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Challenges Faced by Nurses in Managing Chronic Kidney Disease Patients with Hearing Impairment in the Hemodialysis Unit of Buea Regional Hospital

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ABSTRACT

Effective patient management in hemodialysis settings depends largely on clear communication, continuous monitoring, patient education, and psychosocial support provided by nurses. However, several factors can significantly hinder care delivery, compromise patient understanding, and negatively affect treatment adherence and safety. Guided by Peplau's Interpersonal Relations Theory which emphasizes therapeutic communication and Orem's Self-Care Deficit Theory which highlights patient participation in care, this study addresses the challenges posed by hearing impairment in achieving effective patient-centered management. This study employs a cross-sectional aqualitative survey design to evaluate the challenges faced by nurses in managing hearing-impaired CKD patients in the hemodialysis unit of Buea Regional Hospital. The study population includes all 30 nurses working in the unit, purposively selected based on their direct involvement in patient care. Data are collected using an interview guide. Methodological technical requirements for the instruments and data validation were abided to. The abstraction of the data was reduced through the systematic process of thematic analysis. Findings unfold number of challenges ranging from communication, management of patients, training, visual support tools and patient discomfort. It was recommended that these challenges be addressed as this will go a long way to palliate to the difficulties nurses faced in managing or carrying out procedure with CKD patients with hearing impairment and improve care and treatment outcome.

KEYWORDS: *Chronic Kidney Disease, Hearing Impairment, Hemodialysis, Nursing Management Challenges.*

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1. INTRODUCTION

Chronic Kidney Disease (CKD) is a progressive and irreversible condition characterized by reduced kidney function or damage lasting at least three months, affecting about 10 percent of adults globally and contributing to significant morbidity and mortality (Kitamura et al., 2019; Lee et al., 2018). CKD often leads to systemic complications, including cardiovascular, metabolic, and neurological disorders, which increase healthcare burden and reduce quality of life. Nurses are central in hemodialysis units, providing patient monitoring, treatment administration, education, and adherence support. Their knowledge, skills, communication abilities, and attitudes significantly influence patient outcomes. Hearing impairment is a common but often overlooked comorbidity, affecting up to 41.7 percent of CKD patients, usually sensorineural and high frequency, and linked to factors such as electrolyte imbalance, hypertension, ototoxic medications, and metabolic changes (Alawiya et al., 2020; Jain et al., 2019). Hearing loss poses challenges in hemodialysis care, limiting patients' understanding, engagement, and adherence, which can compromise safety and treatment effectiveness (Jain et al., 2019; Wang et al., 2024), thus the need to pay sufficient attention to this vulnerable group.

2. Background

From the emergence of dialysis in the 1940s and kidney transplantation in the 1950s to the establishment of comprehensive, evidence-based guidelines, CKD management has profoundly evolved worldwide. Hemodialysis and peritoneal dialysis became established life-saving treatments for end stage kidney disease (ESKD) in high-income countries beginning in the mid-20th century (Tenckhoff et al., 1968). In 1972 the US introduced the Medicare End Stage Renal Disease Program, dramatically expanding access to dialysis via broad public funding (U.S. Congress, 1972). Since then, the development of kidney Disease Improving Global Outcomes (KDIGO) and other professional guideline bodies have standardized CKD staging, prevention and early intervention strategies including risk stratification, blood pressure control, renin angiotensin blockade, Sodium-Glucose Cotransporter 2 inhibitors such as dapagliflozin, and diet and lifestyle modification (KDIGO, 2012; Heerspink et al., 2020). Nurses have played a pivotal historical role in managing chronic kidney disease (CKD), particularly during the early development of renal replacement therapies. In the 1950s, nurses were responsible for technical aspects of hemodialysis including equipment setup, infection prevention, patient assessment, fluid management, documentation, and basic patient education as well as offering comfort and reassurance to patients (Coleman & Merrill, 1952; Hoffart, 1989).

Globally, CKD affects more than 10 percent of the population, representing over 800 million people and contributing significantly to mortality (Bikbov et al., 2020). In Africa, prevalence ranges between 13 and 15 percent, with both traditional and region-specific risk factors contributing to disease burden (Stanifer et al., 2014; Bikbov et al., 2020).

Across sub–Saharan Africa, CKD management lagged behind due to limited infrastructure, poor access to renal replacement therapy, and late presentation (Stanifer et al., 2014; Bikbov et al., 2020).

In Cameroon, CKD prevalence ranges between 10 and 14 percent, with higher rates among high-risk populations such as hypertensive patients (Kaze et al., 2016; Kaze et al., 2018). The disease is associated with high morbidity, mortality, and financial burden due to limited healthcare coverage (George et al., 2017). CKD management began with the introduction of dialysis during the early 1980s, initially including both peritoneal and hemodialysis, though hemodialysis eventually became the sole modality over the following decades (Kaze et al., 2018). Despite this, patients typically present late with over 70 percent referred at stage G4 to G5 CKD, and more than half of cases involving delayed referrals, resulting in high rates of unplanned emergency dialysis (Halle et al., 2019). Dialysis costs remain largely borne by patients, with significant financial burden and minimal insurance coverage (Ashuntantang et al., 2017). Newer developments include pilot kidney transplantation introduced in 2021 and 2022 (Halle et al., 2022).

Empirical studies have shown that One of the major factors influencing nurses' competency is education and professional training. Formal education and continuing professional development programs play a significant role in improving nurses' knowledge and clinical abilities in managing complex patient conditions. Studies have shown that participation in structured training programs significantly improves nurses' competence in CKD-related care and patient education (Congying *et al*., 2024). Nurses who receive regular clinical training demonstrate higher levels of confidence and performance compared with those who lack such opportunities. Another important factor is clinical experience. Experience gained through years of practice in specialized units such as hemodialysis enhances nurses' ability to recognize patient needs, respond to complications, and communicate effectively with patients. Research indicates that nurses with longer clinical experience tend to demonstrate stronger communication and interpersonal competencies because they have developed practical skills through repeated patient interactions (Almarwani & Alzahrani, 2023). Experienced nurses are also more likely to form therapeutic relationships with patients and provide emotional support, which is particularly important for CKD patients who undergo long-term dialysis treatments. Communication competence and self-efficacy also play an essential role in determining nurses' competency in caring for patients with hearing impairment. Communication competence enables nurses to accurately assess patient needs, provide health education, and ensure patient safety during clinical procedures. Studies indicate that effective communication skills improve nurses' clinical decision-making, reduce treatment errors, and enhance the overall quality of healthcare delivery (Camedda *et al*., 2023). Additionally, nurses with high communication self-efficacy are more confident in their ability to interact with patients and overcome communication barriers, including those caused by hearing loss. The work environment and organizational support also influence nurses' competency. Healthcare institutions that provide supportive work environments, adequate staffing

levels, and access to communication resources enable nurses to perform their duties more effectively. Conversely, factors such as excessive workload, inadequate staffing, and lack of institutional support may negatively affect nurses' performance and limit the time available for effective patient communication. Studies have shown that workplace conditions and workload significantly affect nurses' communication behaviors and professional engagement (Pérez-Francisco *et al*., 2020). Another influencing factor is availability of communication resources and assistive tools. Caring for patients with hearing impairment often requires the use of alternative communication methods such as written instructions, visual aids, interpreters, or hearing-assistive technologies. However, in many healthcare settings, these resources are limited. The absence of appropriate communication tools and institutional policies can reduce nurses' ability to communicate effectively with hearing-impaired patients and may hinder optimal patient care (Camedda *et al*., 2023). Finally, personal attributes such as empathy, caring ability, and professional attitude contribute significantly to nurses' competency. Empathy helps nurses understand patients' emotional experiences and respond appropriately to their needs. Research on hemodialysis nurses indicates that empathy and caring ability strengthen nurse–patient relationships and support shared decision-making processes in clinical practice (Cao & Chen, 2019). Nurses who demonstrate empathy are more likely to adopt patient-centred communication approaches, which improve the overall quality of care.

3. Problem statement

Nursing care is expected to be holistic and patient centered, providing timely assessment, monitoring, therapeutic intervention, education, and emotional support tailored to individual patient needs (Hermalia *et al*., 2021; Kanwal *et al*., 2023). Beyond clinical duties, nurses play a critical role in communication, coordination, and collaboration within multidisciplinary teams to optimize health outcomes (Lamb & Norton, 2018; Santos *et al*., 2020). In chronic kidney disease management, particularly in hemodialysis units, nurses are central to patient care, performing complex tasks such as monitoring kidney function, managing fluid and electrolytes, instructing on strict diets and medication, and ensuring adherence to dialysis schedules (Hermalia *et al*., 2021; Kanwal *et al*., 2023).

Competent nursing care requires comprehensive knowledge, clinical and communication skills, and positive professional attitudes. However, gaps in training, inadequate resources, and unstructured protocols often undermine nurses' ability to deliver consistent and effective care, especially in specialized settings like hemodialysis units (Hermalia *et al*., 2021; Lamb & Norton, 2018). These challenges are compounded when patients have comorbidities such as hearing impairment, which can significantly hinder nurse patient communication. Observations at the Buea Regional Hospital hemodialysis unit indicate that nurses face difficulties resulting in reduced treatment comprehension, non-adherence to dialysis regimens, and higher risk of complications (Agrawal & Singh, 2023; Santos *et al*., 2020; Hermalia et al., 2021; Kanwal et al., 2023)). Therefore, evaluating nurses' challenges in managing hearing impaired chronic kidney disease patients and addressing gaps in nursing practices is crucial.

4. Aim

To study aims at examining challenges faced by nurses in the effective management of chronic kidney disease patients with hearing impairment in the hemodialysis unit of Buea Regional Hospital.

5. Significance of the Study

This study will benefit the following:

CKD Patients: Chronic kidney disease (CKD) patients stand to benefit directly from this study's findings, as it will illuminate specific communication barriers that arise when hearing impairment intersects with complex hemodialysis regimens. By identifying how miscommunication contributes to treatment non-adherence, medical errors, or anxiety during dialysis sessions, interventions such as visual aids, assistive listening devices, and staff training in basic sign-supported communication can be implemented to ensure that patients fully understand dietary restrictions, medication adjustments, and the significance of machine alarms. In turn, this promotes greater patient autonomy, enhances safety, and may reduce avoidable complications or hospital readmissions, ultimately improving both quality of life and clinical outcomes.

Nurses: For nurses working in hemodialysis units, the research will clarify the nature and frequency of the challenges they face when caring for hearing-impaired patients, transforming anecdotal frustrations into evidence-based insights. Understanding these dynamics will inform targeted continuing-education programs and in-service workshops that equip nurses with practical skills such as effective use of written summaries, positioning to improve lip-reading, and coordinating with interpreter services thereby reducing stress, preventing moral distress, and boosting professional confidence. By strengthening nurse–patient rapport through enhanced communication competency, the study contributes to

a more rewarding practice environment and may help stem turnover in high-pressure dialysis units.

Nursing students: Nursing students will also gain long-term advantages from this work through curricular innovations grounded in real-world needs. Embedding modules on sensory impairment care into both general and nephrology nursing education will ensure that graduating students have early exposure to the principles of inclusive communication. Rather than encountering these challenges unprepared during their first clinical rotations, students will practice alternative communication strategies in simulation labs and supervised placements, fostering greater empathy and competence. This proactive educational approach not only aligns with global calls for disability inclusion in health professions education but also readies the next generation of nurses to deliver truly patient-centered care.

Policy makers: Policy makers require robust data to allocate resources effectively and to develop regulatory standards that mandate inclusive practices. By quantifying the prevalence of hearing impairment among CKD patients in the Buea Regional Hospital hemodialysis unit and documenting its impact on treatment outcomes, this study will provide the evidence base needed to advocate for budget lines dedicated to procuring assistive technology, funding interpreter services, and revising national nursing curricula. In doing so, health authorities can integrate disability-inclusive communication requirements into accreditation guidelines and national health strategies, ensuring that all dialysis programs adhere to a standard of care that addresses the needs of hearing-impaired patients.

Researchers: researchers across multiple disciplines will find in this study a springboard for further inquiry into the intersections of sensory impairment, chronic disease management, and health systems in low-resource settings. By elucidating previously under-explored facets of nurse–patient communication in hemodialysis, the work will highlight fertile areas for intervention trials such as randomized evaluations of communication-skills workshops, pilot studies of hearing-assistive technology deployment, or qualitative investigations of patient and family experiences. These subsequent studies can deepen our understanding of best practices and support the development of scalable models for inclusive care in similar contexts around the world.

6. Scope of the Study

6.1. Thematic Scope

Content wise, the study examines the challenges inherent to hearing loss on CKD patients' management by hemodialysis nurses at the Buea Regional Hospital.

6.2. Geographical Scope

Geographically, the investigation is confined to the Buea Regional Hospital, located in the Southwest Region of Cameroon. Buea Regional Hospital serves as the principal referral center for kidney failure in the area, drawing patients from both urban Buea and the surrounding rural communities.

6.3. Time Scope

It was a cross sectional study carried out from February to April 2026.

6.4. Theoretical Scope

The study was guided by the Peplau's Interpersonal Relations Theory, Communication Accommodation Theory (CAT), Leininger's Culture Care Theory, then the Health Belief Model (HBM) which together provide a robust foundation for understanding how hearing impairment affects nurse-patient communication and the implications for nursing education and practice

6.5. Methodological Scope

Methodologically, it a case study adopting a cross-sectional qualitative survey design, utilizing a qualitative data collection and analysis method to gain an in-depth understanding of the challenges faced by nurses managing chronic kidney disease patients with hearing impairment at the Buea Regional Hospital's hemodialysis unit.

7. Operational Definition of Terms

Hearing Impairment: Hearing impairment describes a partial or total inability to perceive sound, ranging from mild loss to profound deafness (World Health Organization, 2021). Clinically, it is classified by hearing thresholds on an audiogram: mild (26–40 dB), moderate (41–60 dB), severe (61–80 dB) and profound (> 81 dB) (Centres for Disease Control and Prevention, 2023). In this study's setting, hearing impairment refers to any level of sensory deficit in CKD patients at the Buea Regional Hospital dialysis unit that hinders their ability to hear nurses' instructions, alarms or verbal cues during treatment.

Chronic Kidney Disease (CKD): Chronic kidney disease is defined as structural or functional kidney abnormalities present for more than three months, often identified by a glomerular filtration rate of < 60 mL/min/1.73 m² or markers of renal damage such as albuminuria (Kidney Disease: Improving Global Outcomes, 2013). CKD is staged I–V by severity, with stage V requiring renal replacement therapy. Within this study, CKD refers to the cohort of patients receiving maintenance hemodialysis at Buea Regional Hospital whose impaired renal function

necessitates lifelong extracorporeal blood purification.

Nurse: A nurse is a licensed healthcare professional educated to assess, diagnose, plan, implement and evaluate nursing care to maintain or improve patient health (International Council of Nurses, 2019; American Nurses Association, 2021). For the purposes of this study, nurses are the clinical staff working in Buea Regional Hospital's hemodialysis unit who provide direct care, patient education and psychosocial support to individuals undergoing dialysis treatment.

Patient: A patient is any individual who receives or is registered to receive healthcare services, including diagnosis, treatment or preventive interventions (World Health Organization, 2020). In this study, patients are adults diagnosed with CKD and enrolled in the hemodialysis program at Buea Regional Hospital, whose interact with nursing staff form the basis for assessing communication and care quality in the presence of hearing impairment.

Hemodialysis: Hemodialysis is a renal replacement therapy that uses an external machine and dialyzer to remove waste products, excess fluid and toxins from the blood when the kidneys are unable to do so (National Kidney Foundation, 2024; U.S. National Library of Medicine, 2023). Treatments typically occur three times per week, lasting three to five hours per session. In the context of this study, hemodialysis describes the routine procedure through which CKD patients receive life-sustaining care, during which effective nurse–patient communication is essential for safety and treatment adherence.

Management: In nursing and healthcare, management denotes the systematic organization, coordination and delivery of care activities to achieve optimal patient outcomes (World Health Organization, 2022). It encompasses assessment, planning, implementation and evaluation of clinical interventions (Merriam-Webster, 2025). Here, management refers to the full spectrum of nursing tasks (monitoring vital signs, operating dialysis equipment, educating patients, and responding to complications) used to prevent CKD progression and maintain patient well-being in the hemodialysis unit.

Challenges: Challenge is the situation of being faced with) something that needs great mental or physical effort in order to be done successfully and therefore tests a person's ability (Cambridge Dictionary, 2025). Challenges are difficult and demanding tasks (Oxford English Dictionary, 2025).

8. Materials and Methods

8.1. Research Design

This study was a case study employing a cross-sectional survey design and notably a qualitative appraoch to assess nurses' competency in the effective management of chronic kidney disease (CKD) patients with hearing impairment in the hemodialysis unit of Buea Regional Hospital.

8.2. Area of Study

The study was conducted at the Buea Regional Hospital, located in the Southwest Region of Cameroon, specifically within its hemodialysis unit.

8.3. Study Setting

It was essentially a hospital-based evaluation study with information gathered from nurses and through structured observations.

8.4. Population of the Study

The target population focuses on nurses in the hemodialysis unit of Buea Regional Hospital, whose direct patient care and specialized renal training make them well-suited to provide insights on managing hearing-impaired CKD patients.

Inclusion Criteria

The study included nurses who are currently employed and actively working in the hemodialysis unit of Buea Regional Hospital. To ensure that participants have sufficient exposure to managing chronic kidney disease (CKD) patients. Eligible nurses must also be directly involved in patient care and possess experience interacting with hearing-impaired patients, as this is essential for obtaining relevant insights for the study. By focusing on nurses actively engaged in providing care within this specialized unit, the study ensures that participants possess the insights necessary to explore the communication challenges and care strategies related to hearing-impaired patients undergoing hemodialysis.

Exclusion Criteria

Nurses working in hospital units or departments outside the hemodialysis unit were excluded from the study, as their roles do not involve direct management of chronic kidney disease (CKD) patients. Those with less than six months of experience in the hemodialysis unit were also excluded, as they may not have acquired sufficient experience in CKD patient care. Finally, any nurse who declined or withdrew consent to participate in the study were excluded.

8.5. Sampling Methods and Sample Size

8.5.1. Sampling Technique

This study employed purposive sampling targeting the entire cohort but focusing on nurses that meet the inclusive criteria of the study.

8.5.2. Sample Size

Thirty nurses currently employed in the hemodialysis unit of Buea Regional Hospital were sampled and served as the primary participants for data collection (table 1). This was supported by 15 observations.

Table 1: Participant Demographic Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Qualification	Nursing Assistant	3	10.0
	HND	8	26.7
	BSc	14	46.7
	Masters	3	10.0
	SRN	2	6.7

8.6. Data collection Tools and Procedure

Data was collected using an interview guide which is an unstructured data collection tool to gather in-depth information on a subject matter.

8.6.1. Validity of the Instrument

A major concern in research is the validity of the procedures and conclusions. Validity is the quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. A valid research finding is one in which there is similarity between the reality that exists in the world and the research results (Mugenda and Mugenda, 2003). Content validity, construct validity, face validity, internal validity and external validity were given prime attention. The questionnaire and the observational checklist were developed based on a review of relevant literature and pretested with a small sample of nurses outside the study population to ensure clarity, reliability, and validity.

Reliability

Given that we are dealing with essentially qualitative data, the panel of judge method of reliability was employed. The method is a palliative to most of test-retest methods' problems. Rather than submitting people to the same questionnaire in two different occasions, this method allows two or more judges to appraise the data collection instrument, the indicators or the codes and then check for level of agreement (Mohlokoane, 2004). This method although safe from some disadvantages of the test-retest method, depends highly on the level conceptual reasoning, the background and the sense of logical and systematic reasoning of the judges. Generally, the judges should have the suitable background meeting the inclusive criteria of the study. The approach of analysis of panel of judge method is similar to that of parallel method in qualitative studies. The parallel method generally applies when dealing with quantitative studies. However, this method or panel-of-judge method can be used in qualitative research as it is the case in this study, whereby reliability was appraised not mathematically but conceptually which is termed conceptual parallel method (Nana, 2018). The responses of the judges were appraised as to make sure that they had the same interpretation or understanding of the questions; this was an indication that the questions were well framed and were understandable. This approach is similar to content validity but the difference lies to the fact that the respondents here shall meet the profile of the study participants, and another difference lies to the fact that the responses are appreciated not by the respondents but by a third party-judge, generally the student, the statistician or the supervisor. In this perspective, for each interview guide, coupled to the content and construct validity from the supervisor and the statistician, two respondents meeting the inclusion criteria of the study were given the interview guide for responses. Generally, comprehension and vocabulary challenges were raised and they were sorted out, adjusted and verified for cross-validations.

8.7. Ethical consideration

The protection of human subjects through the application of appropriate ethical principles is important in any research study. The researcher ensured that the subjects were aware of the purpose of the research and the manner in which it would be conducted. Participation in the research was voluntary, and withdrawal was possible at any time. Measures were taken to ensure confidentiality. Specific details or references which could easily lead a reader to deduce the identity of the participant were made more generic.

A letter of introduction and authorization was collected from the Faculty of Education, University of Buea, signed by the Vice Dean in charge of Research and Cooperation and addressed to the authorities of the hospital. Ethical consideration and obligations are very necessary in any research work to respect participants' rights. The researcher sought the assent of the participants for them to willingly take part in order to give appropriate information for better results.

8.8. Data Management and Analysis

Qualitative textual data from the open-ended question will be prepared as a single primary document and assigned for coding and analysis in Atlas.Ti 5.2 software (Atlas ti. Scientific Software Development GmbH, Berlin, Germany). This program easily automates the coding process and examines huge amounts of data and a wider range of texts quickly and efficiently, once the coding is done. The researcher can now examine the data and draw possible conclusions and inductions. These data will be analyzed using the process of thematic analysis whereby concepts or ideas will be grouped under umbrella terms or key words. The first stage will consist in deciding on the level of analysis. At this level, single words, clauses and sets of words or phrases will be coded. The researcher will not initially decide on how many different concepts to code and for this reason, a pre-defined or interactive set of concepts/categories will not be initially developed and concepts or umbrella terms emerged from the data till saturation. However, pre-established standardized terminology will be used to enrich the umbrella terms that emerged from the study as to make the findings more comparable. The primary documents of textual data will be coded for every independent idea as it emerged from the data and for frequency of concepts following the positivism principle, but the interpretation of findings will be dominantly qualitative. However, the frequency or grounding also reflects how many times a concept emerged and will be a major indicator of emphasis. Precautions will be taken to clearly determine the meaning of themes or umbrella term and what they stand for. In the context of this study, to satisfy this requirement, findings will be organized in code-grounding-quotation tables whereby themes or codes will be clearly explained or described, followed by their grounding or frequency of occurrence and at the same time backed by their related quotations. The code-quotation table ensures the objectivity and reliability of qualitative analysis in the sense that if code/concepts/umbrella terms and their descriptions can be subjected to relative error, the quotations are grounded and real and thus help compensate for potential bias (Nana, 2018). A conceptual diagram will conclude the analytical stage which consists in relating concepts or ideas in a meaningful and logical manner, what is termed concept-building in qualitative analysis.

9. Findings

9.1. Socio-Demographic Information

Table 2: Demographic characteristics of participants

Age	n	%
18-24	10	33.3
25-54	19	63.3
55-64	1	3.3
Sex	**n**	**%**
Male	11	36.7
Female	19	63.3
Marital status	**n**	**%**
Single	16	53.3
Married	13	43.3
Divorced	1	3.3
Level of education	**n**	**%**
HND	8	26.7
BSc	14	46.7
Masters	3	10.0
SRN	2	6.7
Nursing assistants	3	10
Years of experience	**n**	**%**
Less than 1 year	6	20.0
1–5 years	18	60.0
6–10 years	6	20.0

Years of working in hemodialysis unit	**n**	**%**
Less than 1 year	12	40.0
1–3 years	13	43.3
4–6 years	5	16.7
Management of CKD patients with hearing impairment was included in training programme or have ever received such training either in a seminar or workshop	**n**	**%**
Yes	17	56.7
No	13	43.3

Age

The mode age was 25-54 years 63.3% (19), followed by those aged 18-24 years 33.3% (10), and the least represented aged 55-64 years 3.3% (1). Cumulatively, 96.7% of nurses were aged 54 years or less. Nurses were stratified in their ages, which was good for the representativeness of the data.

Sex

Sex was also stratified with both male and female represented in the sample though females were more than males with proportions of 63.3% (19) and 36.7% (11) respectively.

Marital status

Nurses were mostly single 53.3% (16), followed by the married 43.3% (13), then the divorced 3.3% (1).

Level of education

The mode here was BSc with proportion of 46.7% (14), followed by HND 26.7% (8), nursing assistant 10.0% (3) having the same proportion with master holders, then SRN 6.7% (2).

Years of experience

The mode was 1-5 years, with a proportion of 60.0% (18), with less than 1 year and 6 – 10 years having the same proportion of 20.0% (6). This therefore implies that nurses were relatively experience and this was good for the validity of the data.

Years of working in hemodialysis unit

The mode here was 1-3 years 43.3% (13), followed by less than 1 year 40.0% (12), then 4-6 years 16.7% (5). This therefore implies that majority of nurses have worked more than one year in the heamodialysis unit, which is good for the validity of the data.

Management of CKD patients with hearing impairment included in your training program or have you ever received such training either in a seminar or workshop

A weak majority 56.7% (17) of nurses had management of CKD patients with hearing impairment included in their training program or have ever received such training either in a seminar or workshop.

9.2. Presentation of Research Objectives

Table 3: Thematic analysis depicting challenges faced by Nurses in managing CKD patients with hearing impairment

Code	Code description	Grounding	quotation
communication	Nurses having difficulties in understanding or communicating with CKD patients with hearing impairment and vice versa	60% (18)	*"difficulties in understanding"* *"patient find it difficult to understand"* *"use of face marks hinders lip reading"* *"talking louder than expected"* *"finds it difficult to interact with patients"* *"misinterpretation"* *"misunderstanding based on patients assumptions"* *"patient care deficit, they hardly understand and effectively practice self care due to inability to fully comprehend instructions"*
management	Difficulties in managing or carrying out procedure with CKD patients with hearing impairment	26.7% (8)	*"difficulties in understanding the procedure to be carried out"* *"facing difficulties in demonstrating how to take medication"*

training	Lack of training on how to care for CKD patients with hearing impairment	10% (3)	*"no training"* *"no formal training"*
Visual support tools	inadequate simulation tools or visual aid materials	6.7% (2)	*"limited visual aid materials"* *"lack of equipment"*
workload	Work over load leading to busy shift	6.7% (2)	*"busy shift"* *"procedure requires a lot of patience and time management"* *"busy work schedule"*
discomfort	CKD patients with hearing impairment are uncomfortable and feel isolated	6.7% (2)	*"hearing impaired patients always feel isolated"* *"patients uncomfortable"*

Nurses face number of challenges in managing CKD patients with hearing impairment. They mostly emphasised on communication as they argue that they have its difficulties in communicating with hearing impaired patients and vice versa as supported by this quotation, "*finds it difficult to interact with patients*". This issue was magnified by the inadequacy of visual support material whereby they were perceived either limited or inexistent as supported by these quotations "*limited visual aid materials*", "*lack of equipment*". Difficulties in managing or carrying out procedure with CKD patients with hearing impairment was emphasised upon ("*difficulties in understanding the procedure to be carried out*") notably as corollary of communication challenges, inadequacy of visual support tools ("*limited visual aid materials*"), and work overload ("*procedure requires a lot of patience and time management*"). Among others, CKD patients with hearing impairment are uncomfortable and feel isolated as emphasised by these nurses ("*hearing impaired patients always feel isolated*"), table 3.

10. Discussion

Training was highlighted as setback and this concern was earlier reported ((Alrasheeday *et al*., 2024) in other settings. It was emphasized in this vein that nurses who had previously received information or training related to CKD demonstrated significantly higher knowledge scores compared to less experienced nurses or those without prior information (Alrasheeday *et al*., 2024). These results from Alrasheeday *et al*. (2024) equally underscore the importance of both clinical exposure and continuous professional development in enhancing nurses' knowledge levels. Previous studies highlighted that continuously reinforced through structured training programs and evidence-based educational initiatives could enhance the outcome ofc are. Providing targeted CKD education for nurses can help address knowledge gaps, improve clinical decision-making, and ultimately enhance patient outcomes in hemodialysis settings (Sumari *et al*., 2023; Alrasheeday *et al*., 2024). This demonstrates that higher academic qualifications that considered courses on the subject matter may provide nurses with enhanced theoretical understanding and clinical reasoning skills necessary for effective CKD management. Findings from Meng *et al*. (2025) equally high pointed the importance of prior exposure to CKD-related information as impetus to conducive attitude toward care (Alrasheeday *et al*., 2024; Meng *et al*., 2025). This suggests that knowledge acquisition can enhance nurses' perception of patient care and their willingness to provide holistic support, thus aligning with the findings of this study context. By highlighting the influence of knowledge acquisition, Mend et al. (2025) supports the realities of this study context. Their study also indicated that nurses appreciated the training, new technologies, and communication strategies related to care, thus reflecting an openness to continuous learning and improvement in patient management (Meng et al., 2025). This corroborates this study context as nurses urged for more adequate training to enhance their ability to care for CKD patients with hearing impairment.

Effective management of CKD patients with hearing impairments requires nurses to possess not only technical knowledge of hemodialysis care but also specialized communication and relational skills (Tannenbaum-Baruchi, 2024). The use of professional interpreters and other communication tools increased, demonstrating that structured, hands-on training directly improves nurses' practical skills in engaging with hearing-impaired patients, which is critical in the hemodialysis setting where complex procedures require clear communication (Tannenbaum-Baruchi, 2024), thus supporting the findings of this study as nurses acknowledged the use of interpreters and requested for visual support aids. Similarly, Britto and Samperiz (2010) examined communication difficulties faced by nursing staff

caring for hearing-impaired patients. The study revealed that 66% of nurses struggled to explain care processes, while 32% experienced difficulty understanding patients' communication methods. To address these challenges, nurses utilized mimicry (100%), lip reading (94%), written communication (42%), and assistance from companions (65%). In this study context as well, nurses heavily highlighted communication challenges and deplored inadequate simulation tools or visual-support materials. Nurses employed informal strategies such as gestures and written notes to convey information (Silva de Assis et al., 2019), which aligns with the practices portrayed by nurses in this study context. This study underscores the skill-related gap in standard communication methods, showing that while nurses attempt to ensure care continuity, enhancing these skills through structured programs is essential for safe and effective management in hemodialysis units. Santos et al. (2020) in assessing challenges faced by nurses assisting patients with hearing disabilities equally highlighted lacks in sufficient training notably in communication with hearing-impaired individuals, limiting nurses' professional skills in delivering inclusive care.

11. Conclusion and Recommendations

As depicted by the proposed grounded and operationalized conceptual diagram for enhancing Management of CKD patients with hearing impairment in the hemodialysis unit of the Buea Regional Hospital below, challenges to the management of CKD patients with hearing impairment in the hemodialysis unit ranged from communication whereby nurses expressed having difficulties in understanding or communicating with CKD patients with hearing impairment and vice versa, management given the worries in managing or carrying out procedure with CKD patients with hearing impairment, training whereby nurses highlighted the lack of training on how to care for CKD patients with hearing impairment, visual support tools as the inadequacy of simulation tools or visual aid materials was a concern, and work load particularly leading to busy shift. Among others was discomfort as CKD patients with hearing impairment were said to be uncomfortable and felt isolated, thus inviting the Rosenstock's Health Belief Model (1952 to 1954) grounded in the idea that health behaviours are shaped primarily by personal perceptions and beliefs rather than by objective medical facts alone. By providing emotional support, reducing isolation, and advocating for patient needs in the care plan and ensuring that the environment is safe and conducive (minimizes noise, provides visual alarms or alerts), nurses in this study context corroborated the Rosenstock's Health Belief Model (1952 to 1954).

To enhance the effective management of CKD patients with hearing impairment in the hemodialysis unit, the following recommendations were made: The following recommendations considered grounded as unfolding from the findings of this study were done:

Because of the inadequacy of training raised in this study context, there need for more in-service training to palliate to this lack, and also having this included in their training programme. This will go a long way to palliate to the difficulties they faced in managing or carrying out procedure with CKD patients with hearing impairment.

Communication with CKD patients with hearing impairment was a major problem, as nurses were having difficulties in understanding or communicating with them and vice versa. Enhancing nursing skills in this respect by including sign language, the use of visual support and simulation tools and other techniques like written note among others in their training program is important.

CKD patients with hearing impairment were uncomfortable and feel isolated and nurses faced with work overload may have it difficult to keep them company. There is need to look into this problem given the paramount role play by the psychological state of patients in treatment outcome as to provide more openings for companionship.

12. Disclaimer

The views and opinions expressed in the submitted article are the author's own and not the official position of the affiliated institutions.

13. Competing Interest Statements

The authors have declared that there is no competing interest existing with respect to this study and publication.

14. Contributions

Asukwa Mouriline Injoh, Ayonghe Lum Suzanne and Majeu Defo Felicite participated in all stages of this paper, from the study design, method, data collection, analysis and paper writing. Nana C. participated in methods and data analysis.

15. Administrative Clearance Approval

A letter of introduction and authorization was collected from the Faculty of Education, University of Buea, signed by the Vice Dean in charge of Research and Cooperation and addressed to the hospital authorities for administrative clearance.

16. Data Availability

Data for this study are available and can be accessed if requested.

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