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Article

Nurses' Perceptions of the Causes and Impact of the Growing Burden of Chronic Kidney Disease: A Descriptive Qualitative Study

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Abstract

Background: Chronic kidney disease is characterised by an ongoing degeneration of kidney function due to various underlying conditions, posing significant challenges to patients, healthcare systems, and nursing professionals. As primary caregivers, nurses are often the first to encounter the increasing demands associated with chronic kidney disease management. Therefore, this study explored nurses' perceptions of the causes and impact of the growing burden of chronic kidney disease.
Methods: A descriptive qualitative research design was used. Data were collected through face–to–face in-depth interviews from a purposively selected sample of nine nurses. The interviews were audio-recorded and transcribed verbatim. The six phases of Braun and Clarke's thematic analysis were adopted to analyse the data.
Results: Participants revealed that personal dynamics such as lifestyle behaviour, lack of public awareness about CKD, poor screening, as well as medication and equipment shortages contributed to the growing burden of chronic kidney disease. Participants also reported that the CKD burden contributed to increased patient volume in the renal unit, burnout among nurses, and poor quality of patient care.
Conclusion: Healthcare systems and the lifestyle behaviour of the population contributed to the growing burden of CKD. To alleviate the burden, healthcare professionals need to scale up public health education for the general population. Moreover, governments need to train and recruit nephrology specialist healthcare professionals and construct additional renal units. Future research should investigate factors associated with poor treatment outcomes in patients with CKD.

Keywords

Burden, Chronic kidney disease, Nurses, Perceptions, Renal unit

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1. Introduction

The kidney is the main excretory organ that removes nitrogenous waste products from the blood and eliminates them in urine. When the kidney loses its function, it starts as an acute kidney injury (AKI), which eventually results in chronic kidney disease (CKD), whereby the kidney can no longer function as required [1]. Progression from AKI to CKD occurs as a result of ischemia, nephrotoxic injury, and inflammation that causes structural changes resulting in increased blood pressure, proteinuria, and a decline in the glomerular filtration rate. However, prompt medical interventions prevent the progression of AKI to CKD [2]. The diagnosis of CKD is made when a person presents with a glomerular filtration rate (GFR) of less than 60 mL/min/1.73 m² for more than three months with or without evidence of kidney damage, or evidence of kidney damage including microalbuminuria, proteinuria, haematuria or any anatomical or pathological abnormality with or without a decreased GFR for more than three months [3]. CKD, mainly resulting from diabetes mellitus and hypertension, is characterised by raised urinary albumin measured using the urinary albumin-to-creatinine ratio (ACR), which is a marker of kidney insult [4]. While both the GFR and ACR are sensitive and specific in detecting albuminuria [5], the GFR identifies existing kidney damage and the ACR identifies kidney damage occurring prior to significant nephron destruction [6]. To maintain homeostasis, dialysis, a form of kidney replacement therapy, is used to enhance the excretion of nitrogenous wastes to compensate for the work of the damaged kidney [7]. Without kidney replacement therapy (KRT), CKD progresses to end-stage kidney disease (ESKD) [4].

Globally, chronic kidney disease is a growing public health problem that contributes to adverse outcomes in other diseases [8]. CKD affects about 844 million people around the world [9] and is classified as the 12th leading cause of mortality. In 2013, CKD was ranked as one of the leading 10 causes of low life expectancy and disability-adjusted life-years. The CKD burden, its testing and treatment differ across the world [10]. The exact CKD burden in Africa is poorly understood due to the paucity of accurate epidemiological data [9,11]. In sub-Saharan Africa, the CKD burden is 10.7%, and is at 85% compared to the rest of the continent [9]. Individuals in sub-Saharan Africa are at a high risk of developing CKD risk due to genetic susceptibility, mainly from apolipoprotein L1 gene mutations and predisposition to sickle cell anaemia. The high prevalence of hypertension and diabetes, HIV infection and its treatment, and the use of nephrotoxic traditional herbs further aggravate the risk [12]. Poverty, a low socio-economic status, and chronic glomerulonephritis also hasten the development of CKD in sub-Saharan Africa [9]. Access to kidney replacement therapy is restricted in sub-Saharan Africa, and individuals progress to ESKD and die prematurely. Individuals who do access KRT experience significant financial constraints [12]. Chronic kidney disease causes a significant global health and economic burden. The health burden is associated with the development of co-morbidities, which include hyperparathyroidism, anaemia, hypertension, diabetes, fluid and electrolyte imbalances, bone disorders, metabolic acidosis, and dyslipidaemia [13].

The increased responsibility of taking care of patients living with CKD becomes a growing burden to the healthcare team [14]. Nurses are at the centre of the healthcare team and are frontliners in the provision of care, and therefore, their role becomes increasingly critical with the growing burden of CKD. In CKD management, nurses play a significant role in holistic patient assessment, education, coordination of care, and implementing evidence-based care [15]. Nurses also address the clinical and psychosocial difficulties experienced by patients with CKD, resulting in positive patient outcomes. Nurse-led interventions in CKD contribute to patient satisfaction, symptom control, complication control, improved diet and fluid restriction, and quality of life [16,17]. Nurses also offer support to the patients or help the patients access social and community resources, such as support groups or counselling services [17]. However, nurses face barriers to effective CKD management in resource limited settings which include lack of in-service training leading to poor management of patient physical and psychological complications [18]. Although nurses face barriers in their critical role of patient management, their perceptions regarding the growing burden of CKD are well-informed. Therefore, this study explored the nurses' perceptions of the causes and impact of the growing burden of CKD in a developing country. Exploring nurses' perceptions in this setting can provide insights into the dynamics associated with high numbers of patients with CKD in lower- and middle-income countries.

2. Methods

2.1 Research Question

The study answered this central question: What perceptions do nurses have concerning the causes and impact of the growing burden of chronic kidney disease?

2.2 Study Design

The study adopted a descriptive qualitative design. Descriptive qualitative designs provide accurate, clear and in-depth information about little-known phenomena to improve healthcare outcomes [19]. The Consolidated Criteria for Reporting Qualitative Research (COREQ) was used to report this qualitative study [20].

2.3 Research Setting

The study was conducted in a renal unit of a public regional referral hospital in the Kingdom of Eswatini (formerly Swaziland). The selected hospital, with a total bed occupancy of 500, treats approximately 700 outpatients daily. The hospital provides the following services: psychiatric and mental healthcare, outpatient care, maternal and child healthcare, surgery, oncology, general medicine, as well as HIV testing and treatment. Renal dialysis, palliative care, dental, audiology, physiotherapy, and occupational therapy services are also provided. The setting was conveniently selected because it is a training hospital for the university where the lead author is a student. General nurses and nurses with a postgraduate qualification in nephrology nursing work full-time in the renal unit.

2.4 Sampling Method and Procedure

Participants included nurses who were working full-time in the renal unit. The participants were working at least 40 hours per week for more than six months in the renal unit. Purposive sampling was used to select participants in the best position to answer the research question [21]. Following ethical approval and permission, the lead author recruited the participants by visiting the renal unit to explain the purpose and value of the study. An information leaflet was given to nurses who were willing to participate. Dates and times were then arranged to clarify questions about the study, sign informed consent forms, and plan a venue and time for the interviews.

2.5 Data Collection and Management

The lead author, who is a male university student with clinical experience in medical-surgical nursing and midwifery, visited the participants who volunteered in their units. The purpose of the visit was to justify the value of the study and clarify participants' questions before signing the informed consent forms. Before primary data collection, two pilot face-to-face interviews were conducted with participants in the same research setting using a semi-structured interview guide developed by the research team. Interviews are important because they allow researchers to collect in-depth primary data about participants’ views, experiences, and perceptions in their own words, enhancing a deeper understanding of the phenomenon being explored [22]. Pilot interviews, on the other hand, are conducted to test and refine the research questions and data collection process [23] to enhance the clarity and relevance of the questions before the main data collection begins [24]. The unstructured interview guide contained one question that explored nurses’ perceptions of the causes and impact of the growing burden of CKD. The question was not changed after the pilot interviews; therefore, the data were included in the data analysis. The question was: What are your perceptions of the causes and impact of the growing burden of CKD in the country? An unstructured interview guide contains one open-ended question that prompts discussions on the phenomenon under exploration [25].

Probing, the use of follow-up questions or prompts during interviews to encourage participants to elaborate on their responses or provide deeper insights into their experiences and perspectives, was used during the interviews [26]. By clarifying vague or ambiguous responses, probing enhances a deeper insight into the diverse feelings, thoughts, and experiences of participants [27]. Data were collected at times selected by the participants to avoid patient care disruptions. Data saturation was reached during the eighth interview, and an extra interview was conducted to confirm the saturation. To avoid biasness, the lead author remained open to participants’ responses throughout the interviews and did not guide them towards specific answers. Additionally, the lead author did not influence the participants using his beliefs and perceptions about the focus of the study. After data collection, the interviews were transcribed verbatim. The second author, who reviewed the interview transcripts, is a male university lecturer with clinical, research, and teaching experience in critical care nursing. The lead author was an outsider to the participants; hence, the participants did not participate under duress. Following data collection, the interview transcripts and audio recordings were encrypted and stored in a password-protected computer accessible only to the research team.

2.6 Data Analysis

Thematic analysis guided by the six phases suggested by Braun and Clarke [28] was adopted. The familiarisation phase occurred when the research team acquainted themselves with the data by reading and re-reading the transcripts, listening to the recordings, and writing down word-for-word the participants’ responses captured in the audio recordings. In the generating initial codes phase, the research team applied descriptive coding to formulate codes using short phrases. Codes that were similar were then classified into categories. The research team then searched for and identified shared subthemes from the participants’ responses in the searching for themes phase [28]. The reviewing themes phase occurred when the research team refined themes by checking for coherence between codes, themes, and participants’ responses. Themes that were not coherent with the data were rectified. During the defining and naming themes phase, the research team identified the essence of each theme and gave appropriate labels indicating the content and scope of the themes. A discussion was held by the research team in which unclear theme names were clarified, and consensus was then reached on the final themes and subthemes. The report writing phase was conducted by the lead author who wrote the analysis by consolidating the analytic narrative with the extracted data to provide a logical account of the data [28].

2.7 Trustworthiness

Trustworthiness is the extent to which research findings are valid, reliable, and applicable to real-world contexts [29]. The strategies of credibility, confirmability, dependability, and transferability, as suggested by Lincoln and Guba [30], were adopted to maintain trustworthiness. Credibility was maintained by prolonged engagement, whereby the lead author met with the nurses before data collection and during the interviews. Member checking was also performed when the interview transcripts were verified with the participants, who confirmed that the findings captured and reflected their perceptions. Transferability was maintained through purposive sampling and by thickly describing the participants' demographic profile and the research setting. Additionally, the research methodology was described in detail. An audit trail that comprehensively accounts for the steps for collecting, organising, and analysing the data was provided to enhance dependability [31]. Confirmability was maintained by providing adequate and relevant direct verbal quotations from the participants to support the findings.

2.8 Ethical Considerations

The Eswatini Health and Human Research Review Board (EHHRRB) granted ethics approval (FWA00026661/IRB00011253/SHR160/2024), and the hospital administration granted written permission to conduct the study. Data collection only commenced after informed consent was obtained from participants. Participants were informed that participation was completely voluntary and that they had the right to withdraw from the study without any prejudice. Pseudonyms were used during the interviews to enhance the anonymity and confidentiality of participants. Moreover, confidentiality of the findings was ensured through the de-identification of participants' personal details during data storage. Non-maleficence was maintained as the interview questions did not cause emotional and psychological harm to the participants.

3. Study Findings

3.1 Participants' Demographic Characteristics

Nine participants were interviewed (Table 1) between September and October 2024, with each interview lasting between 30 and 45 minutes. The participants' mean age was 39 years, and the mean duration of working in the renal unit was 8.3 years.

Table 1. Summary of participants' demographic characteristics.

Participant	Age (in years)	Sex	Number of Years Working in the Renal Unit	Current Position
1	33	Female	3	Registered nurse
2	43	Male	5	Registered nurse
3	52	Female	18	Nephrology nurse specialist
4	38	Male	11	Nephrology nurse specialist
5	34	Female	2	Registered nurse
6	32	Female	6	Registered nurse
7	42	Female	16	Nephrology nurse specialist
8	31	Female	4	Registered nurse
9	50	Female	10	Nephrology nurse specialist

3.2 Thematic Analysis

Two themes, four subthemes, and 11 categories emerged from the data analysis (Table 2).

Table 2. Summary of themes, subthemes, and categories.

Theme	Subtheme	Categories
Healthcare system	Perceived causes of chronic kidney disease	Shortage of medication and equipment
		Poor provision of health education
	Perceived impact of chronic kidney disease	High patient volume
		Lack of dialysis facilities
		Economic impact
		Burnout and poor quality of patient care
Personal dynamics	Lifestyle and behaviour	Cultural and religious beliefs
		Lack of medical screening
		Knowledge deficit
	Quality of life	Pre-existing diseases
		Non-adherence to therapy

3.2.1 Theme 1: Healthcare System

This theme describes the perceived causes and impact of chronic kidney disease related to the country's healthcare system. Participants verbalised that CKD results from healthcare system-related causes shortage of healthcare professionals, equipment, and medication. The perceived impact of CKD includes burnout among healthcare professionals. Two subthemes were developed, namely, perceived causes of CKD and perceived impact of CKD.

3.2.1.1 Subtheme 1: Perceived Causes of Chronic Kidney Disease

Participants verbalised that the shortage of medication in the country's hospitals contributed to progression from acute kidney injury to CKD among patients. Participants also expressed that the growing burden resulted from a lack of health education for the general population about CKD causes and prevention strategies. These insights highlight the contribution of the country's healthcare system towards the growing burden of CKD:

"Another thing, the government does not have enough drugs, such that even if the person is diagnosed with acute phase of kidney failure, they may progress [to chronic kidney disease] due to the lack of drugs" (Participant 2)

"Another issue is poor health education from healthcare providers - We don't teach our patients about kidney disease and how it can be prevented" (Participant 7)

These responses collectively reflect the need for adequate treatment of acute kidney injury to avoid progression to CKD and scaling up of health education to enhance the prevention of CKD in the general population.

3.2.1.2 Subtheme 2: Perceived Impact of Chronic Kidney Disease

Participants verbalised their perceived impact of CKD on the healthcare system and patients. According to the participants, the growing burden of CKD resulted in a high patient volume with no corresponding increase in dialysis facilities, and treating the disease was costly for patients. Moreover, the growing burden resulted in poor patient care and burnout among nurses as they could not keep up with the rise in patient numbers:

"The number of people living with the condition continues to increase leading overcrowding of the facilities such that those living with acute kidney injury don't even have the space to dialyse" (Participant 3)

"…Number two, it [CKD] causes the influx of these patients in the hospital." (Participant 4)

"…dialysis on its own for one patient - they dialyse maybe three times a week - and it costs around E2,000 [$108]. Can you imagine how much money the government is forking out, it's just too much" (Participant 9)

"Another thing, we have a lot of patients, and with such a big number, we experience burnout and use shortcuts to get the work done and help as many people as possible - we are not being comprehensive with the care we are providing to the patients." (Participant 5)

"As the number of patients increases, the number of healthcare professionals often does not keep pace, which eventually causes burnout among the nurses." (Participant 7)

The participants' responses jointly indicate that more healthcare professionals need to be recruited to keep up with the increasing number of patients with CKD. The burnout experienced by healthcare professionals can result in poor patient outcomes, including the death of patients. Moreover, the government needs to construct more renal units to address the growing number of people living with CKD in the country.

3.2.2 Theme 2: Personal Dynamics

This theme describes personal factors that contribute to the growing burden of CKD. According to the participants, the lifestyle and behaviour of individuals, which include cultural and religious beliefs, failure to attend medical screening, and lack of knowledge about CKD, contributed to the growing burden of the disease. Individuals' quality of life, which includes pre-existing diseases and poor adherence to therapy, also contributed to the growing burden. Two subthemes emerged: 1) Lifestyle and behaviour; and 2) quality of life.

3.2.2.1 Subtheme 1: Lifestyle and Behaviour

Participants verbalised the role of individuals' lifestyle and behaviour on the growing burden of CKD. According to the participants, the beliefs of individuals in traditional medicine contributed to the development of CKD because the medicine caused kidney damage. Moreover, a lack of medical screening in the general population increased the burden because people lived with the disease without even knowing such that they presented late in hospitals. The lack of knowledge on CKD among individuals led to inadequate preventive measures towards the disease:

"…People present to the healthcare facilities late because they opt for traditional healers first and end up dying from kidney failure" (Participant 9)

"The growing burden can also be due to religious beliefs or even traditional beliefs" (Participant 1)

"Most of the time, you hardly find anyone in the queue who has come to do a medical check-up. No healthy person will come to spend a whole day or two in the hospital for a check-up only" (Participant 5)

"Challenge number one, I can say it's poor knowledge on the part of our clients- poor knowledge of what kidney disease is and how to take care of yourself so that you do not get the condition" (Participant 3)

The collective responses by participants indicate that, to reduce the growing burden, there is a need for scaling up screening for CKD and educating the population about the consequences of using traditional medicine.

3.2.2.2 Subtheme 2: Quality of Life

The participants verbalised that individuals' quality of life contributed to the growing burden of CKD in the country. The comorbidities of diabetes and hypertension were reported to increase the burden of CKD. Failure of patients with these comorbidities to adhere to treatment also caused a rise in the growing burden of the disease. Moreover, the participants reported that CKD had a profound impact on the patient's physical health because of an inability to meet dietary requirements:

"…if only the patients could understand the conditions they have, diabetes or hypertension, which are key causes of kidney failure…" (Participant 3)

"…like for instance, people living with hypertension, you find that they default the treatment, they don't adhere to the diet" (Participant 1)

"So, on them [the patients], the disease affects them financially and physically because they don't have anything to eat" (Participant 6)

Collectively, the participants' responses reflect that the growing burden of CKD is associated with the comorbidities of hypertension and diabetes mellitus. Therefore, there is a need to scale up the prevention and control of these two diseases. Moreover, patients with CKD need to consume recommended foods readily available at no cost.

4. Discussion

This study has created awareness of nurses' perceptions regarding the causes and impact of the growing burden of chronic kidney disease in a resource-limited country. The impact of CKD on public health is significant, especially in low-income countries (LICs) and lower-middle-income countries (LMICs), where a high number of people are affected [32]. Findings of this study concur with those of research conducted in Sri Lanka, where it was reported that the scarcity of medication, equipment, and facilities for kidney transplantation is a challenge for patients with CKD, which may contribute to the burden of the disease [33]. Therefore, in line with the findings of this study, a lack of prompt interventions for individuals with AKI enhances rapid progression to CKD. Chronic kidney disease is prevalent in the United States, however, 90% of those living with the disease are unaware of their diagnosis [34]. Findings of this study are consistent with those of a study conducted in Malawi, where it was reported that patients had not been taught about

CKD, 50% of the patients had not received adequate treatment; and 34% were unaware that haemodialysis therapy was locally available [35]. The growing burden of CKD is associated with poor knowledge and self-management about the disease [36]. A study conducted among the Saudi population also revealed that a lack of awareness about CKD among the Saudi population was a key cause of the increasing disease burden [37]. Chu, McCulloch [38] also conducted a study which concluded that among adults with CKD, about 50% were not aware of their kidney disease, a challenge that has persevered for almost two decades. Insufficient knowledge leads to poor prevention, lack of screening, and late detection of CKD [39]. Hence, there is a need for healthcare professionals to scale up health literacy for all about CKD to alleviate the growing burden.

Chronic kidney disease has now reached epidemic proportions, placing a huge strain on the healthcare systems of many countries. The findings of this study corroborate those which reported that unadjusted rates of hospitalisation in the CKD population, reflecting its total disease burden, were 3-5 times higher than those of patients without CKD. Additionally, the incredible number of patients who come for dialysis results in a lack of space to contain them in renal units [40]. In a study with similar findings to this study, it was reported that a larger proportion (35%) of patients were hospitalised due to chronic kidney disease rather than other conditions [41]. Therefore, the large number of affected individuals coupled with the significant adverse impact of the disease should enhance better prevention and treatment efforts to reduce the growing burden of CKD. Consistent with the study findings, research conducted in Nigeria reveals that the scarce resources, inadequate dialysis therapy, and shortage of kidney transplantations exacerbate the growing burden of CKD in low- and middle-income countries [42]. Hence, the available dialysis equipment is insufficient to meet the needs of the large number of patients with CKD and ESKD, which further exacerbates the burden and encourages disease progression [41]. Hence, the rising number of people with CKD, coupled with the insufficient dialysis facilities, puts a strain on the healthcare system and may result in increased morbidity and mortality. Governments need to construct more dialysis facilities to counteract the increasing number of individuals with CKD.

There is also a need to recruit more nurses with a speciality qualification in nephrology nursing science. The number of nephrologists and nephrology nurses is insufficient to provide renal care to the growing number of CKD patients worldwide [10]. In line with findings of this study, there is a global shortage of specialist nephrology healthcare professionals, which is significant in developing countries. This inadequacy stifles secondary and tertiary prevention programs, as the number of people living with CKD may overwhelm the available healthcare professionals [43]. Growing evidence indicates that the impact of the treatment for CKD is undermined by poor quality of care due to the impact of the disease burden on healthcare professionals [44]. In conjunction with health disparities, including poverty, stigma, and prejudice, the growing burden of chronic kidney disease leads to poor quality of care in patients, which is consistent with the findings of this study. Due to the high volume of patients with CKD, comprehensive care for everyone is nearly impossible, especially due to the current staff shortage in healthcare systems [45]. The staff shortage contributes to burnout and poor patient care, which becomes a vicious cycle in the growing burden of CKD.

Patients living with CKD use traditional medicine, consult traditional healers for treatment, and experience a heightened spirituality after being diagnosed with the disease, leading to decreased compliance with medical therapy [46]. Findings of this study concur to those of research conducted on the burden of CKD in resource-limited settings, which reported that the influence of practitioners of traditional medicine and cultural beliefs hinder access to health care, leading to the increased burden of CKD in remote communities [47]. However, findings from Olivera, Okuno [48] differed from those of this study, which suggested that spirituality enhances emotional resilience, reduces depression and improves the well-being of individuals with CKD. There is a need for improved screening of the population at risk of developing CKD to enhance early detection and prompt treatment of the disease. Corroborated by the findings of this study, research conducted on the barriers and facilitators to screening for kidney disease reported that the poor health-seeking behaviours hindered targeted screening for CKD [49]. Additionally, Neale, Rosario [50] classified the barriers to screening for CKD into: healthcare provider-based; shortage of finances, poor health-seeking behaviours, knowledge deficit; overstretched workload, and poor patient-healthcare professional communication. The effective implementation of CKD screening in lower- or middle-income countries remains a significant challenge [51].

The rising incidence of ESKD is likely to be exacerbated by patients with CKD who lack knowledge about the disease, and its management. Findings of this study support the assertion that CKD often develops from two pre-existing major non-communicable diseases (NCDs) that have been acknowledged by the World Health Organization, namely diabetes mellitus and hypertension [52]. Non-adherence to therapy is a significant challenge for patients with CKD and can contribute to adverse events, progression to CKD, and increased cost of care [53,54]. Thus, increasing health literacy about the impact of diabetes and hypertension in increasing the burden of CKD is needed, especially in resource-limited countries. Additionally, patients living with these diseases require improved health education on adherence to medication to reduce the risk of the development of CKD. Consistent with the findings of this study, a conclusion was drawn from research conducted on the associations between socioeconomic status and chronic kidney disease, that a low income and educational level were positively associated with the development and worsening of CKD [55]. Additionally, a low socioeconomic status also leads to delayed CKD diagnosis and insufficient access to dialysis therapy [18].

5. Conclusions

The study explored nurses' perceptions of the causes and impact of the growing burden of CKD in a resource-limited country. Findings revealed that the healthcare system contributed to the rising burden through medication and equipment shortages, and poor health education about the disease. Individuals contributed through their lifestyle and behaviour, which included the use of traditional medicine and a lack of screening for CKD. Individuals' quality of life also contributed to the CKD burden through the existence of comorbidities such as diabetes and hypertension, and non-adherence to therapy. The impact of CKD on the healthcare system included high patient numbers with insufficient dialysis facilities, burnout among healthcare professionals, and poor patient care. CKD caused a significant financial impact on both patients and the healthcare system. The study confirms that the growing burden of CKD results from the healthcare system and individual factors. Moreover, the growing burden strains the healthcare system and patients. Therefore, there is a need for healthcare professionals, patients, non-governmental organisations, and government to collaboratively formulate policies and guidelines to address the contributing factors at both the healthcare system and individual levels. Policies can include incorporation of mandatory screening for CKD and structured health education programs for the general population. Addressing the contributing factors will result in the alleviation of the growing burden of CKD in similar settings.

6. Implications of the Study

The study reflects the need for healthcare professionals to scale up health literacy about CKD to both patients and those who do not have the disease. Patients living with diabetes and hypertension need to improve adherence to therapy to prevent the development of CKD. Governments need to construct more renal units and train and recruit additional healthcare professionals with speciality qualifications in nephrology to address the needs of people with CKD. Additionally, patients with CKD need holistic care and support from healthcare professionals and families to enhance positive coping with the disease. Hospital management needs to plan and implement in-service training programs for nurses on CKD early identification and management.

7. Strengths and Limitations

One strength is that the study has raised awareness about nurses' perceptions of the causes and impact of CKD in a developing country. The qualitative approach has provided in-depth insights from the nurses. One limitation is that the findings could not be generalised to the entire population because of the qualitative approach. Moreover, the study only focused on nurses, and perceptions of other healthcare professionals were not explored.

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Conflict of Interest

The authors declare no competing conflicts of interest.

Generative AI Statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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