Assessment of Psychological Well-being, Coping Mechanisms, and Quality of Life Among Chronic Kidney Disease Patients at Different Stages of Disease: A Structured Narrative Synthesis

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ABSTRACT

Chronic kidney disease (CKD) is associated with progressive physical, psychological, and social consequences. Depression, anxiety, psychological distress, maladaptive coping, and impaired health-related quality of life (HRQoL) may occur throughout the CKD continuum and become more prominent in advanced disease and dialysis. The objectives were to synthesize evidence on psychological well-being, coping mechanisms, and quality of life among adults with CKD at different stages. A structured review of PubMed-indexed studies, systematic reviews, meta-analyses, and contemporary clinical guidance was undertaken. Studies involving adults with CKD stages 1–5, dialysis-dependent kidney failure, and kidney transplantation were included when they assessed psychological well-being, depression, anxiety, coping, or HRQoL. Due to heterogeneity in populations, measures, and disease stages, findings were synthesized narratively. The results showed that, HRQoL generally declines with worsening kidney function, particularly in physical domains. Depression is common, with interview-based estimates of approximately 20% across CKD G1–G5 and 23% in stage 5D; symptom-rating scales report higher prevalence. Anxiety symptoms affect approximately 43% of patients with CKD in one meta-analysis. Adaptive coping includes acceptance, problem-focused coping, self-care, social support, and religious or spiritual coping, whereas maladaptive coping is associated with greater psychological distress and poorer HRQoL. Psychosocial and psychoeducational interventions may reduce depression and anxiety and improve aspects of HRQoL, particularly among dialysis patients. The findings suggest that psychological well-being, coping, and HRQoL are important outcomes throughout the CKD continuum. Psychological distress should be assessed from early CKD stages. Integrating psychological assessment, social support, coping interventions, and patient-centred care into routine CKD management may improve overall well-being and quality of life.

Keywords: Chronic kidney disease; psychological well-being; depression; anxiety; coping mechanisms; health-related quality of life; dialysis.

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1. Introduction

Chronic kidney disease is a major long-term health condition characterized by abnormalities of kidney structure or function that persist over time. CKD is classified according to cause, glomerular filtration rate, and albuminuria, with G1-G5 categories reflecting progressively reduced kidney function. Contemporary clinical practice increasingly recognizes that CKD management should extend beyond preservation of kidney function to include symptom management, patient-centred outcomes, functional status, and quality of life (Kidney Disease: Improving Global Outcomes [KDIGO], 2024). The

current KDIGO guideline specifically emphasizes management strategies that help people with CKD live well and improve health-related quality of life.

The psychological consequences of CKD are important because the disease frequently requires patients to modify diet, fluid intake, physical activity, employment, family responsibilities, and social activities. As CKD progresses, patients may experience increasing symptom burden, uncertainty regarding prognosis, fear of kidney failure, changes in body image, financial stress, and decisions concerning dialysis or transplantation. Patients receiving dialysis additionally have to accommodate a demanding treatment schedule and treatment-related restrictions.

Psychological well-being encompasses emotional and psychological functioning, including the presence or absence of depressive symptoms, anxiety, stress, emotional distress, perceived control, self-efficacy, and subjective well-being. These domains are closely connected with HRQoL. Depression and anxiety can impair motivation, self-management, treatment adherence, social functioning, and perceived quality of life. Conversely, reduced quality of life and increasing symptom burden may contribute to psychological distress.

Depressive symptoms are common across the CKD population. Palmer *et al.* (2013), in a systematic review and meta-analysis involving 249 populations and 55,982 participants, found that estimates varied substantially according to disease stage and assessment method. Interview-defined depression was approximately 21% among CKD G1–G5 and approximately 23% among patients with stage 5D disease. When rating scales rather than diagnostic interviews were used, depressive symptom prevalence was higher, particularly in dialysis populations.

Anxiety is similarly prevalent. Huang et al. (2021) synthesized 61 studies and found that elevated anxiety symptoms occurred in approximately 43% of CKD patients, while diagnosed anxiety disorders were identified in approximately 19%. The prevalence of elevated anxiety symptoms was not statistically different between pre-dialysis and dialysis populations in their analysis, suggesting that anxiety should not be viewed exclusively as a consequence of dialysis.

Quality of life is also increasingly recognized as a central outcome in CKD. A systematic review and meta-analysis by Fletcher *et al*. (2022) demonstrated a substantial global symptom burden and impairment in HRQoL across non-dialysis CKD, dialysis, and transplant populations.

Importantly, psychological adjustment is not determined solely by disease severity. Patients with similar levels of kidney dysfunction may report substantially different psychological experiences and quality of life. Coping mechanisms, illness perceptions, social support, self-efficacy, socioeconomic circumstances, comorbidities, and access to healthcare may modify the relationship between disease burden and psychological outcomes (Knowles *et al*., 2023; Kalfoss *et al.,* 2019).

Therefore, assessment of psychological well-being, coping mechanisms, and quality of life across different CKD stages is clinically relevant.

1.1 Review Objectives

1.1.1 Primary objective

To synthesize the available evidence regarding psychological well-being, coping mechanisms, and quality of life among adults with CKD at different stages of disease.

1.1.2 Secondary objectives

The review aimed to: examine psychological well-being across CKD stages 1-5, assess the prevalence and distribution of depression, anxiety, and psychological distress, examine changes in HRQoL as CKD

progresses, Identify common coping mechanisms used by patients with CKD, Examine the relationship between coping strategies and quality of life, identify factors associated with poorer psychological well-being, examine psychosocial and psychoeducational interventions intended to improve psychological outcomes, and identify gaps in the existing evidence and priorities for future research.

2. Methods

2.1 Review design

This study was conducted as a structured narrative synthesis of published evidence concerning psychological well-being, coping mechanisms, and health-related quality of life (HRQoL) among adults with chronic kidney disease (CKD). The review included evidences relating to non-dialysis CKD, dialysis-dependent kidney failure, and kidney transplantation.

A narrative approach was adopted because the available literature comprised different study designs, patient populations, outcome measures, and stages of kidney disease. The findings were therefore synthesized descriptively rather than combined into a new pooled quantitative estimate.

The review was informed by the general principles of transparent evidence reporting. However, it was not considered a fully systematic review because a prospectively registered protocol, reproducible database-specific searches, independent duplicate screening, formal risk-of-bias assessment, and a complete PRISMA study-selection process were not documented.

2.2 Information sources and search strategy

PubMed was the principal bibliographic source for identifying relevant clinical studies and reviews. The literature search focused on peer-reviewed observational studies, qualitative investigations, randomized controlled trials, systematic reviews, meta-analyses, and clinical guidelines relevant to psychological well-being, coping, and HRQoL in adults with CKD.

The search strategy used combinations of the following terms: “chronic kidney disease,” “CKD stages,” “dialysis,” “hemodialysis,” “kidney transplantation,” “depression,” “anxiety,” “psychological distress,” “psychological well-being,” “coping,” “illness perceptions,” “self-efficacy,” “social support,” “quality of life,” “health-related quality of life,” and “psychosocial interventions.”

Relevant systematic reviews and their reference lists were also considered to identify additional publications. The KDIGO 2024 clinical practice guideline was consulted for contemporary clinical context.

2.3 Eligibility criteria

Studies were considered eligible when they met the following criteria:

1. Included adults aged 18 years or older with CKD, including non-dialysis CKD stages G1–G5, dialysis-dependent kidney failure, or a functioning kidney transplant.
2. Examined at least one relevant outcome, including depression, anxiety, psychological distress, coping, illness perceptions, self-efficacy, social support, or HRQoL.
3. Used quantitative, qualitative, or mixed-methods designs and reported findings relevant to the review objectives.
4. Used validated instruments or clearly described methods for assessing psychological outcomes or quality of life.
5. Were published in peer-reviewed journals or constituted relevant clinical practice guidance.

Studies exclusively involving acute kidney injury were excluded. Publications without sufficient information relevant to the review objectives were not prioritized for synthesis.

2.4 Study selection and evidence synthesis

Relevant publications were identified through the literature search and examination of pertinent review 23 articles and reference lists during 2007-2024. Publications were considered for inclusion according to their relevance to the review objectives, population, study design, outcomes, and contribution to understanding psychological well-being, coping, and HRQoL across the CKD continuum.

Because a complete screening log and independent duplicate study-selection procedure were not documented, the review does not report a PRISMA flow diagram or claim exhaustive identification of all eligible studies. The evidence was organized thematically into four domains: psychological well-being, coping mechanisms, HRQoL, and psychosocial or behavioural interventions.

Findings were compared descriptively across CKD stages and treatment modalities. Particular attention was given to differences in outcome definitions, assessment instruments, study populations, and the distinction between psychological symptoms identified by screening instruments and disorders diagnosed through clinical interviews.

2.5 Measurement of Psychological Well-being and Quality of Life

Psychological well-being in CKD has been assessed using a range of instruments, including the Hospital Anxiety and Depression Scale (HADS), Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), Patient Health Questionnaire instruments, and other validated psychological scales.

Quality of life has similarly been assessed using generic instruments such as the Short Form-36 (SF-36), WHOQOL-BREF, and EQ-5D, as well as kidney-specific instruments such as the Kidney Disease Quality of Life (KDQOL) family of measures.

The KDQOL-36 includes generic physical and mental health components together with kidney-specific domains assessing the burden, symptoms and problems, and effects of kidney disease on daily life. Psychometric studies support its clinical utility, although a systematic review found that some measurement properties remain supported by low or inconsistent-quality evidence (Yangöz *et al*., 2021).

Peipert *et al*. (2018), using data from 70,786 dialysis patients, found acceptable internal consistency and evidence of construct validity for the KDQOL-36, supporting its use for assessing HRQoL among dialysis populations.

The KDQOL-36 has also been evaluated in patients across CKD stages 1–5. Chao *et al*. (2016) demonstrated that the instrument could be used among patients with different stages of CKD after appropriate psychometric modification.

A systematic review of patient-reported outcome measures concluded that the KDQOL-36 has evidence supporting its use in predialysis CKD, whereas KDQOL-SF and KDQOL-36 can be considered in dialysis populations (Aiyegbusi *et al*., 2017).

These findings are important because differences in instruments can produce different estimates of psychological distress and quality of life. Consequently, prevalence estimates from different studies should not be interpreted as directly interchangeable.

2.6 Methodological quality and limitations of the evidence assessment

No standardized risk-of-bias or methodological quality-appraisal tool was applied systematically to all publications included in this narrative synthesis. Consequently, the review does not provide formal study-level quality ratings or certainty-of-evidence grades. Instead, findings were interpreted with

consideration of study design, sample characteristics, measurement methods, consistency across publications, and the limitations acknowledged by the original investigators. The absence of a formal quality appraisal and reproducible study-selection process limits the certainty and comprehensiveness of the synthesis and is acknowledged when interpreting the findings.

3. Results

3.1 Psychological well-being across CKD stages

The available evidence indicates that psychological difficulties occur across the CKD continuum rather than exclusively during kidney failure (Table 1). A study of 208 pre-dialysis patients with eGFR below 60 mL/min/1.73 m² found depression in 47.1% and anxiety in 27.6% when HADS thresholds were used. Importantly, the prevalence of depression and anxiety did not differ significantly across the CKD stages studied (Lee *et al*., 2013). This finding demonstrates that clinically relevant psychological symptoms may develop before dialysis initiation. Similarly, Palmer *et al*. (2013) found substantial depression prevalence among both non-dialysis CKD and dialysis populations. However, the estimates varied substantially according to whether diagnostic interviews or symptom-rating scales were used. A later study comparing patients with CKD stages III-V and kidney transplant recipients found that depressive symptoms were particularly prominent among patients undergoing dialysis, while anxiety and life satisfaction were related to depressive symptoms across groups (Wojtaszek *et al*., 2021).

Overall, the evidence suggests that advancing CKD can increase psychological burden, but disease stage alone does not adequately explain individual psychological outcomes.

3.2 Depression

Depression represents one of the most extensively studied psychological outcomes in CKD. Palmer *et al*. (2013) demonstrated that depression is common in CKD, with approximately one-fifth to one-quarter of patients meeting interview-based criteria depending on disease group. Symptom scales produced substantially higher estimates, particularly in dialysis populations. This difference is clinically important because somatic symptoms of advanced CKD - such as fatigue, sleep disturbance, reduced appetite, and impaired physical functioning - can overlap with depressive symptoms. Depression may adversely influence self-management, adherence, social participation, and quality of life. It is therefore important to distinguish screening-positive depressive symptoms from formally diagnosed depressive disorders. A systematic review and meta-analysis of psychosocial interventions found that psychological interventions can reduce depressive symptoms among adults with CKD (Yang *et al*., 2024). Across 19 randomized controlled trials, the pooled effect for depression favoured psychosocial intervention, although substantial heterogeneity existed between studies. The effect on overall quality of life was less consistent, with stronger evidence in some kidney-specific quality-of-life measures than in generic SF-36 scores.

Table 1. Systematic review and meta-analysis; 249 populations and 55,982 participants

CKD stages 1–5, clinical interview	21.4%
Dialysis-dependent kidney failure (stage 5D), clinical interview	22.8%
CKD stages 1–5, symptom-rating scales	26.5%
Stage 5D, symptom-rating scales	39.3%

Source: Palmer et al. (2013).

3.3 Anxiety

Anxiety is another important psychological concern across the CKD continuum. A systematic review and meta-analysis by Huang et al. (2021), involving 61 studies, estimated that 43% of participants had elevated anxiety symptoms, while approximately 19% met criteria for anxiety disorders across the studies included in that analysis (Table 2). Elevated anxiety symptoms were estimated at 31% in pre-dialysis populations and 42% in dialysis populations; the difference between these groups was not statistically significant.

The findings distinguish the burden of anxiety symptoms from the prevalence of diagnosed anxiety disorders. They also demonstrate that anxiety is not confined to dialysis-dependent kidney failure. Anxiety may arise in response to uncertainty about prognosis, symptom burden, treatment decisions, and changes in family or occupational roles. Screening results should therefore be interpreted in their clinical context, with further assessment when symptoms are persistent, severe, or associated with functional impairment.

Table 2. Systematic review and meta-analysis on anxiety

Elevated anxiety symptoms	43%
Anxiety disorders	19%
Elevated symptoms, non-dialysis CKD	31%
Elevated symptoms, dialysis	42%

Source: Huang et al. (2021)

3.4 Psychological distress and symptom burden

CKD-related symptoms may contribute substantially to psychological distress. Fletcher *et al*. (2022) conducted a global systematic review and meta-analysis examining symptom burden and HRQoL in non-dialysis CKD, dialysis, and transplant populations. Fatigue, sleep disturbance, pain, itching, and other symptoms were common, and increasing symptom burden was associated with poorer quality of life. A previous systematic review similarly found that HRQoL decreased as symptom burden increased. Fatigue, feeling washed out, and drowsiness were among the frequently reported symptoms (Almutary *et al*., 2019). These findings suggest that psychological well-being should not be assessed independently from physical symptoms. Fatigue, sleep disturbance, pain, pruritus, and reduced physical functioning may create a cycle in which physical symptoms increase psychological distress and psychological distress amplifies the perceived impact of physical symptoms (Table 3 and 4).

Table 3. Summary of Findings from Key References

Author(s), Year	Study/Review Focus	Population/Design	Main Findings	Relevance to Review
Palmer *et al.* (2013)	Depression in CKD	Systematic review and meta-analysis	Depression was common in CKD; interview-based	Demonstrates the substantial psychological

			estimates were approximately 20% in CKD stages 1-5 and 23% in stage 5D. Estimates were higher when symptom-rating scales were used.	burden of CKD and the importance of depression screening.
Aggarwal *et al.* (2016)	Health-related quality of life in CKD	Patients with CKD	CKD was associated with impairment in multiple HRQoL domains, particularly physical functioning and general health.	Supports the finding that CKD negatively affects quality of life.
Shi *et al*. (2021)	Anxiety in CKD	Systematic review and meta-analysis	Anxiety symptoms were reported in approximately 43% of patients with CKD.	Demonstrates that anxiety is a frequent psychological problem across CKD populations.
Fletcher *et al.* (2022)	Symptom burden and HRQoL	Systematic review	CKD patients experienced substantial symptom burden, including fatigue, pain, sleep problems, and reduced physical functioning, which negatively affected HRQoL.	Supports the relationship between CKD symptoms and reduced quality of life.
Knowles *et al*. (2023)	Psychological and psychosocial factors	Systematic review	Psychological factors, coping, social support, and illness-related perceptions were associated with HRQoL and psychological adjustment. Maladaptive coping was associated with poorer outcomes.	Provides evidence for the importance of coping mechanisms and psychosocial factors.
Barello *et al.* (2023)	Psychosocial interventions in dialysis	Systematic review	Psychosocial interventions were associated with improvements in psychological outcomes, including depression and anxiety, and selected	Supports incorporating psychosocial interventions into dialysis care.

			quality-of-life measures.	
Yang *et al*. (2024)	Psychological interventions in dialysis	Systematic review/meta-analysis	Psychological interventions were associated with reductions in depression and anxiety among patients receiving dialysis.	Demonstrates potential benefits of psychological support for dialysis patients.
Zhang *et al.* (2024)	Psychosocial interventions and HRQoL	Systematic review/meta-analysis	Psychosocial interventions showed beneficial effects on psychological health and selected HRQoL outcomes in dialysis populations.	Supports multidisciplinary psychological and educational interventions.

Table 4. Overall Findings of the Review

Domain	**Overall finding**
Psychological well-being	Depression, anxiety, and psychological distress may occur throughout the CKD continuum, including before dialysis.
Depression	Palmer et al. (2013) estimated interview-defined depression in 21.4% of CKD stages 1–5 and 22.8% of stage 5D populations; symptom-rating scales produced higher estimates.
Anxiety	Huang et al. (2021) estimated elevated anxiety symptoms in 43% and anxiety disorders in 19% of the CKD populations studied.
Health-related quality of life	HRQoL is frequently impaired, particularly in physical functioning, energy, general health, and daily activities.
Coping mechanisms	Active coping, planning, acceptance, self-management, social support, and spiritual coping may assist adjustment; persistent avoidance and disengagement may be associated with poorer outcomes.
Advanced CKD and dialysis	Symptom burden, treatment demands, and functional limitations may substantially affect quality of life, although individual experiences vary.
Kidney transplantation	Transplantation may reduce some treatment burdens, but psychological concerns and HRQoL limitations can persist.
Psychosocial interventions	Psychological and psychoeducational interventions may reduce depression and anxiety and improve selected quality-of-life outcomes, particularly in dialysis populations.

Clinical implications	Consider psychological screening, validated HRQoL assessment, individualized coping support, and appropriate multidisciplinary referral throughout the CKD continuum.
Evidence gaps	More longitudinal studies, standardized outcome measures, formal quality appraisal, and trials of coping-focused interventions are needed.

Abbreviations: CKD, chronic kidney disease; HRQoL, health-related quality of life.

3.5 Quality of Life across Different CKD Stages

3.5.1 Early and moderate CKD

Quality-of-life impairment can occur even when patients have not reached advanced CKD. Aggarwal *et al*. (2016) examined 200 patients across CKD stages 1-5 in India and found progressive deterioration in HRQoL across declining renal function. Both physical and mental composite scores decreased as kidney function declined, with particularly pronounced impairment among patients with eGFR below 30 mL/min/1.73 m². Similarly, a study of 535 patients with CKD stages 2-5 found that HRQoL deteriorated progressively with CKD stage. The largest differences were observed in physical functioning, physical role limitations, general health, and physical summary scores (Wyld *et al*., 2012). These findings demonstrate that CKD can impair quality of life before dialysis becomes necessary.

3.5.2 Advanced CKD

As CKD progresses, symptom burden and functional limitations generally increase. Patients with advanced CKD may experience increasing fatigue, weakness, sleep disturbances, dietary restrictions, pruritus, pain, reduced physical functioning, and uncertainty regarding the future. These factors can influence both physical and psychological domains of HRQoL (Fletcher *et al*., 2022). The relationship between kidney function and quality of life is not necessarily linear. Comorbidities such as diabetes, cardiovascular disease, anemia, inflammation, and socioeconomic difficulties may independently contribute to poor HRQoL. Aggarwal *et al*. (2016) found that reduced GFR, cardiovascular disease, and inflammatory markers were among important predictors of impaired HRQoL.

3.5.3 Dialysis

Dialysis represents a major transition in the experience of CKD. Although dialysis prolongs life and treats complications of kidney failure, it imposes significant treatment demands. Hemodialysis requires regular attendance at a dialysis facility, vascular access procedures, dietary and fluid restrictions, and adaptation to treatment-related fatigue. Patients undergoing dialysis generally demonstrate poorer physical quality of life than many pre-dialysis populations. However, psychological outcomes are more heterogeneous. The KDQOL-36 is widely used among dialysis populations because it captures both generic health status and kidney-specific concerns (Peipert *et al*., 2018).

Barello et al. (2023) found that psychosocial interventions among adults undergoing hemodialysis were associated with reductions in depression and anxiety. Their meta-analysis of 15 studies found a medium pooled effect for depression and anxiety, although heterogeneity was considerable. Preliminary evidence also suggested potential benefits for quality of life.

3.5.4 Kidney transplantation

Kidney transplantation changes the treatment burden but does not necessarily eliminate psychological difficulties. Transplant recipients may experience concerns regarding graft survival, immunosuppressive medications, rejection, infection, body image, financial costs, and uncertainty about the future. Palmer *et al*. (2013) found that depression remained relevant among transplant recipients, with interview-defined depression estimated at approximately 26%, although confidence

intervals were wide. Thus, psychological assessment should continue following transplantation rather than stopping after successful kidney replacement (Table 5).

Table 5. Comparison of Psychological Well-Being, Coping Needs, and HRQoL Across CKD Stages and Treatment Modalities

CKD group	Principal psychological concerns	Typical HRQoL effects	Coping and care priorities	Relevant evidence
Early and moderate CKD (G1–G3)	Uncertainty about prognosis, fear of progression, anxiety following diagnosis, and concerns about lifestyle changes	Quality-of-life impairment may occur before advanced kidney failure; physical and mental effects vary among individuals	Disease education, self-management support, early identification of psychological distress, and development of effective coping strategies	Lee et al. (2013); Palmer et al. (2013); Aggarwal et al. (2016)
Advanced non-dialysis CKD (G4–G5)	Fear of kidney failure, treatment-related uncertainty, decision-making stress, and concerns about dependence on healthcare	Increasing symptom burden, fatigue, functional limitations, and reduced physical quality of life	Shared decision-making, preparation for kidney replacement therapy, symptom management, and individualized psychological support	Wyld et al. (2012); Fletcher et al. (2022); Jadhav et al. (2019)
Dialysis-dependent kidney failure (G5D)	Depressive and anxiety symptoms, treatment-related stress, reduced autonomy, and disruption of employment and family roles	Physical functioning, energy, daily activities, and treatment-related quality of life may be substantially affected	Accessible psychological support, dialysis-specific education, social support, coping-skills training, and routine HRQoL monitoring	Palmer et al. (2013); Barello et al. (2023); Zhang et al. (2024)
Kidney transplantation	Fear of graft rejection or failure, medication-related concerns, uncertainty, and adjustment to post-transplant life	Treatment burden may decrease in some domains, but medication effects, comorbidities, and psychological	Continued psychological assessment, medication education, support for adjustment, and monitoring of	Palmer et al. (2013); Kalfoss et al. (2019)

		concerns may persist	patient-reported outcomes	

This table provides a qualitative synthesis rather than a direct quantitative comparison. The listed concerns and HRQoL effects are not experienced by every patient, and differences between groups may reflect age, comorbidities, socioeconomic circumstances, and study methods as well as disease stage.

3.6. Coping Mechanisms Among CKD Patients

Coping refers to cognitive and behavioural responses used to manage stressful circumstances. CKD creates multiple stressors, including symptoms, treatment demands, uncertainty, dietary restrictions, financial concerns, employment limitations, and fears regarding disease progression.

3.6.1 Problem-focused coping

Problem-focused coping involves attempts to manage the source of stress directly. Examples include: seeking information, treatment planning, adherence to medication and diet, planning for dialysis, maintaining physical activity, communicating with healthcare professionals, and actively managing symptoms. Problem-focused coping may be particularly relevant during transitions such as preparation for dialysis. Jadhav *et al*. (2019) evaluated a pre-hemodialysis preparatory program among patients with stage 3-4 CKD and found improvements in several adaptive coping strategies, including active coping, planning, acceptance, self-distraction, and religious coping.

3.6.2 Emotion-focused coping

Emotion-focused coping involves attempts to manage emotional responses rather than directly changing the stressor. Examples include: emotional regulation, acceptance, positive reframing, seeking emotional support, venting, relaxation, and psychological counselling. Schick-Makaroff *et al*. (2018) reported that problem-focused coping was frequently used among people with CKD and kidney transplantation, while relationships between coping style and quality of life varied across individuals. The findings highlighted the need for further research examining whether interventions targeting emotion-focused coping could improve quality of life.

3.6.3 Social support

Social support is an important coping resource in CKD. Patients may rely on: spouses or partners, family members, friends, other patients, healthcare professionals, patient support groups, and community organizations. A systematic review of coping strategies among patients with end-stage kidney disease receiving haemodialysis identified external support as one of four major themes, together with emotion management, faith or spirituality, and self-care (Ling *et al*., 2021).

3.6.4 Religious and spiritual coping

Religious or spiritual coping can be particularly important for some patients. Spiritual coping may involve: prayer, religious beliefs, acceptance, faith communities, spiritual counselling, and interpreting illness within a broader meaning system. A systematic review examining spiritual and religious coping among people with CKD concluded that these approaches have the potential to improve quality of life, although effects may be positive or negative depending on how religious coping is used (Nurbadriyah *et al*., 2023). Religious coping should therefore be assessed respectfully and individually rather than assumed to be beneficial for every patient.

3.6.5 Maladaptive coping

Not all coping mechanisms are beneficial. Maladaptive coping may include: denial, avoidance, withdrawal, excessive emotional venting, disengagement, substance use, and persistent behavioural avoidance. Knowles *et al*. (2023) found that poorer quality of life among people with stage 3–5 CKD was associated with greater psychological distress, maladaptive coping, poorer illness perceptions, and lower self-efficacy. Psychological distress mediated part of the relationship between illness perceptions and quality of life. These findings support the importance of assessing not only whether patients are coping, but how they are coping.

3.7 Relationship Between Coping and Quality of Life

The relationship between coping mechanisms and HRQoL is multidimensional and varies according to individual circumstances. Evidence from studies of people with CKD, dialysis-dependent kidney failure, and kidney transplantation indicates that active coping, planning, acceptance, self-management, and social support may help patients adapt to disease-related demands. However, the benefits of specific coping strategies are not uniform across individuals or situations.

Problem-focused coping is particularly relevant when patients can take practical steps to manage a stressor, such as obtaining information, planning treatment, managing medication, or preparing for dialysis. Jadhav et al. (2019) reported improvements in several coping strategies following a pre-hemodialysis preparatory program. Such findings support the potential value of structured preparation during transitions in kidney care.

Acceptance and emotion-focused coping may be useful when stressors cannot be readily changed. These approaches may help patients manage uncertainty, emotional responses, and the continuing demands of chronic illness. Schick-Makaroff et al. (2018) described the use of multiple coping approaches among people with CKD, while Kalfoss et al. (2019) examined relationships among illness perceptions, symptoms, coping, and quality of life. Collectively, these findings suggest that coping should be considered alongside symptom burden and patients' interpretations of their illness.

Social support can provide practical assistance, emotional reassurance, and a sense of belonging. Ling et al. (2021) identified external support, emotion management, faith or spirituality, and self-care as important themes in coping among patients with end-stage kidney disease receiving haemodialysis. Spiritual or religious coping may also provide meaning and comfort for some patients, although its effects depend on personal beliefs and how those beliefs are applied to illness.

In contrast, persistent avoidance, disengagement, and other unhelpful responses may be associated with greater distress and poorer HRQoL. Knowles et al. (2023) identified relationships among illness perceptions, coping, self-efficacy, psychological distress, and quality of life in people with CKD stages 3-5. These relationships support a multidimensional understanding of psychological adjustment, although observational findings do not establish causality.

The effectiveness of coping strategies may differ according to disease stage, treatment modality, culture, religion, family structure, socioeconomic resources, and personal preferences. Accordingly, clinicians should avoid categorizing any single strategy as universally adaptive or maladaptive. Instead, coping assessment should identify which approaches are helpful for a particular patient, which are associated with distress or impaired functioning, and what additional support the patient considers appropriate.

3.8 Factors Associated with Poor Psychological Well-being and Quality of Life

Several factors appear to influence psychological well-being and HRQoL.

3.8.1 Disease severity

Declining kidney function is generally associated with poorer physical quality of life (Aggarwal *et al.,* 2016; Wyld *et al*., 2012).

3.8.2 Symptom burden

Fatigue, sleep disturbance, pain, pruritus, and other symptoms are strongly associated with poorer HRQoL (Fletcher *et al.,* 2022).

3.8.3 Comorbidities

Diabetes, cardiovascular disease, anaemia, inflammation, and other chronic conditions may compound the effects of CKD on psychological and physical functioning (Aggarwal *et al*., 2016).

3.8.4 Illness perceptions

Negative beliefs about the consequences, controllability, and duration of CKD may be associated with psychological distress and poorer quality of life (Knowles *et al.,* 2023).

3.8.5 Self-efficacy

Patients who perceive greater ability to manage their illness may experience better psychological adjustment and quality of life (Knowles *et al*., 2023).

3.8.6 Social circumstances

Employment, financial difficulties, family responsibilities, social isolation, and availability of social support may influence coping and quality of life.

3.8.7 Treatment modality

Dialysis introduces additional treatment-related demands. However, dialysis should not automatically be considered synonymous with poorer psychological well-being because individual experiences vary considerably.

3.9 Psychosocial and Behavioural Interventions

3.9.1 Psychosocial interventions

Evidence increasingly supports the use of psychosocial interventions in CKD. Yang *et al*. (2024) reviewed 19 randomized controlled trials evaluating psychological, emotional, or social interventions for depression in CKD. Overall, psychosocial interventions were associated with a significant reduction in depressive symptoms, although heterogeneity was high. Effects on overall quality of life were less consistent, indicating that improvement in psychological symptoms does not necessarily translate automatically into broad HRQoL improvement. Barello *et al*. (2023) similarly found that psychosocial interventions among haemodialysis patients reduced depression and anxiety, with preliminary evidence for quality-of-life benefits.

3.9.2 Psychoeducational interventions

Psychoeducation may help patients understand CKD, anticipate treatment changes, develop coping skills, and improve self-management. Zhang *et al*. (2024) conducted a systematic review and meta-analysis of 14 studies involving 1,134 maintenance-haemodialysis patients. Psychoeducational interventions produced short- and medium-term reductions in anxiety and depression. Interventions incorporating coping strategies, goal setting, and relaxation techniques were also associated with short-term improvement in quality of life.

3.9.3 Exercise interventions

Exercise may provide both physical and psychological benefits. A systematic review and meta-analysis by Ferreira *et al*. (2021) found that exercise interventions improved depression and anxiety among patients with CKD stages 3-5. Exercise interventions may therefore represent a potentially useful

component of comprehensive CKD rehabilitation, provided that they are individualized according to medical status and physical capacity.

3.9.4 Coping-focused interventions

Coping-focused interventions may be particularly valuable around transitions in disease. Jadhav *et al*. (2019) demonstrated that a preparatory intervention before haemodialysis improved several adaptive coping strategies among patients with advanced CKD. This suggests that psychological preparation should ideally begin before dialysis rather than after treatment has already started.

3.9.5 Technology-based interventions

Technology-based interventions are an emerging area. Marin *et al*. (2023) systematically reviewed technology-based interventions addressing psychological well-being and related outcomes in CKD. Although the evidence base was still limited and many studies emphasized feasibility and acceptability, digital approaches showed potential for supporting psychological well-being and patient engagement.

4. Discussion

The central finding of this review is that psychological well-being, coping, and quality of life are important dimensions of CKD regardless of disease stage. The evidence consistently demonstrates deterioration in HRQoL as kidney function declines, particularly in physical functioning. Studies involving patients across CKD stages have demonstrated progressive reductions in HRQoL, with particularly pronounced impairment in advanced CKD (Aggarwal *et al*., 2016; Wyld *et al*., 2012). However, psychological distress does not follow a simple linear relationship with eGFR.

Depression and anxiety can occur in earlier stages of CKD, and some studies have not identified substantial differences in psychological symptom prevalence between pre-dialysis CKD stages (Lee et *al.*, 2013). Therefore, waiting until patients reach CKD G5 or dialysis before assessing psychological well-being may result in missed opportunities for early intervention.

The relationship between physical symptoms and psychological well-being is particularly important. CKD symptoms such as fatigue, sleep problems, pain, and pruritus can directly impair quality of life and may also contribute to depression and anxiety (Fletcher *et al*., 2022). Consequently, psychological management should be integrated with symptom management rather than treated as a separate specialty concern.

Coping mechanisms represent another important dimension. Patients use multiple strategies to manage CKD, including active coping, planning, acceptance, self-care, social support, emotional regulation, and spirituality (Jadhav et al., 2019; Ling et al., 2021). There is no single coping strategy that can be considered universally optimal. Effectiveness depends on the individual's circumstances, stage of disease, cultural context, personality, available support, and nature of the stressor.

The distinction between adaptive and maladaptive coping is nevertheless important. Knowles et al. (2023) found that maladaptive coping was associated with poorer quality of life and that psychological distress played a mediating role between illness perceptions and quality of life.

These findings suggest that interventions should not merely provide information about CKD. They should also address how patients interpret the illness, how confident they feel in managing it, and how they respond emotionally to disease-related stress.

4.1 Psychological well-being before dialysis

An important implication of this review is that psychological care should begin before dialysis. Patients approaching kidney failure may face uncertainty concerning treatment modality, vascular access, changes in employment, dependence on healthcare services, and possible transplantation. These concerns may generate anxiety even before dialysis begins. Pre-dialysis preparation programs that

incorporate coping education, planning, acceptance, and psychological support may therefore improve adjustment (Jadhav *et al*., 2019).

4.2 Psychological well-being during dialysis

Dialysis is associated with substantial treatment burden. Patients may experience fatigue, loss of independence, dietary and fluid restrictions, transportation problems, financial concerns, and disruptions to employment and family life. The evidence suggests that psychosocial interventions can reduce depression and anxiety among haemodialysis patients (Barello *et al*., 2023). However, considerable heterogeneity between interventions indicates that treatment should be individualized rather than delivered as a single standardized program.

4.3 Psychological well-being after transplantation

Kidney transplantation can substantially change treatment demands but does not eliminate psychological concerns. Transplant recipients may experience fear of graft rejection, medication burden, uncertainty regarding graft longevity, and anxiety regarding returning to previous roles. Therefore, psychological and quality-of-life assessment should continue after transplantation.

4.4 Clinical Implications

The evidence supports a multidimensional approach to CKD care.

4.4.1 Routine psychological screening

Healthcare professionals should consider routine screening for: depressive symptoms, anxiety, psychological distress, sleep problems, perceived stress, social isolation, and coping difficulties. Screening should not be restricted to dialysis patients.

4.4.2 Routine quality-of-life assessment

Patient-reported outcome measures can complement traditional laboratory and clinical measures.

Potential instruments include: KDQOL-36, KDQOL-SF, SF-36, EQ-5D, WHOQOL-BREF, HADS, PHQ-based instruments, and BDI, where appropriate. The choice should depend on the clinical population, purpose of assessment, and instrument validity.

4.4.3 Individualized coping assessment

Clinicians should explore: how patients understand their disease, what they perceive as the greatest stressors, what coping strategies they currently use, whether they have adequate social support, whether they use religious or spiritual coping, whether avoidance or disengagement is occurring, and what additional resources they want.

4.4.4 Multidisciplinary care

Psychological support should ideally be integrated into multidisciplinary CKD management involving: nephrologists, nurses, psychologists or mental-health professionals, renal dietitians, social workers, physiotherapists, occupational therapists where appropriate, and patient support organizations.

4.4.5 Patient-centred decision-making

Treatment decisions should incorporate patient priorities and quality of life. CKD treatment should not focus exclusively on biochemical targets when patients are experiencing substantial psychological or functional impairment. The KDIGO 2024 guideline emphasizes patient-centred care and strategies that support people with CKD to live well and improve HRQoL (KDIGO, 2024).

4.5 Evidence Gaps and Future Research

Several important gaps remain.

4.5.1 Lack of longitudinal studies

Many studies assessing psychological well-being and coping are cross-sectional. Longitudinal research is needed to determine how psychological outcomes change from early CKD through advanced disease, dialysis, and transplantation.

4.5.2 Limited stage-specific evidence

Many studies combine CKD stages or combine dialysis and non-dialysis populations. Future studies should clearly stratify participants by CKD stage and treatment modality.

4.5.3 Lack of standardized psychological outcomes

Studies use different instruments and diagnostic thresholds. Standardization would improve comparison across populations.

4.5.4 Limited evidence regarding coping interventions

Although coping is associated with quality of life, relatively few high-quality trials specifically target coping mechanisms.

4.5.5 Cultural differences

Coping and psychological adjustment may be influenced by culture, religion, family structure, socioeconomic conditions, and healthcare systems. Evidence from one country cannot necessarily be generalized to another.

4.5.6 Underrepresentation of early-stage CKD

Much of the psychological intervention literature focuses on advanced CKD and dialysis. More research is needed in CKD stages 1-3 because psychological interventions may be particularly valuable before treatment burden becomes severe.

4.5.7 Need for patient-centred outcomes

Future CKD trials should routinely report: quality of life, psychological well-being, treatment satisfaction, coping, symptom burden, functional status, and patient-defined goals.

4.6 Strengths and Limitations of the Review

This review brings together evidence concerning psychological well-being, coping mechanisms, and HRQoL across non-dialysis CKD, dialysis-dependent kidney failure, and kidney transplantation. Its principal strength is the integration of psychological outcomes with coping strategies, symptom burden, and patient-reported quality-of-life outcomes.

Several limitations should nevertheless be acknowledged. First, the review used a structured narrative synthesis rather than a fully systematic review with a prospectively registered protocol, reproducible database-specific search strategies, independent duplicate screening, and a PRISMA flow diagram. Consequently, selection bias is possible, and relevant studies may have been missed. The available documentation does not permit a complete assessment of search comprehensiveness.

Second, a standardized methodological quality-appraisal tool was not applied systematically to the included publications. The findings should therefore be interpreted cautiously because the risk of bias and certainty of evidence were not formally graded across studies.

Third, substantial heterogeneity existed in study design, participant characteristics, CKD stages, treatment modalities, outcome definitions, and assessment instruments. In particular, screening

questionnaires and diagnostic interviews identify different aspects of depression and anxiety and may produce substantially different prevalence estimates. Generic and kidney-specific HRQoL measures also assess different dimensions of health and should not be assumed to be interchangeable.

Fourth, non-dialysis CKD, dialysis-dependent kidney failure, and kidney transplantation represent clinically and psychosocially distinct populations. Differences between these groups may reflect comorbidities, treatment demands, socioeconomic circumstances, and access to support in addition to kidney disease severity.

Fifth, much of the evidence concerning coping, illness perceptions, psychological distress, and quality of life is observational and cross-sectional. These studies can identify associations but cannot establish causal relationships or determine how psychological outcomes change over time.

Finally, the review included evidence from diverse settings, but differences in culture, religion, family structure, healthcare systems, and socioeconomic conditions may limit the generalizability of particular findings. Future research should use transparent and reproducible search methods, formal risk-of-bias assessment, longitudinal designs, and more consistent patient-reported outcome measures to strengthen the evidence base.

5. Conclusion

Psychological well-being, coping mechanisms, and quality of life are important components of comprehensive care for people with chronic kidney disease. The evidence indicates that HRQoL generally deteriorates as CKD progresses, particularly in physical functioning. However, psychological distress can occur at earlier stages, and depression and anxiety should not be considered problems limited to dialysis or kidney failure. Depression and anxiety are common among people with CKD, while increasing symptom burden is strongly associated with poorer quality of life. Patients use a range of coping mechanisms, including active coping, planning, acceptance, self-care, social support, emotional regulation, and religious or spiritual coping. Maladaptive coping, negative illness perceptions, and psychological distress are associated with poorer quality of life. Evidence from intervention studies suggests that psychosocial, psychoeducational, exercise, and coping-focused interventions may improve psychological outcomes, particularly depression and anxiety. However, effects on quality of life are less consistent and require further investigation. The assessment of CKD should therefore extend beyond eGFR, albuminuria, and biochemical parameters. Routine assessment of psychological well-being, coping, symptom burden, and HRQoL can provide clinically meaningful information about how patients experience their illness. Future research should prioritize longitudinal studies that follow patients from early CKD through advanced disease, dialysis, and transplantation. Such studies could clarify how psychological well-being and coping evolve over time and identify opportunities for early, individualized psychosocial intervention.

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Ethical Approval

Not applicable.

Competing Interests

The authors declare no competing interests.

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