed with respect to sex, place of residence, education level, or occupational status. Similarly, dialysis modality and the type of vascular access were not significantly associated with the level of illness acceptance. Statistically significant differences were found for marital status and parenthood. Married participants demonstrated the highest level of illness acceptance, whereas the lowest level was observed among individuals in informal relationships (p = 0.003). In addition, participants with children showed a slightly lower level of illness acceptance compared with those without children (p = 0.031). The variable related to living arrangement was close to the threshold of statistical significance (p = 0.055), with slightly higher illness acceptance observed among participants living with others compared with those living alone.

Discussion

In the context of chronic diseases, the concepts of illness acceptance and therapy acceptance are sometimes used interchangeably; however, they refer to related but distinct dimensions of adaptation. Illness acceptance primarily reflects the psychological integration of the disease and its consequences into a patient's life, whereas therapy acceptance refers more specifically to the willingness to adhere to and cooperate with the treatment regimen. In patients

Table 4. Association between illness acceptance and demographic and clinical variables

Factor	Mean	Median	*p*
Sex			
Female	24.73	25.00	0.520
Male	24.99	26.00	
Marital status			
Single	23.86	24.00	0.003
Married	25.49	26.00	
Informal relationship	19.88	19.00	
Living arrangement			
Living alone	23.76	23.00	0.055
Living with others	25.07	25.00	
Place of residence			
City	25.10	25.00	0.426
Village	24.69	25.00	
Education			
Primary	24.39	24.00	0.147
Gymnasium (lower secondary)	27.83	27.50	
Vocational education	25.30	26.00	
Secondary	24.87	25.00	
Higher	24.33	24.00	
Occupational status			
Employed	24.35	26.00	0.564
Unemployed	25.58	26.00	
Pensioner	24.67	25.00	
Retired	24.85	24.00	
Student	21.00	22.00	
Having children			
Yes	23.81	24.00	0.031
No	25.09	25.00	
Current dialysis modality			
Hemodialysis	24.86	25.00	0.255
Hemodiafiltration	25.39	27.00	
Continuous ambulatory peritoneal dialysis with manual exchanges (CAPD)	25.21	25.50	
Automated peritoneal dialysis (APD)	24.43	26.00	
Current dialysis access			
Arteriovenous fistula (AV fistula)	25.23	25.50	0.146
Arteriovenous graft (AV graft)	25.20	26.00	
Tunneled (permanent) central venous catheter	23.86	24.00	
Temporary (non-tunneled) central venous catheter	23.88	23.50	
Tenckhoff catheter (for peritoneal dialysis)	28.33	29.00	

undergoing dialysis therapy, these two constructs may overlap, as the treatment itself becomes a permanent component of everyday life. In the present study, the AIS was used to assess the broader construct of illness acceptance rather than acceptance of dialysis therapy itself.

The present study provides important data on the level of illness acceptance and psychosocial and clinical determinants among patients undergoing dialysis therapy. The mean score on the AIS was 24.84 points, indicating a moderate level of acceptance of CKD. This finding is consistent with the literature, in which AIS scores among dialysis patients typically range between 23 and 26 points, suggesting the persistence of adaptation difficulties associated with renal replacement therapy despite technological advances. Similar AIS values have been reported in other studies conducted among dialysis patients, further supporting the notion that dialysis therapy, despite improvements in treatment modalities, continues to be associated with significant adaptive challenges and reduced psychological well-being [17, 18]. This observation aligns with reports indicating an ongoing psychosocial burden among dialysis patients [19, 20].

In the present analysis, no significant association was found between the duration of dialysis therapy and illness acceptance. Although previous studies suggest that prolonged exposure to the burden of chronic illness may reduce adaptive resources, this relationship was not confirmed in our sample. This may indicate that illness acceptance is influenced more strongly by psychosocial factors than by the duration of treatment itself. In the literature, this phenomenon has been described in the context of so-called "chronic illness burnout" [21–23].

An interesting and somewhat paradoxical finding was the higher level of illness acceptance among patients reporting travel limitations. The literature emphasizes that illness acceptance does not imply the absence of losses but rather the ability to recognize, acknowledge, and integrate them into a new model of functioning [24]. One possible interpretation is that acknowledging such limitations may reflect a more realistic appraisal of the disease and its consequences. However, alternative explanations should also be considered. Higher illness acceptance in this group may partly reflect a process of psychological resignation or reduced expectations regarding everyday functioning. In such cases, acceptance may coexist with withdrawal from previously valued activities rather than represent a fully adaptive coping strategy. This interpretation highlights the complexity of the concept of illness acceptance and indicates that higher AIS scores do not necessarily reflect optimal psychological adjustment. At the same time, the literature suggests that maintaining life activity and striving to preserve autonomy despite health limitations may promote better adaptation to dialysis therapy, indicating that the relationship between perceived limitations and illness acceptance may be multifaceted and requires further investigation [20].

In most analyzed categories of functional limitations – including somatic symptoms and dialysis-related complications – no significant differences in illness acceptance were observed. This finding is consistent with current evidence suggesting that illness acceptance is determined primarily by psychological resources, social support, and coping strategies rather than by clinical parameters or symptom severity [24].

The analysis of demographic and clinical variables revealed no significant differences in illness acceptance with respect to sex, age, place of residence, education level, occupational status, dialysis modality, or type of vascular access. Similar results have been reported in studies that failed to demonstrate a clear influence of traditional clinical parameters on psychological adaptation to dialysis therapy [20, 24, 25]. These findings suggest that illness acceptance is only weakly determined by medical factors, while psychosocial determinants appear to play a more substantial role.

Statistically significant differences were observed with respect to marital status, with the highest levels of illness acceptance found among married participants. These results are consistent with studies emphasizing the role of close partner relationships as a key source of emotional support, stress reduction, and reinforcement of health-promoting behaviors [26]. Stable interpersonal relationships may facilitate stress reduction and enhance adaptive behaviors, which may indirectly contribute to higher levels of illness acceptance.

Lower levels of illness acceptance observed among patients with children may be associated with additional emotional burdens, a heightened sense of responsibility toward family members, concern for their future, and anxiety related to meeting family needs under conditions of health-related limitations. However, this interpretation should be treated with caution. The present study did not include multivariate analyses controlling for potential confounding factors such as patients' age, the age of their children, or socioeconomic conditions, which may influence both family roles and psychological adaptation to illness. Future studies should therefore examine family-related variables in greater detail to better understand the mechanisms linking parenthood and illness acceptance [27]. Current literature highlights the ambivalent nature of family roles in the context of chronic illness – while they may provide substantial emotional support, they can simultaneously increase stress and psychological burden [26].

The variable related to living arrangement reached the threshold of statistical significance. Slightly higher levels of illness acceptance were observed among

patients living with others, which may reflect the supportive role of shared daily functioning and the availability of practical or emotional assistance. However, given the borderline significance of this result, the finding should be interpreted with caution. At the same time, the influence of defense mechanisms – such as minimization or internalization of difficulties – cannot be excluded [20, 29].

The absence of significant differences in illness acceptance between patients treated with different dialysis modalities is consistent with findings from recent comparative studies demonstrating that quality of life and psychological adaptation are more strongly associated with subjective health perception, level of support, and psychological resources than with the technical modality of renal replacement therapy itself [30, 31]. However, it should be noted that the study sample was predominantly composed of HD patients, which may have limited the ability to detect potential differences between therapeutic groups.

An important area requiring further investigation concerns the situation of patients qualified for KTx and those awaiting transplantation. The waiting period for KTx may represent a specific psychological context in which patients simultaneously experience hope for recovery and uncertainty related to the duration of the waiting time. Previous studies suggest that prolonged waiting for transplantation may influence psychological adaptation and illness perception. Future research should therefore examine whether the status of being listed for transplantation, as well as the duration of time spent on the waiting list, affects the level of illness acceptance and psychological adjustment among dialysis patients.

In the context of the Polish healthcare system, such analyses could provide valuable information for planning supportive interventions for patients awaiting transplantation, including psychological counseling and educational programs aimed at strengthening coping resources during the waiting period.

Implications for clinical practice

The findings highlight the need for routine assessment of illness acceptance among dialysis patients as an integral component of comprehensive nephrological care [20, 24, 25]. Illness acceptance constitutes an important indicator of psychological adaptation, which may influence quality of life, adherence to therapeutic recommendations, and cooperation with the medical team. The use of brief screening instruments, such as the AIS, during nephrology consultations or dialysis sessions may facilitate the early identification of patients requiring additional psychological support.

Particular attention should be given to patients undergoing long-term dialysis therapy and those burdened with family responsibilities, as these groups may be at increased risk of reduced illness acceptance and adaptive difficulties [28, 31]. In such cases, systematic psychological support and consideration of the family context in care planning are recommended.

The results also support the implementation of targeted psychosocial interventions, including psychoeducation, strengthening of autonomy and self-efficacy, and the development of adaptive coping strategies [31]. Structured educational programs improving patients' understanding of treatment and self-management, as well as patient support groups enabling the exchange of experiences, may further facilitate psychological adaptation to dialysis therapy.

From a systemic perspective, multidisciplinary cooperation between nephrologists, nurses, psychologists, and social workers appears essential in addressing the complex psychosocial needs of dialysis patients. In addition, organizational solutions – such as improved access to guest dialysis, more flexible scheduling of dialysis sessions, and optimization of medical transport – may contribute to better adaptation to illness and improved quality of life among patients undergoing dialysis therapy.

Strengths and limitations of the study

The main strengths of this study include the large sample size and nationwide scope, which enhance the generalizability of the findings to the population of dialysis patients in Poland. The use of a standardized instrument – the AIS – ensures good comparability with other studies. Additionally, the inclusion of a wide range of demographic, clinical, and functional variables enabled a multidimensional analysis of factors associated with illness acceptance.

The primary limitation of the study is its cross-sectional design, which precludes causal inference. The use of self-report instruments is associated with the risk of declarative bias, which may introduce information bias, and the results may have been influenced by the respondents' current clinical and emotional status.

Conclusions

Patients undergoing dialysis therapy demonstrated a moderate level of illness acceptance. Most clinical and functional factors did not significantly differentiate the level of acceptance, suggesting that psychosocial factors may play a more prominent role in this process. Significant associations were observed for selected sociodemographic variables: higher levels of illness acceptance were found among married individuals and those living with others, while lower levels were observed among patients with children. These findings emphasize the importance of family context and social support and highlight the need for routine monitoring of illness acceptance as part

of comprehensive nephrological care. Special attention should be directed toward patients burdened with family responsibilities. Further longitudinal studies incorporating broader assessments of psychological variables are necessary to better understand the mechanisms underlying adaptation to dialysis therapy.

Funding

This study presents independent research financed by the National Science Centre – Miniatura-7 Project; No. DEC-2023/07/X/NZ5/01309.

Ethical approval

The study was approved by the Bioethics Committee of Andrzej Frycz Modrzewski University in Kraków (approval no. KBKA/34/O/2023). The study was carried out in accordance with the principles of the Declaration of Helsinki (World Medical Association, 2013) and the STROBE guidelines for observational studies.

Conflict of interest

The authors declare no conflict of interest.

References

1. Kidney Disease: Improving Global Outcomes (KDIGO) Lupus Nephritis Work Group. KDIGO 2024 Clinical Practice Guideline for the management of LUPUS NEPHRITIS. Kidney Int. 2024; 105(1S): S1-S69. DOI: 10.1016/j.kint.2023.09.002.
2. GBD Chronic Kidney Disease Collaboration. Global, regional, and national burden of chronic kidney disease, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2020; 395(10225): 709-733. DOI: 10.1016/S0140-6736(20)30045-3.
3. Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. Kidney Int Suppl. 2022; 12(1): 7-11.
4. Gellert R. Przewlekła choroba nerek. 2025. Available online at: https://medicalpress.pl/zdrowie-wspolna-sprawa/prof-ryszard-gellert-przewleka-choroba-nerek-dotyka-kadej-komrki-w-organizmie-trzeba-j-wykry-i-leczy_NlRLBXkAGe/ (accessed: 02.12.2025).
5. Dębska-Ślizień A, Rutkowski B, Jagodziński P, Rutkowski P, Przygoda J, Lewandowska D, Czerwiński J, Kamiński A, Gellert R. Aktualny stan leczenia nerkozastępczego w Polsce – 2024. Nefrol Dial Pol. 2025; 29(1): 3-20.
6. Chuasuwan A, Pooripussarakul S, Thakkinstian A, Ingsathit A, Pattanaprateep O. Comparisons of quality of life between patients underwent peritoneal dialysis and hemodialysis: a systematic review and meta-analysis. Health Qual Life Outcomes. 2020; 18: 191. DOI: 10.1186/s12955-020-01449-2.
7. Murtagh FEM, Addington-Hall J, Higginson IJ. The prevalence of symptoms in end-stage renal disease: a systematic review. Adv Chronic Kidney Dis. 2007; 14: 82-99. DOI: 10.1053/j.ackd.2006.10.001.
8. Hayes SC, Hofmann SG, Ciarrochi J. Process-based therapy: concepts and applications. Clin Psychol Rev. 2020; 82: 101908. DOI: 10.1016/j.cpr.2020.101908.
9. Kołtuniuk A, Rosińczuk J. The levels of depression, anxiety, acceptance of illness, and medication adherence in patients with multiple sclerosis – descriptive and correlational study. Int J Med Sci. 2021; 18: 216-225. DOI: 10.7150/ijms.51172.
10. Almutary H, Bonner A, Douglas C. Which patients with chronic kidney disease have the greatest symptom burden? A comparative study of advanced CKD stage and dialysis modality. J Renal Care 2016; 42(2): 73-82.
11. Łatka J, Majda A, Sołtys A. Determinants of acceptance of the illness by hemodialysis patients. Problemy Pielęgniarstwa/Nursing Problems 2013; 21(3): 318-326.
12. andenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, Poole C, Schlesselman JJ, Egger M; STROBE Initiative. Strengthening the reporting of observational studies in epidemiology (STROBE): explanation and elaboration. PLoS Med. 2007; 4(10): e297. DOI: https://doi.org/10.1371/journal.pmed.0040297.
13. World Medical Association. World medical association declaration of Helsinki: ethical principles for medical research involving human subjects. JAMA. 2013; 310(20): 2191-2194.
14. It is necessary to increase the rate for dialysis treatment. 2025. Available online at: https://www.termedia.pl/lekarz-specjalista/Konieczne-jest-podwyzszenie-stawki-za-leczenie-dializami-,47380.html (accessed: 03.12.2025).
15. Tomaszek L, Kurleto P, Turkanik E. Pain, anxiety and depression among chronic kidney disease patients undergoing hemodialysis and their association with disease acceptance – a pilot cross-sectional study. Pielęgniarstwo w Anestezjologii i Intensywnej Opiece 2024; 10(1): 53-59.
16. Juczyński Z. Narzędzia pomiaru w promocji i psychologii zdrowia. Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego; 2001, p. 123-127.
17. Pompey C, Alarcón-Ferrari E, Calvo-Aguilar MJ. Illness acceptance and quality of life among end-stage renal disease patients undergoing hemodialysis. Enferm Clin. 2019; 29(1): 51-56.
18. Hreńczuk M, Szymańska M, Królak-Olejnik B. Acceptance of illness and health behaviors of patients treated with hemodialysis. Adv Clin Exp Med. 2024; 33(2): 187-195.
19. Milewska E. The impact of dialysis therapy on the quality of patients' life. J Educ Health Sport. 2018; 8(9): 1073-1083.
20. Bulathwatta DT, Bulathwatta DT, Borchet J, Rudnik A, Bidzan M. Psychosocial well-being among individuals with chronic kidney disease undergoing hemodialysis and their caregivers: a protocol of a mixed method study in Sri Lanka and Poland. Front Psychol. 2023; 14: 1194991. DOI: 10.3389/fpsyg.2023.1194991.
21. Jankowska-Polanska B, Uchmanowicz I, Wysocka A, Uchmanowicz B, Lomper K, Fal AM. Factors affecting quality of life of chronic dialysis patients. Eur J Public Health. 2017; 27(2): 262-267.
22. Abdel-Kader K, Unruh ML, Weisbord SD. Symptom burden, depression, and quality of life in chronic kidney disease and dialysis patients. Clin J Am Soc Nephrol. 2009; 4: 1057-1064.
23. Cukor D, Coplan J, Brown C, Friedman S, Cromwell-Smith A, Peterson RA, Kimmel PL. Depression and anxiety in urban hemodialysis patients. Clin J Am Soc Nephrol. 2007; 2: 484-490. DOI: 10.2215/CJN.00040107.
24. Hreńczuk MK, Rudnicka W, Piątek TD, Małkowski P. Acceptance of illness and health behaviours of patients with end-stage renal disease treated with haemodialysis:

a single-centre study. Healthcare (Basel). 2024; 12(24): 2562. DOI: https://doi.org/10.3390/healthcare12242562.
25. Bakhsh AM, Mahallawi WH. Psychological effects of hemodialysis on patients with end-stage renal disease: Anxiety, depression and health-related quality of life. J Clin Med. 2025; 14(20): 7136. DOI: https://doi.org/10.3390/jcm14207136
26. Al Naamani Z, Gellens ME. Social support and health-related quality of life in hemodialysis patients: a cross-sectional study. BMC Nephrol. 2022; 23: 312.
27. Ribeiro O, Teixeira L, Araújo L. Marital status, social support and adaptation to chronic illness in dialysis patients. Int J Environ Res Public Health. 2023; 20(9): 5721.
28. Tong A, Sainsbury P, Craig JC. Support interventions for caregivers of people with chronic kidney disease: a systematic review. Nephrol Dial Transplant. 2008; 23(12): 3960-3965. DOI: 10.1093/ndt/gfn415.
29. Krok D, Telka E. Psychological resources and illness acceptance in chronic disease patients. Front Psychol. 2021; 12: 628810.
30. Griva K, Kang AW, Yu ZL, Mooppil NK, Foo M, Chan CM, Newman SP. Quality of life and emotional distress between patients on peritoneal dialysis versus community-based hemodialysis. Qual Life Res. 2014; 23(1): 57-66. DOI: 10.1007/s11136-013-0431-8.
31. Barello S, Anderson G, Acampora M, Bosio C, Guida E, Irace V, Guastoni CM, Bertani B, Graffigna G. The effect of psychosocial interventions on depression, anxiety, and quality of life in hemodialysis patients: a systematic review and a meta-analysis. Int Urol Nephrol. 2023; 55(4): 897-912. DOI: 10.1007/s11255-022-03374-3.

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Received: 25.01.2026
Accepted: 21.04.2026
Online publication: 17.08.2026