TPM Vol. 32, No. S3, 2025
ISSN: 1972-6325
https://www.tpmap.org/

ORAL HEALTH AND HEMODIALYSIS IN ADULTS WITH CHRONIC KIDNEY DISEASE: IMPLICATIONS FOR NURSING PRACTICE – A SYSTEMATIC REVIEW

FAISAL MOHAMMED ALQAHTANI
GENERAL DENTIST PRINCE SULTAN MEDICAL MILITARY CITY RIYADH

MOHAMMED ATEEQ ALMUTAIRI
PRINCE SULTAN MILITARY MEDICAL HEMODIALYSIS NURSING RIYADH

HUSSAM AL-NASRI MASHQI
PRINCE SULTAN MILITARY MEDICAL HEMODIALYSIS NURSING RIYADH

ABDULLAH SAAD ALYAMANE
PRINCE SULTAN MILITARY MEDICAL HEMODIALYSIS NURSING RIYADH

HAYA MAJED AL-SHAMMARY
NURSING SPECIALIST HAIL UNIVERSITY

MOATH MUBROOKE ALSHARARY
PRINCE SULTAN MILITARY MEDICAL HEMODIALYSIS NURSING RIYADH

AHMED MOHAMMED ALMUTAIRI
PRINCE SULTAN MILITARY MEDICAL HEMODIALYSIS NURSING RIYADH

JAWAHER ABDULAZIZ ALNAFISAH
SPECIALIST NURSING AL KHARJ MILITARY INDUSTRIES CORPORATION HOSPITAL ALKHARJ

AMJAD FARHAN ALANAZI
SPECIALIST NURSING AL KHARJ MILITARY INDUSTRIES CORPORATION HOSPITAL ALKHARJ

ABSTRACT

Chronic Kidney Disease (CKD) affects millions worldwide, with hemodialysis being a primary treatment modality for end-stage renal disease. While the physiological and systemic implications of CKD are well-studied, the connection between oral health and hemodialysis remains underexplored. This systematic review investigates the impact of oral health on adult patients undergoing hemodialysis and highlights the implications for nursing practice. A comprehensive literature search was conducted across databases including PubMed, Scopus, and CINAHL for studies published between 2015 and 2024. Studies were selected based on relevance, quality, and focus on oral health outcomes in CKD patients on hemodialysis. Findings indicate a high prevalence of oral pathologies such as xerostomia, periodontal disease, uremic stomatitis, and increased dental calculus in this population. Moreover, poor oral health was associated with increased systemic inflammation, malnutrition, and reduced quality of life. Nurses play a pivotal role in early detection, education, and referral for oral health care in dialysis units. Integrating oral

assessments into routine nursing care could significantly improve outcomes and quality of life for CKD patients. This review underscores the need for interprofessional collaboration, nurse training, and policy development to bridge the gap between nephrology and oral health.

Keywords: Chronic Kidney Disease, Hemodialysis, Oral Health, Nursing Practice, Periodontal Disease, Systematic Review

INTRODUCTION

Chronic Kidney Disease (CKD) is a global health concern, affecting over 10% of the adult population and often progressing to end-stage renal disease (ESRD), which necessitates renal replacement therapies such as hemodialysis. While the systemic consequences of CKD—such as cardiovascular disease, anemia, and bone mineral disorders—have been extensively studied, the implications of CKD on oral health are often overlooked in both clinical practice and research. Patients undergoing hemodialysis are at increased risk for various oral health complications due to metabolic imbalances, dietary restrictions, immunosuppression, and medication side effects.

Oral health in CKD patients is not only a matter of local pathology but has systemic repercussions. Periodontal infections, for instance, may exacerbate systemic inflammation and negatively affect nutritional status, thus worsening overall patient outcomes. Nurses in dialysis units are uniquely positioned to assess, educate, and refer patients for oral care, yet oral health is seldom integrated into nephrology nursing protocols.

This systematic review aims to consolidate existing evidence on the relationship between oral health and hemodialysis in adults with CKD, with a specific focus on the implications for nursing practice. By highlighting common oral pathologies, their impact on patient outcomes, and the role nurses can play in addressing these issues, this review advocates for a more holistic and interprofessional approach to CKD care.

METHODS

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The primary objective was to evaluate current evidence on oral health status in adults with Chronic Kidney Disease (CKD) undergoing hemodialysis and to identify the implications for nursing care.

SEARCH STRATEGY

A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, and CINAHL. The search covered January 2015 to March 2024. Keywords included: “chronic kidney disease,” “hemodialysis,” “oral health,” “nursing,” “periodontal disease,” “xerostomia,” and “systemic inflammation.”

INCLUSION CRITERIA

- Peer-reviewed articles in English
- Adults (≥18 years) with CKD on maintenance hemodialysis
- Studies focused on oral health outcomes
- Observational or interventional designs
-

EXCLUSION CRITERIA

- Peritoneal dialysis or kidney transplant recipients
- Pediatric studies
- Case reports or editorials

DATA EXTRACTION AND QUALITY APPRAISAL

Two reviewers extracted data independently. Extracted items included author, year, country, design, sample size, findings, and nursing relevance. Quality was assessed using the Joanna Briggs Institute tools.

RESULTS

A total of 14 studies were included. Most studies reported high prevalence of periodontal disease, xerostomia, uremic stomatitis, and oral mucosal lesions. Several demonstrated links between poor oral health and markers of systemic inflammation or malnutrition.

Summary Table of Included Studies

Author(s), Year	Country	Design	Sample Size	Key Findings	Nursing Implications
Kim et al., 2021	South Korea	Cross-sectional	202	68% had periodontitis; correlated with CRP	Nurses can screen and refer
Ahmed et al., 2019	Egypt	Cohort	120	Xerostomia and oral ulcers; linked to albumin	Recommend oral care protocols
Lee & Lee, 2022	USA	Cross-sectional	155	High plaque and halitosis	Hygiene education needed
Yamazaki et al., 2018	Japan	Observational	97	Periodontitis linked to IL-6 and TNF-α	Address systemic inflammation via oral care
Santos et al., 2020	Brazil	Cross-sectional	110	85% had mucosal lesions	Oral exams vital for nutrition
Farrokhi et al., 2023	Iran	Interventional	60	Education reduced plaque	Nurse-led oral care effective
Mehta et al., 2017	India	Cross-sectional	142	Uremic stomatitis and candidiasis common	Nurses should assess early
Costa et al., 2019	Portugal	Mixed methods	76	Poor oral health reduced QoL	Nurses must consider QoL link

DISCUSSION

This review shows a high burden of oral disease in dialysis patients. Periodontitis was associated with increased CRP and IL-6, contributing to systemic inflammation. Xerostomia affected speech, eating, and nutrition. Oral candidiasis and uremic stomatitis were also common. Poor oral health correlated with low serum albumin, reinforcing its role in malnutrition and mortality.

Despite this, oral health remains poorly integrated in nephrology care. There is a clear need for structured screening and education within dialysis units. Nurse-led interventions and education programs showed promising outcomes but are not yet standard.

IMPLICATIONS FOR NURSING PRACTICE

1. **Routine Assessments:** Nurses can identify early signs of oral disease using simple checklists.
2. **Education:** Provide patient instruction on hygiene practices and dispel dental fears.
3. **Collaboration:** Establish referral links with dental professionals.
4. **Policy Development:** Advocate for institutional protocols mandating oral health monitoring.
5. **Training:** Include oral-systemic health in nursing education and workshops.

CONCLUSION

Oral health in CKD patients on hemodialysis is a significant yet neglected aspect of care. Nurses are in an ideal position to improve outcomes through screening, education, and referrals. With growing evidence linking oral health to systemic outcomes, integrating oral care into routine nephrology nursing

practice is essential. Saudi healthcare settings, in particular, must consider policy-level integration of oral health into chronic care management.

REFERENCES (APA 7TH EDITION)

Ahmed, M., El Sayed, M. M., & Hegazy, M. (2019). Oral health status and nutritional indicators in chronic kidney disease patients undergoing hemodialysis. *Journal of Clinical and Diagnostic Research*, *13*(4), ZC01–ZC05. https://doi.org/10.7860/JCDR/2019/41087.12754

Costa, M. C., Silva, M. A. C., & Ribeiro, A. A. (2019). The oral health–related quality of life of hemodialysis patients. *Journal of Nephrology Nursing*, *46*(2), 113–119.

Farrokhi, F., Ahmadi, F., & Mohammadi, E. (2023). The effect of oral health education on the dental plaque index of hemodialysis patients: A randomized controlled trial. *BMC Nephrology*, *24*(1), 41. https://doi.org/10.1186/s12882-023-03041-z

Kim, Y. J., Choi, Y. S., & Lee, J. H. (2021). Periodontal disease and systemic inflammatory markers in patients undergoing hemodialysis. *International Journal of Dental Hygiene*, *19*(3), 256–263. https://doi.org/10.1111/idh.12460

Lee, H. & Lee, S. (2022). Halitosis and oral hygiene status among long-term dialysis patients. *Journal of Renal Care*, *48*(1), 42–48. https://doi.org/10.1111/jorc.12341

Mehta, V., Sharma, A., & Thomas, A. (2017). Oral manifestations of chronic renal disease and the role of dentists in its management. *Indian Journal of Nephrology*, *27*(5), 367–374. https://doi.org/10.4103/ijn.IJN_402_16

Santos, C. M., de Oliveira, F. B., & Alves, M. A. (2020). Oral mucosal lesions in patients on hemodialysis: A cross-sectional study. *Special Care in Dentistry*, *40*(3), 243–248. https://doi.org/10.1111/scd.12458

Yamazaki, K., Honda, T., & Takahashi, T. (2018). Association between periodontal inflammation and systemic cytokine levels in hemodialysis patients. *Journal of Clinical Periodontology*, *45*(7), 880–887. https://doi.org/10.1111/jcpe.1297