Journal of Public Health Sciences (JPHS)
Vol. 4, No. 01, pp. 1-10
journal.iistr.org/index.php/JPHS
DOI: 10.56741/jphs.v4i01.752

Perception and Knowledge of Chronic Kidney Disease (CKD) among Undergraduate Students of Institut Supérieur Bilingue Libre du Togo (IBLT University Togo)

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ARTICLE INFO

Article history
Received 11 November 2024
Revised 18 February 2024
Accepted 9 March 2025

ABSTRACT

Chronic Kidney Disease (CKD) is a global health concern with increasing prevalence, particularly in developing countries. Despite its significant impact, public awareness and understanding of CKD remain limited. This study assessed the knowledge and perception of CKD among university students of IBLT University in Togo. A descriptive cross-sectional design was employed, and a standardized questionnaire was administered to 112 students, covering sociodemographic characteristics, CKD knowledge, and perception. The study found that while most students had a reasonable understanding of basic CKD concepts, significant gaps existed in their knowledge. Only 26% demonstrated good knowledge of CKD, while 46% had average knowledge and 28% exhibited poor knowledge. The perception of CKD varied among respondents. The majority believed that a person could live with one kidney, but there was uncertainty about screening costs and personal health awareness. Concerns about stigmatization, treatment costs, and religious beliefs were also prevalent. The study highlights the need for improved CKD education and awareness among young populations like university students. Targeted interventions are necessary to address knowledge gaps, dispel misconceptions, and provide support for individuals with CKD.

Keywords
Chronic Kidney Disease
Health Sciences
Knowledge
Perception
Undergraduate Student

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Introduction

CKD is a global health concern with increased incidence and prevalence in both developed and developing countries [1],[2]. Characterized by gradual depletion of kidney function over time, leading to severe complications such as cardiovascular disease, kidney failure, and increased mortality. CKD affects approximately 10% of the global population and accounts for millions of deaths in resource-limited countries due to inadequate care [2]. In Africa and sub-Saharan Africa, the prevalence rates are 15.8% and 17.7%, respectively [3]. Hypertension and diabetes are the most common risk factors for CKD in Africa, accounting for 75-90% of cases [4].

Beyond non-communicable diseases, communicable diseases like HIV, infectious glomerulonephritis, and schistosomiasis, can also elevate the risk of CKD [5]-[7]. Additionally, environmental pollutants, using herbal medications, and repeated malaria infections are implicated in CKD development [4],[8]. Despite the rising prevalence of CKD, particularly in developing countries, public awareness and understanding of the disease remain limited [2],[3]. Knowledge and perception play crucial roles in early detection, prevention, and management of CKD.

Studies on CKD knowledge in Africa are limited. A survey among non-medical university students in Benin, Nigeria, revealed that only 44.7% were aware of diabetes mellitus and 25.1% knew hypertension as a risk factor for CKD. Additionally, 48% believed that scientifically unproven treatments like spiritual healing, herbal therapy, and urine therapy could cure CKD. Only 25.1% of participants in the study had good CKD knowledge, 35.2% had some, and 39% had poor knowledge [9].

A study among students in a university in Rwanda showed that 44% of the students had low knowledge of CKD and its risk factors [10]. Another study among final-year nursing students in Nigeria revealed that only 22.6% had good knowledge of kidney functions and CKD. Although the majority of the participants had good knowledge of the general functions of the kidney [11], other studies among the general populace have shown various outcomes, they generally depict a poor level of awareness and other important information on some aspects of kidney disease and management when assessed [12].

University students represent an important age group and period for establishing lasting health behaviors, making it essential to understand their baseline knowledge of CKD. Moreover, as students frequently act as sources of health information within their families and communities, their awareness could have a broader impact on general health outcomes. By evaluating CKD knowledge among students at IBLT University, this study aims to identify specific knowledge gaps that could be addressed through targeted educational interventions, ultimately helping to reduce CKD incidence and promote proactive health practices among the young.

Material and Methods

The study employed a descriptive cross-sectional design at Institut Supérieur Bilingue Libre du Togo (IBLT University Togo) main campus. IBLT University was founded by Dr. Peniel Danjuma Amani on November 14, 2010, in the Republic of Benin as Institut Universitaire Bilingue Rehoboth before relocating to Togo, where it became a full-fledged university under the regulation of the Ministry of Higher Education and Research of Togo. The university offers a range of programs across various departments, including Public Health, Pharmacy, Nursing, Computer Science, Mass Communication, and Law, among others. It is a small but high-quality private institution, providing courses in both English and French, with a student population of approximately 500 studying at the main campus and the majority of the students are from Nigeria.

The study utilized a standardized, self-administered questionnaire adapted from previous research on the knowledge and perception of CKD [13]. The questionnaire was modified to meet the specific objectives of this study and underwent pre-testing by members of the research team from the Public Health Department to ensure readability, comprehensibility, and grammatical accuracy. Following the pre-test, the finalized questionnaire was converted into an online survey using Google Forms. A link to the e-survey was distributed to students and student groups via WhatsApp.

The questionnaire was designed according to the ethical principles outlined in the Declaration of Helsinki. The purpose of the study was clearly explained to each participant, and informed consent was obtained on the first page of the questionnaire, allowing participants to voluntarily choose whether to participate. A convenience sampling technique was employed in this study, with no prior sample size calculation. The online survey relied on the voluntary participation of eligible students with smartphone access and internet connectivity.

The questionnaire consists of three sections: Section A covered socio-demographic characteristics; Section B focused on knowledge of CKD; and Section C addressed the perception of CKD. The socio-demographic variables included gender, age, marital status, level

of study, faculty (Health Sciences or Non-Health Sciences), and student working status. The level of CKD knowledge was assessed through 11 questions covering various domains, including kidney function, causes of kidney disease, presentations of CKD, and progression of CKD. Responses were scored from 0 to 11 based on the number of correct answers, with all questions equally weighted (0 points for incorrect or unknown answers; 1 point for correct answers). Scores were categorized as follows: 0-4 indicated poor knowledge of CKD, 5-7 indicated average knowledge and 8-11 indicated good knowledge. The study was conducted over one month in September 2023, with a total enrollment of 112 students.

Results

A. Sociodemographic characteristics of study participants

112 students enrolled for this study, with 50% aged 21-25 years, 29.5% aged 16-20 years, 17.9% aged 26-30 years, and 2.7% over 30 years old. Female participants made up 58% of the sample, while males comprised 42%. Most students (66.1%) were from the Faculty of Health Sciences, with the remaining 33.9% being Non-Health Sciences. Departmental representation included Pharmacy (24.1%), Nursing (23.2%), Public Health (16.1%), and others. 38.4% were in their 300 level, 33% in the 200 level, with the rest distributed across 100, 400, and 500 levels. Most participants were single (90.2%), and 23.2% were working while studying. See Table 1.

Table 1. Sociodemographic characteristics of study participants

Demographic	n	%
Age		
• 16-20	33	29.5
• 21-25	56	50.0
• 26-30	20	17.9
• >30	3	2.7
Sex		
• Male	47	42.0
• Female	65	58
Faculty		
• Health Sciences	74	66.1
• Non-Health Sciences	38	33.9
Department		
• Pharmacy	27	24.1
• Nursing	26	23.2
• Public Health	18	16.1
• Computer sciences	10	8.9
• Mass communication	6	5.3
• Human resources management	5	4.5
• Others (Business administration, community health)	20	17.9
Level		
• 100	10	8.9
• 200	37	33.0
• 300	43	38.4

Demographic	n	%
• 400	22	19.6
• 500	10	8.9
Marital Status		
• Single	101	90.2
• Married	11	9.8
• Divorced	0	0
• Widowed	0	0
Student's working status		
• Working	26	23.2
• Not working	86	76.8

B. Knowledge of CKD

From Fig. 1, 26% of students had good knowledge of CKD, while 46% had average knowledge and 28% exhibited poor knowledge of CKD while respondents had a reasonable understanding of some basic aspects of CKD, significant gaps existed in their knowledge. For instance, a majority (87.7%) were aware that waste removal is a function of the kidneys, and a significant portion (68.8%) understood the link between holding urine and kidney disease. However, only 33.9% knew that eGFR is the best diagnostic marker for CKD patients. Furthermore, there was a notable lack of understanding regarding the early detection of CKD through lifestyle modifications. Only 50.9% of respondents recognized the possibility of early detection.

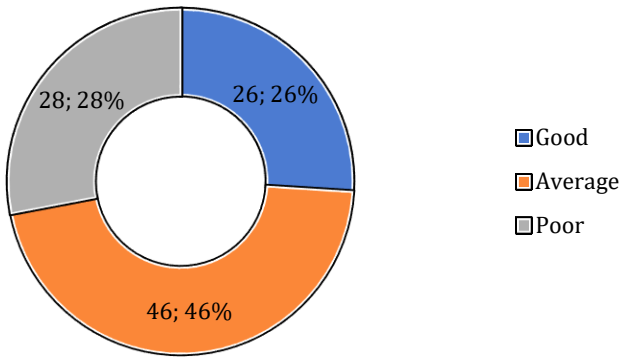


Fig. 1. Students' Knowledge of CKD

The study also shows disparities in knowledge about specific risk factors and consequences of CKD. While the majority (60.7%) recognized the link between diabetes and high blood pressure and kidney problems, only 39.3% were aware that a high-protein diet could contribute to CKD. The chi-square test reveals a significant association between faculty and knowledge of CKD ($\chi^2 = 48.960$, df = 2, $p < 0.001$). Students from the Health Sciences faculty are more likely to have "Average" and "Good" knowledge levels.

Table 2. Students knowledge of different domains of CKD

No	Items	Correct (%)	Wrong (%)	Do not know (%)
1.	Waste removal is a Function of the kidney?	87(77.7)	4(3.6)	21(18.8)
2.	Do you think holding urine causes kidney disease?	77(68.8)	14(12.5)	21(18.8)
3.	Can Diabetes and High BP cause Kidney problems?	68(60.7)	16(14.3)	28(25.0)
4.	Drinking little water may cause kidney problems.	74(66.1)	12(10.7)	26(23.2)
5.	Does much salt consumption cause kidney problems?	71(63.4)	10(8.9)	31(27.7)
6.	Do you think Urinary tract problems can cause kidney disease?	65(58.0)	8(7.1)	39(34.8)
7.	Does a high-protein diet cause kidney problems?	44(39.3)	25(22.3)	43(38.4)
8.	Is it possible to know CKD by observing urine color or smell?	56(50.0)	17(15.2)	39(34.8)
9.	Is eGFR the best diagnosis marker for CKD patients?	38(33.9)	19(17.0)	55(49.1)
10.	Is it possible to know kidney disease early via life modification?	57(50.9)	16(14.3)	39(34.8)
11	Do you think that the end stage of CKD has treatment?	38(33.9)	(43)38.4	31(27.7)

C. Perception of CKD

The findings reveal a mixed perception of CKD among respondents (Table 3). While a majority (82.7%) believed that a person could live with one kidney, there was significant uncertainty about the cost of kidney screening tests, with 32.1% expressing uncertainty. Regarding personal experience and knowledge, only 8.0% had considered having signs or symptoms of CKD, and 25.0% expressed interest in learning more about kidney problems. However, a significant number (30.4%) feared stigmatization from friends and family if they were diagnosed with CKD. Concerns about treatment costs were prevalent, with 33.0% expressing worry. Religious beliefs posed a barrier for some, with 41.3% believing that their religion does not allow kidney transplantation.

Table 3. Student's response to the perception of CKD

	To what extent do you agree with the following?	Strongly Agree	Agree	Not sure	Disagree	Strongly disagree
1.	Can a person live with one kidney?	62(55.4)	31(27.7)	14(12.5)	3(2.7)	2(1.8)
2.	Do you think kidney screening tests are expensive?	33(29.5)	35(31.3)	36(32.1)	3(2.7)	5(4.5)
3.	Have you thought you may have signs or symptoms?	9(8.0)	9(8.0)	39(34.8)	33(29.5)	22(19.6)
4.	I like learning all about kidney problems.	20(17.9)	40(35.7)	28(25.0)	14(12.5)	10(.9)
5.	I will be stigmatized by friends and families if I have a kidney problem?	15(13.4)	21(18.8)	24(21.4)	18(16.1)	34(30.4)
6.	I will be worried about treatment costs related to kidney disease.	37(33.0)	29(25.9)	17(15.2)	14(12.5)	15(13.4)
7.	My religion does not allow kidney transplantation.	6(5.4)	8(7.1)	35(31.3)	22(19.6)	41(36.6)
8.	Do you think that kidney disease is a major problem in Nigeria?	25(22.3)	22(19.6)	42(37.5)	5(4.5)	18(16.1)
9.	Do you think the Nigeria Ministry of Health gave adequate knowledge about its prevention?	15(13.4)	19(17.0)	50(44.6)	16(14.3)	12(10.7)
10.	Can one have chronic kidney disease from any cause?	20(17.9)	22(19.6)	54(48.2)	11(9.8)	5(4.5)

Regarding the broader impact of CKD, 42.3% perceived it as a major problem in Nigeria, and 44.6% felt that the Nigerian Ministry of Health had not provided adequate knowledge about its prevention.

Discussion

A significant proportion of students had limited knowledge of CKD. As shown in Figure 1, only 26% of participants demonstrated good knowledge, while 46% had average knowledge and 28% exhibited poor knowledge of CKD. Many studies have shown a similar trend in the knowledge of CKD [12], [14]-[16]. A Nigerian study conducted among students in government-owned universities showed that one-third (39.7%) and (35.2%) had low and average knowledge of CKD respectively, and (25.1%) had good knowledge.

When assessed on various domains of CKD knowledge, most respondents demonstrated a good understanding of certain aspects of kidney function and disease. Specifically, 77.7% correctly identified waste removal as a function of the kidney, and 68.8% were aware that holding urine can cause kidney disease.

Participants also showed awareness of the relationship between lifestyle factors and kidney health, with 66.1% recognizing that drinking insufficient water can lead to kidney problems, and 63.4% acknowledging that high salt consumption can be detrimental. Additionally, 60.7% correctly identified diabetes and high blood pressure as causes of kidney issues.

However, knowledge was less consistent in other areas. While 58% understood that urinary tract problems could lead to kidney disease, awareness about the effects of a high-protein diet was lower, with only 39.3% responding correctly. Although they may need some deep knowledge of CKD and familiarity to know this. Furthermore, there was a notable gap in understanding diagnostic and treatment aspects, as only 33.9% correctly identified eGFR as the best diagnostic marker for CKD, and the same percentage were aware that the end stage of CKD has treatment options.

Our study indicates students from non-health-related faculties institutes were more likely to have below-average CKD knowledge in health-related faculties, this is also like a study in Malaysia [13] on knowledge of CKD among undergraduate and postgraduate students in a public university.

The perception of CKD among study participants revealed varied levels of awareness and beliefs. When asked whether a person can live with one kidney, most respondents strongly agreed (55.4%) or agreed (27.7%), indicating a relatively high level of awareness about the functional capacity of a single kidney. Regarding the cost of kidney screening tests, opinions

were divided, with 29.5% strongly agreeing and 31.3% agreeing that such tests are expensive, while 32.1% were unsure.

Concerning personal health awareness, only 8% strongly agreed or agreed that they had considered the possibility of having signs or symptoms of CKD, while 34.8% were unsure, and a combined 49.1% disagreed or strongly disagreed. Interest in learning about kidney problems was evident, with 17.9% strongly agreeing and 35.7% agreeing, whereas 25% were unsure, and a minority expressed disinterest.

Perceptions of stigma associated with CKD were mixed, with 13.4% strongly agreeing and 18.8% agreeing that friends and family would stigmatize them, while 21.4% were unsure, and 46.5% disagreed or strongly disagreed. Concerns about treatment costs were prevalent, with 33% strongly agreeing and 25.9% agreeing that they would worry about the expenses related to kidney disease treatment.

Religious beliefs regarding kidney transplantation showed that a small percentage of respondents strongly agreed (5.4%) or agreed (7.1%) that their religion prohibits it, while 31.3% were unsure, and a majority (56.2%) disagreed or strongly disagreed. Regarding the perception of kidney disease as a major problem in Nigeria, 22.3% strongly agreed and 19.6% agreed, while 37.5% were unsure, and 20.6% disagreed or strongly disagreed.

The adequacy of knowledge provided by the Nigerian Ministry of Health on CKD prevention was questioned, with 13.4% strongly agreeing and 17% agreeing that adequate knowledge is provided, while 44.6% were unsure, and 25% disagreed or strongly disagreed. Finally, when asked whether CKD can result from any cause, 17.9% strongly agreed and 19.6% agreed, whereas 48.2% were unsure, and 14.3% disagreed or strongly disagreed.

Conclusion

In conclusion, participants showed a basic understanding of CKD, recognizing key factors like kidney function and the impact of certain lifestyle choices. However, there were notable gaps in knowledge about advanced topics, such as diagnostic markers (e.g., eGFR) and the effects of dietary habits. Many participants had average to poor knowledge, highlighting the need for more targeted education on CKD diagnostics and management. Additionally, concerns about treatment costs and potential stigma were noted, suggesting that both educational and supportive efforts are needed. Improving CKD education through academic programs and public health initiatives could enhance understanding and perceptions of the disease, leading to better prevention and practices among this population.

Conflict of Interest

The authors declare that there is no conflict of interest.

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