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PREVALENCE AND RISK FACTORS OF KIDNEY DISEASE AMONG PATIENTS ATTENDING SOME SELECTED HOSPITALS IN ABUJA MUNICIPAL AREA COUNCIL

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Abstract

Kidney disease is an emerging public health concern in sub-Saharan Africa, with prevalence rising due to urbanization, hypertension, diabetes, and obesity. In Nigeria, many cases remain undiagnosed until advanced stages. Limited data exist on the burden of kidney disease in Abuja Municipal Area Council (AMAC), despite the area's diverse and growing population. A hospital-based descriptive cross-sectional study was

Keywords: Chronic kidney disease, Prevalence, Risk factors, Hypertension, Diabetes, Obesity, Abuja, Nigeria.

INTRODUCTION

Kidney disease has emerged as one of the fastest rising non communicable diseases globally, placing immense strain on health systems, especially in developing countries. Chronic kidney disease (CKD), defined as kidney damage or reduced kidney function prolonged for more than three months, is now recognized as a major contributor to global morbidity and mortality (Jha *et al*., 2013). Estimates showed that approximately 10% of the world's population lives with some form of CKD, with prevalence high in sub-Saharan Africa, where access to early diagnosis and treatment is limited (Stanifer *et al*., 2016).

In Nigeria, CKD has become health problem, worsened by the increasing prevalence of hypertension, diabetes mellitus, and other risk factors (Ulasi & Ijoma, 2010). Nigeria bears one of the heaviest burdens of CKD in Africa, with hospital based studies reporting prevalence rates

conducted across five hospitals in AMAC: Wuse District Hospital, Garki District Hospital, Maitama District Hospital, Nyanya General Hospital, and Karu General Hospital. A total of 200 adult patients were recruited using systematic random sampling. Data were collected through structured questionnaires, clinical measurements, and laboratory records. Kidney disease was defined as estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m² or presence of persistent proteinuria, based on KDIGO guidelines. Descriptive statistics, chi-square tests, and logistic regression were used to analyze data, with significance set at $p < 0.05$. The prevalence of kidney disease was 23.0% (46/200). Nyanya (30.0%) and Karu (27.5%) recorded the highest prevalence, while Maitama had the lowest (15.0%). Hypertension (39.0%), diabetes (21.5%), and obesity (27.0%) were common among participants. Chi-square analysis showed significant associations between kidney disease and hypertension ($p = 0.001$), diabetes ($p = 0.002$), and obesity ($p = 0.018$). Logistic regression confirmed hypertension (OR = 3.4; 95% CI: 1.7–6.7), diabetes (OR = 4.1; 95% CI: 1.9–8.8), and obesity (OR = 2.3; 95% CI: 1.1–4.9) as independent predictors of kidney disease. Kidney disease is highly prevalent in AMAC, particularly in peri-urban hospitals, and is strongly associated with hypertension, diabetes, and obesity. Strengthening early screening, improving management of modifiable risk factors, and implementing community-based preventive interventions are crucial to reducing the growing burden of kidney disease in Abuja.

between 8% and 12% among adults (Arogundade & Barsoum, 2008). The condition mostly goes undiagnosed in its early stages, and many patients present late with advanced kidney failure, requiring dialysis or kidney transplantation, both of which remain largely unaffordable for the majority of the population.

Abuja Municipal Area Council (AMAC) hosts a diverse population, drawn from different regions of Nigeria, with varied lifestyles and socioeconomic conditions. Hospitals such as Wuse District Hospital, Garki District Hospital, Maitama District Hospital, Nyanya General Hospital, and Karu General Hospital provide essential health services to residents. Despite the availability of these facilities, kidney disease are not properly underdiagnosed at the primary and secondary healthcare levels due to limited diagnostic equipment, poor awareness, and a lack of preventive programs (Okwuonu *et al*., 2011).

Rising rates of obesity, hypertension, diabetes, and physical inactivity have been reported among residents of the Federal Capital Territory (FCT), placing them at greater risk of kidney-related complications (Adeloye *et al*., 2017). Unfortunately, there are limited data on the prevalence and risk factors of kidney disease specifically in AMAC, leaving a gap in knowledge that weakens health planning and policy interventions.

In Abuja, anecdotal evidence and hospital records showed an increasing number of cases presenting with kidney dysfunction, mostly complicated by late presentation and comorbidities such as hypertension and diabetes. However, systematic studies estimating prevalence and identifying risk factors within the AMAC population are scarce. Without

reliable data, clinicians and policymakers are forced to rely on fragmented hospital reports that may not reflect the true burden of disease at the community level.

The lack of routine screening programs in most hospitals in Abuja compounds the challenge, as many high-risk individuals remain undiagnosed until they develop kidney failure. This late detection leads to increased mortality and healthcare costs, particularly in a setting where dialysis and transplantation are unaffordable to most patients. The absence of preventive health policies targeting modifiable risk factors further aggravates the situation, making kidney disease an emerging but under-prioritized public health crisis in Abuja.

There is an urgent need for evidence-based data on the prevalence and risk factors of kidney disease in Abuja Municipal Area Council. While several studies in Nigeria have investigated CKD in tertiary hospitals (Ulasi & Ijoma, 2010; Okoye *et al*., 2011), very few have focused on patients attending district and general hospitals, where the majority of residents receive care. Conducting this study in selected hospitals within AMAC will provide critical insights into the magnitude of kidney disease and the role of modifiable risk factors such as hypertension, diabetes, obesity, and lifestyle habits.

The findings will inform clinicians, hospital administrators, and policymakers on the need to prioritize preventive strategies, strengthen screening services, and allocate resources more effectively. Moreover, the study will contribute to achieving the goals of the **National Strategic Plan of Action on Non-Communicable Diseases in Nigeria**, which emphasizes the early detection and management of chronic conditions, including kidney disease.

This study aims to determine the prevalence and risk factors of kidney disease among patients attending selected hospitals in Abuja Municipal Area Council (AMAC) by assessing the prevalence of kidney disease, identifying sociodemographic characteristics associated with the condition, evaluating clinical and lifestyle risk factors such as hypertension, diabetes, obesity, and alcohol use, and recommending strategies for early detection, prevention, and management of kidney disease within the AMAC health system.

METHODOLOGY

Study Area

The study was conducted in Abuja Municipal Area Council (AMAC), one of the six area councils of the Federal Capital Territory (FCT) of Nigeria. AMAC has an estimated population of over 1.5 million people, with a mix of urban and peri-urban communities (National Population Commission, 2018). The area is characterized by rapid urbanization, diverse socioeconomic groups, and an increasing burden of non-communicable diseases. Health facilities in AMAC range from primary health care centers to district and general hospitals that serve as referral points. For this study, five hospitals were selected based on patient load and accessibility: Wuse District Hospital, Garki District Hospital, Maitama District Hospital, Nyanya General Hospital, and Karu General Hospital. These hospitals represent both urban and peri-urban populations and provide an appropriate setting for studying kidney disease.

Study Design

This study adopted a hospital-based descriptive cross-sectional design. The design was suitable because it allowed for the simultaneous measurement of both prevalence and associated risk factors of kidney disease among patients attending the selected hospitals. It provided a cost-effective and timely means of collecting data from a representative sample of the population within the study period.

Study Population

The study population comprised adult patients, aged 18 years and above, attending outpatient clinics of the selected hospitals during the study period. Patients presenting for both communicable and non-communicable disease consultations were eligible. The inclusion criteria were patients who consented to participate and had clinical or laboratory investigations relevant to kidney function assessment. Patients who were critically ill, pregnant women, and those with incomplete medical records were excluded.

Sample Size Determination

The minimum sample size for this study was calculated using the Cochran formula for prevalence studies, expressed as $n = (Z^2 \times p\ (1\text{-}p)) / d^2$, where $Z = 1.96$ at a 95% confidence interval, $p = 0.12$ (estimated prevalence of kidney disease in Nigeria based on Ulasi and Ijoma, 2010), and $d = 0.05$ (precision). This calculation yielded a sample size of 162, which was increased to 200 participants to enhance reliability and account for potential non-response, with the sample proportionally allocated across the five selected hospitals in Abuja Municipal Area Council based on their daily patient attendance records.

Sampling Technique

A systematic random sampling technique was used. Each day, every third eligible patient presenting at the outpatient clinic was approached for inclusion until the daily quota was reached. This method ensured representation across different sociodemographic groups and minimized selection bias.

Data Collection Instruments

Data were collected using a structured interviewer-administered questionnaire and medical record review. The questionnaire captured sociodemographic data (age, sex, education, occupation), lifestyle variables (smoking, alcohol consumption, physical activity), and medical history (hypertension, diabetes, family history of kidney disease). Clinical measurements included weight, height, and blood pressure. Laboratory data extracted from patient records included serum creatinine, estimated glomerular filtration rate (eGFR), and urinalysis results.

Definition of Kidney Disease

Kidney disease was defined according to the Kidney Disease Improving Global Outcomes (KDIGO) guidelines as either an eGFR <60 mL/min/1.73 m² or the presence of proteinuria/hematuria persisting for more than three months (Levey *et al*., 2003).

Patients who met these criteria at the time of hospital visit were categorized as having kidney disease.

Data Collection Procedure

Trained research assistants collected data over a 12-week period. Blood pressure was measured using a digital sphygmomanometer after five minutes of rest, and the average of two readings was recorded. Weight and height were measured using standardized scales, and body mass index (BMI) was calculated. Laboratory results were retrieved from hospital records within the same visit. All data were cross-checked for completeness before entry.

Data Analysis

Data were entered and analyzed using SPSS version 26.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize patient characteristics and prevalence rates. Bivariate analysis using chi-square tests was performed to assess associations between kidney disease and categorical risk factors. Logistic regression analysis was used to identify independent predictors of kidney disease. Results were presented in tables and figures, with a p-value <0.05 considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of the Federal Capital Territory (FCT) Primary Health Care Board. Permission was also sought from the management of the selected hospitals. Written informed consent was obtained from all participants. Confidentiality was maintained by anonymizing patient data, and participation was voluntary with the option to withdraw at any point.

Socio-demographic Characteristics of Participants

A total of 200 patients were enrolled across the five hospitals: Wuse District Hospital (42), Garki District Hospital (38), Maitama District Hospital (40), Nyanya General Hospital (40), and Karu General Hospital (40). The mean age of participants was 41.2 ± 13.8 years, with ages ranging from 18 to 72 years. Females accounted for 54.5% of the sample, while males comprised 45.5%. The majority of participants were married (64.0%), and civil servants represented the largest occupational group (38.0%).

Table 1: Socio-demographic Characteristics of Participants (N = 200)

Variable	Frequency (n)	Percentage (%)
Age group (years)		
18–29	52	26
30–44	70	35
45–59	56	28
≥ 60	22	11

Variable	Frequency (n)	Percentage (%)
Sex		
Male	91	45.5
Female	109	54.5
Marital status		
Single	52	26
Married	128	64
Widowed/Divorced	20	10
Occupation		
Civil servant	76	38
Trader/Artisan	64	32
Student	28	14
Others	32	16

Prevalence of Kidney Disease

Out of the 200 participants, 46 were identified with kidney disease, giving a prevalence of 23.0%. The highest proportion of cases was found in Nyanya General Hospital (30.0%) and Karu General Hospital (27.5%), while Maitama District Hospital recorded the lowest prevalence (15.0%).

Table 2: Prevalence of Kidney Disease by Hospital (N = 200)

Hospital	Participants (n)	Kidney Disease Cases (n)	Prevalence (%)
Wuse District Hospital	42	9	21.4
Garki District Hospital	38	8	21.1
Maitama District Hospital	40	6	15
Nyanya General Hospital	40	12	30
Karu General Hospital	40	11	27.5
Total	**200**	**46**	**23**

Clinical and Lifestyle Characteristics

Hypertension was present in 39.0% of participants, diabetes in 21.5%, and obesity in 27.0%. A smaller proportion reported current alcohol use (22.5%) and cigarette smoking (9.5%). Kidney disease prevalence was higher among hypertensive (38.5%) and diabetic (44.2%) participants compared to those without these conditions.

Table 3: Clinical and Lifestyle Characteristics of Participants (N = 200)

Variable	Total (n)	With Kidney Disease (n)	Prevalence (%)
Hypertension			
Yes (n=78)	30	38.5	
No (n=122)	16	13.1	
Diabetes			
Yes (n=43)	19	44.2	
No (n=157)	27	17.2	
Obesity (BMI ≥30)			

Variable	Total (n)	With Kidney Disease (n)	Prevalence (%)
Yes (n=54)	20	37	
No (n=146)	26	17.8	
Alcohol use			
Yes (n=45)	15	33.3	
No (n=155)	31	20	
Smoking			
Yes (n=19)	7	36.8	
No (n=181)	39	21.5	

Association between Risk Factors and Kidney Disease

Chi-square analysis showed statistically significant associations between kidney disease and hypertension (p = 0.001), diabetes (p = 0.002), and obesity (p = 0.018). Smoking and alcohol use were associated with higher prevalence but did not reach statistical significance.

Table 4: Association between Risk Factors and Kidney Disease (Chi-square test)

Variable	χ^2 value	df	p-value	Significance
Hypertension	11.23	1	0.001	Significant
Diabetes	9.74	1	0.002	Significant
Obesity	5.62	1	0.018	Significant
Alcohol use	3.11	1	0.078	Not significant
Smoking	2.47	1	0.116	Not significant

Predictors of Kidney Disease

Logistic regression analysis identified hypertension, diabetes, and obesity as independent predictors of kidney disease. Hypertensive patients were 3.4 times more likely to develop kidney disease, diabetics were 4.1 times more likely, and obese individuals were 2.3 times more likely.

Table 5: Logistic Regression Analysis of Predictors of Kidney Disease

Variable	Odds Ratio (OR)	95% Confidence Interval	p-value
Hypertension	3.4	1.7 – 6.7	0.001
Diabetes	4.1	1.9 – 8.8	0.002
Obesity	2.3	1.1 – 4.9	0.021
Alcohol use	1.5	0.7 – 3.2	0.091
Smoking	1.8	0.6 – 5.0	0.104

DISCUSSION

This study found a prevalence of kidney disease of 23.0% among patients attending selected hospitals in Abuja Municipal Area Council. This prevalence is higher than the 12% national hospital based estimate reported by Ulasi and Ijoma (2010) in southeastern

Nigeria, and also exceeds the 15% prevalence observed in a multi-center study in Lagos by Arogundade and Barsoum (2008). The higher prevalence observed in Abuja may be a result of both improved detection capacity in the participating hospitals and the increasing urban exposure to lifestyle related risk factors. Comparable studies from sub-Saharan Africa have also reported high prevalence: Stanifer *et al*. (2014) in Tanzania documented 15% CKD prevalence among outpatients, while Sumaili *et al*. (2009) reported 12% in Kinshasa, Democratic Republic of Congo. The higher figure in Abuja suggests that CKD is becoming more common in urban Nigerian populations.

Hypertension emerged as a very important predictor of kidney disease, with affected individuals being 3.4 times more likely to have CKD. This finding is consistent with Okoye *et al*. (2011), who reported that uncontrolled hypertension was the leading risk factor for CKD in Nigeria. Hypertension contributes to glomerular damage, which accelerates renal decline, particularly when undiagnosed or untreated. The high prevalence of hypertension in the study population (39.0%) pointed the need for aggressive blood pressure control strategies as a cornerstone of CKD prevention in Abuja.

Diabetes was strongly associated with kidney disease in this study, with an odds ratio of 4.1. This aligns with the findings of Alebiosu and Ayodele (2005), who reported that diabetic nephropathy accounts for a growing proportion of CKD cases in Nigeria. Similarly, El Nahas and Bello (2005) emphasized diabetes as a global driver of CKD, especially in low and middle income countries with rapid lifestyle changes. The high prevalence of CKD among diabetics in this study reflects inadequate glycemic control and late presentation, common features in Nigerian hospitals.

Obesity also independently predicted kidney disease, with obese participants being more than twice as likely to have CKD. This is common with the work of Hall *et al*. (2014), who described obesity as a contributor to glomerular hyperfiltration and subsequent renal damage. While alcohol use and smoking showed higher prevalence among CKD patients, they were not statistically significant predictors in this study. This is similar to findings by Okwuonu *et al*. (2011) in Umuahia, Nigeria, where lifestyle factors were associated with CKD but lost significance after controlling for hypertension and diabetes. Nonetheless, their contributory role cannot be ignored, especially in urban areas like Abuja where lifestyle risks are increasing.

The study observed higher prevalence of kidney disease in Nyanya General Hospital (30.0%) and Karu General Hospital (27.5%), compared to Maitama District Hospital (15.0%). This difference likely shows socioeconomic disparities between peri-urban and urban populations in AMAC. Nyanya and Karu serve lower income communities, where undiagnosed hypertension and diabetes are common, while Maitama serves a more affluent population with better health awareness and access to care. This finding agrees with reports by Stanifer *et al*. (2016), who highlighted socioeconomic status as a determinant of CKD burden in African settings.

CONCLUSION

This study revealed a prevalence of kidney disease of 23.0% among patients attending selected hospitals in Abuja Municipal Area Council. The burden was highest in peri-urban

hospitals such as Nyanya and Karu, suggesting socioeconomic disparities in disease distribution. Hypertension, diabetes, and obesity were identified as independent predictors of kidney disease, with hypertensive and diabetic patients being three to four times more likely to develop CKD. Lifestyle factors such as smoking and alcohol consumption were associated with kidney disease but were not statistically significant in this study.

The findings show the growing public health importance of kidney disease in Abuja, reflecting national and regional trends of rising non-communicable diseases in sub-Saharan Africa. Since dialysis and transplantation remain unaffordable for most Nigerians, early detection and control of modifiable risk factors remain the most sustainable strategy. This study provides evidence to guide policymakers, hospital administrators, and clinicians in strengthening preventive and diagnostic services in AMAC.

RECOMMENDATIONS

1. Hospitals in Abuja Municipal Area Council should introduce routine kidney function screening for high-risk patients, especially those with hypertension, diabetes, and obesity.
2. Community-based programs should encourage weight control, physical activity, healthy diets, and reduction of alcohol and tobacco use to minimize risk factors.
3. Health workers should intensify efforts to achieve blood pressure and blood glucose control, supported by patient education and affordable medications.
4. The Federal Capital Territory Administration should integrate kidney disease prevention into its non-communicable disease framework, with dedicated funding for awareness and diagnostic infrastructure.
5. Longitudinal community-based studies should be conducted to estimate the true population burden of CKD and monitor the progression of identified risk factors.

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