

Prevalence of Chronic Kidney Disease in University of Ilorin Teaching Hospital, Ilorin Kwara State, Nigeria

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Abstract:

Chronic kidney disease (CKD) is an increasingly prevalent problem worldwide. Treatment of end stage kidney disease is beyond the reach of an average Nigerian. The prevention and early detection are imperative to reducing its burden. The aim of this study was to determine the prevalence of chronic kidney disease in University of Ilorin Teaching Hospital, Ilorin Kwara state. It was a retrospective study of patients with chronic kidney disease managed in University of Ilorin Teaching Hospital, Ilorin Kwara state over a 36-month period from January 2017 to December 2019. Relevant data were collected directly from renal care centre clinic and admission and discharge register and statistical package for social sciences was used to analyze the data collected. The findings of the study revealed that the prevalence of some established chronic kidney disease risk factors was hypertension has 454 (33.2%), diabetic mellitus has 246 (18.1%), chronic glomerulonephritis has 167 (12.2%), autosomal dominant polycystic kidney disease has 59 (4.3%), diabetic mellitus and hypertension has 148 (10.8%) among others. The hypotheses of the study were tested using chi-square tests; two of the null hypotheses were not rejected while one null hypothesis was rejected. It was concluded that effective control of the modifiable risk factors identified will assist in reducing the burden of chronic kidney disease. It was

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recommended among others that the public should be enlightened to desist from habits that can lead to kidney failure so as to reduce the rate at which patients with kidney disease increase.

Keywords: kidney disease, Chronic Kidney Disease, Prevalence of Chronic Kidney Disease,



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Introduction

The global burden of kidney diseases has so far been underestimated; most people are not aware of their impaired kidney function. In general, kidney diseases are “silent diseases”, most often there are no apparent early symptoms. Many patients with kidney diseases are not aware that they have been living with high risks not only of kidney failure which may require dialysis or transplantation but also cardiovascular diseases, infections, and hospitalizations (Eze, 2017).

The prevalence of kidney disease, particularly diabetic and hypertensive kidney disease is increasing rapidly specially in the disadvantaged group of population throughout the world. It was estimated that over 850 million people worldwide have some form of kidney disease, which is roughly double the number of people who live with diabetes (422 million, and 20 times more than the prevalence of cancer worldwide (42 million or people living with Acquired Immunodeficiency Syndrome /Human Immune Deficiency virus (AIDS/HIV) (36.7 million). Thus, kidney diseases are one of the most common diseases worldwide (Chukwuonye *et al.*, 2017).

The estimated number of chronic kidney disease cases in Nigeria is between 50,000 (Eze, 2017) and 60,000 annually with only 27 dialysis units for an estimated population of 120,000,000, and fewer than 50 haemodialysis are done locally (Eze, 2017). Failure to detect chronic kidney disease early can lead to CVD, which complicates chronic kidney disease (Devraj & Wallace, 2013). Currently in Nigeria, about 36.8 million people are Chronic Kidney Disease patients who need either the expensive dialysis or kidney transplant process. Many of these people cannot afford this due to the economic crisis hence, this situation has led to the death of many patients with chronic kidney disease (Evans & Taal, 2015).

According to Bamgboye (2013), many Nigerians are coming down with kidney failures and there is an increase in the mortality rate from chronic kidney disease, very little is known about chronic kidney disease in Nigeria. The utilization of imaging techniques in the diagnosis of diseases has become widespread and cystic kidney disease being is an important cause of chronic renal failure is now being increasingly diagnosed.

Chronic kidney diseases (defined as abnormalities of kidney structure or function, persistent for greater than 3 months) are the most common form of kidney diseases, with an estimated prevalence around the world of about 10.4% among men and 11.8% among women. Between 5.3 and 10.5 million people require dialysis or transplantation, though there are many who die because they do not receive these treatments due to lack of resources or financial barriers. According to Judd and Calhoun (2015), acute kidney injury (AKI) is experienced by 13.3 million patients each year; it may resolve or lead to chronic kidney disease in the future and using all these sources of data, and existing estimates of acute and chronic kidney diseases, there are approximately 850 million kidney patients, a number which surely signifies an 'epidemic' worldwide.

Chronic kidney disease has been identified as a global non-communicable health problem that has continued to kill many people worldwide silently (Chow *et al.*, 2012). People die from diseases such as Chronic Kidney Disease that can be prevented or properly treated or managed if they are caught early. According to Eze (2017), kidney disease is the ninth leading cause of death in the United States with diabetes and CVD accounting for 72% cases of kidney



disease. The CDC stressed that the trend will continue if there are no effective and aggressive health interventions. Across Central America, chronic kidney disease has been identified as the cause of death of about 20,000 over the past decade and a leading cause of deaths (Bautovich, et al 2014).

Thus, the researcher assessed the prevalence of chronic kidney disease at Renal Care Centre (RCC) University of Ilorin Teaching Hospital, Ilorin because appropriate chronic kidney disease education with thorough understanding of cultural beliefs of the target population could lead to increased screening and prevention. The specific objectives of the research were:

1. to determine the prevalence of chronic kidney disease among patients attending Renal Care Centre, University of Ilorin Teaching Hospital, Ilorin (2017 – 2019);
2. to assess the prevalence of chronic kidney disease by patients' socio-demography variables at Renal Care Centre, University of Ilorin Teaching Hospital, Ilorin; and
3. to identify the risk factors for developing chronic kidney disease at Renal Care Centre, University of Ilorin Teaching Hospital, Ilorin

Research Hypotheses

1. There is no significant relationship between prevalence of chronic kidney disease and patients' age at renal care centre University of Ilorin Teaching Hospital, Ilorin
2. There is no significant relationship between prevalence of chronic kidney disease and patients' gender at renal care centre in University of Ilorin Teaching Hospital, Ilorin
3. There is no significant relationship between chronic kidney disease risk factors and the prevalence of chronic kidney disease

Methodology

The study adopted descriptive-retrospective study. Data were obtained from patients' hospital records. Patients with Chronic Kidney Disease attending Renal Care Centre University of Ilorin Teaching Hospital (UITH), Ilorin from January 2017 to December 2019. Total enumeration was used to select patients with chronic kidney disease at Renal Care Centre University of Ilorin Teaching Hospital (UITH) between January 2017 and December 2019. A checklist consisting of socio-demographic characteristics, risk factors, and causes of chronic kidney disease was used to gather information from the record department. The services of the personnel in-charge of the record section was utilized in sorting out the necessary information based on the checklist. Data collection was done over 6 weeks period, working 5 days a week from 8am-4pm daily. Data were sorted out manually, checked for errors and analyzed using statistical package for social sciences (SPSS) version 22. Descriptive and inferential statistics were used to analyse the data collected.

Results

Table 1: Monthly distribution of chronic kidney disease over 3-year (2017 – 2019)

Monthly distribution of patients with CKD	2017		2018		2019		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
January	45	9.7	29	8.0	42	7.8	116
February	44	9.5	19	5.2	54	10.0	117
March	45	9.7	40	11.0	71	13.2	156
April	56	12.0	26	7.2	40	7.4	122



May	69	14.8	-	-	36	6.7	105
June	31	6.7	49	13.5	58	10.8	138
July	35	7.5	66	18.2	65	12.1	166
August	43	9.2	16	4.4	34	6.3	93
September	29	6.2	32	8.8	23	4.3	84
October	31	6.7	15	4.1	35	6.5	81
November	17	3.6	41	11.3	39	7.2	97
December	20	4.3	29	8.0	42	7.8	91
Total	465	100	362	100	539	100	1,366

This table shows that prevalence of Chronic Kidney Disease (CKD) in January, 2017 was 45(9.7%), February 44(9.5%), March 45(9.7%), April 56(12.0%), May 69(14.2%), June 31(6.7%), July 35(7.5%), August 43(9.2%), September 29(6.2%), October 31(6.7%), November 17(3.6%) and December 20(4.3%). In 2018, the prevalence of CKD was recorded as: January 29(8.0%), February 19(5.2%), March 40(11.0%), April 26(7.2%), May nil (due to industrial action), June 49(13.5%), July 66(18.2%), August 16(4.4%), September 32(8.8%), October 15(4.1%), November 41(11.3%) and December 28(8.0%). Monthly distribution of CKD in 2019 recorded January 42(7.8%), February 54(10.0%), March 71(13.2%), April 40(7.4%), May 36(6.7%), June 58(10.8%), July 65(12.1%), August 34(6.4%), September 23(4.3%), October 35(6.5%), November 39(7.2%) and December 42(7.8%).

Table 2: Distribution of age group of patients with chronic kidney disease over 3 Years

Patient's age group	2017		2018		2019		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Teenager: 10 -18	4	0.9	4	1.1	3	0.6	11
Adults: 19 - 60	268	57.3	187	52.4	264	48.8	719
Elderly: >60	196	41.9	166	46.5	274	50.6	636
Total	468	100	357	100	541	100	1,366

The table above shows that in 2017 4(0.9%) patients fall between the age group of 10-18years (teenager), 268(57.3%) patients fall between the age group of 19-60years (adults), and 196(41.9%) patients fall between age group above 60years (elderly), in 2018 4(1.1%) patients fall between the age group of 10-18years (teenager), 187(52.4%) patients fall between the age group of 19-60years (adults), and 166(46.5%) patients fall between age group above 60years (elderly) and in 2019 3(0.6%) patients fall between the age group of 10-18years (teenager), 264(48.8%) patients fall between the age group of 19-60years (adults), and 274(50.6%) patients fall between age group above 60years (elderly).

Table 3: Distribution of gender of patients with chronic kidney disease over 3 years

Sex	2017	2018	2019	Total
Male	269	203	306	778



Females	196	159	233	588
Total	465	362	539	1,366

The table above shows that in 2017 269(57.8%) are males and 196(42.2%) are females, in 2018 203(56.1%) are males and 159(43.9%) are females and in 2019 309(57.3%) are males and 233(43.2%) are females.

Table 4: Risk factors of Chronic Kidney Disease (CKD) for 3 years

S/N	Risk Factors	Total	Percentages (%)
1	Hypertension	454	33.2
2	Diabetic mellitus	246	18.1
3	Chronic glomerulonephritis	167	12.2
4	Autosomal dominant polycystic kidney disease	59	4.3
5	Diabetic mellitus and hypertension	148	10.8
6	Obstructive nephropathy 2 ⁰ benign prostate hypertrophy and prostate cancer	86	6.3
7	Others	206	15.1
	Total	1366	100%

The table above reveals that hypertension has 454 (33.2%), diabetic mellitus has 246 (18.1%), chronic glomerulonephritis has 167 (12.2%), autosomal dominant polycystic kidney disease has 59 (4.3%), diabetic mellitus and hypertension has 148 (10.8%), obstructive nephropathy 2⁰ benign: prostate hypertrophy has 86(6.3%) and others had 206 (15.1%).

Testing of Hypotheses

Hypothesis 1: There is no significant relationship between prevalence of chronic kidney disease and patients' age at renal care centre University of Ilorin Teaching Hospital, Ilorin

Table 5: Cross tabulation of Age group and prevalence of Chronic Kidney Disease (CKD)

			Prevalence of CKD Over Three Years			Total
			2017	2018	2019	
Age group Teenager : 10 - 18 years	Count		4	4	3	11
	Expected Count		3.8	2.9	4.4	11.0



Adult : 19 - 60 years	Count	268	187	264	720
	Expected Count	246.7	188.2	285.2	720.0
Elderly : > 60 years	Count	196	166	274	635
	Expected Count	217.6	166.0	251.5	635.0
Total	Count	468	357	541	1366
	Expected Count	468.0	357.0	541.0	1366.0

The table above shows the chi-square value of cross tabulation of age group and prevalence of chronic kidney disease over three years.

Table 6: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
<i>Pearson Chi-Square</i>	8.827 ^a	4	.066	.063	
<i>Likelihood Ratio</i>	8.840	4	.065	.080	
<i>Fisher's Exact Test</i>	8.964			.054	
<i>Linear-by-Linear Association</i>	8.189 ^b	1	.004	.004	.002
<i>N of Valid Cases</i>	1366				

It was observed that the X values for the Pearson Chi- square 0.063 are greater than the alpha significant level of 0.05, hence, we accept the null hypothesis and conclude that the prevalence of chronic kidney disease does not relate to age group.

Hypothesis 2: There is no significant relationship between prevalence of chronic kidney disease and patients' gender at renal care centre in University of Ilorin Teaching Hospital, Ilorin

Table 7: Cross tabulation Gender and Prevalence of Chronic Kidney Disease (CKD)

			Prevalence of CKD over three years			Total
			2017	2018	2019	
Gender	Male	Count	269	203	306	778
		Expected Count	264.8	206.2	307.0	778.0
	Female	Count	196	159	233	588



	Expected Count	200.2	155.8	232.0	588.0
Total	Count	465	362	539	1366
	Expected Count	465.0	362.0	539.0	1366.0

The table above shows the chi-square value of cross tabulation of gender and prevalence of chronic kidney disease over three years.

Table 8: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.273 ^a	2	.872	.873	
Likelihood Ratio	.273	2	.872	.875	
Fisher's Exact Test	.276			.873	
Linear-by-Linear Association	.108 ^b	1	.742	.750	.383
N of Valid Cases	1366				

It was observed that the X value for the Pearson Chi-square 0.873 is greater than the alpha significant level of 0.05, hence, we accept the null hypothesis and conclude that the prevalence of chronic kidney disease does not relate to gender.

Hypothesis 3: There is no significant relationship between chronic kidney disease risk factors and the prevalence of chronic kidney disease

Table 9: Cross tabulation of Risk factor and prevalence of Chronic Kidney Disease (CKD)

			Prevalence of CKD over three years			Total
			2017	2018	2019	
Risk factor	1	Count	158	105	191	454
		Expected Count	152.7	116.7	184.6	454.0
	2	Count	87	66	93	246
		Expected Count	82.7	63.3	100.0	246.0
	3	Count	56	48	63	167
		Expected Count	56.2	42.9	67.9	167.0



4	Count	33	15	11	59
	Expected Count	19.8	15.2	24.0	59.0
5	Count	24	53	66	143
	Expected Count	48.1	36.8	58.2	143.0
6	Count	33	18	35	86
	Expected Count	28.9	22.1	35.0	86.0
7	Count	34	20	55	109
	Expected Count	36.6	28.0	44.3	109.0
Total	Count	425	325	514	1264
	Expected Count	425.0	325.0	514.0	1264.0

The table above shows the chi-square value of cross tabulation of risk factors and the prevalence of chronic kidney disease over three years.

Table 10: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	45.835	12	.001	-
Likelihood Ratio	48.129	12	.000	-
Fisher's Exact Test	-	-	-	-
Linear-by-Linear Association	2.021	1	.155	-
N of Valid Cases	1264			

It was observed that the X value for the Pearson Chi-square 0.001 is less than the alpha significant level of 0.05, hence, we reject the null hypothesis and conclude that the prevalence of chronic kidney disease does relate to Risk factors.

Discussion of Findings

The results of this study demonstrates that the risk factor profile for the development of chronic kidney disease were more common in patients with hypertension 454(33.2%) which was the major and most precipitating risk factor for the development of chronic kidney disease in this study while autosomal dominant polycystic kidney disease 59(4.3%) posed the least risk factor for chronic kidney disease.



This is comparable to a reports by Mobley (2009); Evans and Taal (2015) who reported that hypertension is often a presenting feature of chronic kidney disease and is an important factor in the development and progression of chronic kidney disease. It is a leading cause of End Stage Renal Disease (ESRD) worldwide. Also, Eze (2017) is in discordance with that of this study as glomerulonephritis was revealed as main cause or risk factor for chronic kidney disease. Other risk factors are Diabetic mellitus 246 (18.1%), Chronic glomerulonephritis 167(12.2%), Diabetic mellitus and hypertension 148(10.8) and Obstructive nephropathy 20 benign prostate hypertrophy and prostate cancer 86(6.3%).

In gender distribution, males have the highest occurrence of chronic kidney disease 269(57.8%) over the 3years period. This may be due to increased rate of nephrotoxic consumption (such as alcoholic drinks) among males. This was revealed by Jha et al. (2013) that females are protected by the effects of estrogens on the cardiorenal system as well on renal function in the elderly; however, the relationships between androgens and kidney health during one's lifetime are not well understood. The cumulative incidence of ESRD remains low during the reproductive ages but begins to rise 10 years later in women than in men among participants in community-based screenings and that a nationwide survey of ESRD by the Japanese Society for Dialysis Therapy revealed a higher incidence and prevalence in men than in women. The findings of this study also revealed that chronic kidney disease is mostly common among age group of 19-60years (adults) 268(57.3%), this may be attributed to the fact that kidney function deteriorates with aging and more age-related GFR decline is seen among this age group.

Conclusion

This study has revealed a high prevalence of chronic kidney disease, driven essentially by their commonest risk factors. Effective control of the modifiable risk factors identified will assist in reducing the burden of chronic kidney disease, hence, the findings of this study invite an array of actions to promote and sustain preventive measures to lower the risk of chronic kidney disease, promote early detection of the disease and implementation of measures to slow the progression to the terminal stage of the disease. There is also a need for more population-based studies, with emphasis on repeating the glomerular filtration rate (GFR) estimation after 3 months in subjects with GFR <60 ml/min/1.7 m².

Recommendations

Based on the findings from this study, the following recommendations are made:

1. The public should be enlightened to desist from habits that can lead to kidney failure so as to reduce the rate at which patients with kidney disease increase.
2. The individuals should avail themselves to be enlightened through programmes organised by either government, nurses or non-governmental organisations including free screening programs, awareness and prevention of kidney disease
3. Nurses should engage in policy makers and help promote awareness programme on kidney disease among the populace
4. Establishment of nationwide education programmes and policies must be carried out in order to create more awareness and improve knowledge among the public in order to prevent chronic kidney disease and to identify its symptoms at the earliest possible time



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