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RESEARCH PAPER

INCIDENCE, PATTERN AND OUTCOME OF RENAL ADMISSIONS AT THE ABIA STATE UNIVERSITY TEACHING HOSPITAL, ABA: A FIVE YEAR REVIEW

[1]Ngwogu K.O, [2]Onwuchekwa U. N, [3]Ngwogu A.C., [4]Ekenjoku, A. J

Departments of [1]Chemical Pathology, [2]Internal Medicine, [3]Medical Microbiology, [4]Pharmacology, College of Medicine and Health Sciences, Abia State University, Uturu, Nigeria.
Corresponding Author: ngwogukenneth@yahoo.com

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ABSTRACT

The aim of this study was to determine the burden of renal diseases in Aba -a cosmopolitan town in Nigeria undergoing increased urbanization in the last decade. The study involved 359 patient case notes with records of renal diseases between January 2009 and December 2013. Information extracted included age, sex, type of renal disease, length of hospitalization and treatment outcome. Data obtained were analyzed using the statistical package for social sciences (SPSS). The student t-test was used and $p < 0.05$ was considered statistical significant. The mean age was 53±5.5 years, while the highest incidence was recorded among those aged between 50 - 59 years (23.67%). Majority (56.82%) of the patients were admitted on account of chronic kidney disease with 45.58% of these associated with renal failure. Other associated diseases included nephritic syndrome (11.45), pyelonephritis (7.79%) glomerulonephritis (5.57%), urinary infection (3.06%) and renal stone (1.11%). Mean duration of hospital stay was 12 ± 5 days with 110 (30.64%) deaths. Majority of the dead patients (27.54%) were those with renal failure resulting from CKD. Most of the deaths occurred within 6 days of hospital stay. Thus renal diseases constitute a significant health burden in our community requiring urgent attention.

Key words: Renal diseases, admissions, results, Aba

INTRODUCTION

The incidence of chronic kidney disease (CKD) is increasing globally at an annual growth rate of 8% (Alebiosu and Ayodele 2015, Lysaght, 2002). The disease is said to be causing enormous socio-economic burdens for societies and the health care systems across the globe (Odenigbo *et al*., 2014). Regional differences exist in the epidemiology of renal diseases and non- whites are more affected (Alebiosu and Ayodele, 2005). It is estimated that I out of 8 adult Americans exhibit evidence of CKD (Coresh *et al.*, 2007). Comparable estimates have also been reported in Asia (Chen *et al.*, 2005), Australia (Chadban *et al.*, 2003) and Europe (Otero *et al.*, 2005; Cirillo *et al*., 2006).

It is more difficult to get accurate estimates in the developing countries like Nigeria, due to lack of national registries of CKD and limited surveys (Odenigbo *et al*; 2014). However, the risk factors for CKD are known to be just as prevalent in many developing countries as in the developed countries. Therefore the burden of CKD in these developing countries may be comparable to those of the developed countries. In addition, developing countries exhibit a disproportionate burden of infections and environmental factors that broaden the spectrum of CKD risk factors and are apt to increase CKD burden (Odenigbo *et al*, 2014).

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Renal disease, especially glomerular disease, is more prevalent in Africa and seems to be of a more severe form than is found in western countries (Naicker, 2003). Also disturbing is the fact that CKD in sub- Saharan African tends to affect relatively younger individuals, most of which are in the economically productive age groups (Naicker, 2009; Arogundade and Barsoum, 2008). This has important health and economic implications for the nation. Risk factors that have been associated with CKD in previous studies carried out elsewhere include age, elevated blood pressure, presence of diabetes mellitus, habitual intake of analgesics and herbs and obesity (Afolabi *et al*., 2009).

Like all other developing countries of the world, no reliable statistic assesses the prevalence of kidney diseases in Nigeria (Alebiosu and Ayodele 2005). The most common causes of chronic renal disease in Nigeria are chronic glomerulonephritis, hypertension, diabetes mellitus and obstructive uropathy (Akinsola *et al*., 1989). By 2020, the burden of diabetes and cardiovascular disease will have increased by 130% in Africa alone, with concomitant increases in the prevalence, of CKD and end stage renal disease (ESRD) (Schena, 2000). Other factors contributing to the dismal picture of CKD in developing countries include late presentation of renal disease patients, limited renal replacement therapy, absence of kidney disease prevention programmes and poor literacy level (Arogundade and Barsoum, 2008). The majority of those with CKD die because of lack of funds, as very few can afford regular maintenance dialysis (Salako, 2001; Arije *et al*., 2000). Renal transplantation is available but still highly unaffordable to most Nigerians.

Though there have been previous reports of medical admissions in tertiary institutions in Nigeria (Ngwogu *et al*., 2015), Osuafor and Ele, 2004; Garko *et al*., 2004), few have focused on admission caused by renal disease (Akinsola *et al*., 1989). The Abia State University Teaching Hospital is located in Aba, a cosmopolitan city in the south eastern part of Nigeria. As a referral centre, it serves all the towns in the state as well as adjourning parts of Rivers, Imo and Akwa Ibom States. Being centrally located within the oil rich states, it has witnessed population explosions, changes in life style of the inhabitants and numerous demographic shifts associated with urbanization.

This study is therefore aimed at reviewing medical admissions caused by kidney disease with a view to determining their prevalence, burden on health facility as well as outcome. The data so generated may help in future planning and further research in this part of the country.

MATERIALS AND METHODS

Study duration and protocol: Ethical approval was obtained from ethical committee of the Abia State University Teaching Hospital where the study was conducted between January 2009 and December 2013.

Study procedure, sample collection and analysis: This was a descriptive retrospective study in which case notes of patients with records of renal disease were reviewed at the medical records department of the hospital. Information extracted from each case note were age, sex, type of renal disease (acute/chronic renal failure, chronic renal disease, nephrotic syndrome, glomerulonephritis, pyelonephritis, renal stone, urinary tract infection), length of hospitalization and treatment outcome (dead or alive). Our definition of chronic kidney disease is those kidney damage for ≥ 3months and/or glomerular filtration rate (GFR) < 60ml/min per 1.73m^2 for ≥ 3 months with or without kidney damage. The definitive diagnosis was made after patients had been investigated and radiographic data detained. If a patient was admitted more than once for the same diagnosis, only the initial entry was used for the analysis. The data obtained from the case notes were reduced, tabulated and the results were subjected to descriptive statistical analysis of percentages. Tables and figures were used to give a clear view of the information obtained.

Statistical analysis: Data analysis was done using the SPSS version 10. Comparison of means was done using the student t-test. The level of statistical significance was taken as $p < 0.05$.

RESULTS

Over the five year period a total of 3754 patients were admitted into the medical wards of the Abia State University Teaching Hospital Aba. Of those 359 were on account of renal diseases, giving a frequency of 9.56%. A total

number of 171 (47.63%) females reported different types of renal disease which 188 (52.37%) males presented with different types of renal diseases, giving a female: male ratio of approximately 1.1. The mean age of the patients was 53 ± 5.5 years. Most of the patients were aged 45-65 years.

TABLE 1: AGE AND GENDER DISTRIBUTION OF PATIENTS WITH RENAL DISEASE.

Age	Males	Females	Totals %
< 20	6	4	10 (2.78)
20-29	11	13	24 (6.68)
30-39	20	21	41 (11.42)
40-49	33	31	64 (17.82)
50-59	45	40	85 (23.67)
60-69	42	35	77 (21.44)
70-79	20	14	34 (9.47)
80-89	11	13	24 (6.68)
Total	188	171	359 (100%)

The highest incidence of renal disease was seen between the age ranges of 50-59 years (23.67%), while the lowest incidence was seen between the age ranges of 0-19 years, figure 1. There was progressive increase in the number of renal admissions with each increasing age group up to the 50-59 years age group and a progressive decline thereafter. A steady increase in the incidence of renal disease was observed in Aba, South Eastern Nigeria from 2009 (15.32%) to 2013 (28.69%), figure 2.

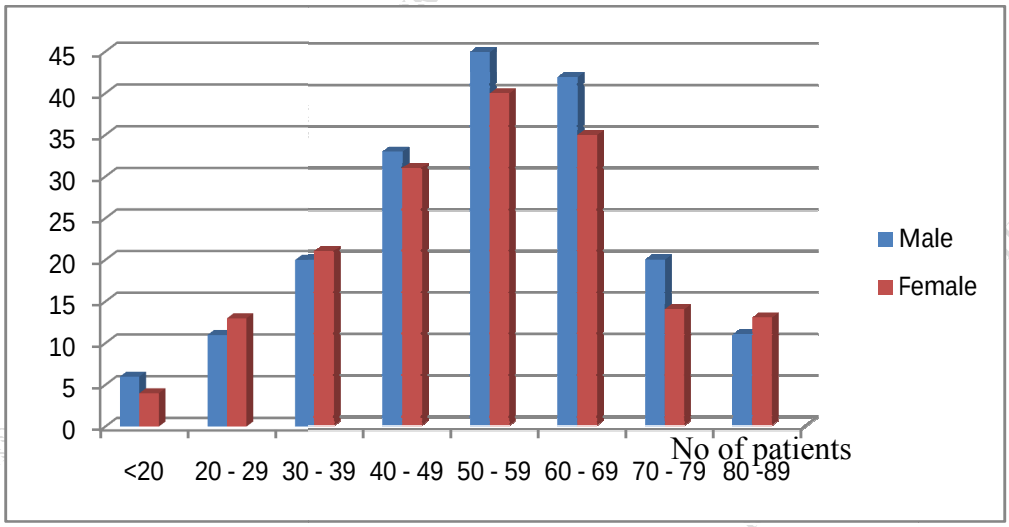

Figure 1: Age and Gender distribution.

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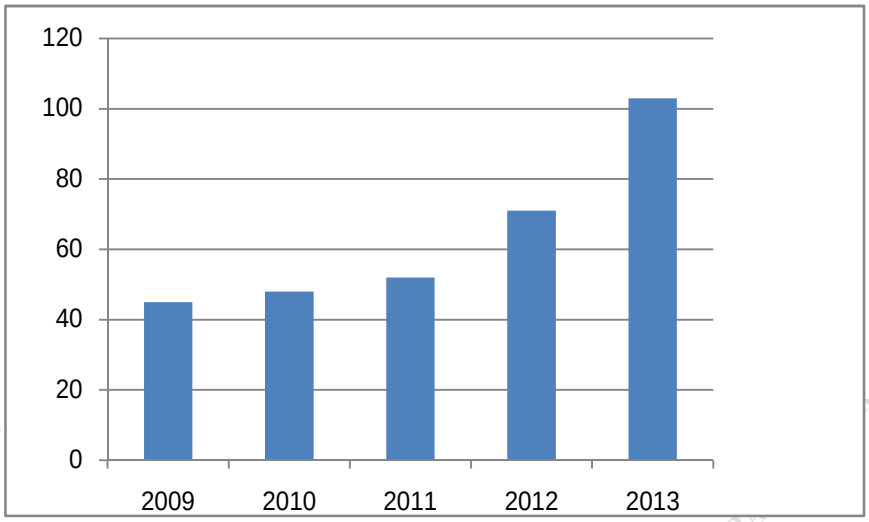

Figure 2: Yearly distribution of renal diseases.

Majority 204 (56.82%) of the renal patients were admitted on account of CKD with 93 of these (45.58%) associated with renal failure.Other diseases associated with renal failure were nephrotic syndrome (11.45%), pyelonephritis (7.79%) glomerulonephritis (5.57%), urinary tract infection (3.06%), and renal stone (1.11%).

TABLE 2: PATTERN OF RENAL ADMISSIONS.

Event	Number	Percentage(%)
Chronic kidney disease	204	56.82
Renal failure	51	14.20
Nephrotic syndrome	41	11.45
Pyelonephritis	28	7.79
Glomerulonephritis	20	5.57
Urinary tract infection	11	3.06
Renal stone	4	1.11
Total	359	100

The length of hospital stay ranged between 2 to 27 days with a mean duration of 12 ± 5 days. There were 110 deaths (30.64%) during this period and 25 (6.96%) discharged themselves against medical advice (LAMA). Majority of the dead patients (27.54%) were those with renal failure resulting from chronic kidney disease. Most of the deaths occurred within 6 days of hospital stay.

TABLE 3: OUTCOME OF RENAL ADMISSIONS.

Event	Number	Percentage(%)
Death	110	30.64
Doctors' discharge	224	62.39
Left against medical advice (LAMA)	25	6.97
Total	359	100

DISCUSSION:

Epidemiologic studies have shown that the incidence of kidney diseases is higher in the developing countries than in the industrialized world (Remuzzi, 2001). In industrialized countries, the prevalence of CKD is said to increase with age (Feest *et al*., 1990; Mc Geown, 1990) and the incidence of CKS is said to be 6-10 times higher in patients between 70 and 90 years of age compared with those between 30 and 50 years.This is contrary to the findings in this study. The highest incidence of renal disease in this study is between the age ranges of 50-59 years and agrees with earlier studies (Salako *et al*., 2002; Alebiosu, 2001; Akinsola *et al*., 1989). This trend therefore contributes to manpower shortage and economic waste for a developing country like Nigeria (Alebiosu and Ayodele, 2005).

Gender differences did not have a significant associatison with renal diseaes in this study. This does not agree with the findings of many other studies, in which the male gender was reported to be a non-modificable risk factor for CKD, especially among smokers (Stengel *et al*., 2003; Stengel *et al*., 2000). Smoking prevalanec is said to be highest in East Africa, Europe and Central Asia and lowest in sub-Saharan Africa (Jha *et al*., 2002). Smoking increases the risk of developing micro albuminuria, shortens the interval from microalbuminuria to overt nephropathy and accelerates progression of nephropathy and loss of glomerular filtration rate (Chase *et al*., 1991; Orth *et al*., 2000; Sawicki *et al*., 1994). Female preponderance of CKD has been documented in Asia (Ingsathit *et al*., 2010). However, our findings agree with the results of Afolabi *et al*. (2009) and Egbi *et al*. (2014) in which there was no sex predilection. The reason for these differences is not obvious but may be related to sample sizes and relative proportion of each gender in these series.

A steady rise in the incidence of renal diseases was observed between 2009 and 2013 due probably to proved accessibility to good and qualitative health care delivery system as seen in Aba, South Eastern Nigeria. This is in tandem with recent reports of increasing prevalence of CKD risk factors which include hypertension, diabetes and obesity (Wachukwu *et al*., 2015; IWG, 2015). Nigeria is reported to have the largest number of people with type 2 diabetes mellitus in Africa (IWG, 2015) and diabetes is known to be the leading cause of CKD worldwide (Atkins, 2005; Wachukwu *et al.,* 2015).

Chronic kidney diease was the commonest renal disease requiring admission into the medical wards (56.82%) followed by renal failure while the least was renal stone. Similar studies by Odenigbo *et al*. (2014) and Okafor *et al*. (2012) also reveal high prevalence of CKD. The high prevalence of CKD in this study may reflect the burden of renal disease in the communtiy under study. Changing life style is increasing the susceptibility to diabetes mellitus and hypertension. The prevalence of hypertension was earlier documented as 10-15% in urban areas in Nigeria (Kadiri *et al.,* 1999), but recent reports show the prevalence of hypertension and diabetes to be on the increase and can be as high as 34.80% in Nigerians (Ngwogu *et al*., 2015; Amira *et al.,* 2014).

The magnitude of the existing burden of illness caused by renal failure, the projections for increasing incidence of CKD, and the limitations of our existing treatments for renal insufficiency all point to the need for clinical and population- based interventions aimed at prevention of CKD (Whelton, 1995). The adverse out come of CKD can be prevented or delayed through interventions in the earlier stages of disease, which can be detected through laboratory testing such as measurment of serum creatinine, estimation of glomerulo filtration rate (GFR), measurement of urinary albumin excretion, urine microscopy for cellular elements and casts, and by radiologic investigations (NKF, 2002).

Renal failure from different causes accounted for 14.20% of renal admissions. Majority of the renal failure were due to CKD while other causes include nephrotic syndrome (11.45%) pyelonephritis (7.79%), glomerulonephritis (5.57%), urinary tract infection (3.06%) and renal stone (1.11%). Renal failure also accounted for 27.54% of deaths arising from chronic kidney disease. Also about 6.96% of renal failure cases left against medical advice (LAMA). These findings highlight the possible rise in the prevalence of renal failure, the burden of renal disease and reflect the limitations of our existing treatments for renal insufficiency (Alebiosu *et al*., 2005). The overall mortality rate from all renal admissions was 30.64%. This high rate may be a reflection of the severity of the diease at presentation due propbaly to late referrals from the initial health facility. Also the early stages of the disease are generally asymptomatic and goes largely undetected (Wachukwu *et al*., 2015). Most patients therefore present late to hospital,

usually in the advanced diseased states when greater than 50% of renal functional mass has been lost and in need of salvage dialysis (Obrador, 2009; Wachukwu et al; 2015).

Chronic renal failure pateints are referred late to nephrologists in both developing and industrialized countries around the world (Alebiosu, 2001; Innes *et al*., 1992; Avorn *et al*., 2002). Early referral to a nephrologist will ensure institution of measures to slow the progression of CKD, timely and proactive development of vascular access required for hemodialysis, and optimization of haematologic, endocrine, nutritional, metabolic and haemodynamic function in the face of progressive renal failure (Salako *et al*., 2002).

The average duration of hospital stay was about 12 days with patients staying for less than 6 days. Most of the deaths occurred in the first six days of admission and were mainly in those with CKD complicated by renal failure. Deaths from other renal diseases also occurred at this time and may be attributed to late presentation or late referrals. The issue of late referrals as a contributing factor to mortality particularly in the first few days of admission had been highlighted in earlier studies. (Garko *et al.,* 2004; Ansa *et al*., 2008; Ngwogu *et al*., 2015). Majority of such chronic disease patients are usually brought to the orthodox health facilities when the traditional interventions fail after which a lot of complications might have set in (Akindele and Uba, 2009).

CONCLUSION

Based on the findings from this study it is seen that renal diseases constituite a significant health burden in our community. Conclusive evidence exist that reducing prevalence of CKD is accompained by a reduction in renal morbidity and mortaility (Egbi *et al*., 2014; Wachukwu *et al*., 2015). Intensive health education is advocated and is aimed at increasing awareness of the renal diseae risk factors as well as promoting healthy life-style. We advocate regular screening and early detection of risk factors of CKD. Early referrals to tertiary health institutions are encouraged as these centers are better equipped to handle the possisble epidemic of CKD consequent upon urbanization in the nearest future.

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AUTHORS' CONTRIBUTION

All the authors participated fully in this study.