

SPECTRUM OF RENAL DISEASES IN A NEW TEACHING HOSPITAL IN MAKURDI, NIGERIA.

ABSTRACT

Renal diseases constitute an enormous health burden globally and is associated with high morbidity and mortality. This study aimed to determine the spectrum of renal diseases admitted into the medical wards of a new teaching hospital – Benue State University Teaching Hospital Makurdi, Nigeria.

METHOD:

A retrospective study of patients admitted for renal diseases in 3 years.

RESULT

A total of 1,147 patients were admitted of which 329 had renal disease. The mean age of the patients was 28.9 ± 11.4 . The most prevalent renal diseases were chronic kidney disease (CKD) 147(44.7%) , acute kidney injury 104(31.6%) , chronic glomerulonephritis 50(15.7%), diabetic nephropathy 23(7.0%), HIV associated nephropathy 22(6.7%) and obstructive uropathy 21(6.4%). Others where urinary tract infections 18(5.5%), nephrotic syndrome 12(3.6%) and autosomal dominant polycystic kidney disease 5(1.5%). Two hundred and fifty seven (78.1%) were discharged home, 15(4.6%) were referred to other hospitals while 57(17.3%) died.

CONCLUSION:

Renal disease is a significant cause of morbidity and mortality in Makurdi, North Central Nigeria. This underscores an urgent need to institute measures for prevention and early detection of renal disease. This will help to improve outcome as well as reduce the burden of kidney disease.

29 Key Words: Spectrum, renal diseases, new teaching hospital.

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31 INTRODUCTION

32 Renal disease is a common health problem associated with high morbidity
33 and mortality¹. The increase in the prevalence of renal disease is associated
34 with life style modifications, increase in life span and nephrotoxin abuse².
35 Chronic kidney disease (CKD) is common and is strongly associated with
36 end stage renal disease (ESRD) and cardiovascular deaths. Renal disease in
37 Nigeria is characterized by late presentation, under reporting, poor literacy
38 level of most patients and inability to afford renal replacement therapy.
39 Additionally there is paucity of information regarding the magnitude of
40 renal disease in our environment. Obtaining accurate data is hampered by
41 the poor socio economic status of most patients with lack of access to
42 specialized care in tertiary institutions, where most of the data is
43 generated.

44 In developed countries, diabetes mellitus and hypertension constitutes the
45 major aetiologies of CKD³. While renal hypo-perfusion and use of
46 nephrotoxin agents are the common causes of acute kidney injury (AKI) ⁴⁻⁵.
47 However, in developing countries like Sub-Saharan Africa, the dual burden
48 of non-communicable and infectious diseases predispose to an increase in
49 prevalence and a modified spectrum of kidney diseases⁶.

50 The common causes of CKD in this setting are chronic glomerulonephritis,
51 hypertension and diabetes with CKD affecting predominantly young
52 adults⁷⁻⁹. The common aetiologies of AKL are sepsis, diarrhoea, use of
53 nephrotoxic agents and obstetric complication^{10,11}. In Nigeria renal
54 diseases tend to affect relatively younger individuals, most of whom are in
55 the economically productive age group. This has important health and
56 economic implications for the nation. Risk factors associated with renal

diseases in previous studies carried out in Nigeria include age, elevated blood pressure, diabetes mellitus, habitual intake of analgesics, herbs and obesity¹².

In recent decades, there has been a shift in the major causes of death and disability from nutritional deficiency and infectious diseases toward non-communicable diseases with the highest mortality caused by cardiovascular diseases¹³. Kidney diseases particularly CKD play a key role in determining health outcomes of major non-communicable diseases such as diabetes and cardiovascular diseases¹⁴ and thus has become a major public health concern worldwide, greatly increasing the burden chronic medical disorders in hospitals.¹⁵

Medical audit of morbidity patterns is a useful tool in health planning and policy formulation in any given community. In addition it is useful in healthcare research and resource allocation particularly in economies where financial allocation to the health sector is not sufficient to meet the growing medical and financial demands.¹⁶

METHODS:

This was a retrospective analysis of medical records of patients admitted in Benue State University Teaching Hospital (BSUTH) Makurdi from January 2013 to December, 2015. BSUTH is a tertiary hospital located in North Central Nigeria serving all the general hospitals in the state as well as receiving referrals from neighbouring states of Nassarawa, Taraba and Kogi. Admission and discharge records were retrieved and the following information extracted: name, age, hospital number, sex, renal diagnosis, duration of hospital stay, investigations, treatment, co-morbidities and outcome.

83 Ethical clearance was obtained from the human research and ethics
84 committee of the hospital. Patients with renal diseases were identified and
85 classified as follows:

86 **DEFINITIONS**

87 Acute kidney injury (AKI) was defined according to the Kidney Disease
88 Improving Global Outcome (KDIGO) criteria as serum creatinine rise of 1.5
89 – 1.9 times baseline or ≥ 26 micromol/L increase or urinary output of $<$
90 0.5ml/kg per hour for over 6 hours¹⁷.

91 CKD was defined according to kidney disease quality outcome initiative
92 (KDOQI) criteria of kidney damage $\geq$ 3months or estimated glomerular
93 filtration rate (eGFR) of ≤ 60 mls/min/1.73m² for ≥ 3 months¹⁸. The eGFR
94 was calculated using the CKD-EPI equation¹⁹.

95 Nephrotic syndrome was defined by the association of proteinuria > 3.5 g/
96 24 hours, hypoalbuminaemia < 3.0 g/dl and oedema.

97 Chronic glomerulonephritis was referred to CKD in patients with
98 hypertension, proteinuria, haematuria and shrunken kidneys on
99 ultrasonography.

100 Hypertension was defined as systolic blood pressure of ≥ 140 mmHg
101 and/or diastolic blood pressure ≥ 90 mmHg or use of anti -hypertensives.

102 Diabetes mellitus was defined as blood glucose > 126 mg/dl or use of anti
103 diabetic agents.

104 Obstructive uropathy was defined as structural or functional changes in the
105 urinary tract that impede normal urine flow²⁰.



106 **DATA ANALYSIS**

107 Statistical analysis was done using the statistical package for social sciences
108 (SPSS) version 19.0 by Chicago Inc. Data analysis was done using
109 descriptive statistics (frequency, proportions, means and standard
110 deviation to summarize variables. The level of significance was set at 5%).

RESULTS

During the period under review (January, 2013 – December, 2015), a total of 1,147 patients were admitted in the medical wards of the hospital. Renal diseases accounted for 329(28.7%) of total medical admissions in the medical ward. The mean age of patients with renal disease was 28.9 ± 11.4 years. The bulk of the patients were in the 26-35, 36-45 and 46 – 54 years age group. 214 (65%) were males and 115 (35%) were females. Characteristics of the study population is shown in Table 1.

Characteristics of study population

Parameter	Frequency (Percentage) mean
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Mean age (Years)	28.9±11.4
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Age group

16 – 25	54(16.4)
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26 – 35	71(21.6)
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36 – 45	69(21.0)
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46 – 54	105(31.9)
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>54	30(9.1)
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Gender

Male	214(65.0)
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Female	115(35.0)
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The distribution of renal diseases during the 3 year review period is shown in Table 2.

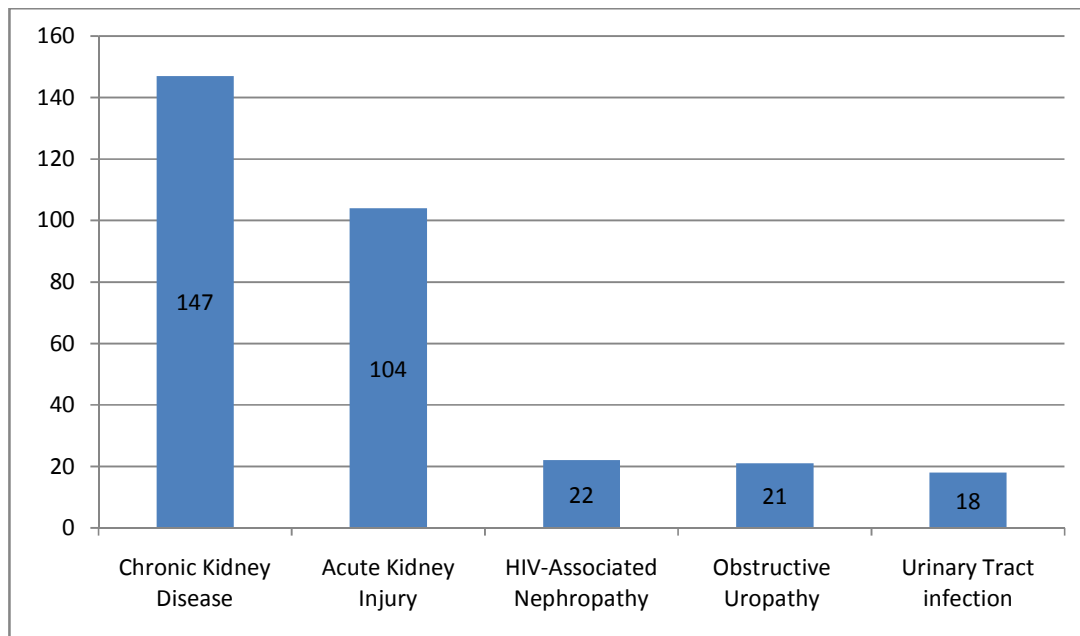
Table 2 : PATTERN OF RENAL DISEASES DURING 3 YEAR REVIEW PERIOD

Renal diagnosis	Frequency	Percentage (%)
Chronic kidney disease	147	44.7
Aetiology of CKD		
Hypertension	74	22.5
Chronic glomerulonephritis	50	15.2
Diabetic nephropathy	23	7.0
Acute Kidney injury	104	31.6
HIV-associated nephropathy	22	6.7
Obstructive uropathy	21	6.4
Urinary tract infection	18	5.5
Nephrotic syndrome	12	3.6
Autosomal Dominant	5	1.5
Polycystic kidney disease		

The five leading causes of kidney diseases were chronic kidney disease 147 (44.7%) acute kidney injury 104(31.6%), HIV associated nephropathy 22(6.7%) obstructive uropathy 21(6.4%), Urinary tract infection 18(5.7%).This is shown in figure 1.



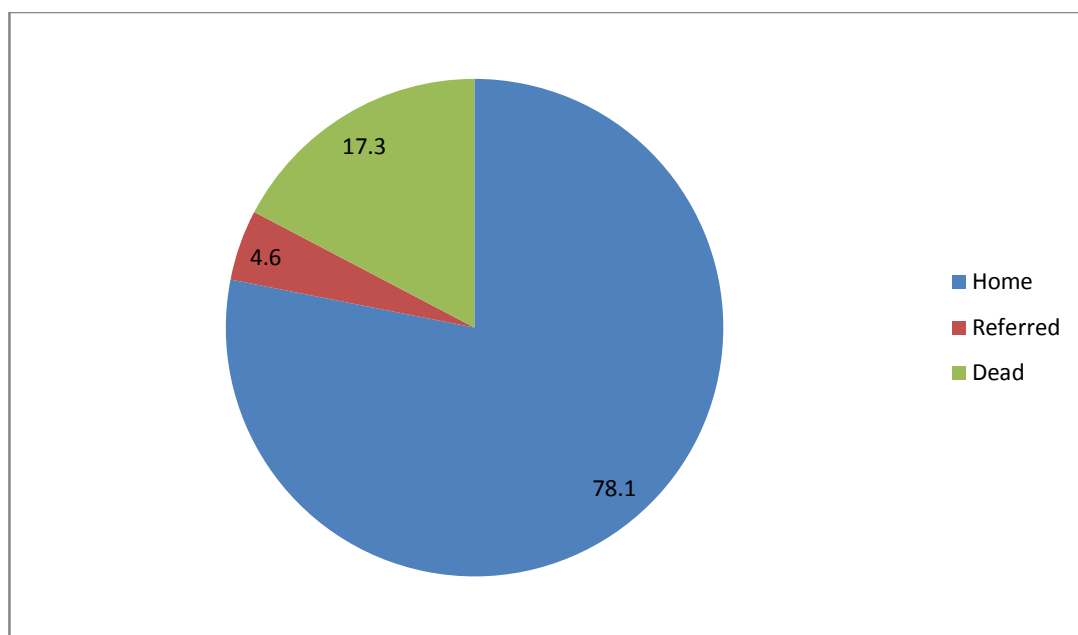
FIGURE 1 : LEADING CAUSES OF RENAL DISEASE IN BSUTH



RENAL DIAGNOSIS

Over this review period 57 patients died representing 17.3% of the study population, 257 renal patients were discharged representing 78.1% of the total number of renal patients while 15(4.6%) were referred. This is shown in figure 2.

FIGURE 2: PIE CHART SHOWING OUTCOME OF PATIENTS WITH RENAL DISEASES.



DISCUSSION

The objective of this study was to determine the spectrum of renal diseases in patients admitted to the medical wards of BSUTH over a 3 year period.

The peak age of renal patients admitted over the period under review was between the third, fourth and fifth decades which is similar to previous studies done in Nigeria^{21,22}. These patients are young and economically active. This is in sharp contrast with reports from United States where CKD is more prevalent in adults aged 60years and above²³.

Renal diseases accounted for 28.7% of all medical admission during the period under review. This is at variance with some studies done in Nigeria. For instance Etyang AO et al²⁴ reported a prevalence of 2-3%. Similarly Ogunmola reported a prevalence of 7.2%.²⁵ The reason for the high prevalence of kidney disease in my centre was because the teaching hospital started as a renal centre before it became fully operational. During the time it operated solely as a renal centre we received a lot of referrals

from neighbouring states because of the availability of renal replacement therapy. The high prevalence of renal diseases underscores the enormous burden of renal diseases in health care delivery in Nigeria. The majority of patients in Nigeria fund their treatment and this poses a huge financial burden on patients. In addition renal replacement therapy is not readily available as it is limited to urban areas and even when available the cost is prohibitive.

The most common causes of renal diseases admitted were CKD comprising hypertensive nephropathy, chronic glomerulonephritis (CGN) and diabetic nephropathy. Studies done in Nigeria also report hypertension, chronic glomerulonephritis and diabetic nephropathy as leading causes of CKD in Nigeria^{8,26} and South Africa²⁷. Hypertension is common and target organ damage involving the kidneys is quite common^{28,29}. In contrast to hypertension as a leading cause of CKD in Africa, diabetes mellitus is the leading cause of CKD and ESRD in other regions of the world³⁰.

In this study, AKI accounted for 104(31.6%) of admissions. Liangos et al ³¹ reported an incidence of 19.2 per 1000 hospitalizations. AKI is associated with high morbidity and mortality especially in developing countries^{32,33,34}.

This study showed a 6.7% prevalence of renal disease in HIV – infected patients. This is in contrasts from reports from other studies which revealed higher prevalence³⁵. This may be due to the fact that majority of HIV patients are treated in special centres and are only referred when they have renal complications. Most of the patients either presented late or were referred late.

The mortality rate was 57(17.3%) in this study. The high mortality observed from this study is similar from reports from other studies. Ngwogu KO et al³⁶ reported a mortality of 30.6% and Wachukwu CM et al also reported a mortality of 20.3%.

This study has some limitations. We excluded some patients due to incomplete files and also most patients are self-funded such that only patients who could pay for their care were admitted into the hospital thus constituting a selection bias.

CONCLUSION

Renal diseases are common and account for a high proportion of medical admissions in BSUTH, North central, Nigeria. Majority of patients are young adults in their economically productive years and often present late. Most of these diseases are preventable and treatable especially in earlier stages hence health education should be reinforced with emphasis on lifestyle modification in addition to targeted screening of individuals at risk of kidney disease to detect early diseases and thus prevent and reduce the burden of Kidney disease in Nigeria.

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