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QUALITY OF LIFE IN PALLIATIVE CARE FOR PATIENTS WITH RENAL FAILURE: A BIBLIOMETRIC ANALYSIS

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ABSTRACT

Quality of life is a key outcome in palliative care for patients with chronic kidney disease (CKD), especially in advanced stages and patients undergoing dialysis. Although publications on QoL in palliative care for CKD continue to increase, the global knowledge landscape remains scattered and has not been comprehensively mapped through a bibliometric approach. Objective to map publication performance, the geographical distribution of country contributions, and the dynamics of research themes related to QoL in palliative care for CKD through bibliometric analysis. A bibliometric study was conducted using the Scopus database (Elsevier) with the range 10 years . The search strategy combined the keywords palliative care/support, CKD/ESRD/dialysis, and QoL/health-related QoL. The initial search yielded 1,077 documents, which were then narrowed down to 681 publications (last 10 years), 654 publications (Medicine and Nursing fields), and finally 561 documents (article and review types) for analysis. Descriptive analysis was used for annual publication trends (2016–2026) and country contributions, while keyword co-occurrence mapping, overlay maps, and density maps were performed using VOSviewer version 1.6.18. Publication production showed an increasing trend from 37 documents (2016) to a peak of 69 documents (2025), with 2026 recording 1 document that was likely temporary. Country contributions were dominated by the United States (198 documents), followed by the United Kingdom (92), Australia (74), and Canada (45). The co-occurrence map places the terms population and service context as central nodes (human/humans, male, aged, article) and shows major clusters reflecting (1) CKD themes and management related to dialysis/hemodialysis as well as palliative and conservative care, (2) comorbidities, symptoms, and clinical indicators related to disease burden (e.g., fatigue, pruritus, anemia, hypertension, sepsis, depression, creatinine, acute kidney failure), and (3) hospital service context and study design (hospitalization, observational/retrospective study). The overlay map indicates a strengthening of the themes of service outcomes and follow-up (follow-up, clinical outcome, hospitalization) as well as an increased focus on patient-centered approaches and psychosocial support (patient-centered care, nurse, interpersonal communication, qualitative research). The density map confirms the largest hotspots in the terms of population (male, aged) and kidney service/therapy themes (palliative care, dialysis/hemodialysis, CKD) that are interconnected with comorbidities and service outcomes. QoL research in CKD palliative care is growing consistently and is dominated by countries with established research ecosystems, with the main themes still strongly centered on the clinical and service context (dialysis/hemodialysis, CKD, comorbidities, inpatient outcomes). However, there are indications of a strengthening research direction towards patient-centered approaches, communication, caregivers, and qualitative methods. Future studies need to strengthen the measurement of QoL outcomes that are meaningful to patients and families, expand the geographical context, and evaluate palliative-nephrology integration models that can tangibly improve QoL.

Keywords: kidney failure; palliative care; quality of life

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INTRODUCTION

Chronic kidney disease is a growing global health problem and a significant burden on healthcare systems in many countries (Craig et al., 2022). CKD is progressive, irreversible, and often progresses to end-stage disease requiring renal replacement therapy such as hemodialysis, peritoneal dialysis, or kidney transplantation (Merchant et al., 2022). This condition not only affects the physiological aspects of patients but also impacts psychological, social, and spiritual aspects, significantly reducing patients' quality of life (Ke et al., 2022). In patients with advanced CKD, the goal of care is no longer limited to prolonging life expectancy but also includes efforts to maintain and improve quality of life. Palliative care is a very important approach. Palliative care in CKD patients aims to manage complex symptoms such as pain, fatigue, shortness of breath, sleep disturbances, as well as psychosocial and spiritual problems that often accompany the course of the disease (Siech et al., 2025). This approach emphasizes patient- and family-centered care, with a focus on comfort, dignity, and decision-making that aligns with the patient's values and preferences (Comrie et al., 2024).

Quality of life has become one of the main indicators in assessing the success of palliative care in CKD patients. The concept of quality of life encompasses physical, psychological, social, and environmental dimensions, all of which are greatly influenced by the course of chronic disease and long-term therapy undergone by patients (Bansal et al., 2018; Fulton et al., 2020) . Various studies show that CKD patients, especially those undergoing dialysis or in the end-of- life phase, often experience a significant decline in quality of life due to the burden of symptoms, dependence on medical technology, and changes in social and economic roles (Downar et al., 2017; Ridley et al., 2023).

As attention to palliative care and quality of life in CKD patients increases, the number of scientific publications discussing this topic also continues to grow. Research covers various aspects, ranging from quality of life measurements, palliative interventions, symptom management, end-of-life decision making, to the role of health workers and families in care (Chiu et al., 2025) . However, this rapid development in the literature has not been accompanied by comprehensive scientific mapping to understand global research patterns, trends, and directions (Wong et al., 2022) . As a result, information on the contributions of researchers, institutions, countries, and research themes remains fragmented (Siech et al., 2025).

Most existing studies still focus on clinical approaches or narrative and systematic reviews of specific interventions, without providing a comprehensive overview of the research landscape on quality of life in palliative care for CKD (Comrie et al., 2024). The absence of bibliometric mapping limits the identification of research gaps, scientific collaboration, and topics that remain under-explored (Strange et al., 2024). This condition has the potential to hinder the development of a more focused and evidence-based research agenda.

Bibliometric analysis is a relevant and powerful method to address these needs (Kokol & Blažun Vošner, 2019; Zupic & Čater, 2014). This approach enables the mapping of publication trends, analysis of networks of authors, institutions, and countries, as well as the identification of keywords and dominant research themes in a field of science. By using bibliometric analysis, the development of research on quality of life in palliative care for CKD patients can be understood systematically and comprehensively. Therefore, this study aims to conduct a bibliometric analysis of research on quality of life in palliative care for chronic kidney disease. The results of this study are expected to provide a comprehensive overview of the dynamics and direction of research development in this field, identify areas of research that have not been fully explored, and serve as a basis for researchers, clinicians, and policymakers in developing palliative care strategies focused on improving the quality of life of CKD patients in the future.

METHOD

Research Design

This study uses bibliometric analysis to examine research trends on quality of life in palliative care for patients with chronic kidney disease. Bibliometric analysis is a quantitative approach used to evaluate scientific literature through the identification of publication patterns, citations, author networks, and concept relationships based on keywords (Donthu et al., 2021) . This approach enables the mapping of knowledge structures, the identification of major research themes, and the analysis of collaborations between authors, institutions, and countries. In addition, bibliometric analysis provides strategic insights into the development and direction of research in the field of palliative care and quality of life in CKD patients.

Data Sources and Search Strategy

The literature search was conducted using the Scopus database (Elsevier) due to its broad coverage of reputable scientific publications and its compatibility with bibliometric analysis software such as VOSviewer. The search strategy was carried out using the following combination of keywords:((TITLE-ABS-KEY ("palliative care") OR TITLE-ABS-KEY ("supportive care") OR TITLE-ABS-KEY ("renal supportive care") OR TITLE-ABS-KEY ("end-of-life care") OR TITLE-ABS-KEY ("terminal care") OR TITLE-ABS-KEY ("hospice care"))) AND ((TITLE-ABS-KEY ("chronic kidney disease") OR TITLE-ABS-KEY (CKD) OR TITLE- ABS-KEY ("end-stage kidney disease") OR TITLE-ABS-KEY ("end-stage renal disease") OR TITLE-ABS-KEY (ESRD) OR TITLE-ABS-KEY ("renal failure") OR TITLE-ABS-KEY ("kidney failure") OR TITLE-ABS-KEY (dialysis) OR TITLE-ABS-KEY (hemodialysis) OR TITLE-ABS-KEY ("peritoneal dialysis"))) AND ((TITLE-ABS-KEY ("quality of life") OR TITLE-ABS-KEY (QoL) OR TITLE-ABS-KEY ("health-related quality of life"))). The initial search yielded 1,077 documents. Next, a time restriction was applied to the last 10 years, resulting in 681 publications. The articles were then limited to the fields of Medicine and Nursing, resulting in 654 publications. Next, only documents of the article and review types were included, resulting in a final number of 561 publications analyzed , consisting of 540 articles in the field of Medicine and 103 articles in the field of Nursing. No language restrictions were applied in the search process (Figure 1).

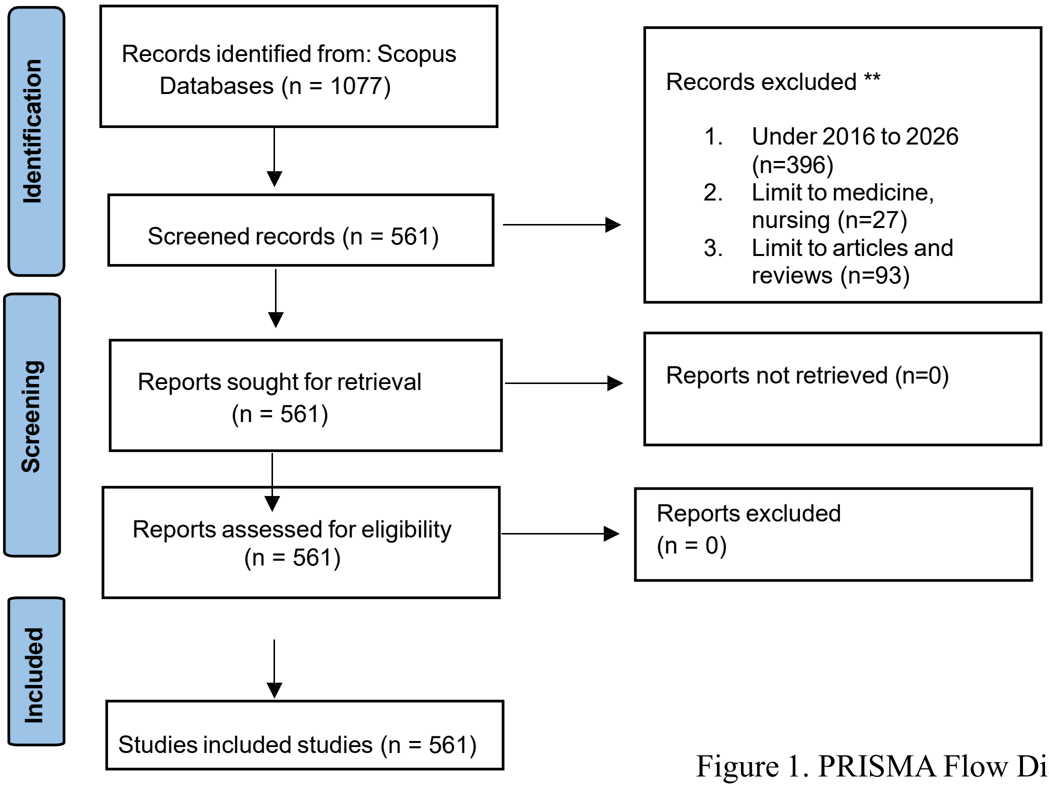

Figure 1. PRISMA Flow Diagram

Inclusion and Exclusion Criteria

Inclusion criteria were established using the Population, Concept, Context (PCC) framework as follows: Population: Patients with chronic kidney disease, including advanced CKD, *end-stage kidney disease*, and patients undergoing dialysis. Concept: Quality *of* life, including *health-related quality of life*. Context: Palliative care, *renal* supportive care, end-of-life care, and hospice services. Documents that did not conform to the PCC framework, did not include articles or *reviews*, or were not relevant to the focus on quality of life in palliative care for CKD were excluded from the analysis.

Data Extraction and Coding

Bibliographic data extracted included article titles, author names, year of publication, journal names, institutional affiliations, authors' countries of origin, keywords, and number of citations. Additional bibliometric indicators were recorded to support the analysis of scientific impact and productivity. The data extraction process was performed independently by two researchers to ensure data consistency and reliability. Any differences were resolved through discussion until agreement was reached.

Bibliometric and Network Analysis

The analysis was conducted to identify annual publication trends, article growth, and research distribution based on the most productive authors, institutions, countries, and journals. Collaboration patterns were analyzed through *co-authorship* networks between authors and institutional affiliations. In addition, keyword *co-occurrence* analysis was used to identify dominant research themes and emerging research areas (Bukar et al., 2023; Herrera-Franco et al., 2021) . Bibliometric network visualization was performed using VOSviewer (version 1.6.18), while descriptive analysis was calculated using Microsoft Excel 2021.

Statistical Analysis

Descriptive statistics were used to summarize publication characteristics and bibliometric indicators, presented in the form of frequencies and percentages.

Visualization

The visualizations produced include annual publication trend maps, author and institutional *co-authorship* networks, country collaboration maps, keyword *co-occurrence* clusters, and geographical distribution of research. These visualizations aim to facilitate the interpretation of bibliometric analysis results and highlight the direction of research development on quality of life in palliative care for patients with chronic kidney disease.

RESULT

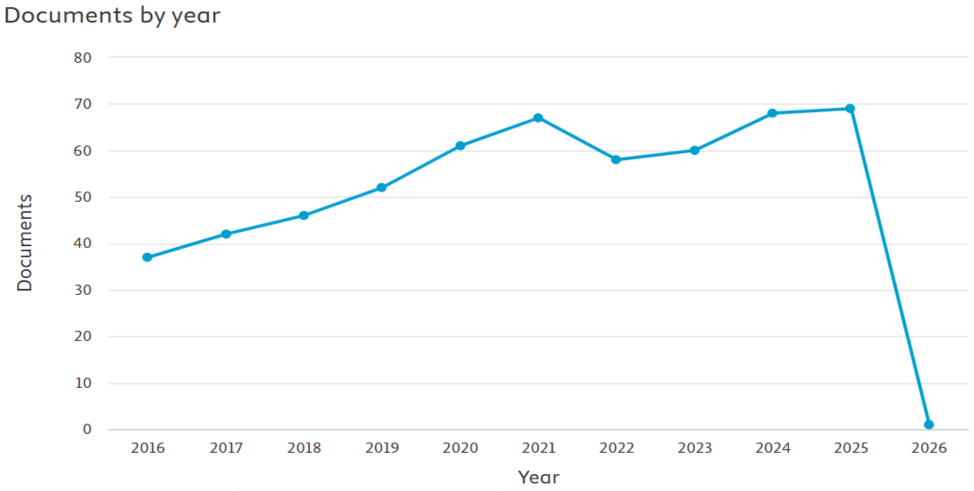

Figure 2. Documents by year (2016–2026)

Note. Figure 2 shows the number of documents per year in the corpus analyzed in the range of 2016–2026 (total of 561 documents). At the beginning of the period, the number of documents increased gradually from 37 documents (2016) to 42 (2017), 46 (2018), and 52 (2019). The upward trend continued in 2020 (61) and reached a high level in 2021 (67). After that, there was a decline in 2022 (58), then increased/stabilized again in 2023 (60). Document production then rose again in 2024 (68) and reached its highest value in 2025 (69). Meanwhile, only 1 document was recorded in 2026, which is most likely temporary because the current year has not ended and the indexing/data update process is not yet complete. Overall, the pattern shows consistent growth until 2021, a brief decline in 2022, and then an increase again in 2023–2025.

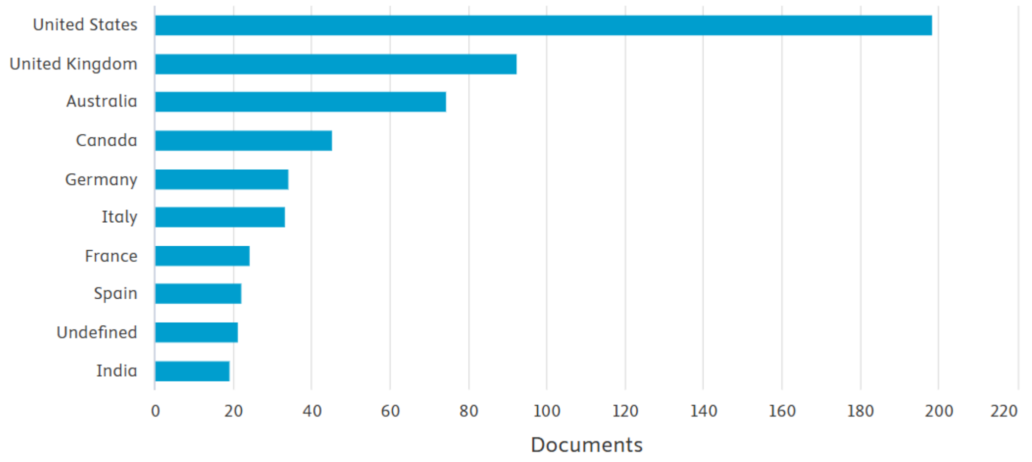

Figure 3. Documents by country or region

Table 1.
Top 10 most cited publications in the dataset

No	Title	Author and Year	TC
1	2022 AHA ACC HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology American Heart Association Joint Committee on Clinical Practice Guidelines	(Heidenreich et al., 2022)	4,034
2	KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease	(Stevens et al., 2024)	2,499
3	Chronic kidney disease	(Kalantar-Zadeh, et al., 2021)	1,138
4	2017 AHA ACC HRS Guideline for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death: A Report of the American College of Cardiology American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society	(Al-Khatib et	1,061
5	Anticipating the silver tsunami: Prevalence trajectories and comorbidity burden among older cancer survivors in the United States	(Bluethmann et al., 2016)	877
6	Japan Atherosclerosis Society (JAS) guidelines for prevention of atherosclerotic cardiovascular diseases 2017	(Kinoshita et	613
7	Effect of Multimodal Prehabilitation vs Postoperative Rehabilitation on 30-Day Postoperative Complications for Frail Patients Undergoing Resection of Colorectal Cancer: A Randomized Clinical Trial	(Carli et al., 2020)	420
8	ESGO ESTRO ESP Guidelines for the management of patients with cervical cancer - Update 2023*	(Cibula et al., 2023)	325
9	2017 AHA ACC HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: A Report of the American College of Cardiology American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society	(Al-Khatib et al., 2018b)	313
10	2017 AHA ACC HRS Guideline for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death: Executive Summary: A Report of the American College of Cardiology American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society	(Al-Khatib et al., 2018c)	310

TC = total citations in Scopus based on the list you submitted.

Figure 3 shows the distribution of the number of documents by country/region in the analyzed corpus. The United States dominates with 198 documents, far higher than any other country. The next positions are occupied by the United Kingdom (92) and Australia (74), followed by Canada (45). Contributions from European countries are at a moderate level, namely Germany (34) and

Italy (33), followed by France (24) and Spain (22). The Undefined category recorded 21 documents, while India contributed 19 documents. Overall, this pattern shows a strong concentration of publications in the United States, with the next largest contributions coming from the United Kingdom and Australia, and additional contributions from a number of other countries in smaller numbers.

Table 1 shows that publications with the highest citations in the dataset are dominated by clinical practice guidelines and international guidelines, particularly in the cardiovascular and renal fields. The most influential article is the 2022 AHA ACC HFSA heart failure management guideline (Heidenreich et al., 2022), followed by the 2024 KDIGO guideline for the evaluation and management of chronic kidney disease (Stevens et al., 2024) as well as the major review "Chronic kidney disease" in The Lancet (Kalantar Zadeh et al., 2021). The emergence of several other cardiology guidelines, such as the AHA ACC HRS ventricular arrhythmia guidelines and the Japanese atherosclerosis guidelines, indicates that the literature that is the main reference in this corpus consists mostly of clinical reference documents across chronic diseases and comorbidities. Additionally, several high-impact articles from the fields of oncology and perioperative care, such as the burden of comorbidities in cancer survivors, prehabilitation in frail patients, and cervical cancer guidelines, indicate the relevance of supportive and palliative care themes to complex chronic patient populations who often experience multimorbidity and require a quality-of-life-oriented approach.

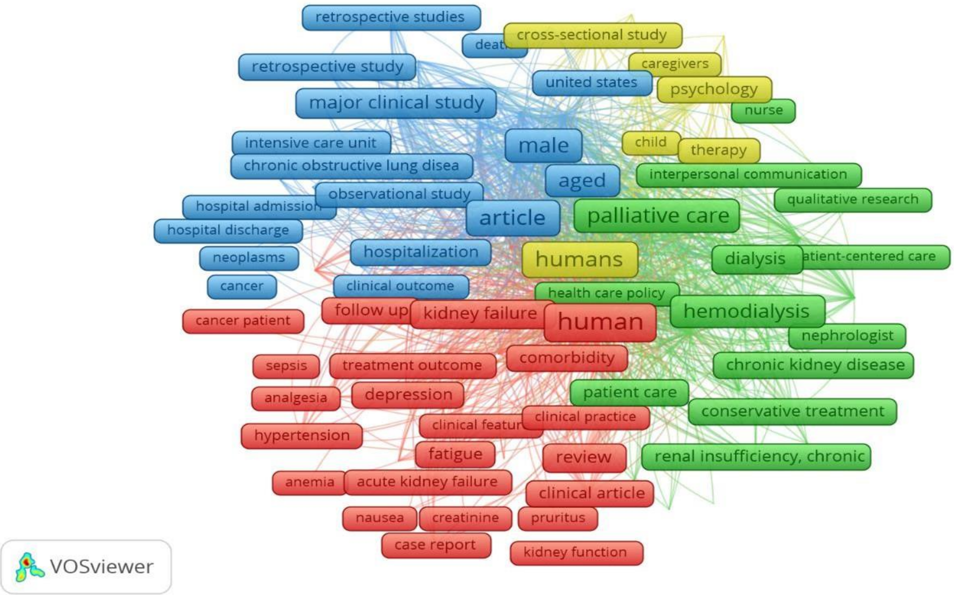

Figure 4. Keyword co-occurrence network (VOSviewer)

Figure 4 displays a map of the interrelationships between keywords in the analyzed corpus using VOSviewer, where the size of the nodes represents the frequency of keyword occurrence and the connecting lines indicate the strength of the co-occurrence relationship. The most central nodes appear in general terms such as human/humans, male, aged, and article, as well as major service topics such as palliative care and hemodialysis, which connect various themes. Several clusters are visible: the green cluster focuses on chronic kidney disease and management (e.g., chronic kidney disease, dialysis/hemodialysis, conservative treatment, patient care), the red cluster highlights comorbidities, symptoms, and clinical outcomes (e.g., comorbidity, hypertension, anemia, acute kidney failure, creatinine, sepsis, depression, fatigue), the blue cluster represents the hospital service context and study design (e.g., hospitalization, hospital admission/discharge, observational/retrospective study, intensive care unit), while the yellow cluster highlights psychosocial and population aspects (e.g., psychology, caregivers, therapy, cross-sectional study). Overall, the density of connections between clusters indicates that the studies in the corpus are integrated, linking patient characteristics and care context with the spectrum of kidney disease, dialysis/palliative interventions, and clinical and psychosocial outcomes.

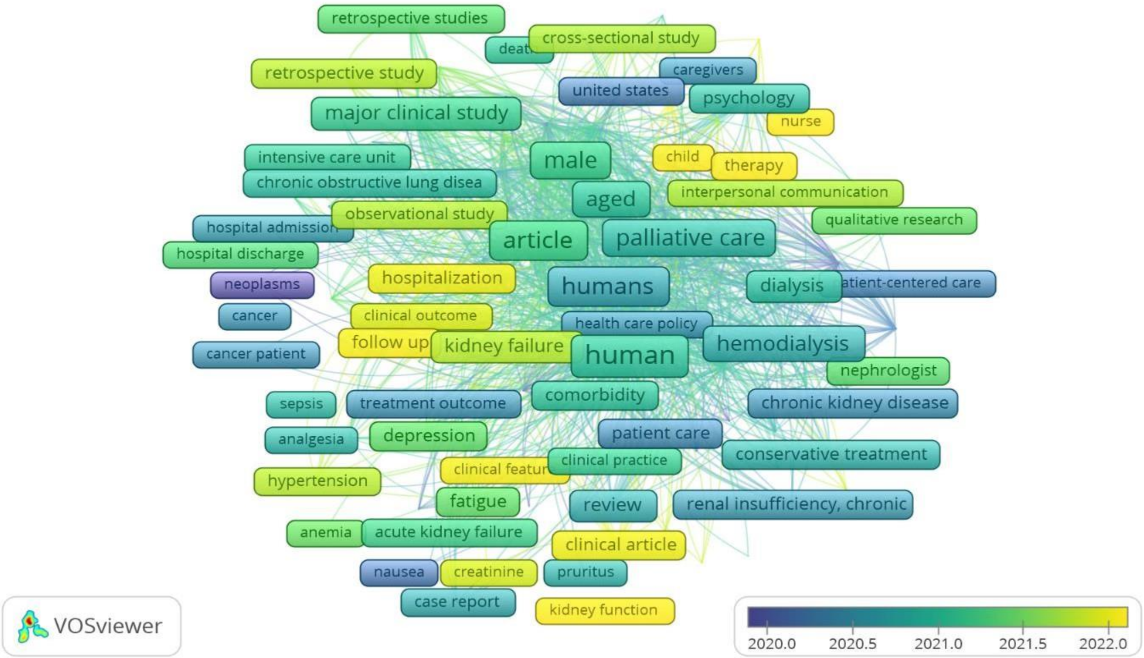

Figure 5. VOSviewer overlay map

Figure 5 shows the temporal development of keywords based on a color gradient from blue (earlier) to yellow (newer) on a scale of approximately 2020.0–2022.0. In the early phase (blue–purple), prominent themes relate to disease context and specific services such as chronic kidney disease, dialysis, patient-centered care, as well as oncology topics (neoplasms/cancer/cancer patient) and country context markers (United States). Entering the middle phase (green–turquoise), the focus appears to strengthen on core terms and care themes, marked by the central keywords human/humans, palliative care, hemodialysis, aged, male, as well as clinical and service aspects such as comorbidity, patient care, clinical practice, and psychological issues such as depression. In the most recent phase (yellow–greenish yellow), there is a strengthening of the themes of service outcomes and follow-up (follow up, clinical outcome, hospitalization) as well as indicators and symptoms related to kidney function (creatinine, kidney function, pruritus, fatigue, hypertension), along with increased attention to psychosocial support aspects and research approaches such as nurse, therapy, child, interpersonal communication, and qualitative research.

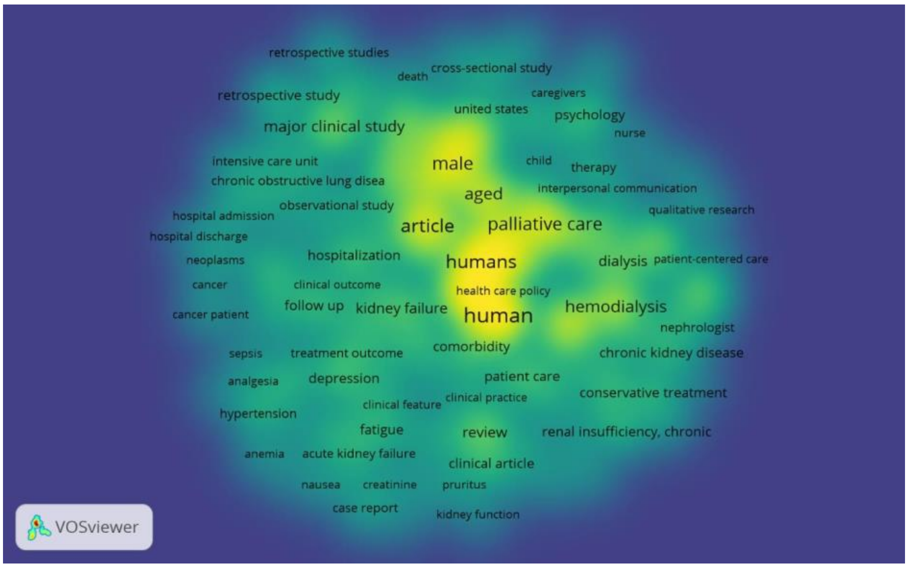

Figure 6. Visualization of keyword co-occurrence density

Figure 6 shows a VOSviewer density map, where bright yellow areas indicate keywords with the highest frequency and connectivity, while green-blue areas indicate lower intensity. The main hotspots appear to be centered on general terms such as human/humans, article, and population characteristics such as male and aged, which serve as cross-thematic connectors. Around this center, there is a medium-to-high density that confirms the literature's focus on kidney care and disease, as seen in the keywords palliative care, hemodialysis, dialysis, chronic kidney disease, kidney failure, and renal insufficiency, chronic, which are linked to clinical issues and service practices such as comorbidity, patient care, and clinical practice. Another prominent density area reflects hospital outcomes and contexts (hospitalization, follow up, clinical outcome) as well as a spectrum of clinical problems and kidney-related indicators such as acute kidney failure, creatinine, kidney function, accompanied by symptoms/complications such as hypertension, anemia, fatigue, pruritus, nausea, and sepsis. Meanwhile, more peripheral but still relevant themes include psychosocial and caregiving aspects (psychology, caregivers, nurses, interpersonal communication, qualitative research), the context of other diseases (neoplasms/cancer), and various study designs (retrospective studies, observational studies, cross-sectional studies), which show the breadth of research coverage even though the intensity is not as high as the center of the map.

DISCUSSION

The research corpus on quality of life (QoL) in palliative care for chronic kidney disease (CKD) shows that QoL issues are understood as a direct consequence of the complexity of the course of kidney disease, the burden of persistent symptoms, and repeated therapeutic decisions (especially related to dialysis). The increase in the number of documents from 2016 to a peak in 2025 indicates growing scientific attention to QoL as an important outcome, while the very low figure for 2026 is more accurately interpreted as an artifact of the ongoing year- s and indexing delays, rather than a decline in research interest. Substantively, this trend is consistent with the needs of modern CKD services that increasingly emphasize "living better" rather than just "living longer," making QoL a relevant indicator for evaluating the real benefits of palliative care in CKD patients (Li et al., 2025). However, the VOSviewer map analysis indicates that despite the field title being QoL, the keyword landscape is still strongly supported by common clinical-population terms such as human/humans, male, aged, article, as well as key service themes such as hemodialysis/dialysis, chronic kidney disease/kidney failure, and palliative care (Phongphithakchai et al., 2025) . This pattern indicates that QoL research in palliative CKD often "adheres" to the architecture of nephrology services (particularly dialysis), so that QoL is often positioned as an outcome evaluated within the framework of treatment and service systems, rather than as a concept explored in depth from the perspective of patient experience (Wachterman et al., 2024) . QoL in this field appears to be largely studied through the lens of disease management and therapy (dialysis, conservative care), while subjective dimensions of QoL such as symptom experience, meaning of life, psychological adaptation, and patient preferences still need reinforcement so that they do not become mere complementary variables (Comrie et al., 2024).

Co-occurrence networks reinforce this interpretation: prominent clinical clusters include symptom burden and conditions that directly "erode" QoL, such as fatigue, pruritus, nausea, anemia, hypertension, and psychological issues like depression, which are intertwined with practice/service outcome terms like follow-up, clinical outcome, and hospitalization (Strange et al., 2024) . QoL is implicitly "present" through clinical and psychological proxies that shape patients' daily experiences (Concepcion Bachynski et al., 2025) . The density findings that place clinical terms and services at the center of the map can be interpreted as a sign that QoL studies in palliative CKD often start from the question: how do clinical status, therapy, and hospitalizations affect quality of life?—while more QoL-specific questions, such as what definition of QoL is most meaningful to CKD patients, how patient preferences change as the disease progresses, and what interventions are most effective at improving QoL, do not yet appear to be the focus of equivalent density (Clavé et al., 2019). The overlay map shows important developmental signals for the QoL field: in the newer phase (yellow), keywords related to patient-centered care, the role of nurses, interpersonal communication, qualitative research, and population/support topics such as caregivers and therapy are gaining strength (Sampath et al., 2024) This shift is relevant because QoL research fundamentally requires an approach that captures the experiences of patients and families more richly, not just biomedical indicators (Savelieva et al., 2023). The increased focus on communication and qualitative approaches can be interpreted as a response to the classic challenges of palliative CKD: QoL is significantly influenced by the quality of communication about treatment goals, shared decision-making processes (e.g., regarding dialysis continuation), and emotional-social support for patients and caregivers—areas often underrepresented when research is dominated by retrospective hospital-based studies (Gayathri M et al., 2025).

The distribution of publications by country also has implications for the form of QoL knowledge that is generated. The dominance of contributions from the United States and other high-income countries (followed by the United Kingdom and Australia) indicates that much of the evidence on palliative QoL in CKD is produced in the context of healthcare systems with relatively widespread access to dialysis and strong research infrastructure. This has the potential to shape the focus of research on service outcomes (hospitalization, follow-up, clinical outcomes) and therapy management, while contexts with limited access to dialysis or integrated palliative care may present a different QoL reality (e.g., financial burden, access to analgesia/symptom control, community support) (Comrie et al., 2024; Wasylynuk & Davison, 2016). Therefore, expanding research across contexts is important so that the definition, determinants, and interventions for improving QoL are not biased toward a single service model (Sanghavi & Vijayan, 2025).

Overall, this bibliometric analysis describes a growing and maturing field: QoL research in palliative CKD is strongly anchored in the core themes of dialysis/hemodialysis, CKD/kidney failure, and service outcomes, but is beginning to show a shift toward patient-centered care, communication, caregivers, and qualitative approaches—which are essential to QoL. The implications for future research are to promote a more explicitly QoL-oriented agenda, for example (1) standardization and selection of QoL instruments appropriate for palliative CKD, (2) CKD-specific symptom management interventions directly linked to QoL improvement, (3) evaluating early palliative-nephrology integration models to improve QoL, and (4) strengthening studies that capture patient/family experiences (including caregiver burden) as key outcomes. Thus, this field should not only measure QoL as an "end result," but truly make QoL the centerpiece of service design and therapeutic decisions for CKD patients in palliative care.

CONCLUSION

This bibliometric analysis shows that research on quality of life (QoL) in palliative care for chronic kidney disease (CKD) has experienced consistent growth in the period 2016–2025, with publication contributions still concentrated in countries with established research ecosystems, particularly the United States. VOSviewer mapping shows that the keyword landscape is dominated by terms related to population and service context (e.g., *human/humans, male, aged, hospitalization*) and core nephrology themes such as CKD/kidney failure and dialysis/hemodialysis, indicating that QoL studies are often discussed in the context of clinical pathways and service systems. However, the emergence of keywords related to patient-centered approaches such as palliative care, patient-centered care, healthcare worker support (e.g., *nurse*), communication, and qualitative research approaches indicates a strengthening of research direction towards the dimension of patient and family experience, although the intensity is still relatively lower than clinical and therapeutic themes. Practically, these findings emphasize the importance of placing QoL as a primary outcome in the development of CKD palliative care services, including strengthening symptom management specific to CKD, communicating treatment goals, and shared decision-making regarding the continuation of dialysis or conservative treatment options. Further research should expand the geographical scope, use prospective/longitudinal designs, and evaluate palliative-nephrology integration models that can meaningfully improve QoL; standardization of terminology and selection of QoL instruments appropriate for the CKD context are also needed to make findings more easily comparable and globally relevant.

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