PREVALENCE AND PATTERN OF ADULT RENAL DISEASES AMONG ADMISSIONS IN RIVERS STATE UNIVERSITY TEACHING HOSPITAL: A 4- YEAR REVIEW.

ABSTRACT:

Introduction: Kidney disease is a growing worldwide public health problem and prevalence varies within and between countries. Epidemiological data is therefore imperative for prioritization and adequate resource allocation especially in settings where no previous data exists.

Aim: To determine the prevalence and pattern of–renal diseases among adults admitted into the medical wards of Rivers State University Teaching Hospital, Rivers State, Southern Nigeria.

Methods: Case notes of all patients admitted into the medical wards were reviewed from January 2019 to December 2022. Data extracted included sociodemographic variables, diagnosis and treatment outcomes of patients with renal disease.

Results: Of the 2,725 patients admitted to the medical wards, 386 (14.2%) had renal disease. Mean age of patients was 51.2 ± 16 years. There was a male preponderance 210 (54.4%) with a M: F = 1.3:1. The most prevalent renal diseases were hypertensive nephropathy 125(32.4%), diabetic nephropathy 91(23.7%), HIV-related renal disease 54(14.0%) and obstructive uropathy 23(6%). Acute kidney injury constituted 37 (9.6%) of renal admissions. Analysis of outcome showed that 254 (65.8%) were discharged home, 17 (4.4%) patients discharged themselves against medical advice, 5 (1.3%) absconded, 2 (0.5%) referred and 108 (28.0%) of them died. The highest mortality (19.4%) occurred among patients with the HIV-related renal disease

Conclusion: The prevalence of renal disease is high, with hypertension, diabetes, HIV and obstructive uropathy as its commonest risk factors. Renal diseases still contribute significantly to morbidity and mortality among in-hospital admissions in Rivers State, Southern Nigeria. Preventative measures including health education, advocacy and screening for renal disease is imperative.

Key words: Adults, Nigeria, Prevalence, Pattern, Renal diseases

1. INTRODUCTION:

Kidney disease is a growing worldwide public health problem and in advanced cases, it is associated with a high cost of care, high mortality and poor quality of life.[1] The global prevalence of chronic kidney disease (CKD) is estimated to be > 10% affecting > 800million people and millions die each year because they do not have access to affordable treatment.[2] It arises from both non-communicable diseases and

communicable diseases, such as malaria, schistosomiasis, human immunodeficiency virus (HIV), and hepatitis B. The use of herbal nephrotoxic medications, such as those containing aristolochic acid, also contributes to CKD.[3] In addition, there is a rising burden of non-communicable disease including kidney disease, systemic hypertension and diabetes mellitus in Africa and a corresponding rise in their related morbidity and mortality[4] Diabetes mellitus has emerged as the most important risk factor for CKD in the developed world.[5] However, the increasing significance of diabetes mellitus as an etiology of CKD has been documented in studies conducted in developing countries.[6] The mean age of CKD patients in Nigeria, as in other developing countries, is between the third and fifth decades of life.[7] This is in contrast to findings in the western countries in which more than 50% of the CKD population are aged 65 years and above.[8] Male gender, apart from being a risk factor for CKD, is also associated with a higher prevalence of other independent risk factors of CKD, such as hypertension, diabetes, and smoking.[9]

A study in south-south Nigeria showed 15.4% make up renal admissions in the medical ward and the most prevalent renal diseases were hypertensive nephropathy, diabetic nephropathy, chronic glomerulonephritis, and HIV-related renal disease constituting 22.8%, 16.6%, 14.4%, and 13.1%, respectively. Acute kidney injury constituted 12.4% of renal admissions. [10] Another study in south east Nigeria showed the frequency of renal admission of 9.56%.[11] Similarly, in a study in Ghana, kidney disease accounted for 15.7% of all medical admissions with acute kidney injury (AKI) constituting 24.9%.[12] Also, in a study in Cameroon, 225 renal admissions were noted and the clinical pattern of renal diseases is dominated by advanced CKD and AKI secondary to preventable causes.[13]

The burden of management of CKD is enormous in developing countries like Nigeria where out of pocket payment for healthcare is prevalent with overtly inadequate health insurance coverage to meet the huge financial demands the disease places on its sufferers and their families. [14]

This study will enable us determine the burden and pattern of renal diseases in our facility and therefore foster strategies in disease prevention while providing framework to guide policy decisions and health resource allocations.

2. MATERIAL AND METHODS:

This was a retrospective review of medical case notes of all adults admitted into the medical wards of the Rivers State University Teaching Hospital (RSUTH) from 1st January 2019 to 31st December 2022. Data of all patients with clinical and/or biochemical evidence of renal diseases were analysed.

The data retrieved included age, sex, clinical diagnosis, and outcomes of treatment. The clinical outcome variables were categorised as discharged, absconded or discharged against medical advice, referred to another health facility and death.

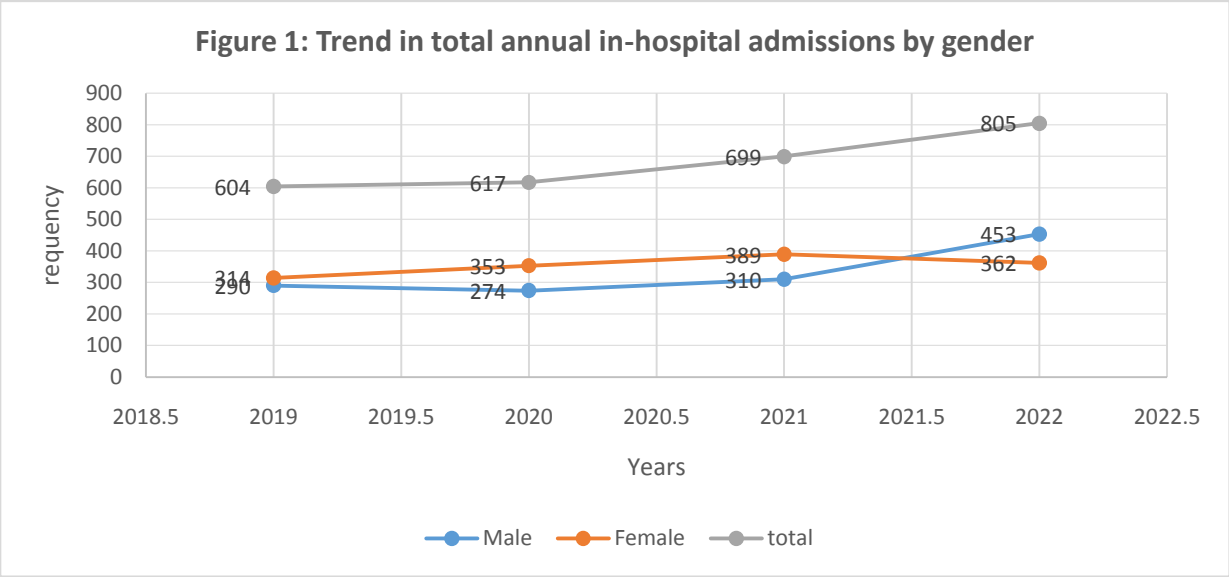
Data were analysed using Excel spreadsheet and SPSS version 25. Data was summarised using descriptive statistics. Continuous variables were expressed as mean ± standard deviation and categorical variables were expressed as frequencies, percentages and charts. Significant p-value <0.05

The Ethics Committee of the hospital approved the study. Consent was also obtained from the patients.

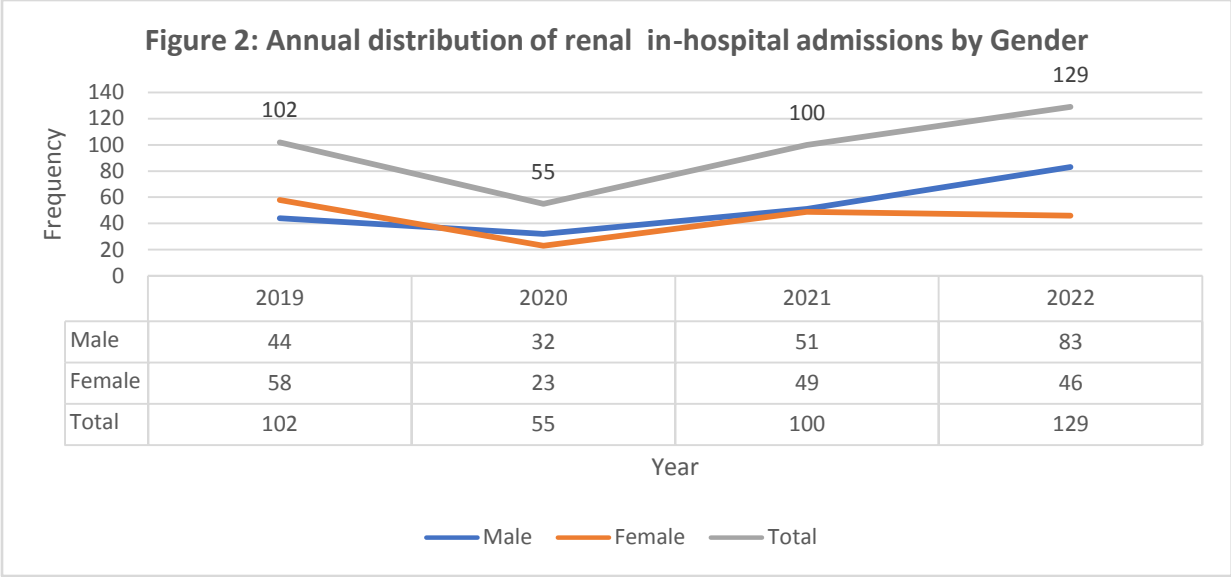
3. RESULTS AND DISCUSSION

The annual trend of renal in-hospital admission:

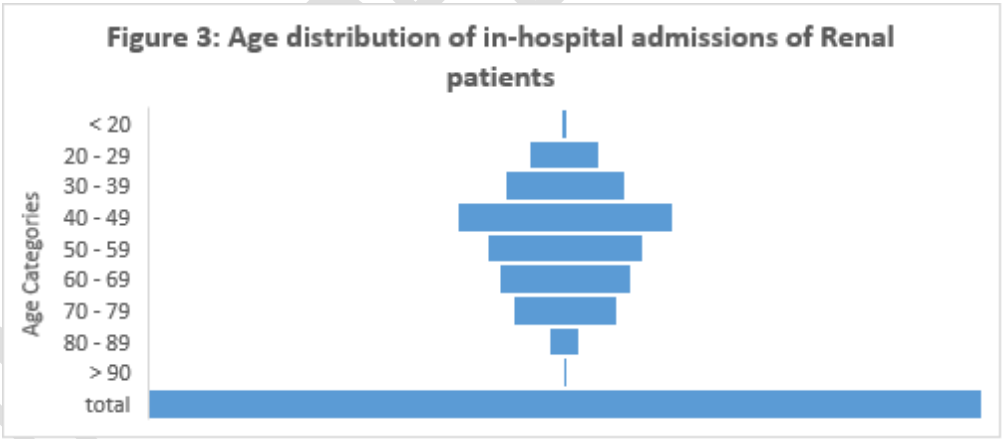
Within the 4-year study period, a total of 2,725 patients were admitted to the medical wards of the hospital. Overall, there was an increase in hospital admissions from 604 in 2019 to 805 in 2022. There was also a steady increase in male admissions with a slight decline in 2020 whereas, female admissions increased steadily from 2019 to 2021, but decreased in 2022. There was a statistically significant difference in the annual in-hospital admission rates by gender (X^2 =30.136, p=0.0001).



The annual distribution of renal in-hospital admissions by gender is displayed in Figure 2. There was an initial female preponderance in 2019 but became the reverse in the succeeding years. There were more males admitted with renal diseases compared to females and this was statistically significant (X^2 = 11.138, p = 0.011).



Age distribution of renal patients and prevalence of renal diseases:



The age distribution of the patients is displayed in Figure 3, with the majority 100 (25.9%) of them being within the 40 – 49 years' age category and the least 1 (0.26%) being within the >90 years' age category. There were 386 patients admitted with renal disease, giving a prevalence of 14.2%. Among the renal patients' males predominated, accounting for 210 (54.4%) while females were 176 (45.6%) with a M: F = 1.3:1. Mean age of patients was 51.2 ± 16 years and ranged between 17 to 98 years.

Distribution of in-hospital admissions by etiology:

The most prevalent renal diseases were hypertensive nephropathy 125(32.4%), diabetic nephropathy 91(23.7%), HIV-related renal disease 54(14.0%) and obstructive uropathy 23(6%) respectively. The least causes of in-hospital renal admissions were Chronic liver disease, cancer of the prostrate, Cardiorenal syndrome, Hepatitis B nephropathy, good pasture syndrome, Lymphoproliferative disorders, Benign prostatic hyperplasia, rhabdomyolysis and Acute coronary syndrome which all contributed 1 (0.26%) each.

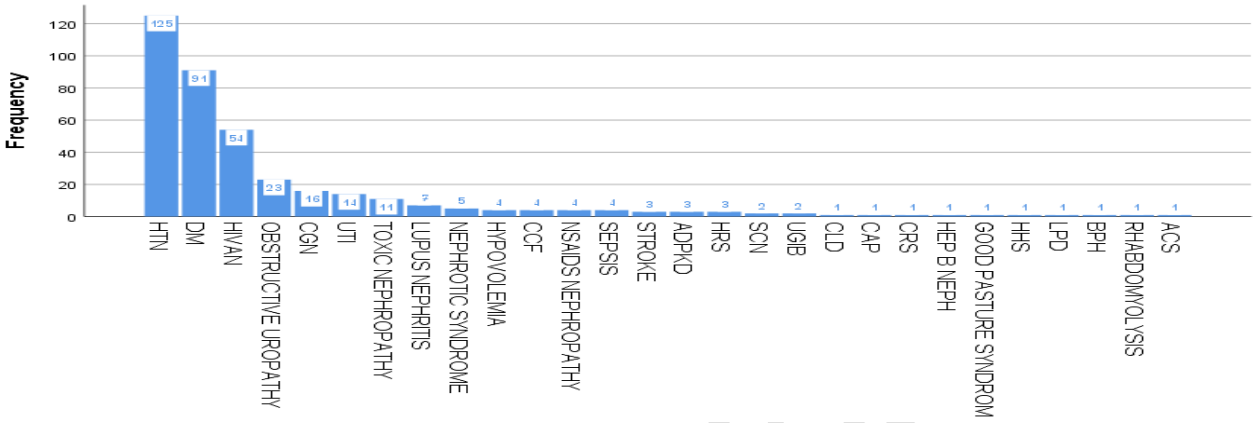
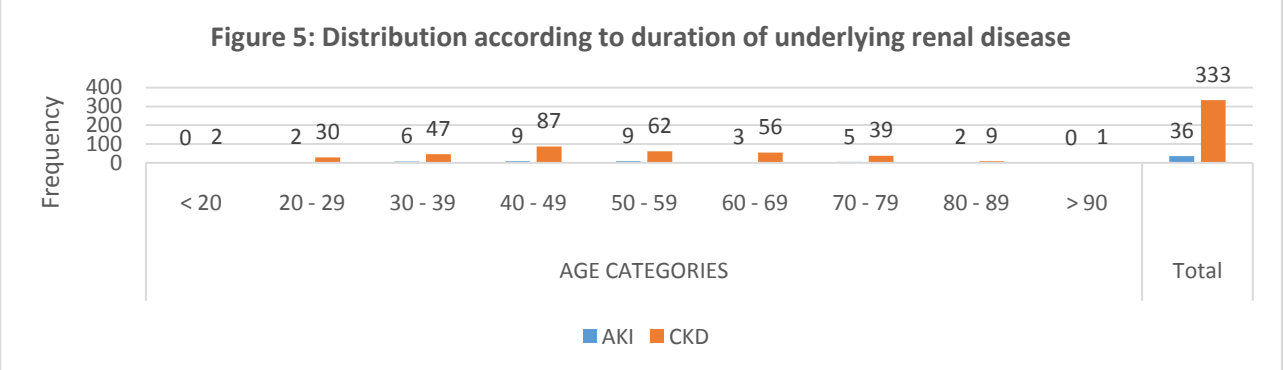


Figure 4: Distribution of in-hospital admissions by etiology

Distribution according to duration of kidney disease:

The distribution of the patients in accordance with the duration of underlying renal disease is shown in Figure 5 which demonstrates that 36 (9.8%) had acute kidney injury whereas the majority 333 (90.2%) had chronic kidney disease. According to age categories, AKI affected mainly patients within the 40-to-59-year-old category and accounted for 9 (25%) respectively. Whereas there was a steady increasing trend in the occurrence of CKD from 20 – 29 age category 30 (9.0%) which peaked in the 40 to 49-year-old category, 87 (26.1%) and then gradually declined from 62 (18.6%) in the 50 – 59-year-old category to 1 (0.3%) in the > 90-year-old category.



Outcome:

Analysis of outcomes showed that 254 (65.8%) were discharged home, 17 (4.4%) patients discharged themselves against medical advice, 5 (1.3%) absconded, 2 (0.5%) referred and 108 (28.0%) of them died.

Figure 6 displays the prevalence of mortality according to age distribution among patients in this review. Deaths occurred the most in the < 20 years and above 60 years' categories, with a 100% mortality in the > 90 years' age category.

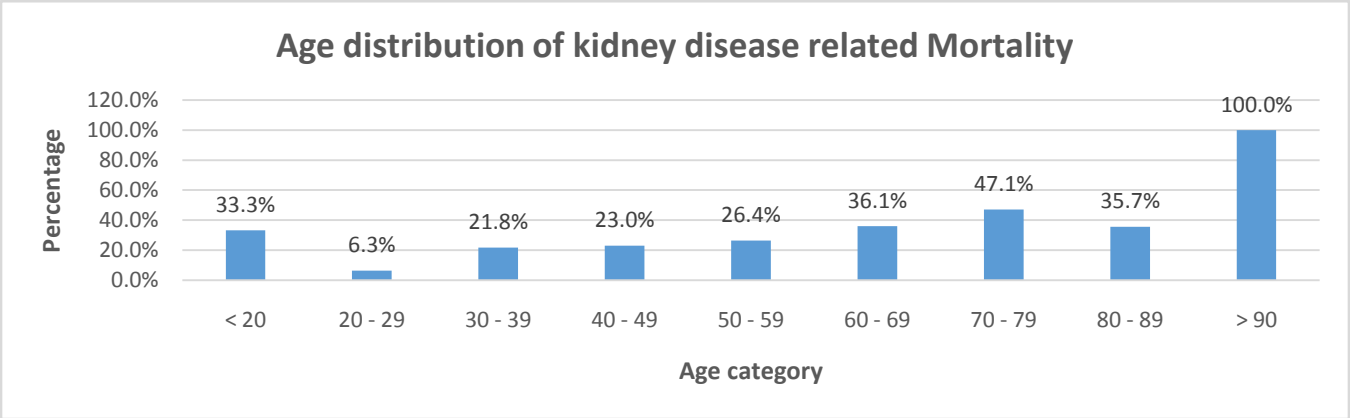


Figure 6: The prevalence of mortality according to age distribution

DISCUSSION

The study showed the prevalence of renal disease to be 14.2% of all adult medical admissions over the study period, while the middle aged group were mainly affected with a male preponderance. The most common risk factors for chronic kidney disease were hypertension, diabetes and HIV-related renal diseases. The highest mortality occurred with the HIV-related renal disease patients.

Renal diseases accounted for 14.2% of all adult medical admissions over the four-year review period of the study and this is similar to a previous study in Port-Harcourt in which renal admissions accounted for 15.4% of medical admissions. [10] This slight increase in prevalence between both centers in Port Harcourt may be

attributable to an increase in kidney disease awareness as well as a likely improvement in the health seeking behavior in the period under review. Lower prevalence's of 6.5% and 7.2% were however obtained from other South-Western States in Nigeria [15,16] Tannor et al in Ghana [12] reported a prevalence of 15.7% over a study duration of 6-months while a study in South-West Ethiopia [17], reports a 9.7% prevalence of renal admissions over the same period. Studies done in other countries in sub Saharan Africa suggest 2- 3% of medical admissions were renal related. [18]

Mean age of patients admitted for renal related medical conditions was 51.2 ± 16 years which is similar to the mean age of 53±5.5 years in a study South East Nigeria [11] and among CKD patients in Nigeria and other developing countries. [7] This corresponds to the productive years of these patients leading to economic and human resource wastage. In developed countries however the prevalence is higher in the elderly,[8] this may also be attributable to better healthcare in terms of availability, access and affordability. The relatively younger age at presentation of many of our patients portends higher risk of infectious causes of renal disease such as HIV and possible increase patronage of nephrotoxic agents in the young and middle age groups. Also, lupus nephritis is known to be commoner in the young than in the elderly. [19]

There seems to be a male preponderance in the prevalence of renal disease with a male to female ratio of 1.3: 1. This tallies with a previous study in Port-Harcourt with 52% of males affected [10] but in contrast with a study in Sierra Leone which had a female preponderance. [20] Males have higher prevalence's of risk factors for CKD such as hypertension and diabetes[9] hence are more predisposed to developing renal complications.

The most common causes of renal diseases were hypertensive nephropathy 124(32.3%), diabetic nephropathy 91(23.7%), HIV-related renal disease 53(13.8%) and obstructive uropathy 23(6%) respectively. This is in line with a study in South-South Nigeria where the commonest causes were hypertension, diabetes and chronic glomerulonephritis.[10] In similar study in Sierra Leone, systemic hypertension (43%) and diabetes mellitus (24%) were more prevalent[20] whereas chronic glomerulonephritis, hypertension and diabetes were the most common causes reported in Cameroon.[13] Whereas hypertension is reported to be the leading cause of CKD in Sub-Saharan Africa (SSA),[21] diabetes mellitus has been noted to be the leading cause of CKD in developed countries and worldwide.[5]

Hypertension is noted to occur earlier in blacks with its consequent target organ damage including renal disease being more pronounced.[22] Diabetic nephropathy seems to be a more significant cause of CKD than was previously reported in Nigeria, and there is need for more intensive preventive measures and early intervention.[23] Nigeria is reported to have the largest number of people in Africa living with type 2 diabetes and type 2 diabetes increasingly becoming a leading cause of CKD and end stage renal disease in Nigeria.[24,6]

The prevalence of HIV-related renal disease in this study was 13.8% and it was the highest cause of mortality (19.4%). Wachukwu et al in an earlier study in south-south Nigeria had a similar prevalence of 13.1% of HIV-related renal disease and it was also the highest cause of mortality [10]. A study in Nigeria showed the prevalence of renal disease in HIV-positive patients to be as high as 38%. [25] This high prevalence of HIVAN can be explained by the more chronic course of the retroviral illness and its drug related nephrotoxicity. [26]

Acute kidney injury constituted 9.6% of total admitted renal cases which is comparable with a previous study in Southern Nigeria [10]. On the other hand, much higher prevalence's were documented in other African studies such as 24% in Ghana [12], 28% in Cameroon [13] and 37% in Ethiopia [17]. The lower prevalence of AKI observed might be due to late presentation as some patients tend to patronize patent drug stores or explore other measures before presenting to the hospitals when symptoms persist or worsen. Some cases of AKI also go unrecognized while some patients with AKI do not present in the hospitals. [27]

Mortality was 28.1% which was similar to mortality rates reported in other Nigerian studies [10,11]. Higher mortality was documented in other African countries such as 45.6% in Ghana, [12] and 47% in Sierra Leone. [20] More than half (65.8%) of the sample population were discharged to follow up at the nephrology clinic. Mortality remains a challenge in renal disease with as high as 50% mortality [28] in patients admitted to the intensive care unit who develop AKI. Late presentation, delayed diagnosis, inadequate prevention and treatment strategies as well as delayed access to renal replacement therapy remain factors that overtly increase mortality in patients with renal disease albeit AKI or CKD.

4. CONCLUSION

Prevalence of renal disease still remains high in our environment, with hypertension, diabetes and HIVAN being major risk factors identified. Preventive measures which targets mitigation of development and progression of kidney diseases such as health education, health advocacy, kidney disease awareness campaigns cannot be overemphasized, while access to adequate and affordable healthcare remains imperative to favorable outcomes.

CONSENT

All authors declare that informed consent was obtained from the participants and other approved parties for publication.

ETHICAL APPROVAL

All authors hereby declare that the study protocol was examined and approved by the appropriate ethics review committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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