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ASSESSMENT OF KNOWLEDGE ON CHRONIC KIDNEY DISEASE AMONG GENERAL OUT-PATIENTS ATTENDING SELECTED TERTIARY HOSPITALS IN ONDO STATE, NIGERIA

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ABSTRACT: *Chronic Kidney Disease (CKD) is a burdening disease condition which affects quality of life; it reduces productivity, increases morbidity and mortality. There are however several ways to lessen the possibility of developing CKD but this will require having a knowledge base. However, while most of the studies conducted in the field of nephrology made public the burden of CKD, they failed to show in-depth specifics on levels of knowledge on CKD. This study assessed level of knowledge on CKD among general out-patients in two tertiary hospitals in Ondo State, Nigeria. The study adopted a descriptive survey design, 145 general out-patients were purposively selected, data were collected using self-structured questionnaire and analyzed with SPSS version 25. Results showed that population-referenced knowledge of CKD is low: 58(40.0%), while score-referenced knowledge is moderate: 55.91±16.47. Hypotheses tested by one-way ANOVA revealed no statistically significant differences in age, level of education and knowledge of CKD ($p = 0.196$ and $p = 0.237$ respectively). In conclusion, knowledge level on CKD of the population is low; this calls for CKD awareness creation.*

KEYWORDS: Chronic Kidney Disease, Knowledge, General Out-Patient, Nephrology, Nigeria

INTRODUCTION

Chronic Kidney Disease (CKD) can be said to be a global burden that calls for serious attention; CKD was seen as the disease of the aged but cases of CKD are being recorded on daily basis in the younger generation in recent times. Anecdotal records from hospitals have it that it leaves out no one as both young and old now contribute to recorded cases. It can occur in any individual as a result of inherent factors or can be an outcome of another pressing disease condition. In the opinion of Krol (2011), risk of death from CKD carries a much higher value than any other cause. According to Hoerger et al (2015), using the total population of U.S as of year 2015, projecting into year 2020 – 2030, it can be said that adults in the U.S.A. within the age range of 30 - 49 years, 50 - 64 years, and those older than 65 years with no CKD at initial state in their lives, have residual life-time CKD incidences of 54 %, 52 %, and 42 % respectively. Reported cases of CKD in persons older than 30 years is expected to rise to 14.4% from 13.2% by 2020 and by 2030, it is projected to hit 16.7%. In another study to ascertain the global prevalence of CKD, a meta-analysis of observational studies as well as systematic

review was done. The study showed that global mean (at 95% Confidence Interval) of CKD prevalence of 5 stages was 13·4% and that stages 3 to 5 was 10·6% (Hill, 2016). Available data showing the burdening nature of kidney disease varies greatly across the globe; ranging from poor quality of life, cost of care, reduced productivity, increased morbidity and mortality (Crews, Bello & Saadi 2019). According to the 2015 Global Burden of Diseases (GBD) estimates, Chronic Kidney Disease is ranked 19th among diseases for the years of life lost worldwide (rising from 36th in 1990), and since then the documented number of deaths attributed to CKD has become twice as much of earlier documentations (Bello et al, 2017).

In a replicated study in an African country assessing the burden of CKD in Africa, a meta-analysis of 98 studies involving 98,432 persons as well as systematic review was done. It was discovered that the overall prevalence among the general population was 15.8% (at 95% Confidence Interval; 12.1 – 19.9) for Chronic Kidney Diseases at stages 1–5 and 4.6% (3.3 – 6.1) for Chronic Kidney Disease stages 3 – 5. It can then be said that CKD has high prevalence on the African continent (Kaze, Ilori, Jaar & Echouffo-Tcheugui, 2018). In a Nigerian perspective, Ulasi et al (2013), opined that the peak prevalence of CKD was 11.4%. In another study, credited to Ladi-Akinyemi and Ajayi (2017), it was affirmed that Chronic Kidney Disease is common; it is usually not detected and remains undiagnosed until the disease has progressed and organ failure is imminent.

A study looked into the level of knowledge of the populace about CKD to reveal misconceptions and low level of knowledge (Okwuonu, Chukwuonye, Adejumo & Agba 2017; Oluyombo et al, 2016). While most of the studies done made public the burden of CKD, they failed to show specifics on level of knowledge on Chronic Kidney Disease. The researchers in clinical practice had also observed that many patients coming into the hospital for both admissions and out-patient care list so many implicating acts such as herbal concoction intake, indiscriminate use of NSAIDs, salt bathes amongst others as what they have done so far to treat their ailments prior coming to the hospital. These acts end up contributing to increased incidences of CKD and portrayed a gap in knowledge about CKD. To curb this menace, the researchers deem it necessary to first assess the level of knowledge of individuals about CKD.

Objective of the study

The general objective of the study was to assess knowledge on CKD among general out-patients attending two tertiary hospitals in Ondo State, Nigeria.

Specific objectives are to:

i) assess the level of general knowledge on chronic kidney disease among respondents

ii) assess the level of knowledge about cause and risk factors of chronic kidney disease

iii) assess the level of knowledge about manifestations of chronic kidney disease

iv) assess the level of knowledge on chronic kidney disease based on socio-demographic characteristics (age and level of education)

Research questions

i) What is the level of knowledge on chronic kidney disease?

ii) What is the level of knowledge on causes and risk factors of chronic kidney disease?

iii) What is the level of knowledge on manifestations of chronic kidney disease?

Hypotheses

H_0 1: there is no significant difference in age range and level of knowledge on Chronic Kidney Disease among respondents.

H_0 2: there is no significant difference in level of education and level of knowledge on Chronic Kidney Disease among respondents.

LITERATURE/THEORETICAL UNDERPINNING

Chronic Kidney Disease (CKD) is a debilitating disease condition that disrupts the quality of life, reduces the lifespan of its victims and burdens individuals. CKD is an irreversible, progressive loss of kidney functions; a permanent impairment which makes filtering of blood a difficult one; by this, toxic wastes are retained in the body causing further havoc (Hinkle & Cheever, 2017; CDC, 2018). According to Arora (2019), CKD refers to all facets of decreased renal function, ranging from damaged to at risk; it could be mild, moderate or severe. In the opinion of Barnes et al (2019), Chronic Kidney Disease is a gradual, progressive condition in which the kidneys suffer irreversible damage over time and lose their ability to properly filter the blood. In the early stages of kidney disease, it may not be detected that the kidneys are not working optimally because they have a remarkable ability to compensate. CKD manifests in 5 states during the disease progression. In the first stage, the kidneys function normally but there is presence of proteinuria (protein in the urine). This is a pointer to future inhibited kidney function. GFR is >90ml/min/1.72m^2. Usually there are some evidences of structural damage in the kidneys. In the second stage, kidney function is greater than 60%. Proteinuria may or may not be present. GFR is between 60-89 ml/min/1.72m^2. This stage is also referred to as the mild stage of CKD. Kidney function of 30-59% marks the third stage. Here, the GFR is between 30-59 ml/min/1.72m^2 and it is the moderate stage of CKD. At stage 4, kidney function is at 15-29% with GFR of 15-29 ml/min/1.72m^2. It is the severe stage of CKD while Stage 5 is kidney function of below 15%. GFR is <15 ml/min/1.72m^2; this is the kidney failure stage also referred to as End Stage Renal Disease (ESRD) (Hinkle & Cheever, 2017; Barnes et al, 2019). A more detailed classification is the one by Renal Association (2019). According to the association CKD is classified based on the eGFR of an individual and the level of protein in the urine. Patients are classified as G1-G5 based on the eGFR; and A1-A3 based on the ACR (albumin: creatinine ratio) as detailed in figure 1 below:

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Classification of chronic kidney disease using GFR and ACR categories

GFR and ACR categories and risk of adverse outcomes			ACR categories (mg/mmol), description and range		
			<3 Normal to mildly increased	3–30 Moderately increased	>30 Severely increased
			A1	A2	A3
GFR categories (ml/min/1.73m²), description and range	≥90 Normal and high	G1	No CKD in the absence of markers of kidney damage		
	60–89 Mild reduction related to normal range for a young adult	G2			
	45–59 Mild–moderate reduction	G3a[1]			
	30–44 Moderate–severe reduction	G3b			
	15–29 Severe reduction	G4			
	<15 Kidney failure	G5			

Increasing risk

Increasing risk

[1] Consider using eGFRcystatinC for people with CKD G3aA1 (see recommendations 1.1.14 and 1.1.15)

Abbreviations: ACR, albumin:creatinine ratio; CKD, chronic kidney disease; GFR, glomerular filtration rate

Adapted with permission from Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group (2013) KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney International (Suppl. 3): 1–150

Figure 1. Renal Association classification of CKD using eGFR and ACR levels (Renal Association, 2019)

Clinical Manifestations of Chronic Kidney Disease

CKD unlike Acute Kidney Injury (AKI), is a slow but gradually progressive disease condition; one kidney can carry out normal functions and compensate for the other without detection. Until the disease is well advanced and the condition has become severe with noticeable signs and symptoms, the disease condition is not suspected; by this period, most of the damages are irreversible and clinical features of CKD are visible (Nordqvist, 2017). The earliest sign of CKD is edema; of the face and lower limbs. The edema on the face is worse in the morning and resolves as the day goes by. Symptoms and other manifestations of well-established CKD include chest pain, dry skin, itching, numbness, feeling of tiredness, headache, decreased urination (in quantity and frequency), anorexia, muscle cramps, nausea, shortness of breath, sleep problems, trouble concentrating, vomiting and weight loss, mineral and skeletal disorders, anemia, hypertension, alteration in cardiovascular functions and coagulation disorder (Grossman & Porth, 2014; Hinkle & Cheever, 2017).

Risk factors and causes of Chronic Kidney Disease

Type I and type II diabetes mellitus and hypertension are the two commonest causes of CKD globally. Immune system diseases, Long-lasting viral illnesses (such as HIV/AIDS, hepatitis B and C), pyelonephritis, urinary tract infections (UTIs) especially those within the kidneys,

which can result in scars as the infection heals, glomerulonephritis (this can happen after a strep infection), polycystic kidney disease (a hereditary condition in which fluid-filled sacs are formed in the kidneys) are all risk factors/causes to developing CKD. Drugs and toxins such as lead and mercury poisoning, long-term use of certain drugs such as NSAIDs (nonsteroidal anti-inflammatory drugs) ibuprofen and naproxen are examples of what can permanently damage the kidneys, being hooked on street drugs over time are not also exempted (Khatri, 2018).

Empirical Review on Knowledge about Chronic Kidney Disease

A study conducted by a set of researchers (Khalil & Abdalrahim, 2014) in Jordan about knowledge of CKD revealed that participants seemed somewhat knowledgeable about CKD but showed poor understanding of CKD causes. The most identified causes as listed by them include cases of kidney stones and recurrent urinary tract infection; 80%, diabetes; 74.5%, being old; 66.6% and hypertension cases; 63%; 50% of the total respondent had wrong information related to clinical manifestations of CKD. In a replica study conducted to assess the awareness, knowledge and perception of CKD in a rural community in South West Nigeria, it was revealed that out of a total of 454 respondents that participated in the study, just 33.7% had heard of CKD; the level of knowledge about chronic kidney disease was high in only 27.1%; the majority (67.0%) do not know where the kidneys are located, only 10.6% could identify at least one function of the kidneys with a minority (24.5%) agreeing that indiscriminate use of NSAIDs is one of the causes of CKD and only 11.1% knew that chronic kidney disease can be hereditary (Oluyombo, Ayodele, Akinwusi, Okunola, Gbadegesin, Soje & Akinsola, 2016).

Bloom's cognitive conceptual framework

Bloom's cognitive taxonomy (revised) has six steps: Remembering is the act of retrieving, recognizing and recalling important knowledge from long-term memory. Understanding is the ability to construct meaning from verbal, written and graphic messages by interpreting, exemplifying, classifying, summarizing, inferring, comparing and explaining. The third step is Applying; it is the act of carrying out or using a procedure for execution or implementation of an activity. Analyzing is proficiency in breaking material(s) into constituent parts, determine how the parts relate to one another and to an overall structure or purpose through ability to differentiate, organize and attribute. Evaluating, the fifth step, is ability to make judgments based on criteria and standards through checking and critiquing. Creating is proficiency in putting small parts together to form a coherent or functional whole entity; ability to reorganize elements into a new pattern or structure through generating, planning, or producing. These steps are in hierarchical order and explained diagrammatically in figure 2 below:

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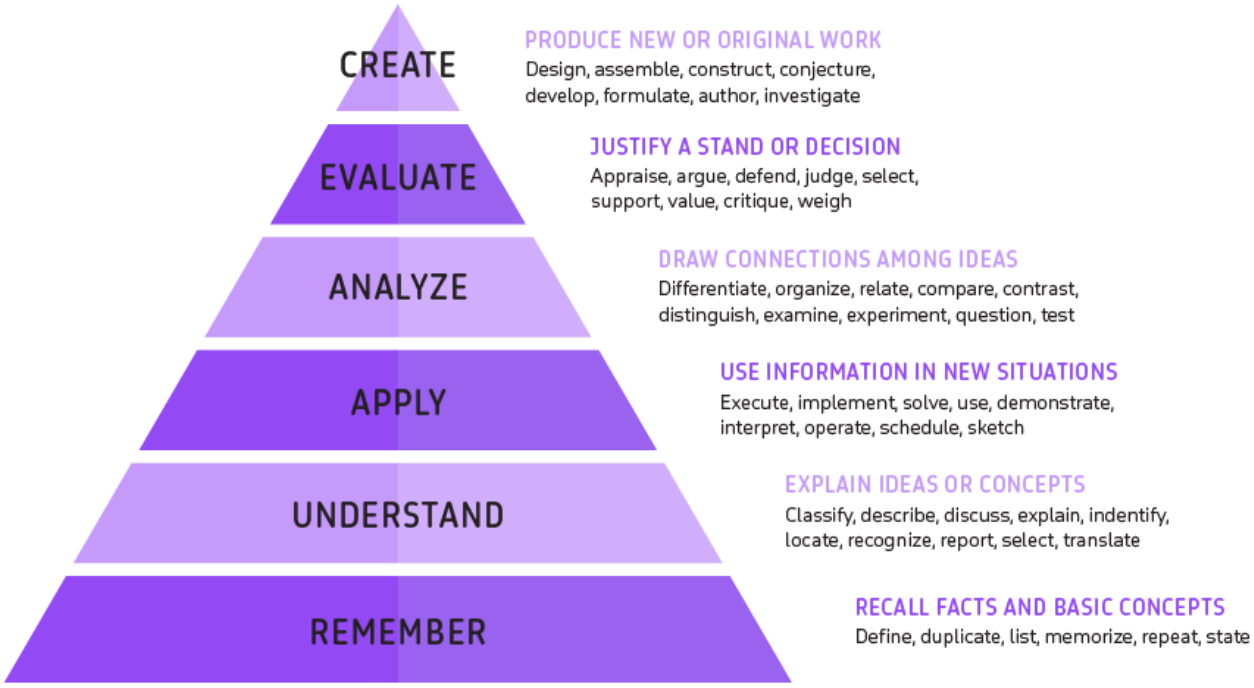

Figure 2. Ranking in Bloom's Cognitive Framework (Persaud, 2018)

Bloom's framework is a display of cognitive processes in a ranking order with the remembering at the base and creating at the peak of the cognitive triangle. Adapting the framework to understand the logicality of the level of knowledge of the respondents require basically, two levels of the framework: remembering and understanding. Being able to remember relevant facts from long-term memory and understand; constructing meaning from what has been said and learnt in the past about chronic kidney disease, form the basis of the knowledge of the disease condition. The information (idea) acquired in the past was expected to be applied in the research study by the respondents to execute /solve the questions in the questionnaires; the respondents were expected to be able to draw connections between information acquired generally about CKD, it's causes/risk factors and it's clinical manifestations and general ideas needed in attaining and maintaining optimal health. These connections may be used to justify a stand in the knowledge base of CKD. See figure 4:

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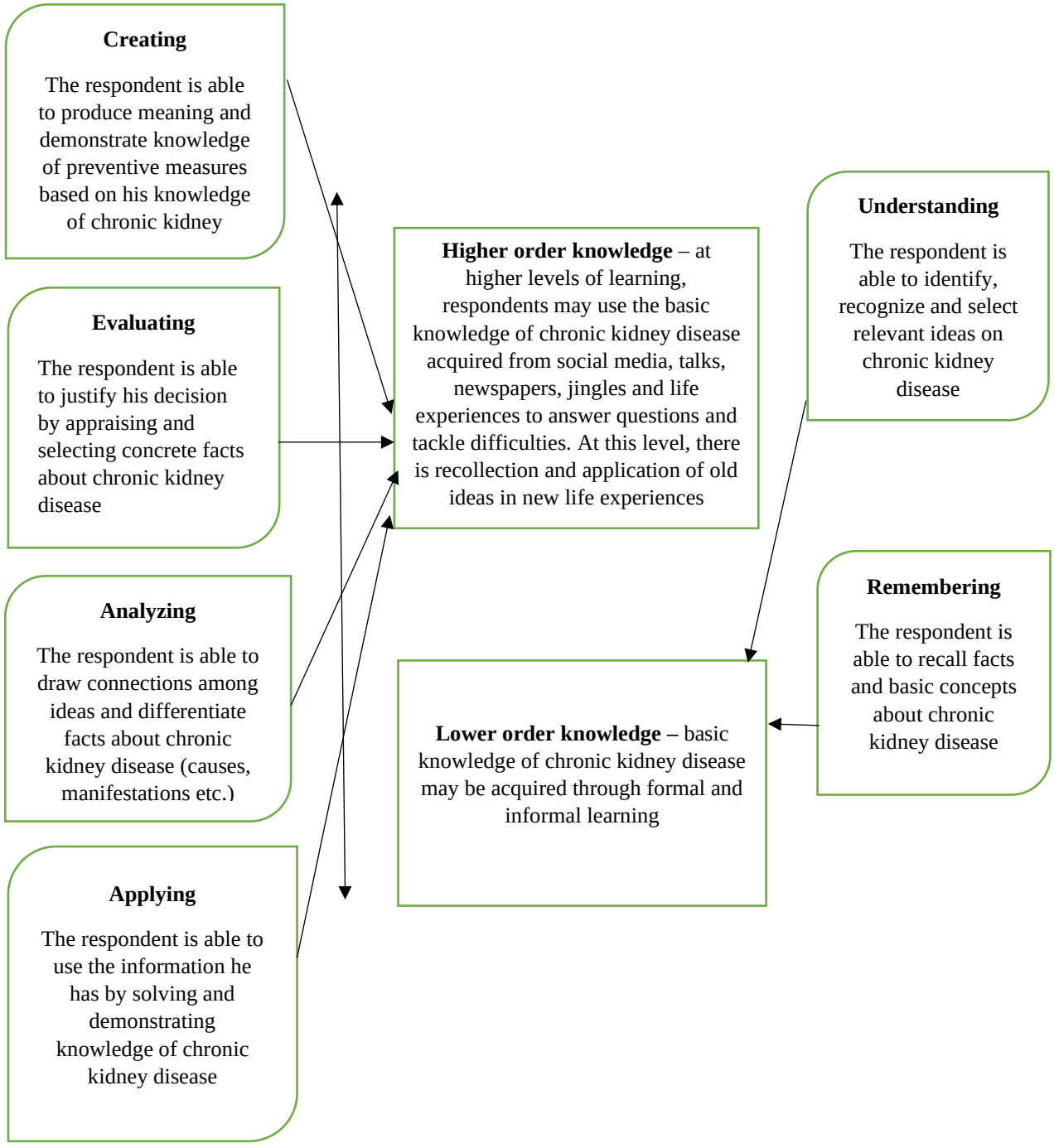

Figure 4. Bloom's Cognitive Conceptual Framework on Knowledge of Chronic Kidney Disease and its Prevention.

METHODOLOGY

The study adopted a descriptive survey design to assess knowledge on chronic kidney disease among patients attending general out-patient clinics in Federal Medical Centre, Owo and University of Medical Sciences Teaching Hospital Complex, Akure, Ondo State. Federal

Medical Centre, Owo is a Federal Government owned hospital; made up of two phases under one management and within the same location. The general out-patient clinic run for five days in a week (Monday to Friday) with an average of 85 patients per month who make an average of 1,576 visitations per month. The University of Medical Science Teaching Hospital is a recently established tertiary hospital owned by the State Government. It was established in the year 2015. The various facilities that made up the University of Medical Science Teaching Hospital Complex include the Medical Village which is made up of the Trauma Centre, Kidney Care Centre, Mother and Child hospital all located in Ondo town and the State Specialist Hospitals, Akure, now University of Medical Science Teaching Hospital, Akure annex. The general out-patient clinic of University of Medical Science Teaching Hospital, Akure run for five days in a week (Monday to Friday) with an average of 62 patients per month (average of 1,837 visitations per month).

The study population is comprised of a total number of 147 adult patients who are non-CKDs and are attending the general out-patient clinics of these two tertiary hospitals in Ondo State which was obtained by finding an average of clinic record of attendance of two months. This is made up of 85 patients from Federal Medical Centre, Owo and 62 patients from University of Medical Science Teaching Hospital, Akure centre.

Inclusion criteria

A patient attending any of the two hospitals' general out-patient clinic.

An out-patient who is above 18 years of age.

Exclusion criteria

A patient who has been diagnosed of CKD and is awaiting referral to the renal clinic.

An out-patient who is less than 18 years of age.

A patient who has spent more than 6 months visiting the clinics and is awaiting specialty clinic referral or has been referred.

Respondents were purposively recruited on the basis of their eligibility among the patients attending general out-patient clinics of the two tertiary hospitals. Within the data collection period, only 83 respondents out of the 85 out-patients attending general out-patient clinic of Federal Medical Centre, Owo fit into the inclusion criteria. These were the ones that were sampled. All the 62 out-patients attending University of Medical Science Teaching Hospital, Akure centre fit into the inclusion criteria. A total of 145 respondents were recruited in to the study.

Questionnaire was the tool for data gathering. It was in sections: Section A asked questions on the socio demographic characteristics of the out-patients. These were age (in range), marital status, ethnicity, religion, occupation and level of education.

Section B gathered information on general knowledge about Chronic Kidney Disease in a yes, no, not sure format. The section had 13 items.

Section C gathered information on knowledge about the causes/risk factors of Chronic Kidney Disease in a yes, no, not sure format. The section had 11 items.

Section D sought information on knowledge about the signs and symptoms of Chronic Kidney Disease in a yes, no, not sure format. The section had 5 items. The instrument was pre-tested to reveal a Cronbach's alpha of 0.934, 0.784 and 0.717 for sections B, C and D respectively.

All necessary ethical clearance was obtained and consents were gained during the course of data gathering. Data generated from the study was processed using the statistical package for social sciences (SPSS) version 25. Descriptive statistics such as frequency counts, percentages, mean and standard deviation was used to provide answers to research questions while inferential statistic, one-way ANOVA was done to provide answers to the hypotheses. University grading system was used to grade patients' responses on knowledge of Chronic Kidney Disease such that a correct response to each question was scored 1 and a score '0' was given if otherwise. As a result, a total score of 70% and above was graded 'high level knowledge', total of 50% to 69% was graded 'moderate level knowledge' while a total of 49% and less was graded 'low level knowledge'.

RESULTS

Table 1: Respondents' Socio-demographics (n = 145)

Variable		Frequency	Percent	Valid Percent	Cumulative Percent
Age (in years)	18 – 29	37	25.5	25.5	25.5
	30 – 39	53	36.6	36.6	62.1
	40 – 49	33	22.8	22.8	84.8
	50 – 59	16	11.0	11.0	95.9
	60 – 69	5	3.4	3.4	99.3
	70 and above	1	0.7	0.7	100.0
	Total	145	100.0	100.0	
Marital status	Married	96	66.2	66.2	66.2
	Single	44	30.3	30.3	96.6
	Divorced or separated	2	1.4	1.4	97.9
	Widowed	3	2.1	2.1	100.0
	Total	145	100.0	100.0	
Ethnicity	Yoruba	123	84.8	84.8	84.8
	Hausa	3	2.1	2.1	86.9
	Igbo	16	11.0	11.0	97.9
	Others	3	2.1	2.1	100.0
	Total	145	100.0	100.0	
Religion	Christianity	129	89.0	89.0	89.0
	Islam	13	9.0	9.0	97.9
	Others	3	2.1	2.1	100.0
	Total	145	100.0	100.0	

Occupation	Health care worker	9	6.2	6.2	6.2
	Non-health care worker	102	70.3	70.3	76.6
	Student	31	21.4	21.4	97.9
	Retiree	3	2.1	2.1	100.0
	Total	145	100.0	100.0	
Level of education	No formal education	5	3.4	3.4	3.4
	Primary	10	6.9	6.9	10.3
	Secondary	28	19.3	19.3	29.7
	Tertiary	102	70.3	70.3	100.0
	Total	145	100.0	100.0	

Table 1 findings revealed that majority 53 (36.6%) were in age bracket of 30 – 39 years while the age bracket 70 years and above had the least number 1 (0.7%) of people. 96 respondents (66.2%) were married, 44 respondents (30.3%) were single, 2 respondents (1.4%) were divorced/separated and 3 respondents (2.1%) were widowed. Majority 123 (84.8%) of the respondents are Yoruba, 3 (2.1%) are Hausa, 16 (11.0%) are Igbo and 3 (2.1%) claimed they do not belong to any of these ethnic groups. Quite a number, 129 (89.0%) of the respondents were Christians, 13 (9.0%) were Muslims and 3 (2.1%) were neither Christians nor Muslims. Of the total respondents, 9 (6.2%) were health care workers, 102 (70.3%) were non-health care workers, 31 (21.4%) were students and 3 (2.1%) are retirees. Based on the level of education, out of the total 145 respondents 5 (3.4%) had no formal education, 10 (6.9%) had only primary education, 28 (19.3%) had only secondary education and 102 (70.3%) had tertiary education.

Table 2: Summary of Knowledge Scores

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Knowledge of CKD	145	23	85	55.91	16.474
Knowledge of causes of CKD	145	0	100	59.44	24.888
Knowledge of manifestations of CKD	145	0	100	71.17	25.042
Valid N (listwise)	145				

Table 2 findings revealed that out of the total score of 100 for each assessment item, general Knowledge of chronic kidney disease had minimum score of 23, maximum score of 85, mean score of 55.91 and standard deviation of 16.47; Knowledge of causes of chronic kidney disease had minimum score of 0, maximum score of 100, mean score of 59.44 and standard deviation of 24.89; Knowledge of clinical manifestations of chronic kidney disease had minimum score of 0, maximum score of 100, mean score of 71.17 and standard deviation of 25.04.

Table 3: General Knowledge on Chronic Kidney Disease (n = 145)

Variable	Frequency	Percent	Valid percent	Cumulative percent
Low level knowledge	58	40.0	40.0	40.0
Moderate level knowledge	57	39.3	39.3	79.3
High level knowledge	30	20.7	20.7	100.0
Total	145	100.0	100.0	

Table 3 revealed that highest population 58 (40.0%) had low level Knowledge of CKD and 57 (39.3%) had moderate level knowledge while 30 (20.7%) had high level knowledge.

Table 4: Knowledge on the causes/risk factors of Chronic Kidney Disease (n = 145)

Variable	Frequency	Percent	Valid percent	Cumulative percent
Low level knowledge	50	34.5	34.5	34.5
Moderate level knowledge	39	26.9	26.9	61.4
High level knowledge	56	38.6	38.6	100.0
Total	145	100.0	100.0	

Table 4 showed that quite a number 56 (38.6%) had high level knowledge on the causes/risk factors of CKD, 39 (26.9%) had moderate level knowledge and 50 (34.5%) had low level knowledge.

Table 5: Knowledge on Clinical Manifestations of Chronic Kidney Disease (n = 145)

Variable	Frequency	Percent	Valid percent	Cumulative percent
Low level knowledge	26	17.9	17.9	17.9
Moderate level knowledge	33	22.8	22.8	40.7
High level knowledge	86	59.3	59.3	100.0
Total	145	100.0	100.0	

Table 5 showed that majority 86 (59.3%) had high level knowledge on clinical manifestations of CKD, 33 (22.8%) had moderate level knowledge and 26 (17.9%) had low level knowledge.

Table 6: Age and Level of Knowledge on Chronic Kidney Disease

Descriptive

Knowledge of CKD

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
18-29	37	51.24	15.814	2.600	45.97	56.52	23	84
30-39	53	54.81	16.171	2.221	50.35	59.27	23	84
40-49	33	59.58	18.154	3.160	53.14	66.01	30	85
50-59	16	62.25	14.744	3.686	54.39	70.11	38	85
60-69	5	58.20	13.065	5.843	41.98	74.42	38	69
70 and above	1	53.00	.	.	.	.	53	53
Total	**145**	**55.91**	**16.474**	**1.368**	**53.21**	**58.61**	**23**	**85**

ANOVA

Knowledge of CKD

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1991.050	5	398.210	1.492	.196
Within Groups	37090.785	139	266.840		
Total	**39081.834**	**144**			

There is no statistically significant difference between groups as demonstrated by one-way ANOVA F (5, 139) = 1.492, $p = 0.196$

Table 7: Level of Education and Level of Knowledge on Chronic Kidney Disease

Descriptives

Knowledge of CKD

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
No formal education	5	58.20	13.682	6.119	41.21	75.19	46	76
Primary education	10	51.20	14.995	4.742	40.47	61.93	30	69
Secondary education	28	51.18	15.706	2.968	45.09	57.27	30	84
Tertiary education	102	57.56	16.797	1.663	54.26	60.86	23	85
Total	**145**	**55.91**	**16.474**	**1.368**	**53.21**	**58.61**	**23**	**85**

ANOVA

Knowledge of CKD

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1152.180	3	384.060	1.428	.237
Within Groups	37929.654	141	269.005		
Total	39081.834	144			

There is no statistically significant difference between groups as demonstrated by one-way ANOVA F (3, 141) = 1.428, $p = 0.237$

DISCUSSION OF FINDINGS

Findings from analysis revealed that majority 53 (36.6%) were in age bracket of 30 – 39 years while the age bracket 70 years and above had the least number 1 (0.7%) of people. 96 respondents (66.2%) were married; this could be explained by the fact that majority of the respondents were in reproductive age-group. Majority 123 (84.8%) of the respondents are Yoruba; this was so because the study was conducted in south western region of Nigeria where Yoruba population predominates. Quite a number, 129 (89.0%) of the respondents were Christians; this was so because the study was conducted in south western region of Nigeria where christianity thrives. Of the total respondents, 9 (6.2%) were health care workers, 102 (70.3%) were non-health care workers, 31 (21.4%) were students and 3 (2.1%) are retirees. Based on the level of education, out of the total 145 respondents 5 (3.4%) had no formal education, 10 (6.9%) had only primary education, 28 (19.3%) had only secondary education and 102 (70.3%) had tertiary education. This could be attributed to great importance attached to education by south-westerners in Nigeria.

SUMMARY OF SCORE ON KNOWLEDGE OF CHRONIC KIDNEY DISEASE

Findings from analysis revealed that out of the total score of 100 for each assessment item, general Knowledge of chronic kidney disease had minimum score of 23, maximum score of 85, mean score of 55.91 and standard deviation of 16.47; Knowledge of causes of chronic kidney disease had minimum score of 0, maximum score of 100, mean score of 59.44 and standard deviation of 24.89; Knowledge of clinical manifestations of chronic kidney disease had minimum score of 0, maximum score of 100, mean score of 71.17 and standard deviation of 25.04. Overall, at scores level, the findings from the study showed moderate level of knowledge of chronic kidney disease among the populace. This is as opposed to other studies where in it was reported that knowledge level of respondents are low/poor (Ng, Lee & Goh, 2016; Ngendahayo et al, 2019). Salman, Anwar and Abul (2019), also buttressed the fact of low-level knowledge. Findings from the analysis (at population level) revealed that highest population 58 (40.0%) had low level Knowledge of CKD and 57 (39.3%) had moderate level knowledge and only 30 (20.7%) had high level knowledge. This is in accordance with the study of Oluyombo et al (2016) wherein they used a pretested structured questionnaire to draw information on socio demographic parameters, knowledge and risk factors of CKD from 563

residents aged greater than 18 years and came to a conclusion that there was low level knowledge of chronic kidney disease among the general populace. In support of this also is the study of Gray, Kapojos, Burke, Sammartino and Clark (2016). They affirmed that patients' understanding of chronic kidney disease is poor.

Findings from the analysis showed that quite a number 56 (38.6%) had high level knowledge on the causes/risk factors of CKD, 39 (26.9%) had moderate level knowledge and 50 (34.5%) had low level knowledge. This is in opposition to a study by Chow, Szeto, Kwan, Leung & Philip (2014); they examined knowledge of chronic kidney disease in the general public and opined that there was great knowledge gap in the causes and risk factors of chronic kidney disease in the populace. Only less than half of their respondents were able to identify hypertension and diabetes mellitus as causes/risk factors of chronic kidney disease. Although, a more recent study conducted in 2018 by a group of scholars revealed that greater number of people (71.4%. 81.2%, 60.7% and 62.7% respectively) were able to identify alcohol, smoking, hypertension and diabetes mellitus as causes of chronic kidney disease; and obesity, analgesics and diabetes mellitus (89.8%, 81.5% and 56.0% respectively) as risk factors of chronic kidney disease though only a few (30.5%) were able to identify family history (heredity) as a risk factor of chronic kidney disease (Albalawi, Ahmed, Alharbi, Almansour & AlSogair, 2018).

Data analysis showed that majority 86 (59.3%) had high level knowledge on clinical manifestations of CKD, 33 (22.8%) had moderate level knowledge and 26 (17.9%) had low level knowledge. This is in opposition to a study conducted in Ado Ekiti on Awareness of Chronic Kidney Disease which revealed that majority (78.4%) of the respondents have no idea about common symptoms associated with CKD but a later study similar to this in another country revealed that identifying common manifestations of chronic kidney disease is not a problem to people (Dada et al, 2015; Albalawi et al, 2018). A confirmation of this is a study by Goro et al (2019), wherein they presented that over half 109 (52.4%) of their study respondents had knowledge about the major clinical manifestation of chronic kidney disease.

Hypothesis descriptive statistic of age range and level of knowledge on chronic kidney disease among respondents showed the overall weighted knowledge of chronic kidney disease mean score to be 55.91±16.47 (min score 23, max score 85) leaving the sum of the groups' level of knowledge at the moderate level. ANOVA was utilized to test the hypothesis to reveal that there is no statistically significant difference between groups as demonstrated by one-way ANOVA $F(5, 139) = 1.492$, $p = 0.196$. The findings from this analysis is in line with a previous study wherein it was presented that there was no statistically significant difference in the mean knowledge scores for the age groups analyzed which ranged between 16 – greater than 60 years (Dada et al, 2015). However, later studies were in opposition; Oluyombo et al (2016), presented that younger ages especially those younger than 65 years had higher knowledge of chronic kidney disease. Stanifer et al (2016), opined that participants 18–39 years old and 40–59 years old had higher mean scores for knowledge of chronic kidney disease.

Hypothesis descriptive statistic of level of education and level of knowledge on chronic kidney disease among respondents showed the overall weighted knowledge on chronic kidney disease mean score to be 55.91±16.47 (min score 23, max score 85) leaving the sum of the groups' level of knowledge at the moderate level. ANOVA was utilized to test the hypothesis to reveal that there is no statistically significant difference between groups as demonstrated by one-way ANOVA $F(3, 141) = 1.428$, $p = 0.237$. This is in line with the work of Roomizadeh et al (2014). In their study, it was opined that there was no statistical difference in knowledge based

on education. Dada et al (2015), supported this; they opined that there was no significant difference in the mean knowledge score among the participants who had attained tertiary education and others who did not, 1.53 (95% confidence interval, CI: 0.78-2.28). Oluyombo et al (2016) in their work refuted this; knowledge of CKD was good among farmers with a high level of education than those with a low level of education (46.2% vs. 20.8%, $P = 0.001$).

IMPLICATION TO NURSING

Nurses should make it a point of duty to always educate and create awareness on chronic kidney disease and its burdening effect to the populace at every opportunity had. This is a giant step towards accepting preventive measures in curbing the global pandemic of the disease.

CONCLUSION

Knowledge on Chronic Kidney Disease of the general populace at population-referenced level, is low; recorded high level knowledge for causes/risk factors and clinical manifestations may be circumstantial. While the study revealed that Knowledge of Chronic Kidney Disease among the general populace is at the moderate level considering the mean scores (score-referenced level), it may be said that socio-demographics especially age and level of education has no paramount influence on attaining knowledge.

Future Research

1. Further studies can be done by researchers to determine what can improve the level of knowledge on chronic kidney disease among the general populace.

2. Studies can be done by researchers to explore into the level of knowledge on prevention of chronic kidney disease

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