

ORIGINAL ARTICLE

Exploring Barriers to Self-Care among Kidney Transplant Recipients: A Qualitative Content Analysis

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ABSTRACT

Background: Self-care is vital for managing chronic conditions like kidney transplantation, enhancing patient outcomes and preventing complications. This study aimed to explore barriers to self-care in patients with kidney transplants.

Methods: A conventional content analysis approach was employed in this qualitative study conducted in Urmia, Iran, from June 2024 to March 2025. Purposive sampling continued until data saturation was reached. Data were collected through semi-structured interviews with 18 participants (15 kidney transplant recipients and 3 healthcare providers). Interviews were analyzed using Graneheim and Lundman's method. Ethical considerations were upheld throughout, and MAXQDA version 10 was used to analyze the data.

Results: The participants' mean age was 45.93 ± 0.53 years. Three main themes emerged: (1) individual barriers (Insufficient knowledge about self-care, negative thoughts and feelings toward the disease, and difficulty in changing lifestyle); (2) disease-related barriers (Disability and limitations due to the disease, complications associated with transplantation, and economic challenges due to the disease); and (3) barriers related to inadequate support (Limited family and social support, restricted access to healthcare services and specialists, and insufficient supportive follow-up from the healthcare team).

Conclusion: Kidney transplant patients encounter significant barriers to self-care, including individual, disease-related, and support-related challenges. Addressing these barriers through targeted interventions, such as educational programs, psychological support, financial assistance, and strengthened social networks, can enhance self-care practices, benefiting patients, families, communities, and policymakers.

Keywords: Self-care; Kidney Transplantation; Barriers; Qualitative Research

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INTRODUCTION

Kidney transplantation represents the optimal treatment for end-stage renal disease (ESRD), offering improved quality of life, reduced mortality, and lower healthcare costs compared to long-term dialysis.¹ Globally, ESRD affects millions, with transplantation meeting only about 10% of the demand due to organ shortages and infrastructural challenges.² In Iran, the landscape is particularly dynamic; the country boasts one of the highest kidney transplant rates in the Middle East, at approximately 30.9 transplants per million people. As of recent data, around 32,000 patients undergo hemodialysis in Iran, with about 2,500 kidney transplants performed annually, 60% from deceased donors.³ Iran's model has evolved from compensated living unrelated donations in the 1980s to a greater emphasis on deceased-donor programs, addressing ethical concerns and organ shortages through religious, legal, and cultural reforms.⁴ Survival rates are impressive, with first-year graft survival exceeding 90% and patient survival at 99%, positioning Iran as a leader in accessible transplantation.⁵ However, this success hinges on the recipients' ability to engage in effective self-care post-transplant, a critical factor often undermined by multifaceted barriers.⁶

Self-care after kidney transplantation is essential for long-term graft function, preventing rejection, infections, and comorbidities like cardiovascular disease. It encompasses medication adherence, dietary management (e.g., low-salt, low-cholesterol intake), regular physical activity, fluid balance, stress management, and monitoring the early signs of complications.⁷ Adhering to immunosuppressive regimens is paramount, as even a single missed dose can trigger rejection.⁸ Also, physical activity aids recovery, reduces blood clot risks, and supports overall health, while adequate hydration maintains renal function.⁹ Studies emphasize that robust self-care correlates with higher graft survival and quality of life, yet noncompliance remains a leading cause of graft loss.^{10, 11} In Iran, where

transplantation is government-supported, self-care education begins pre-transplant but often faces implementation gaps due to complex regimens and lifelong demands.¹²

Despite its importance, kidney transplant recipients encounter numerous barriers to self-care. Globally, common obstacles include physical limitations, such as post-surgery fatigue or pain, and psychological factors like fear of harming the new kidney through exercise.¹³ Habits formed during hemodialysis, such as fluid restriction, persist, leading to inadequate intake because patients may not feel thirsty or may feel overly full.¹⁴ Socioeconomic issues, low health literacy, and limited access to follow-up care exacerbate these challenges, with nonadherence contributing to poor outcomes.¹⁵ Qualitative explorations reveal attitudinal barriers, including motivation deficits and stress from adapting to new lifestyles. For instance, in a study, recipients reported facilitators like family support, but barriers such as inadequate guidance and emotional strain were also mentioned.¹⁶ These barriers are amplified in prolonged post-transplant periods, where treatment complexity and life adjustments hinder sustained behaviors.¹⁷

In Iran, cultural, socioeconomic, and infrastructural factors introduce unique barriers. Rural patients often lack access to specialized care, compounded by economic constraints despite government subsidies.¹⁸ Qualitative studies highlight coping strategies tailored to Iranian contexts, such as family involvement and religious resilience, but they also reveal persistent issues like insufficient long-term follow-up and educational gaps.^{19, 20} Communication barriers, cultural differences, and limited repetition of educational content during discharge further impede self-care.²¹ While Iran's system has shortened waiting lists, the shift toward deceased-donor transplants demands enhanced self-care support to maintain high survival rates.²²

Despite the critical role of self-care in kidney transplant outcomes, existing quantitative studies often fail to capture the nuanced

cultural, social, and individual barriers faced by recipients, particularly in Iran's unique healthcare context.^{23, 24} Qualitative research on this topic remains limited, with few studies exploring the lived experiences of Iranian kidney transplant patients.^{25, 26} While some studies have identified general barriers, none have comprehensively explored the multifaceted, context-specific barriers to self-care among kidney transplant recipients that include both patient and healthcare provider perspectives.^{27, 28} Moreover, prior research has often focused on isolated aspects of self-care (e.g., medication adherence alone) rather than providing a holistic understanding of individual, disease-related, and support-related barriers as they interact within the Iranian sociocultural and healthcare system.^{28, 29} This gap hinders development; this study aimed to explore barriers to self-care in patients with kidney transplants.

MATERIALS AND METHODS

This qualitative study was conducted using a conventional content analysis approach from June 2024 to March 2025. Participants were patients with kidney transplant from the kidney transplant ward of Imam Khomeini Hospital and outpatient kidney transplant clinics in Urmia, Iran, along with healthcare providers (nurses and a nephrologist) for triangulation. Purposive sampling was employed, considering maximum diversity in age, gender, education level, ethnicity, economic status, time since transplant, and professional experience for providers. To account for potential differences in patient experiences, the sampling also considered variations in pre-transplant medical history and transplant circumstances, such as patients with long-term conditions like diabetes or heart disease who underwent prolonged dialysis before transplantation, those who received a transplant due to an acute condition, or those who received a transplant more quickly from a living donor, whether a family member or a non-related individual (e.g., a family member or altruistic donor). Additionally, deceased donors

were included as a source of transplantation, and this distinction was considered during sampling to capture potential differences in experiences based on the donor type. Inclusion criteria for patients included age over 18 years old with a history of kidney transplantation, the ability to communicate verbally and share experiences, willingness to participate in the study, and no prior formal home care intervention by external services (Note: Routine post-transplant self-care at home without structured professional home-based support was not considered a formal intervention and did not affect eligibility). For healthcare providers, inclusion criteria included at least 5 years of experience in kidney transplant care and willingness to participate. The exclusion criterion was unwillingness to continue participation.

Data were collected through in-depth, semi-structured interviews with 15 kidney transplant patients (7 female, 8 male) and 3 healthcare providers (2 nurses, 1 nephrologist), by the first author (R.A., PhD candidate in nursing). Patients included those who were either hospitalized at the time of the study or had been discharged from the hospital after kidney transplantation. Access to hospitalized patients, including those in isolation due to medical protocols, was achieved through coordination with the hospital nephrology departments and with their informed consent. For discharged patients, access was achieved through post-transplant follow-up clinics or by contact with patients registered in the hospital database. Healthcare providers were also selected through coordination with the hospital and associated clinics. All interviews were conducted in person at times and locations preferred by participants, such as quiet private rooms at the hospital or clinics. For hospitalized patients in isolation, interviews were conducted in their rooms with strict adherence to infection control protocols, and recording was permitted with their consent using portable audio devices to ensure safety and compliance with hospital regulations. Interviews began with open-ended questions such as: "What problems has

kidney transplantation caused for you?”, “How do you perform self-care for issues related to your transplant?”, and “What conditions create challenges in performing self-care?” Probing questions, such as “Can you elaborate on that?” and “What do you mean by that?” were used to gather deeper insights. At the end of each interview, participants were asked if they wished to add anything further. Non-verbal behaviors, including body movements, facial expressions, tone of voice, emotional reactions, and expressions of feelings, were considered by the researcher to enhance the analysis of the interview data. These nonverbal cues were particularly valuable during the data interpretation phase, as they provided contextual depth to the participants’ verbal responses. For example, emotional reactions such as hesitation or changes in tone during discussions about self-care challenges helped identify underlying anxiety or levels of confidence that were not fully expressed verbally. These observations were integrated into the analysis to enrich understanding of the patients’ and providers’ experiences, particularly in identifying emotional barriers to self-care, such as fear of medication side effects or frustration with lifestyle adjustments. Although not explicitly detailed in the initial findings, these nonverbal data helped develop the themes related to the emotional and psychological aspects of self-care after transplantation.

Interviews were audio-recorded with participants’ consent, and durations ranged from 35 to 45 minutes, averaging 40 minutes, depending on the participants’ conditions and fatigue levels; in the case of fatigue, the sessions were paused and resumed as needed. Data collection continued until data saturation was achieved, defined as the point where no new codes or themes emerged from additional interviews; this occurred after 15 patient interviews and was confirmed through the 3 provider interviews for triangulation. Interviews were transcribed verbatim immediately after completion and managed using MAXQDA version 10 software.

Data were analyzed using Graneheim and Lundman’s approach.³⁰ This method involves five steps: transcribing interviews immediately after completion; reading the text multiple times to gain an overall understanding; identifying meaning units and primary codes; categorizing the primary codes into broader categories; and determining the latent content (main themes). Data analysis was conducted concurrently with data collection through constant comparison by two researchers (RA and HG). The coding process involved independent initial coding by both researchers, followed by joint discussions to resolve discrepancies and achieve consensus on the categories and themes. Themes were not predetermined; rather, they emerged inductively from the data.

Following Lincoln and Guba’s (1986) criteria, the study ensured trustworthiness through credibility, transferability, dependability, and confirmability.³¹ To ensure credibility, the coded interview transcripts were shared with participants for member checking, and discrepancies were clarified with the participants’ input. The data were analyzed by the research team to identify issues in the interview and coding processes. The researcher spent sufficient time reviewing data, revisiting codes and categories, and holding multiple meetings with the research team to reach consensus, enhancing credibility. Triangulation of data collection methods, such as in-depth interviews, note-taking, daily journals, and maximum participant diversity, further supported credibility. To enhance dependability, detailed descriptions of participants and data analysis steps were provided to enable research auditing. The interview and coding processes were aligned with the research question to ensure logical and consistent findings. For confirmability, all study stages, from data collection to the formation of subcategories, categories, and themes, were thoroughly documented to allow reader scrutiny. The accuracy of the research process, including interviews, coding, and theme extraction,

was validated by the research team. To enhance transferability, we provided clear and comprehensive descriptions of the study context, experiences, and events to enable other researchers to evaluate the process. Participants were selected with maximum diversity in age, education, occupation, and marital status.

This article is part of a PhD thesis that was conducted after obtaining ethical approval from Urmia University of Medical Sciences (IR.UMSU.REC.1403.051). Participants received written information about the study before we commenced the study. Upon meeting the interviewer, they were provided with additional written and verbal information about the study purpose and procedures; they were informed that participation was voluntary and assured of their right to withdraw or decline to answer questions without any change in their treatment process. They were informed that interviews would be recorded and that data would remain confidential. Written and verbal (recorded) informed consent was obtained from all participants.

RESULTS

Participants included 18 individuals: 15 kidney

transplant recipients (8 males, 7 females; mean age 45.93 ± 0.53 years, range: 40–60; time since transplant: 6 months to 15 years; 3 widowed, 3 single, 9 married; education from illiterate to bachelor's degree; diverse ethnicities including Kurdish, Turkish, and Fars; varying economic statuses from low to middle income) and 3 healthcare providers. Table 1 presents participants' characteristics.

Data analysis identified three main themes of barriers to self-care in kidney transplant patients: individual factors, disease-related factors, and factors related to inadequate support. These themes encompass nine sub-themes, as shown in Table 2.

1. Individual Barriers

This theme includes individual factors affecting patients' ability and motivation to engage in self-care activities. The three sub-themes were insufficient knowledge about self-care, negative thoughts and feelings toward the disease, and difficulty in changing lifestyle.

1.a. Insufficient Knowledge About Self-Care

Lack of adequate knowledge about self-care was a major barrier reported by nearly all participants. They lacked sufficient

Table 1: Participants' Characteristics

Participant Code	Age (year)	Sex	Education Level	Occupation	Marital Status
1	45	Male	Illiterate	Freelance	Married
2	55	Female	High School	Homemaker	Widowed
3	53	Male	Illiterate	Retired	Married
4	46	Male	High School	Shopkeeper	Widowed
5	44	Male	High School	Shopkeeper	Married
6	40	Male	Bachelor's	Teacher	Married
7	58	Male	Illiterate	Freelance	Single
8	46	Female	Bachelor's	Employee	Married
9	42	Male	High School	Freelance	Single
10	45	Female	Bachelor's	Employee	Married
11	44	Female	Bachelor's	Homemaker	Single
12	40	Female	High School	Homemaker	Married
13	55	Male	Illiterate	Retired	Married
14	60	Female	Illiterate	Homemaker	Widowed
15	46	Female	Bachelor's	Employee	Married
16	33	Female	Bachelor's	Nurse	Married
17	36	Female	Bachelor's	Nurse	Married
18	54	Male	Nephrologist	Physician	Married

Table 2: Sub-themes and themes generated from data

Sub-Themes	Themes
Insufficient knowledge about self-care Negative thoughts and feelings toward the disease Difficulty in changing lifestyle	Individual Barriers
Disability and limitations due to the disease Complications associated with transplantation Economic challenges due to the disease	Disease-Related Barriers
Limited family and social support Restricted access to healthcare services and specialists Insufficient supportive follow-up from the healthcare team	Barriers Related to Inadequate Support

understanding of kidney transplantation, medications, mobility restrictions, and dietary requirements. Reasons for this included low education levels, limited health literacy, and the absence of comprehensive educational programs provided by healthcare centers. Participants reported difficulties in reading and understanding essential health and transplant-related information. They often resorted to trial-and-error methods or obtained information from unreliable sources, sometimes leading to misinformation. A nurse said: *“Patients often come back with questions because initial education is rushed due to workload.”* (P16)

1.b. Negative Thoughts and Feelings Toward the Disease

Most participants in the present study complained of unpleasant thoughts and feelings, such as anxiety and despair about the future, which bothered them and led to disruptions in the self-care process. One patient said: *“Anxiety keeps me up at night, and I forget my meds the next day.”* (P12)

1.c. Difficulty in Changing Lifestyle

Changing habitual behaviors and adopting new adaptive ones was challenging for most participants. Kidney transplant patients often failed to sustain lifestyle changes or reverted to old habits after a period. For example, they adhered to self-care practices during symptom exacerbation or hospitalization but returned to previous habits after symptom relief or discharge. The most challenging

changes were dietary habits and smoking cessation, particularly for men. Participants found low-salt and low-fat diets unappealing. One patient said: *“Since childhood, I’ve loved salty and fried foods, but controlling myself and avoiding them is hard. I often get tempted and can’t stop myself.”* (P2)

2. Disease-Related Barriers

The second main theme encompasses disease-related factors linked to treatment and transplant care challenges. The burden imposed by the disease and its treatments reduced the patients’ self-care capacity. This theme includes three sub-themes: disability and limitations due to the disease, complications associated with transplantation, and economic challenges caused by the disease.

2.a. Disability and Limitations due to the Disease

Participants reported reduced physical capacity, which directly interfered with their ability to perform essential self-care activities. Tasks such as preparing low-salt meals, maintaining personal hygiene to prevent infection, and organizing daily medications became physically daunting. One patient explained how weakness hindered a basic self-care necessity:

“After the transplant, I became so weak that I couldn’t even stand long enough to prepare a proper low-salt meal for myself. I often ended up eating whatever was easy, even if it was unhealthy for my kidney.” (P7)

2.b. Complications associated with transplantation

Complications associated with transplantation were another disease-related barrier to self-care. Not all participants had comorbidities, but common ones among those affected included hypertension and respiratory issues. Managing these required multiple specialist visits, various tests, and numerous medications. Participants were dissatisfied with the number and side effects of their medications, sometimes avoiding or altering doses. They also reported confusion due to conflicting medical advice from different specialists, rendering decision-making difficult. A nurse said: *“Comorbidities like diabetes complicate regimens, leading to non-adherence to treatment.”* (P17)

2.c. Economic Challenges due to the Disease

Economic challenges were another barrier to self-care, with varying impacts on the participants. Kidney transplantation may lead to temporary or permanent job loss and a reduction in income. Additionally, periodic medical visits, tests, medications, and dietary requirements significantly increase the costs. Reduced income and increased expenses imposed financial burdens, limiting self-care capacity. One patient said: *“Getting the medications prescribed by doctors is too hard. I can’t afford to buy all these drugs, so sometimes I skip some because I run out of money.”* (P11)

3. Barriers Related to Inadequate Support

The third main theme involved the factors related to inadequate support from external sources, which negatively affects self-care. Unlike individual knowledge deficits, these barriers reflect failures in the patient’s environment, including family, society, and the healthcare system. This theme includes three sub-themes: limited family and social support, restricted access to healthcare services and specialists, and insufficient supportive follow-up from the healthcare team.

3.a. Limited Family and Social Support

Due to their complex condition, kidney transplant patients require significant emotional and financial support for self-care. Support should empower patients, but participants reported dissatisfaction with inadequate social, family, governmental, and healthcare team support. They emphasized the need for financial and emotional support, prioritizing financial aid. Family members were often their only source of support. The nephrologist noted: *“Family support is crucial, but urban lifestyles reduce it.”* (P18)

3.b. Restricted Access to Healthcare Services and Specialists

Limited access to healthcare providers and specialists was a barrier to self-care. Patients with advanced age, mobility limitations, those living alone, or in remote areas faced significant challenges accessing specialists and healthcare services. One patient said: *“I can’t visit a nephrologist because I’d have to travel a long way from my village to the city, and I don’t have personal transportation. There’s a health center in our village where I get my medications, and I ask the general practitioner to prescribe them again.”* (P14)

3.c. Insufficient Supportive Follow-Up from the Healthcare Team

Participants reported that even when they had basic knowledge about self-care, they lacked ongoing supportive follow-up from the healthcare team after discharge. This included infrequent check-ins, no reinforcement of previous education, and no assistance with problem-solving when self-care difficulties arose. Unlike the initial lack of knowledge (an individual barrier), this barrier reflects a systemic failure to provide continuous support. One patient explained:

“After I went home, no one called to ask how I was managing. I had questions about my diet and my medications, but there was no one to help me. The doctor is very busy, and the nurses are, too. I felt alone.” (P9)

DISCUSSION

This study aimed to identify barriers to self-care in kidney transplant patients. The findings were categorized into three main groups: individual factors, disease-related factors, and factors related to inadequate support.

Insufficient knowledge about self-care was a prominent individual barrier, potentially rooted in Iran's healthcare system where patient education is often deprioritized due to high workloads and resource limitations. A study also identified inadequate self-care knowledge as a barrier, aligning with the current findings although they emphasize health literacy correlations more quantitatively.³² In the Iranian context, this may be exacerbated by cultural factors like reliance on oral traditions over written materials, leading to misinformation.¹² Adequate knowledge about kidney transplantation and its management is fundamental to successful self-care, highlighting the need for comprehensive educational programs to enhance patients' self-care knowledge and, consequently, their ability to manage their condition. Contrasting studies emphasize cultural and religious beliefs as key influencers, which were not prominent here but could be implicit in Iranian patients' reliance on family and faith for coping, warranting further exploration.^{33,34}

Negative thoughts and feelings toward the kidney transplantation adversely affected the patients' self-care knowledge and behaviors. A study showed that kidney transplant patients experienced fear and social isolation, leading to depression, anxiety, and hopelessness, which aligns with the current study results.³⁵ In Iran, where mental health stigma is prevalent, these emotions may be amplified by cultural norms discouraging open discussion of psychological issues, reducing motivation for self-care.³⁶ Given the significance of this issue in the self-care and treatment process of kidney transplant patients, early detection and management of these psychological challenges can be beneficial.

The difficulty of changing lifestyle was

another individual barrier. This finding aligns with research showing that behavioral modification counseling programs are typically not implemented due to their time-consuming nature, underscoring the need for new approaches to change unhealthy habits and behaviors.³⁷ The most significant barriers to habit change include socioeconomic status, age, cultural beliefs, education level, and mental health disorders.³⁸ A previous study of hemodialysis patients in Iran similarly noted lifestyle adaptation challenges but added family involvement as a facilitator;³⁹ in our study, however, participants struggled primarily with breaking long-standing dietary habits (e.g., preference for salty and fried foods) and smoking cessation, rather than economic constraints.

Disease-related factors included disability and limitations, which in the Iranian context may be worsened by limited rehabilitation services.⁴⁰ Kidney transplantation and its associated limitations hindered the participants' ability to perform daily activities, making them dependent on others for self-care activities and treatment adherence. Consequently, when symptoms worsened, patients could not perform self-care activities without assistance. A study reported physical limitations as a barrier to self-care among kidney transplant patients, consistent with the current study findings.⁴¹ This can be explained by the fact that impaired physical function, a consequence of kidney transplantation, is associated with poor prognosis, loss of independence, and reduced quality of life, which may lead to feelings of uselessness in patients.⁴² A previous study reported similar physical barriers but highlighted technological aids as potential solutions, not explored here; critically, in Iran, access to such aids is limited by economic sanctions, explaining their absence in participants' narratives.⁴³

Complications compounded challenges in performing self-care activities, often due to fragmented care in Iran's multi-specialist system. A study found a significant correlation between the number of complications and

self-care ability in kidney transplant patients, confirming the current study results.⁴⁴ Thus, the presence of multiple chronic conditions simultaneously complicates the patients' circumstances, weakening their self-care capabilities. A study indicated that healthcare providers often failed to adequately address complications in kidney transplant patients, which exacerbated their condition.⁴⁵ To address this issue, adopting a comprehensive approach to managing kidney transplantation and associated conditions can improve patient outcomes. Clear clinical guidelines and close collaboration among healthcare providers can effectively manage complications in these patients. Supporting this, previous research has shown that protocol-based care reduces complications and improves self-care outcomes;⁴⁶ however, implementing such protocols in Iran requires addressing resource shortages and fragmented follow-up systems to ensure sustainability.

Economic challenges due to the disease imposed financial burdens, limiting self-care capacity, particularly acute in Iran due to lack of comprehensive insurance for transplants. A study identified financial difficulties as a barrier to treatment adherence, consistent with the findings of the current study.⁴⁷ In Iran, since kidney transplantation is not classified as a rare disease, patients receive limited governmental or insurance support, leading to substantial financial challenges. Consequently, financial difficulties are associated with lower quality of life, poorer health status, restricted medication use, and an increased likelihood of hospitalization.⁴⁸ However, some international studies link economic barriers to systemic racism,^{49, 50} not directly applicable here but highlighting how, in Iran, geopolitical factors like sanctions exacerbate inequities, calling for policy reforms.⁵¹

Factors related to inadequate support included insufficient social and family support, influenced by shifting family dynamics in urbanizing Iran. A study identified a lack of adequate social support as a barrier to self-care in kidney transplant patients, aligning

with the current study findings.¹⁸ Conversely, a previous study found that kidney transplant patients received relatively good social support; this contrasts with the present study results.⁵² This discrepancy may be explained by differences in sample characteristics and the nature of the support assessed. The contrasting study may have included patients with stronger familial networks or those residing in regions with more cohesive community structures, whereas the present study participants, drawn from Urmia and surrounding areas, reported that their family members, while willing to help, were often overwhelmed by caregiving demands, lacked adequate knowledge about transplant-specific needs, or were themselves facing health and livelihood pressures. Additionally, in Iranian culture, family support is traditionally strong; however, urbanization, changing family structures, and the increasing prevalence of nuclear families may have reduced the availability of extended family networks that historically provided caregiving support. This shift may explain why participants in the present study perceived family support as limited, despite cultural expectations of strong familial involvement. Social support can empower patients to engage in self-care, but it should be recognized that support must be informed and sustainable; otherwise, even well-intentioned family members may inadvertently contribute to patient stress or provide incorrect guidance.⁵³ Healthcare systems should, therefore, consider family-centered educational interventions that equip family members with accurate knowledge and practical skills to effectively support transplant recipients in their self-care journey.

Limited access to healthcare services and specialists was a barrier, particularly for rural patients, reflecting Iran's urban-rural healthcare divide. While most self-care activities are done by patients, certain aspects of self-care are guided and supported by healthcare providers. Therefore, patients require easy access to healthcare providers, and managerial and organizational barriers to

this access must be identified and addressed. A study highlighted the importance of regular visits and access to healthcare providers for improving self-care, which aligns with the current study findings.¹³ Thus, healthcare systems need to develop strategies to ensure easy access to specialized healthcare services. Cultural studies suggest community-based access models, which could be adapted here to leverage Iran's local health networks.^{28, 54}

Insufficient supportive follow-up from the healthcare team was identified as a distinct barrier to self-care, separate from patients' initial lack of knowledge. Even when the participants possessed basic self-care information, they reported a lack of ongoing, proactive support after hospital discharge. This included infrequent communication, no structured reinforcement of previous education, and limited assistance with real-time problem-solving (e.g., managing medication adjustments or dietary questions at home). Participants felt abandoned after leaving the hospital, which diminished their confidence and adherence. This finding aligns with a previous study showing that continuity of care and follow-up are critical for sustained self-care behaviors in kidney transplant recipients.¹³ In Iran, high patient-to-nurse ratios and limited community health infrastructure for transplant patients exacerbate this gap. Unlike individual knowledge deficits (which can be addressed through pre-discharge teaching), insufficient supportive follow-up requires systemic changes, such as telehealth monitoring, nurse-led phone clinics, or home visit programs. Contrasting evidence from a study in a well-resourced setting showed that structured follow-up protocols significantly improved self-care maintenance; therefore, adapting such protocols to Iran's context, perhaps through low-cost mobile health solutions, could bridge this support gap.⁵⁵

A key challenge in this study was distinguishing between self-care (focused on daily personal management of health and well-being) and self-management (broader, including adherence to medical regimens

and decision-making). Some findings, such as medication confusion, leaned toward self-management, while others, like lifestyle changes, aligned more with self-care. This conceptual overlap is noted in the literature and may reflect the intertwined nature of these concepts in chronic care; however, future studies should delineate them more clearly.

CONCLUSION

Kidney transplant patients in Iran encounter multifaceted barriers to self-care, encompassing individual knowledge and emotional challenges, disease-induced physical and economic strains, and systemic support deficiencies. These findings, rooted in the Iranian socio-cultural context, underscore the need for targeted interventions to enhance patient outcomes. Policymakers should prioritize classifying kidney transplantation into rare disease support to provide better insurance coverage and financial aid. Nurses and healthcare teams can implement literacy-adapted educational workshops and integrate mental health screening into routine follow-ups. Community-based programs involving families could foster emotional support, while telehealth initiatives address access issues for rural patients. Future research should evaluate the impact of these operational strategies in diverse Iranian settings to promote effective self-care and improve quality of life in these patients.

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Authors' Contribution

RA, HGH, and MR made substantial contributions to the conception and design of the study. Data collection was conducted by RA

Data analysis and interpretation were carried out by RA and HGH. All authors participated in drafting, critically reviewing, and revising the manuscript for important intellectual content. All authors have approved the final version of the manuscript for publication and agreed to be accountable for the accuracy and integrity of the work. The corresponding author attests that all listed authors meet the authorship criteria, and no individuals meeting these criteria have been omitted.

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Conflict of Interest

None declared.

Declaration on the use of AI

No Artificial Intelligence (AI) tools were used in the data collection, analysis, or preparation of this manuscript.

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