



EVALUATING THE PREVALENCE OF RENAL DISEASE IN OSUN STATE, NIGERIA

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Abstract: Chronic kidney disease is a progressive condition that affects more than 10% of the general population worldwide, however, it affects more than 800 million individuals. Chronic Renal Disease (CKD) is a worldwide public health problem which aggravate to kidney failure, cardiovascular disease, and premature death. The aim of the study is to examine the prevalence of renal disease and various factors responsible for renal disease among people in Osun State Secondary data for three years and four months were collected from the record department of some hospitals in both state and teaching hospitals. The secondary data obtained were used to calculate frequency, means, and standard deviation using SPSS Version 26.0. Logistic regression was adopted to determine the factors associated with chronic kidney disease. The data obtained from an interval of three years to four starting from 2019 to 2022 revealed that number of patients increases year after year that is, 2019(154), 2020 (213), 2021 (231), and for four months in 2022 (106). The mean and standard deviation from the study (12.88 ± 10.26 , 13.64 ± 12.51) showed that the number of female patients reported was more than male patients. In conclusion, chronic kidney disease (CKD) is a major contributor to morbidity and mortality among non-communicable diseases, this is a call for urgent attention of the government NGOs etc to reduce or eliminate the burden on the community due to the rate of increase.

Keywords: Causes, Prevalence, Prevention, and renal disease.

Introduction

Chronic kidney disease a prevalence of one in 1,000 people and affects approximately 10 million people worldwide (Grantham, 2017). Chronic Kidney Disease (CKD) is a global public health problem, exhibiting sharp increases in incidence, prevalence, and attributable morbidity and mortality. Chronic Disease (CKD) is a worldwide public health problem, which leads to premature death (International Society of Nephrology, 2015), CKD is a serious financial burden on families subject to medical conditions in most parts of the country, most especially Nigeria (Chukwuonye & Oviasu, 2012).

There is global attention to increase in chronic renal disease (CKD) which attributed to five major factors: the rapid increase rate of its prevalence, the high cost of treatment, recent data indicating that overt disease is the tip of an iceberg of covert disease, its correlation with an increase in the risk of cardiovascular disease, and the discovery of effective measures to prevent its progression. In China, the prevalence of dialysis was 33.2 pmp in 1999, and the number had surged to 402.18 pmp in 2015, and the corresponding number of hemodialysis patients was approximately 553,000 (Yang *et al.*, 2019). Furthermore, a similar trend was also present in other developing countries, where patients with CKD generally had relatively higher medical expenditure compared with those who had other comorbidities (Wang, *et al.*, 2015). Diseases of the kidney and urinary tract remain a major cause of illness and death in the United State of America (USA) as the National Kidney Foundation states that more than 37 million Americans health problem is associated with chronic conditions such as chronic kidney diseases (Rajput, 2017). Thus, millions are at risk from CKD and associated case may include health conditions such as kidney failure, kidney stones, and kidney cancer

Nephrol (2016) established in a study that positive association of CKD with an increased risk for cardiovascular disease mortality and is a risk multiplier in patients with hypertension and diabetes The study done in the Udhanam region of the Srikakulam district (Andhra Pradesh, India) funded by the Research and Prevention Committee of the International Society of Nephrology carried an clinical investigation when most of their

farmers affected by disease, histology report discovered interstitial fibrosis, interstitial mononuclear cell infiltration, and tubular atrophy but no excess of heavy metals found in the water, this was traced to CKD (Kakitapalli, 2020). Chronic kidney disease (CKD) is associated with a disproportionately high risk of cardiovascular disease, progression to kidney failure, and death (Stanifer, 2014)

Materials and Methods

Study design

The study is cross-sectional in which the study was carried in a snap short.

Study Location

study was carried out in some selected secondary and tertiary hospitals from three senatorial district of the state these include Ede state hospital, Osun State University Teaching Hospital, Osogbo and Obafemi Awolowo Teaching Hospital Complex, Ile-Ife, Osun state. The selection was based on peculiarity of the case and category of health system where proper diagnosis could be done as well as provision adequate treatment. Moreover. detailed claim records, including any prescription drugs, and other medical services were included in the database without missing values.

Data collection

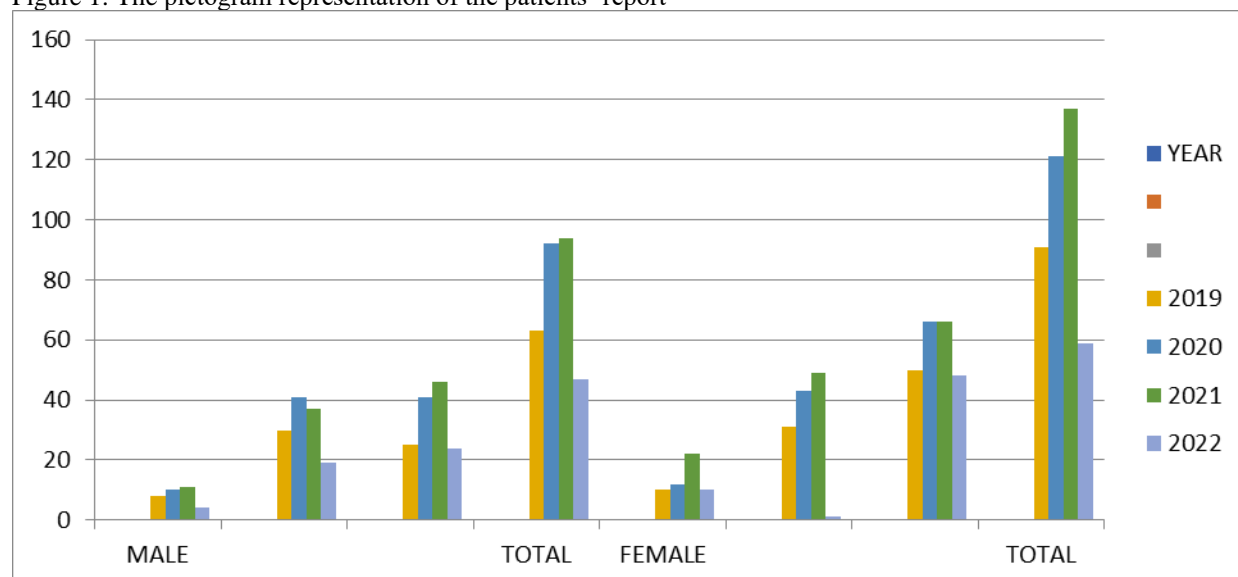
The secondary data was collected from record and information department with the approval of chief medical director selected hospitals these include General hospital Ede, University Osun Teaching Hospital Osogbo, and Obafemi. Awolowo University Teaching Hospital Ile-Ife, Osun, Nigeria

Data Processing and Analysis

Statistical Package for Social Science Version 23.0 was used to analyse secondary data collected. Descriptive statistics carried out include frequency, mean and Standard deviation (SD), association of variables determined level of significant set at $p > 0.05$ using chi-square was also used.

Findings

Figure 1: The pictogram representation of the patients’ report



The pictogram of renal patients at different years in selected hospitals in the state. The figure above revealed the number of patients at different years, in 2019 (40.91% male, and 59.09% female patients), 2020 (43.19% male, and 56.81% female patients), 2021 (40.69% male, and 59.31% female patients), and the first four months in 2022 (44.34% male, and 55.55% female patients). The figure shown that female were more than male patients

Table 2: The mean and standard deviation of the patients

| | N | Mean | Std. Deviation | Std. Error Mean |
|--------|-----|---------|----------------|-----------------|
| Male | 296 | 12.8889 | 10.26930 | .62310 |
| Female | 408 | 13.6472 | 12.5168 | .98926 |

Source: Researcher’s computation with the aid of SPSS v16

Table 4.3 shows the mean and standard deviation of the male and female patients as 12.89±10.26 and 13.64±12.52. This indicated that disease affect more of female than male

Table 3: The level of significant among the two groups

| | Test Value = 2 | | | | | |
|--------|----------------|----|-----------------|-----------------|--|--------|
| | T | Df | Sig. (2-tailed) | Mean Difference | 5% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Male | 10.101 | 3 | .069 | .88889 | -.0868 | 1.8646 |
| Female | 14.464 | 3 | .002 | 1.88889 | .9132 | 2.8646 |

Source: Researcher’s computation with the aid of SPSS v16

Table 3 shows the level of significant between female and male renal patients. The decision rule is: if the two-tailed critical t value is less than the observed t and the means are in the right order, then we can reject H0. In hypothesis, the critical t is 1.684 (from the table of critical t values) and the observed t are 10.101 and 14.464 respectively, so we reject H0, then the p-value is less 0.05. this shown that renal disease affect female than male.

Discussion of Findings

The results in table 1 revealed the report and prevalence of renal patients in Osun State increase in the number of patients yearly based on data collected.

The report showed that the prevalence of renal disease was significantly higher in female (408 (57.95%) compared with the male (296 (42.05%). This is in line with the report of Burke et.al., (2016) who revealed data from the Chinese National Renal Data System (CNRDS) found that more female has end-stage of renal disease. The results suggested that access to medical care was substantially limited for women, which might partly explain a higher prevalence of renal disease in the females.

Also, the studies revealed the prevalence of renal disease among male and female, thus, Versino and Piccoli, (2019) indicated that in European Country the prevalence among male and female was 7.5% and 70% respectively. Liyanage, (2015,) finding showed that the prevalence of renal disease was higher in females than males. Chanyi et. al (2017) reported from Population-based studies that chronic kidney disease affecting more women than men, especially at stage G3, some reasons were given to support the claim such as overdiagnosis of CKD through the inappropriate use of Glomerular filtration rate (GFR) equations, the protective effects of estrogens in women, and also some women prefer conservative care to normal therapy etc (Juan et. al, 2018)

The prevalence of chronic kidney disease is high developing countries with no example to Nigeria. There are many causes of kidney disease but hypertension and diabetes mellitus are the two major causes of chronic kidney disease worldwide. (Centers for Disease Control and Prevention, 2022). The major causes of chronic kidney disease in developing countries with chronic glomerulonephritis and interstitial nephritis due to high prevalence of bacterial, parasitic, and viral infection. Chronic kidney disease is also increasing at a more rapid rate in developing countries. The differences between the developed and the developing countries are due to the fact that the burden of chronic kidney disease is moving away from communicable diseases and toward chronic non-communicable diseases in the developed countries of the world. However, in developing countries, there is a double burden of communicable diseases and non-communicable diseases. (Victor et. al, 2010 & Valerie et.al, 2018), as the prevalence of some diseases such as obesity, hypertension, and diabetes mellitus are also at increase in the developing countries of the world, other factors that may likely lead to its high prevalence especially in Nigeria are Polycystic kidney disease or other inherited kidney diseases, prolonged obstruction of the urinary tract, from conditions such as enlarged prostate, kidney stones and some cancers, Vesicoureteral reflux, a condition that causes urine to back up into the kidneys, recurrent kidney infection, also called pyelonephritis (Okpechi, et al. 2013, & Cukwuonye, et al. 2013). The study reviewed major risk factors to CKD which include type 2 diabetes mellitus (T2D), HIV, hypertension, obesity, ageing and black ethnicity, also considered one of the major contributors. (Ayodele and Alebiosu 2010, Agyei-Mensah de-Graft 2010). Moreover, the studies revealed that an African descent has a higher prevalence of CKD compared with individuals of European descent, suggesting a possible genetic predisposition in African populations. (Limou et. al, 2014 & Parsa et. al, 2013). The supportive evidence is that in sub-Saharan Africa more than 22 million individuals have HIV, accounting for more than 70% of the global burden of infection,19 with HIV-associated nephropathy, it is fast becoming an important issue causing morbidity and mortality related to kidney disease. (Wearne and Okpechi, 2016)

Chronic kidney disease (CKD) has emerged as one of the most prominent causes of death and suffering in the 21st century. Due in part to the rise in risk factors, such as obesity and diabetes mellitus, the number of patients affected by CKD has also been increasing, affecting with an estimated of 843.6 million individuals worldwide in 2017. (Jager, 2019)

The increase in the prevalence of dialysis patients may be driven by two factors. On one hand, China has experienced a dramatic shift in diet and lifestyle in recent decades and these changes often bring with them rapid increases in the prevalence of obesity, diabetes, and hypertension, which substantially affect the prevalence and pattern of CKD. China. On the other hand, health system reform in China may be another driver. The lower rates of dialysis in the past largely stemmed from unaffordable health care associated with out-of-pocket expenses and inequalities in access to medical resources. (Bello, 2019, & Yang, 2020), the prevalence of CKD among people of low socioeconomic status is because they do not have access to health insurance and limited access to health care, which makes the treatment unaffordable (Lozano, 2012)

It is important to note that chronic kidney disease (CKD) is increasingly recognized as a global public health problem and a key determinant of poor health outcomes. There are compelling evidences that individuals from low-resource ethnic minority communities and/or indigenous and socially disadvantaged backgrounds, suffer from marked increases in the burden of unrecognized and untreated CKD.

Furthermore, about 1.2 billion people live in extreme poverty worldwide. Thus, the level of poverty negatively influences healthy behaviors, health-care access and environmental problem, all of which contribute differential in health-care. That is poor are more susceptible to disease because of lack of access to goods and health services, particularly, clean water and sanitation, health education, life style behaviour, adequate nutrition, and health care. (Liyanage et. al, 2015)

Sachs (2001) stated that there are differences as well as increase in renal replacement therapy among the indigenous people that stated over 25 years exceeded the increase in the number of the non-indigenous population 3.5-fold, likely due to type 2 diabetic nephropathy, a disease largely attributable to lifestyle issues such as poor nutrition and lack of exercise.(Collins, 2010) Indigenous populations also have a higher incidence of end-stage renal disease (ESRD) due to glomerulonephritis and hypertension compared with the United State of America general population, It is also revealed in Guam and Hawaii, where the proportion of indigenous people is high in the incidence of ESRD , again driven primarily by diabetic ESRD (Jha, 2013)

In addition, poverty-related factors such as infectious diseases secondary to poor sanitation, inadequate supply of safe water, environmental pollutants, and high concentrations of disease-transmitting vectors continue to play an important role in the development of CKD in low-income countries. Although, the rates of diabetic nephropathy is rising, chronic glomerulonephritis and interstitial nephritis are among the principal causes of CKD in many countries. Likewise, an association between low birth weight due primarily to nutritional factors and kidney disease has been noticed in privileged populations also, strong association with farm work has led to suggestions that exposure to agrochemicals, dehydration, and consumption of contaminated water might be responsible as well for the prevalence. Additionally, the use of traditional herbal medications is common and which frequently associated with CKD among the poor (International Society of Nephrology 2015).

Recommendations

1. All patients with CKD should be counselled to avoid nephrotoxins.
2. The anemia of CKD should be treated via recombinant human erythropoietin.
3. Vitamin-D analogues should be used in conjunction with a specialist with experience in prescribing these agents.
4. Patients should avoid binge drinking and be vigilant in replacing extra fluid losses in hot weather and during episodes of diarrhoea or vomiting.

Conclusion

Increase in Chronic kidney disease (CKD) has led to increase in morbidity and mortality from non-communicable diseases, and this disease should be actively addressed to reduce premature mortality from non-communicable diseases. Low socioeconomic status and poor access to health-care services largely contribute to increase CKD. Thus to reduce mortality rate arising CKD and other related diseases, community education should be improved, improved economic opportunity, and access to preventive medicine for those at highest risk.

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