Self-management in chronic kidney disease: A comprehensive approach

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ABSTRACT

Chronic kidney disease (CKD) affects approximately 10–13% of the global population and is associated with substantial morbidity, mortality, cardiovascular complications, and healthcare costs. Effective self-management is increasingly recognized as a cornerstone of CKD care. This narrative review synthesizes current evidence on self-management in adults with CKD by examining its core components, effectiveness, influencing factors, and clinical implications. A literature search of PubMed, CINAHL, Embase, Scopus, and Web of Science included studies published up to 2025, including randomized controlled trials, systematic reviews, clinical guidelines, and observational studies. The evidence indicates that self-management interventions improve patient knowledge, self-efficacy, medication adherence, lifestyle behaviours, blood pressure control, psychological well-being, and health-related quality of life. Nurse-led education, behavioural counselling, family support, and digital health approaches have shown promising outcomes, although effectiveness varies according to health literacy, patient engagement, socioeconomic conditions, and healthcare access. Future research should focus on standardized, culturally appropriate, and sustainable self-management interventions, particularly in resource-limited settings.

Keywords: Chronic kidney disease, health outcomes, patient empowerment, quality of life, self-management.

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INTRODUCTION

Chronic diseases represent one of the leading causes of global morbidity and mortality, accounting for nearly 74% of deaths worldwide according to the World Health Organization (WHO). Among these conditions, chronic kidney disease (CKD) has gained increasing attention due to its rising prevalence and its strong association with cardiovascular disease and premature mortality.[1]

CKD is defined as abnormalities of kidney structure or function that persist for more than three months and have implications for health. The disease is typically classified into five stages based on the estimated glomerular filtration rate (eGFR).[2] In the early stages, kidney damage may be asymptomatic; however, progressive decline in renal function can lead to self-management in Chronic Kidney Disease: Improving Patient Outcomes and Quality of Life disorders.[3]

Global epidemiological data demonstrate the significant scale of this problem. The Global Burden of Disease study estimated that CKD affects approximately 850 million individuals worldwide, while the prevalence in the adult population ranges between 9% and 13%.[4] In 2019, CKD was responsible for approximately 1.4 million deaths globally, representing a significant increase compared with previous decades.[5]

The rising incidence of CKD is closely linked to the growing prevalence of diabetes mellitus and hypertension. For example, diabetes alone accounts for nearly 40% of CKD cases, while hypertension contributes to approximately 25–30% of cases globally.[6] In addition to medical complications, CKD is associated with significant economic burden. In high-income countries, treatment of end-stage kidney disease through dialysis or transplantation can consume 2–3% of total healthcare expenditure, despite affecting less than 0.1% of the population.[7]

Given these challenges, healthcare systems increasingly emphasize strategies that promote patient engagement in disease management. Self-management has therefore emerged as a key component of chronic disease care, aiming to empower patients to actively participate in managing their health.[8]

METHODS

This study was conducted as a narrative review to synthesize current evidence on self-management interventions in adults with chronic kidney disease (CKD). A comprehensive literature search was performed across five electronic databases: PubMed, CINAHL, Embase, Scopus, and Web of Science. Search terms included combinations of keywords and Medical Subject Headings (MeSH), such as "chronic kidney disease," "CKD," "self-management," "self-care," "self-efficacy," "patient education," "behavioral intervention," and "health outcomes".

The initial search identified 200 records. After removing duplicate articles and screening titles and abstracts for relevance, 150 full-text articles were assessed for eligibility. A total of 40 articles were included in the final review. Eligible publications comprised randomized controlled trials, quasi-experimental studies, observational studies, systematic reviews, and meta-analyses that examined self-management interventions among adult patients with CKD.

Data were extracted on study characteristics, including study design, population, intervention components, outcomes, and key findings. Given the narrative nature of this review and the heterogeneity of study designs and interventions, findings were synthesized descriptively to summarize the effectiveness of self-management interventions, factors influencing self-management behaviors, and the role of healthcare professionals in supporting self-management among adults with CKD.

CONCEPTUAL FRAMEWORK OF SELF MANAGEMENT

The concept of self-management has evolved considerably over the past several decades. Early research in chronic illness management highlighted the importance of patient participation in treatment decisions and daily disease management.[9] Thomas Creer first introduced the concept of self-management in the context of chronic respiratory diseases, suggesting that patients could play an active role in controlling symptoms and improving outcomes.[10]

Later theoretical models expanded this concept. Corbin and Strauss proposed that individuals living with chronic illness perform three primary categories of work: medical management, role management, and emotional management.[11] Medical management involves tasks such as medication adherence and symptom monitoring, while role management refers to adapting daily activities to accommodate illness.[12] Emotional management involves coping with psychological responses such as anxiety, fear, or depression.[13]

Another influential framework is the Chronic Care Model, which emphasizes patient self-management support as one of six essential elements required for high-quality chronic disease care.[14] Within this model, healthcare professionals collaborate with patients to develop problem-solving skills, goal-setting strategies, and decision-making capabilities.[15]

From a behavioral perspective, self-efficacy plays a central role in successful self-management. Self-efficacy refers to an individual's confidence in their ability to perform specific health behaviors.[16] Studies indicate that patients with higher self-efficacy are more likely to adhere to treatment regimens and adopt healthy lifestyle behaviors.[17]

However, the literature also highlights conceptual ambiguity between related terms such as self-care, patient education, and self-management.[18] While these concepts overlap, self-management is broader in scope because it integrates knowledge, behavioral skills, and psychological adaptation required to live with chronic illness.[19,20]

SELF MANAGEMENT BEHAVIOURS IN CHRONIC KIDNEY DISEASE PATIENTS

Effective management of CKD requires patients to engage in multiple daily behaviors aimed at slowing disease progression and preventing complications. These behaviors include medication adherence, dietary modification, blood pressure monitoring, and lifestyle adjustments.[21]

Dietary management is particularly important in CKD because excessive intake of sodium, potassium, and phosphorus can worsen kidney function and increase cardiovascular risk. Research indicates that reducing

sodium intake to less than 2 gm per day can significantly improve blood pressure control and reduce proteinuria in CKD patients.[22]

Fluid management is another crucial aspect, particularly for patients undergoing dialysis. Excessive fluid intake can lead to interdialytic weight gain, which is associated with increased risk of cardiovascular complications and mortality.[23]

Medication adherence is a cornerstone of effective CKD management. Non-adherence to prescribed therapies is common among patients with chronic illnesses, with estimates suggesting that 30–50% of patients fail to follow their medication regimens, which can significantly compromise treatment efficacy, accelerate disease progression, and increase the risk of hospitalization and mortality.[24] In CKD populations, non-adherence may result in poor blood pressure control, faster disease progression, and increased hospitalization rates.[25]

Psychological well-being is another important dimension of self-management. CKD patients frequently experience emotional distress due to the chronic and progressive nature of the disease.[26] Prevalence estimates indicate that 20–30% of CKD patients suffer from depression, while anxiety disorders affect approximately 15–25% of patients receiving dialysis.[27]

EVIDENCE FOR SELF MANAGEMENT INTERVENTIONS

A growing body of evidence, including randomized controlled trials, systematic reviews, and meta-analyses, has evaluated the effectiveness of self-management interventions in adults with CKD. These interventions generally included structured patient education, behavioral counselling, goal setting, self-monitoring, and ongoing support from healthcare professionals over varying durations.[28]

A systematic review of randomized controlled trials found that self-management programs consistently improved CKD knowledge, self-efficacy, self-care behaviours, and medication adherence compared with usual care.[29] Several studies included in the review also reported improvements in blood pressure control and reduced interdialytic weight gain among dialysis patients.[23] However, evidence for improvements in renal function, proteinuria, dialysis initiation, and mortality was limited or inconsistent because of short follow-up periods and variability across studies.[29]

Similarly, a meta-analysis pooling randomized and quasi-experimental studies demonstrated moderate improvements in health-related quality of life, reduced depressive symptoms, and a moderate increase in self-efficacy (standardized mean difference ≈ 0.45), indicating that structured interventions can enhance patients' confidence in managing their illness.[16,23] However, the meta-analysis found inconsistent effects on objective clinical outcomes, including estimated glomerular filtration rate (eGFR) and other long-term renal outcomes.[16,30]

Despite these promising findings, the evidence remains heterogeneous. Studies differed in intervention design, duration, delivery methods, and outcome measures, making direct comparisons difficult.[31] In addition, many studies had relatively small sample sizes and were conducted in high-income countries, limiting the generalizability of the findings to low-resource settings. Overall, current evidence strongly supports improvements in behavioural and psychosocial outcomes, whereas further large, long-term studies are needed to determine the effects of self-management interventions on renal disease progression and survival.

ROLE OF HEALTH CARE PROFESSIONALS

Healthcare professionals play a crucial role in facilitating effective self-management among CKD patients. Among them, nurses are particularly well positioned to provide education, counselling, and ongoing support due to their frequent interaction with patients.[37]

Nursing interventions often focus on improving patient knowledge, promoting lifestyle changes, and strengthening self-efficacy. Educational strategies may include teaching patients how to monitor blood pressure, interpret laboratory results, and recognize early signs of complications.[30]

In addition to education, nurses can use motivational interviewing techniques to encourage behavioral change. This patient-centered communication approach helps individuals explore their personal motivations for improving health behaviors.[38]prolonged treatment often leads to ego depletion and subsequently impacts self-management. Interventions to address this issue remain underdeveloped. Aim To evaluate the effects of psychological empowerment?based motivational interviewing program on early-stage CKD patients? self-management, perceived empowerment, and ego depletion and to explore their engagement experiences and the underlying reasons for the intervention?s effectiveness. Methods The study employed the explanatory sequential mixed methods design comprised of a randomized controlled trial and a qualitative study, which were conducted in a tertiary hospital from July 2022 to November 2023. About 70 patients with early CKD

were randomly assigned to a control group (n?=?35

IMPLICATIONS FOR CLINICAL PRACTICE

The evidence reviewed in this paper suggests that self-management interventions have the potential to improve outcomes for CKD patients. However, several considerations must be addressed to maximize their effectiveness.

First, programs should be tailored to individual patient needs, considering factors such as cultural background, educational level, and disease stage. Standardized interventions may not adequately address the diverse challenges faced by different patient populations.[39]

Second, digital health technologies may offer new opportunities for supporting self-management. Mobile health applications and telehealth platforms can facilitate remote monitoring, provide educational resources, and enable communication between patients and healthcare providers.[40]

Third, future research should focus on developing standardized outcome measures to improve comparability across studies. Long-term follow-up is also needed to determine whether self-management interventions can slow disease progression and reduce mortality.30

CONCLUSIONS

Chronic kidney disease represents a significant global health challenge characterized by increasing prevalence, high mortality rates, and substantial healthcare costs. Effective management of CKD requires sustained patient engagement in daily health behaviors aimed at controlling symptoms and preventing complications.

Self-management interventions offer a promising strategy for improving patient outcomes by enhancing knowledge, self-efficacy, and adherence to treatment regimens. Evidence suggests that such programs can improve quality of life, reduce psychological distress, and support better clinical outcomes.

However, the effectiveness of self-management programs depends on multiple factors, including patient education, social support, and access to healthcare resources. Future research should focus on developing culturally appropriate, evidence-based interventions that address the diverse needs of CKD patients.

Strengthening self-management support within healthcare systems may play a crucial role in improving the long-term health and well-being of individuals living with chronic kidney disease.

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AUTHORS' CONTRIBUTIONS

All authors contributed substantially to the conception and design of the review, literature search, interpretation and synthesis of the evidence, drafting and critical revision of the manuscript, and approved the final version for publication.

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