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Bibliometric Analysis Of Diabetic Kidney Disease: Public Health Challenges (1974-2024)

Kevin Fornaciari Gonçalves[1], Henrique Groberio Nantet[2], Levi Oliveira Colombi[3], Wellington Gonçalves[4], Rodrigo Ribeiro De Oliveira[5], Alexandre Beletti Ferreira[6], Mauro Machado De Oliveira[7], Carlos Augusto Barbosa Da Silva[8], Thiago Pedro Donadon Homem[9]

[1,2,3]*(College Of Medicine, Espírito Santo Santo University Center, Brazil)*
[4]*(Department Of Engineering And Technology, Federal University Of Espírito Santo, Brazil)*
[5,6,7,8]*(Federal Institute Of São Paulo, Brazil)*

Abstract:
Background*: Diabetic kidney disease (DKD) stands as one of the leading causes of end-stage chronic renal failure, exerting a significant burden on healthcare systems, particularly among socioeconomically vulnerable populations. The increasing global prevalence of diabetes, coupled with disparities in access to diagnostics and therapies, underscores the need for systematic studies that assess the progression of research in this field. Persistent gaps remain in the literature regarding the identification of emerging trends and international collaborative networks, as well as in the systematization of evidence related to biomarkers and innovative therapies — elements that are essential for the formulation of effective public policies and for the advancement of clinical practice.*
Materials and Methods*: This study is characterized as a systematic review employing a bibliometric and scientometric approach, based on secondary data extracted from the Web of Science database covering the period from 1974 to 2024. Data collection was conducted through rigorous selection and refinement criteria, with the corpus organized using Zotero software. Subsequently, VOSviewer was applied to analyze co-occurrence, collaboration, and scientific impact networks, enabling the mapping of thematic trends and the main research clusters on DKD. This procedure ensured high precision by integrating robust quantitative analyses with qualitative interpretation, oriented towards addressing public health challenges.*
Results*: The analysis revealed a significant evolution in the scientific output on DKD, highlighting the increase in international collaborations and the strengthening of thematic networks related to biomarkers, such as albuminuria, and emerging therapies, notably SGLT2 inhibitors. Twelve interconnected thematic clusters were identified, reflecting the multidimensional nature of DKD by integrating clinical, molecular, and social factors. Furthermore, critical gaps emerged related to inequalities in access to early diagnosis and treatment, particularly in low- and middle-income countries, representing persistent challenges to achieving equity in renal healthcare.*
Conclusion: *The findings consolidate a comprehensive overview of the evolution of research on DKD, emphasizing the importance of integrating scientific advances, public policies, and clinical practices oriented towards equity. The mapping of international collaboration networks and emerging trends provides valuable input for the development of more effective interdisciplinary strategies to address DKD. It is recommended that future research prioritize the validation of innovative biomarkers and personalized interventions, as well as the assessment of the impact of public health policies aimed at reducing socioeconomic disparities and expanding access to DKD diagnosis and treatment.*

Key Word: *Renal Epidemiology. Microvascular Complications. Innovative Therapies.*

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I. Introduction

Diabetic Nephropathy or Diabetic Kidney Disease (DKD), according to Takkavatakarn et al. (2023), can be recognized as one of the most prevalent and debilitating chronic sequelae of diabetes mellitus, as it directly affects individual health and significantly contributes to increased mortality associated with related cardiovascular outcomes. According to Heerspink et al. (2023), DKD is globally acknowledged as the cause of a substantial proportion of advanced-stage chronic kidney disease (CKD) cases, and is regarded as a public health emergency. With the rising number of diabetes cases, particularly in emerging nations, investigating the

pathophysiological mechanisms and preventing DKD have become increasingly relevant in the medical field (Chesnaye et al., 2024).

Brown et al. (2021) argue that scientific advances in pharmacological therapies, such as sodium-glucose co-transporter 2 (SGLT2) inhibitors and glucagon-like peptide-1 receptor agonists (GLP-1 RAs), have revealed interactions between renal and cardiovascular diseases in patients with diabetes. Recent research emphasizes the effectiveness of these therapies in reducing proteinuria and delaying DKD progression, representing a milestone in the management of this condition (Ragi et al., 2023). However, the universal implementation of these strategies still faces challenges, such as disparities in access to treatment and early diagnosis.

Diabetic Kidney Disease (DKD) can be seen as an emerging public health problem in Brazil, particularly due to the high prevalence of type 2 diabetes mellitus among socially vulnerable groups (Neves et al., 2023). According to Asbeque et al. (2024), analyses from the Mortality Information System (SIM) reveal that renal complications resulting from diabetes exert a significant impact on mortality rates and related hospital admissions. Simultaneously, the Brazilian Unified Health System (SUS) faces considerable challenges in promoting access to essential tests for early detection of DKD, such as albuminuria quantification and estimated glomerular filtration rate, both indispensable for adequate clinical management (Veríssimo et al., 2024).

The International Diabetes Federation (IDF), which brings together more than 240 organizations across 161 countries and territories, estimates that the prevalence of diabetes in Brazil is 10.5%, representing approximately 20 million individuals diagnosed with the disease (Brazilian Diabetes Society, 2024).

The prevention and management of DKD demand a comprehensive interdisciplinary approach that goes beyond glycemic control and blood pressure regulation, also including interventions aimed at promoting significant lifestyle changes among patients (ElSayed et al., 2024). In this context, health education initiatives targeted at both patients and healthcare professionals play a crucial role in improving clinical outcomes and adherence to therapeutic interventions. Additionally, the implementation of public health strategies focused on systematic screening and early intervention for DKD is critical to mitigating the disease's burden on healthcare systems, reducing costs, and providing more effective and equitable care (Curran et al., 2023).

Therefore, the role of clinical research is essential to understanding the social and biological factors influencing DKD, particularly in settings characterized by genetic diversity, such as Brazil. Recent studies have investigated innovative biomarkers and personalized medicine approaches that are poised to reshape treatment perspectives, enabling more efficient and tailored interventions (Haghayegh et al., 2024). However, the implementation of these advances in clinical practice still faces significant barriers.

According to Parente (2024), in Brazil, the combination of public health policies and educational programs can considerably reduce the complications of DKD. This author emphasizes that such programs should include the expansion of access to primary care, focusing on prevention and early detection.

In general terms, DKD transcends the clinical barrier and should be interpreted as an indicator of socioeconomic disparities that affect access to healthcare services. Promoting joint initiatives among governmental authorities, academic institutions, and private sectors can foster innovative and responsible solutions. Thus, contemporary medicine can reconcile technological advances with the principles of equity and effectiveness in the care of patients with DKD.

This study aims to systematically assess the current state, research focal points, and emerging trends on diabetic kidney disease. This will be achieved through a literature analysis using bibliometric methods, identifying significant findings and providing insights for future research directions.

II. Methodological Approach

The approach employed was defined according to rigorous criteria recommended for conducting a systematic review, with bibliometric analysis as the primary technique (Lim & Kumar, 2024). This strategy is characterized by meticulous data evaluation, ensuring high transparency and rigor throughout the analytical process. As emphasized by Demir et al. (2024), systematic reviews enable a thorough examination of existing research, promoting the synthesis of evidence and a well-founded interpretation of results—elements that contribute to the robustness and reliability of scientific inquiry.

The use of the Web of Science (WoS) database is grounded in its academic relevance, offering peer-reviewed publications and advanced analytical tools. Al Husaeni et al. (2023) highlight its robust interface, which enables refined searches and results aligned with the research objectives. The choice of WoS over PubMed is justified by its multidisciplinary coverage and rigorous indexing process, including high-impact journals across diverse fields. While PubMed focuses primarily on biomedical literature, it lacks the advanced analytical resources that WoS provides for co-authorship network analysis, citations, and scientific impact. This ensures a structured and comparative bibliometric approach, offering greater precision in data interpretation.

The data collection process was conducted in four sequential steps, aimed at ensuring a systematic and effective procedure. The first step involved a preliminary analysis performed on the Google Scholar platform in

December 2024, with the objective of identifying and selecting scientifically relevant keywords. This step was based on the findings of Demir et al. (2024), incorporating the use of VOSviewer software, version 1.6.20, as a tool for analyzing and filtering the most impactful search terms in terms of citations.

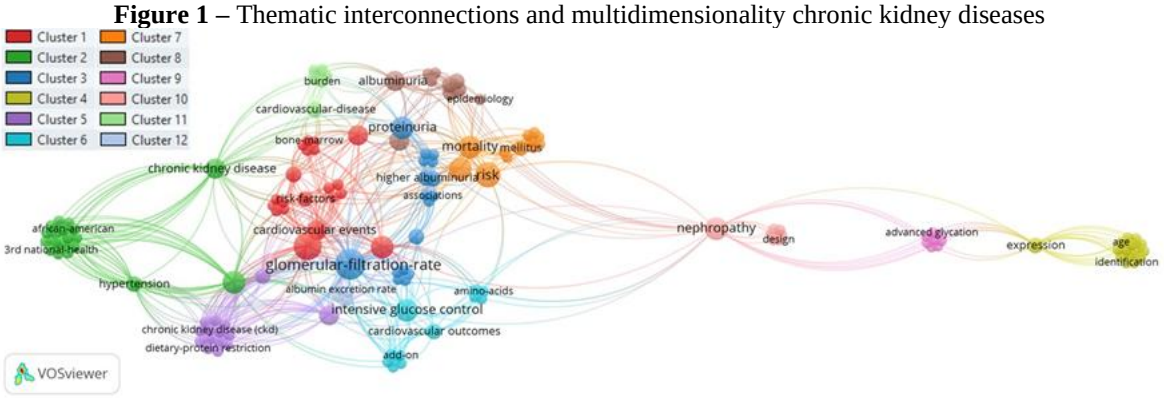
In the second step, also conducted in December 2024, the identified keywords were used to retrieve articles published between 1974 and 2024, in English. The files were exported from WoS to Zotero software, version 7, for reference organization and management. Subsequently, the third step consisted of reviewing and organizing these files and metadata into a database, including the correction of incomplete information, resulting in a structured repository suitable for bibliometric analyses (Ali et al., 2024).

Finally, in the fourth step, a scientometric mapping was performed to visually and analytically represent the phenomena under investigation, utilizing VOSviewer software (Al Husaeni et al., 2023). This process allowed for the identification of predominant trends and patterns related to diabetic kidney disease and public health challenges. In addition to simplifying data interpretation, this approach integrated the results into a coherent structure, promoting an in-depth and evidence-based analysis (Al Husaeni et al., 2023; Demir et al., 2024; Lim & Kumar, 2024).

III. Result And Discussion

The results obtained from the bibliometric analysis highlight the interrelationship of fundamental concepts in the study of chronic kidney diseases and their associated factors. The term co-occurrence network (Figure 1), generated using VOSviewer, reveals 12 thematic clusters representing different yet interconnected research areas. The central cluster, identified in red, features terms such as 'glomerular filtration rate' and 'risk factors', suggesting that the glomerular filtration rate is a key element in understanding cardiovascular events associated with nephropathy. The prominence of 'proteinuria' and 'albuminuria', located in distinct clusters, further reinforces the role of these conditions as prognostic and clinical markers.

Figure 1 – Thematic interconnections and multidimensionality chronic kidney diseases



Source: Authors (2025).

Moreover, Figure 1 highlights the relationship between nephropathy and other specific terms, such as 'advanced glycation' and 'expression', which belong to peripheral clusters. This distribution suggests a growing interest in molecular investigations aimed at expanding the understanding of pathophysiological mechanisms. The clear visualization of connections among 'chronic kidney disease', 'intensive glucose control', and 'hypertension' reflects the integration of clinical approaches and risk factors. The findings of this study reinforce contemporary literature by evidencing the multidimensional complexity of factors influencing the progression of chronic kidney disease. This observation underscores the relevance of systematic and interdisciplinary strategies as foundational pillars for the expansion of scientific knowledge in this field, contributing to the consolidation of an integrated body of evidence.

The findings from the second phase revealed an extensive temporal distribution of selected publications, covering five decades of scientific output (1974–2024). The use of pre-established keywords (Figure 1) enabled the identification of a pertinent and consistent bibliographic corpus composed exclusively of articles written in English. The migration and structuring of this compendium into the Zotero software streamlined reference management, enhancing the efficiency of bibliometric and systematic analysis. This procedure unveiled publication patterns, gaps in the literature, and the progression of themes related to the study topic, providing a solid foundation for evidence-based discussions regarding scientific advancements during the analyzed period.

The systematization of the files and metadata review revealed the need for substantial adjustments to the initial dataset, aiming to preserve the integrity of the repository intended for bibliometric analyses. In the third phase of the research, 167,853 articles were analyzed, of which 37 (0.02%) were excluded for not meeting

the previously established eligibility criteria, such as lack of thematic relevance or methodological inadequacy. The exclusion of these records, essential for ensuring the representativeness of the dataset, contributed to eliminating potential biases and strengthened the reliability of the final corpus. Additionally, 93 articles (0.06%) required corrective or supplementary interventions in their metadata, covering information such as authors' institutional affiliations, year of publication, and keywords. This meticulous curation process culminated in the formation of a structured and coherent repository, suitable for conducting bibliometric analyses with high precision and methodological rigor.

The adjustments made to the metadata reinforce the importance of standardized practices in academic publication records, especially in research-oriented databases. The need to complete metadata for more than two-thirds of the selected articles suggests weaknesses in indexing and publication systems that may compromise the accuracy of future analyses. Furthermore, the exclusion of nearly one-third of the initially considered articles highlights the importance of rigorous screening in constructing specific repositories. These findings not only confirm previous research emphasizing the challenges in bibliometric data collection but also underscore the relevance of careful interventions to foster consistency and quality in scientific research.

Figure 2 presents the scientometric mapping conducted as part of the bibliometric analysis, using VOSviewer software, a tool widely recognized for its ability to provide visualization and interpretation of co-authorship, term co-occurrence, and citation networks. This mapping allowed for highlighting major trends and patterns related to diabetic kidney disease, with an emphasis on the public health challenges faced over the past 50 years. Through a visual and analytical approach, it was possible to simplify data interpretation and integrate the results into a coherent structure, facilitating an evidence-based analysis. This methodology made it possible to highlight critical points such as the evolution of scientific knowledge, emerging themes, and existing gaps in the literature, contributing to a more profound and targeted understanding (Al Husaeni et al., 2023; Demir et al., 2024; Lim & Kumar, 2024).

The scientometric analysis performed on the literature concerning diabetic kidney disease revealed significant patterns of thematic evolution and collaboration networks among leading authors over the five decades investigated. Between 1974 and 1984, studies were characterized by a descriptive and exploratory approach, focusing on initial clinical manifestations and the associations between diabetes mellitus and renal insufficiency. Authors such as Mogensen (1984) and Mogensen et al. (1983) emerged as pioneers, contributing to the initial understanding of diabetic nephropathy, particularly through the description of microalbuminuria as an early marker of disease progression.

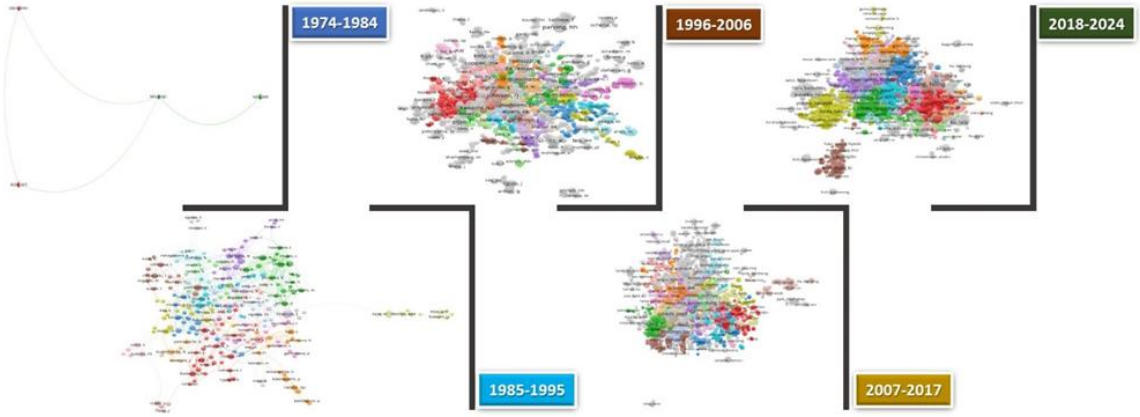
Between 1985 and 1995, there was an intensification in the search for therapeutic interventions and underlying pathological mechanisms. Co-authorship networks began to consolidate around groups in Europe and the United States, with authors such as Mogensen (1994) gaining prominence for the impact of his theories on glomerular hemodynamics. During this period, multicenter studies and controlled clinical trials predominated, reflecting a growing effort to integrate disciplines such as nephrology and endocrinology in disease management.

From 1996 to 2006, the integration of advanced technologies, including genetic and molecular analyses, introduced new perspectives. Researchers like Cooper and Johnston (2000) and Ziyadeh (2004) led investigations into the interactions between genetic and environmental factors influencing disease progression. Scientometric analyses revealed increased intercontinental collaborations, highlighting strong connectivity among researchers in Asia, North America, and Europe, fostered by advances in digital communication and international research funding.

Between 2007 and 2017, the global prevalence of diabetic kidney disease was consolidated as a critical public health challenge. Studies by Magri and Fava (2009) and Tuttle et al. (2014) emphasized the economic burden of disease management and the impact of population aging. Co-occurrence network analyses revealed an expansion of related themes, notably biomarker research, therapies involving sodium-glucose cotransporter 2 (SGLT2) inhibitors, and the influence of social inequalities on disease progression.

An analysis of research collaborations and productivity from 2018 to 2024 revealed significant patterns of international cooperation (see Figure 3). The United States, China, and Germany emerged as primary collaboration hubs, establishing robust partnerships with numerous countries. These nations led in productivity and played central roles in facilitating international cooperation, as evidenced by the thickness of connecting lines in the network diagrams.

Figure 2 – Bibliometric overview of the last 50 years



Source: Authors (2025).

A stacked bar chart indicated a marked increase in research output in 2021, followed by stabilization in subsequent years. This surge may be attributed to increased funding and interest in diabetic kidney disease research, possibly stimulated by technological advances and updated clinical guidelines. Other countries, including Italy, Sweden, Australia, and Canada, demonstrated consistent growth in their contributions, reflecting a global commitment to addressing the challenges posed by diabetic kidney disease.

Emerging trends underscore the critical importance of international collaboration in advancing research. The density of partnership networks suggests that knowledge and resource sharing among countries is vital for the development of novel therapies and treatment approaches. Furthermore, data analysis indicated that countries with higher productivity tend to engage in more extensive collaborative partnerships.

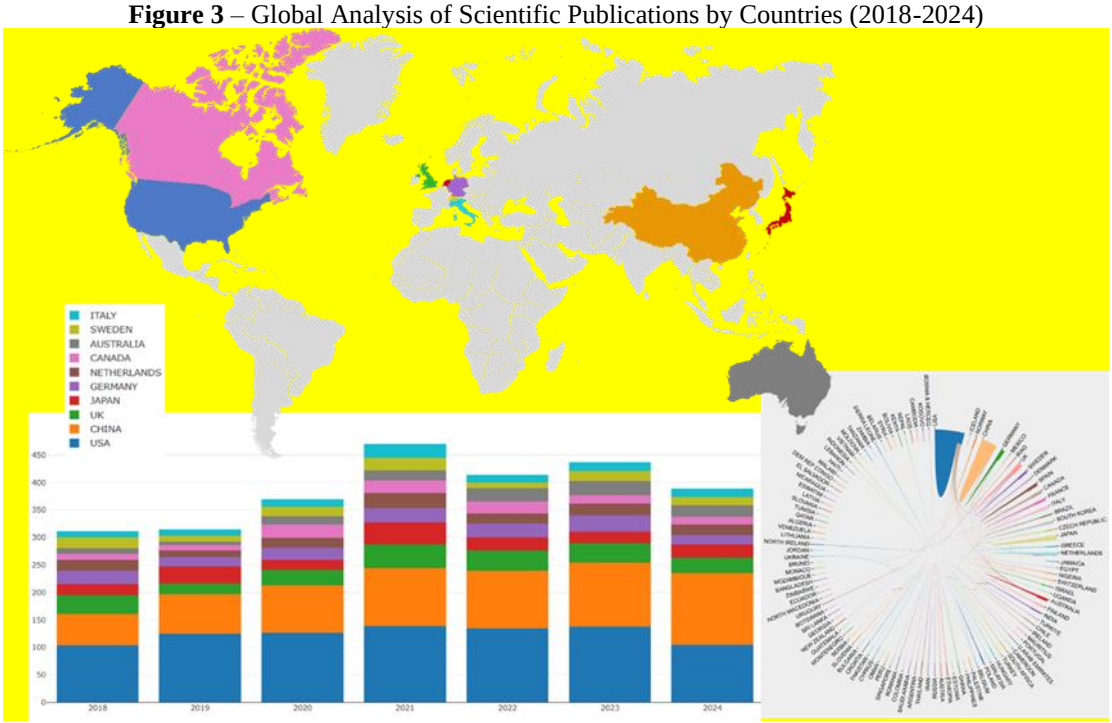
In summary, the analysis of collaboration and productivity patterns between 2018 and 2024 illustrates that diabetic kidney disease research is a truly global effort. The United States, China, and Germany stand out as leaders, while other countries continue to increase their contributions. International collaborations are essential to progress in this field, and trends suggest that integrated, multinational approaches will remain fundamental in tackling the challenges associated with diabetic kidney disease in the future.

The global bibliometric analysis of Diabetic Kidney Disease (DKD) from 1974 to 2024 revealed a geographically concentrated pattern of scientific production, as synthesized in the figure above. The United States stands out as the leader, significantly dominating the volume of publications during the analyzed period, as indicated by the blue coloration on the world map and the highest volume in the stacked bar chart. This result confirms the hegemonic role of North American academia in nephrology and endocrinology research, directly reflecting substantial public and private investment in biomedical research.

In a secondary, yet notable position, China and Canada are highlighted by orange and pink colors, respectively. China's rise to second place is particularly remarkable, especially after 2020, indicating an accelerated growth trend due to public policy incentives for research and the increasing prevalence of diabetes mellitus within the Chinese population. Canada, in turn, has maintained a stable and significant trajectory over the period, reflecting its tradition of clinical and epidemiological research in kidney diseases.

The bar chart shows a consistent increase in global scientific production on DKD between 2018 and 2021, peaking in 2021, followed by a slight stabilization in subsequent years. This pattern can be interpreted as the result of intensified research on chronic diabetes complications, as well as the impact of the COVID-19 pandemic, which stimulated new studies on metabolic diseases and their systemic effects, including renal implications. From 2022 onward, there is a slight decline, possibly associated with a temporary redirection of research agendas toward emerging pandemic-related topics.

Figure 3 – Global Analysis of Scientific Publications by Countries (2018-2024)



Source: Authors (2025).

In the European context, countries such as Germany, the United Kingdom, Italy, the Netherlands, and Sweden exhibit significant participation, although still below that of the North American and Asian powers. The spatial distribution of these contributions, as shown on the map, suggests the existence of regional centers of excellence that act complementarily and collaboratively. This configuration is also evident in the circular diagram, where the diversity of countries indicates a global scientific production network with important collaborations, although still centered in countries with greater investment capacity.

Finally, the relatively low participation of countries from Latin America, Africa, and Southeast Asia is noteworthy, revealing an imbalance in global scientific production on DKD. Such asymmetry poses challenges for translating scientific knowledge into effective public policies, especially in regions where the disease burden is increasing but scientific production remains incipient. These results underscore the need to strengthen international cooperation and expand research funding and capacity building in low- and middle-income countries, aiming for a more equitable and global approach to tackling Diabetic Kidney Disease.

IV. Conclusion

This study systematically reviewed the literature on Diabetic Kidney Disease (DKD), addressing its growing relevance as a public health emergency and recent advances in its management and prevention. The research was guided by the following question: What are the scientific advances, challenges, and emerging trends in the understanding and management of DKD over the past five decades? Through a detailed bibliometric analysis, the current state of knowledge was mapped, identifying gaps in the literature and exploring implications for public policy and clinical practice.

The results highlighted the centrality of DKD within the context of chronic kidney diseases, particularly due to its role as the leading cause of end-stage renal disease among diabetic patients. The co-occurrence network analysis emphasized recurrent themes, such as the significance of proteinuria and albuminuria as prognostic markers, and the integration of clinical and molecular approaches in studying the pathophysiological mechanisms. Therapeutic advances, such as sodium-glucose cotransporter-2 (SGLT2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists, represent notable progress in the treatment of chronic kidney disease (CKD). However, the broad adoption of these interventions faces substantial obstacles, notably those related to disparities in treatment access and limitations in the early detection of the condition.

The central contribution of this study lies in elucidating evolutionary patterns in the field of DKD research, as well as in evaluating the effects of public policies and socioeconomic disparities on management strategies for this condition. The linkage between biological, social, and clinical elements underscores the importance of interdisciplinary and integrated strategies to address DKD, particularly in contexts of high vulnerability, such as Brazil. The findings establish a robust foundation for future research and strategies that combine technological advances with principles of equity and sustainability.

Despite its methodological robustness, this study has some limitations, such as the exclusion of publications in languages other than English and the reliance on a single data repository, which may have limited the scope of the analysis. Furthermore, although bibliometric analysis is valuable for mapping trends, it does not assess the intrinsic quality of the included studies, representing a limitation in interpreting the results.

Given the complexity of DKD and its public health implications, future research should explore emerging areas, such as the identification of innovative biomarkers and the development of personalized therapies that consider the genetic diversity of specific populations. Additionally, longitudinal studies assessing the impact of educational interventions and preventive policies on reducing DKD complications are recommended to strengthen the existing evidence.

This study represents a relevant contribution to the development of scientific knowledge in the fields of nephrology and public health, providing a solid basis for the creation of strategies aimed at minimizing the adverse effects of CKD. Through an in-depth analysis, it offers insights that enable the implementation of effective measures to address this health challenge, with significant implications for public policies and comprehensive care management for affected populations. At the same time, it reinforces the need for joint actions among governments, academic institutions, and the private sector, aiming to expand access to early diagnosis and advanced therapies. Such efforts are essential to reduce inequalities and promote efficiency in the care of patients with DKD, integrating science, innovation, and equity in favor of more accessible and sustainable healthcare.

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References

[1]. Al Husaeni, D. N., Nandiyanto, A. B. D., & Maryanti, R. (2023). Bibliometric Analysis Of Special Needs Education Keyword Using Vosviewer Indexed By Google Scholar. Indonesian Journal Of Community And Special Needs Education, 3(1), 1–10.

[2]. Ali, Q., Parveen, S., Aspiranti, T., Nurhayati, N., & Rusgianto, S. (2024). Barriers To The Adoption Of Islamic Banking: A Bibliometric Analysis. International Journal Of Ethics And Systems, 40(3), 628–650.

[3]. Asbeque, A. C. F., Leitão, F. N. C., Oliveira, F. S., Pinheiro, D. R., & Deus Morais, M. J. (2024). Mortalidade De Doença Renal Crônica No Brasil: Revisão Sistemática. Revista De Epidemiologia E Saúde Pública-RESP, 2(2), 1–14.

[4]. Brown, E., Heerspink, H. J., Cuthbertson, D. J., & Wilding, J. P. (2021). SGLT2 Inhibitors And GLP-1 Receptor Agonists: Established And Emerging Indications. The Lancet, 398(10296), 262–276.

[5]. Chesnaye, N. C., Ortiz, A., Zoccali, C., Stel, V. S., & Jager, K. J. (2024). The Impact Of Population Ageing On The Burden Of Chronic Kidney Disease. Nature Reviews Nephrology, 20(9), 569–585.

[6]. Cooper, M. E., & Johnston, C. I. (2000). Optimizing Treatment Of Hypertension In Patients With Diabetes. American Journal Of Hypertension, 283(24), 3177–3179.

[7]. Curran, K., Piyasena, P., Congdon, N., Duke, L., Malanda, B., & Peto, T. (2023). Inclusion Of Diabetic Retinopathy Screening Strategies In National-Level Diabetes Care Planning In Low-And Middle-Income Countries: A Scoping Review. Health Research Policy And Systems, 21(1), 2.

[8]. Demir, G., Chatterjee, P., & Pamucar, D. (2024). Sensitivity Analysis In Multi-Criteria Decision Making: A State-Of-The-Art Research Perspective Using Bibliometric Analysis. Expert Systems With Applications, 237, 121660.

[9]. Elsayed, N. A., Bannuru, R. R., Bakris, G., Bardsley, J., Boer, I. H., Gabbay, R. A., ... & Rhee, C. M. (2024). Diabetic Kidney Disease Prevention Care Model Development. Clinical Diabetes, 42(2), 274–294.

[10]. Haghayegh, F., Norouziazad, A., Haghani, E., Feygin, A. A., Rahimi, R. H., Ghavamabadi, H. A., ... & Salahandish, R. (2024). Revolutionary Point-Of-Care Wearable Diagnostics For Early Disease Detection And Biomarker Discovery Through Intelligent Technologies. Advanced Science, 11(36), 2400595.

[11]. Heerspink, H. J., Kiyosue, A., Wheeler, D. C., Lin, M., Wijkmark, E., Carlson, G., ... & Ambery, P. (2023). Zibotentan In Combination With Dapagliflozin Compared With Dapagliflozin In Patients With Chronic Kidney Disease (ZENITH-CKD): A Multicentre, Randomised, Active-Controlled, Phase 2b, Clinical Trial. The Lancet, 402(10416), 2004–2017.

[12]. Lim, W. M., & Kumar, S. (2024). Guidelines For Interpreting The Results Of Bibliometric Analysis: A Sensemaking Approach. Global Business And Organizational Excellence, 43(2), 17–26.

[13]. Magri, C. J., & Fava, S. (2009). The Role Of Tubular Injury In Diabetic Nephropathy. European Journal Of Internal Medicine, 20(6), 551–555.

[14]. Mogensen, C. E. (1984). Microalbuminuria Predicts Clinical Proteinuria And Early Mortality In Maturity-Onset Diabetes. The New England Journal Of Medicine, 310(6), 356–360.

[15]. Mogensen, C. E. (1994). Systemic Blood Pressure And Glomerular Leakage With Particular Reference To Diabetes And Hypertension. Journal Of Internal Medicine, 235(4), 297–316.

[16]. Mogensen, C. E., Christensen, C. K., & Vittinghus, E. (1983). The Stages In Diabetic Renal Disease: With Emphasis On The Stage Of Incipient Diabetic Nephropathy. Diabetes, 32(Supplement_2), 64–78.

[17]. Neves, R. G., Tomasi, E., Duro, S. M. S., Saes-Silva, E., & Saes, M. D. O. (2023). Complicações Por Diabetes Mellitus No Brasil: Estudo De Base Nacional, 2019. Ciência & Saúde Coletiva, 28, 3183–3190.

[18]. Parente, L. E. A. S. (2024). Efeitos Do Uso De Álbum Seriado E De Roda De Conversa No Conhecimento Sobre Hábitos De Vida Saudáveis Para Pessoas Com Doenças Cardiometabólicas: Ensaio Randomizado Controlado (Dissertação De Mestrado). Universidade Da Integração Internacional Da Lusofonia Afro-Brasileira.

[19]. Ragi, N., Pallerla, P., Babi Reddy Gari, A. R., Lingampelly, S. S., ... & Sripadi, P. (2023). Assessment Of Uremic Toxins In Advanced Chronic Kidney Disease Patients On Maintenance Hemodialysis By LC-ESI-MS/MS. Metabolomics, 19(3), 14.

[20]. Ruggenenti, P., Kraus, B. J., Inzucchi, S. E., ... & Wanner, C. (2022). Nephrotic-Range Proteinuria In Type 2 Diabetes: Effects Of Empagliflozin On Kidney Disease Progression And Clinical Outcomes. Eclinicalmedicine, 43, 1–13.
[21]. Brazilian Diabetes Society. (2024, Abril 26). Brasil Já Tem Cerca De 20 Milhões De Pessoas Com Diabetes. Sociedade Brasileira De Diabetes. Https://Diabetes.Org.Br/Brasil-Ja-Tem-Cerca-De-20-Milhoes-De-Pessoas-Com-Diabetes/
[22]. Takkavatakarn, K., Thammathiwat, T., Phannajit, J., Katavetin, P., Praditpornsilpa, K., Eiam-Ong, S., & Susantitaphong, P. (2023). The Impacts Of Hypoxia-Inducible Factor Stabilizers On Laboratory Parameters And Clinical Outcomes In Chronic Kidney Disease Patients With Renal Anemia: A Systematic Review And Meta-Analysis. Clinical Kidney Journal, 16(5), 845–858.
[23]. Tuttle, K. R., Bakris, G. L., Bilous, R. W., Chiang, J. L., Boer, I. H., Goldstein-Fuchs, J., Hirsch, I. B., Kalantar-Zadeh, K., Narva, A. S., Navaneethan, S. D., Neumiller, J. J., Patel, U. D., Ratner, R. E., Whaley-Connell, A. T., & Molitch, M. E. (2014). Diabetic Kidney Disease: A Report From An ADA Consensus Conference. Diabetes Care, 37(10), 2864–2883.
[24]. Veríssimo, M. H. G., Dias, B. A. S., Cordeiro, A. A., Mendonça, A. R. S., ... & Lima, R. R. (2024). Atendimento Odontológico Aos Pacientes Com Doenças Crônicas No Sistema Único De Saúde: Limitações E Avanços. Brazilian Journal Of Implantology And Health Sciences, 6(10), 2346–2372.
[25]. Ziyadeh, F. N. (2004). Mediators Of Hyperglycemia And The Pathogenesis Of Diabetic Nephropathy: The Case For TGF-B As The Major Mediator. Journal Of The American Society Of Nephrology, 15(1_Suppl), S55–S57.