Faculty of Natural and Applied Sciences Journal of Scientific Innovations
Print ISSN: 2814-0877 e-ISSN: 2814-0923
www.fnasjournals.com
Volume 4; Issue 1; March 2023; Page No. 132-139.

KNOWLEDGE OF CHRONIC KIDNEY DISEASE AND ITS RISK FACTORS AMONG RIVERS STATE CIVIL SERVANTS

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Abstract
Chronic kidney disease (CKD), which is associated with end-stage renal disease (ESRD), is now recognized as a global public health crisis, resulting in significant morbidity and mortality. Several studies have reported the prevalence of critical risk factors for CKD among civil servants due to sedentary work lifestyles. The study sought to ascertain how knowledgeable Rivers State's civil servants were about CKD and its risk factors. A cross-sectional descriptive study with 300 participants was carried out using a multistage sampling procedure. To collect data from civil servants in Rivers State, a structured questionnaire titled Knowledge of Chronic Kidney Disease and its Risk Factors (KCKDRF) was used. SPSS version 26 was used to analyze the data. Results showed that 84.6% of respondents had good knowledge of CKD and its risk factors, while 15.6% had poor knowledge. The level of knowledge of CKD and its risk factors among civil servants in Rivers State was not significantly related to age, gender, or level of education. Based on the findings, it was suggested that sustained health awareness campaigns be implemented to increase and maintain knowledge of CKD and its risk factors in health facilities, as well as increase the training of general physicians and nurses in CKD prevention programs

Keywords: Chronic Kidney Disease, Prevalence, Civil Servants, Risk Factors for CKD, Sedentary Lifestyles

Introduction

Chronic kidney disease (CKD) is a global public health crisis (Kumela Goro, 2019). CKD is characterized by irreversible and impaired renal function, with the progression of renal function deterioration leading to end-stage renal disease (ESRD), which is life-threatening without proper renal replacement therapy intervention (Nugent et al., 2011). Chronic kidney disease (CKD) occurs when the structure and function of the kidneys are abnormal and last for more than 3 months, with or without decreased glomerular filtration rate (GFR), but is distinguished by increased urinary albumin excretion, according to the National Kidney Foundation (2012). Understanding CKD is essential, and studies have shown that people who are properly informed about CKD and its risk factors are more likely to engage in health-promoting behaviours and lifestyle changes. As a result, the incidence of risk factors decreases, as does the incidence and prevalence of CKD (Chow et al., 2012; Yahalom et al., 1999; Nunes et al., 2012). Knowledge influences one's ability to make informed decisions, so education is important. As a result, a person's attitude towards their health, as well as their health-seeking behaviour, can be influenced by their medical knowledge of any disease. The knowledge, attitude, and practice (KAP) model, which employs health education as an input to stimulate information, attitude, and practice that improves health outcomes, supports this (Achalu, 2019).

Cite this article as:
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The global increase in CKD is mainly due to the increase in the prevalence of vital risk factors such as diabetes mellitus (DM), high blood pressure (HBP), obesity, and ageing (Damtie et al., 2018; Couser et al., 2011), and several studies have reported the prevalence of these risk factors among civil servants in Nigeria due to sedentary lifestyles (Alabi et al., 2021; Afam-Anene et al., 2017; Oladimeji et al.,2104). Also, Hayford, et al. (2018) reported high blood pressure, diabetes, and obesity amongst others were prevalent among civil servants in the Rivers State secretariat complex so, targeting this high-risk population to ascertain their level of knowledge on CKD and its risk factors is a priority hence the basis for this study, knowledge of chronic kidney disease and its risk factors among civil servants in Rivers State.

Materials and Methods

The study was conducted in Port Harcourt, Rivers State, Nigeria, and among civil servants at the Rivers State Secretariat Complex, Moscow Road, Port Harcourt from December 2021 to February 2022 using the Rivers State Civil Service Clinic, a government facility within the secretariat premises. A descriptive cross-sectional study was used to explore the knowledge and risk factors associated with CKD among civil servants in Rivers State. The participants for this study were chosen using a multistage sampling procedure. The secretariat was divided into five blocks in stage one (A, B, C, podium block, and point block). In the second stage, cluster sampling was used to select four ministries from each of the secretariat complex's blocks, yielding a total of 20 ministries out of the 30 ministries housed in the Rivers State Secretariat Complex. In stage three, purposeful sampling was used to recruit the necessary participants from the selected ministries to achieve an equal proportion from each stratum among the civil servants working at the Rivers State secretariat complex. Finally, a list of those interested in participating in the study was compiled. To collect data for the study, a well-structured questionnaire titled "Knowledge of Chronic Kidney Disease and its Risk Factors (KCKDRF) among Rivers State civil servants" with two sections was used. Section (1) of the research instrument was used to obtain data on the socio-demographic status and had four questions: age, gender, marital status, and educational qualification. Section (2) consists of questions on a two-point response scale (true or false) that assess knowledge of CKD and knowledge of risk factors for CKD. Each correct response received one (1) point, while incorrect responses received zero (0). As a result, the expected minimum score was zero (0%), while the expected maximum score was 15 (100%). Ngendahayo et al. (2019) used this scale. A low level of knowledge was defined as any score less than 7, a moderate level of knowledge as any score between 7 and 10, and a high level of knowledge as any score between 11 and 15. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26; The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26; percentages were used to report knowledge of CKD and its risk factors, and demographic characteristics of the participants.

Results

Table 1: Socio-demographic characteristics of Participants (n=296)

Demographic characteristics	Cohort	F	%
Age	18-25years	18	6.1
	26-35years	27	9.1
	36-45years	127	42.9
	46 years and older	124	41.9
	Total	**296**	**100.0**
Gender	Male	94	31.8
	Female	202	68.2
	Total	**296**	**100.0**
marital status	Single	68	23.0
	Married	198	66.9
	Divorced/Separated	12	4.1
	Widow/Widower	18	6.1
	Total	**296**	**100.0**
Educational status	Nonformal	5	1.7
	Primary	14	4.7
	Secondary	57	19.3
	Tertiary	220	74.3

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Table 1 summarizes the percentage analysis of the participant's demographic characteristics. In this table, 9% were between the ages of 36 and 45, while 41.9% were 46 and older. Furthermore, 31.8% (94) were men, while 68.2% (202) were women. In terms of marital status, 23% were single, 66.9% were married, 4.1% had divorced, and 6.1% had lost their spouses.

Research Question 1: What is the level of knowledge of chronic kidney disease and its risk factors among civil servants in Rivers State?

Table 2*:* Analysis of Level of Knowledge of Chronic Kidney Disease and its Risk Factors among Civil Servants

S/no	Knowledge items	Incorrect answers F	%	Correct answers F	%	Remark
1	CKD is a reduction in Kidney's ability to remove waste from the body	40	13.5	256	86.5	High
2	CKD is gradual damage to the kidneys	35	11.8	261	88.2	High
3	Hypertension increases the risk of CKD	50	16.9	246	83.1	High
4	Diabetes increases the risk of CKD	44	14.9	252	85.1	High
5	CKD results in pain in the upper back	90	30.4	205	69.5	Good
6	Being overweight or obese can increase the risk of CKD	62	20.9	234	79.1	High
7	Untreated urinary tract infection can increase the risk of CKD	28	9.5	268	90.5	High
8	Excessive and prolonged use of herbal concoctions can result in CKD	45	15.2	251	84.8	High
9	Excessive and prolonged use of painkillers like Ibuprofen is associated with CKD	42	14.2	254	85.8	High
10	Not drinking enough water can result in CKD	36	12.2	260	87.8	High
11	Smoking excessively can increase the risk of CKD	29	9.8	267	90.2	High
12	Swollen hands and feet could be a sign of CKD	28	9.5	268	90.5	High
13	Sugar sweetened beverages, sodas, and cola drinks can harm the kidneys and cause CKD	47	15.9	249	84.1	High
14	Too much salt intake especially adding salt to cooked meals increases the risk of CKD	44	14.9	252	85.1	High
15	Genetic factors are associated with CKD	63	21.3	233	78.7	High
	Aggregate	**46**	**15.4**	**250**	**84.6**	**High**

Table 2 summarizes the level of knowledge of chronic kidney disease and its risk factors among civil servants. In total, 84.6% of participants had good knowledge of CKD and its risk factors, while 15.4% had limited knowledge. As a result, civil servants in Rivers State have a high level of knowledge of chronic kidney disease and its risk factors.

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Table 3: Analysis of the Level of Knowledge of Chronic Kidney Disease based on Gender.

		Gender							
		Male				Female			
		Incorrect		Correct		Incorrect		Correct	
S/N	Items	F	%	F	%	F	%	F	%
1	CKD is a reduction in Kidney's ability to remove waste from the body	12	12.8	82	87.2	28	13.9	174	86.1
2	CKD is gradual damage to the kidneys	16	17.0	78	83.0	19	9.4	183	90.6
3	Hypertension increases the risk of CKD	17	18.1	77	81.9	33	16.3	169	83.7
4	Diabetes increases the risk of CKD	15	16.0	79	84.0	29	14.4	173	85.6
5	CKD results in pain in the upper back	28	29.8	66	70.2	62	30.7	139	68.8
6	Being overweight or obese can increase the risk of CKD	17	18.1	77	81.9	45	22.3	157	77.7
7	Untreated urinary tract infection can increase the risk of CKD	8	8.5	86	91.5	20	9.9	182	90.1
8	Excessive and prolonged use of herbal concoctions can result in CKD	14	14.9	80	85.1	31	15.3	171	84.7
9	Excessive and prolonged use of painkillers like Ibuprofen is associated with CKD	11	11.7	83	88.3	31	15.3	171	84.7
10	Not drinking enough water can result in CKD	13	13.8	81	86.2	23	11.4	179	88.6
11	Smoking excessively can increase the risk of CKD	10	10.6	84	89.4	19	9.4	183	90.6
12	Swollen hands and feet could be a sign of CKD	13	13.8	81	86.2	17	8.4	185	91.6
13	Sugar-sweetened beverages, sodas cola drinks can harm the kidneys and cause CKD	11	11.7	83	88.3	36	17.8	166	82.2
14	Too much salt intake especially adding salt to cooked meals increases the risk of CKD	9	9.6	85	90.4	35	17.3	167	82.7
15	Genetic factors are associated with CKD	20	21.3	74	78.7	43	21.3	159	78.7
	Aggregate	**14**	**14.9**	**80**	**85.1**	**31**	**15.3**	**171**	**84.7**

According to Table 3, 85.1% of male civil servants correctly answered the questions, while 84.7% of female civil servants correctly answered the questions so, the level of knowledge was not related to gender.

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Table 4: Analysis of the Level of Knowledge of Chronic Kidney Disease based on Age

S/N	Items	Age															
		18-25				26-35				36-49				50 and above			
		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	CKD is a reduction in Kidney's ability to remove waste from the body	1	5.6	17	94.4	4	14.8	23	85.2	17	13.4	110	86.6	18	14.5	106	85.5
2	CKD is gradual damage to the kidneys	0	0.0	18	100	3	11.1	24	88.9	13	10.2	114	89.8	19	15.3	105	84.7
3	Hypertension increases the risk of CKD	1	5.6	17	94.4	5	18.5	22	81.5	19	15.0	108	85.0	25	20.2	99	79.8
4	Diabetes increases the risk of CKD	3	16.7	15	83.3	2	7.4	25	92.6	17	13.4	110	86.6	22	17.7	102	82.3
5	CKD results in pain in the upper back	9	50.0	9	50.0	13	48.1	13	48.1	37	29.1	90	70.9	31	25.0	93	75.0
6	Being overweight or obese can increase the risk of CKD	9	50.0	9	50.0	7	25.9	20	74.1	25	19.7	102	80.3	21	16.9	103	83.1
7	Untreated urinary tract infection can increase the risk of CKD	1	5.6	17	94.4	1	3.7	26	96.3	17	13.4	110	86.6	9	7.3	115	92.7
8	Excessive and prolonged use of herbal concoctions can result in CKD	3	16.7	15	83.3	5	18.5	22	81.5	19	15.0	108	85.0	18	14.5	106	85.5
9	Excessive and prolonged use of painkillers like Ibuprofen is associated with CKD	2	11.1	16	88.9	4	14.8	23	85.2	20	15.7	107	84.3	16	12.9	108	87.1
10	Not drinking enough water can result in CKD	2	11.1	16	88.9	3	11.1	24	88.9	18	14.2	109	85.8	13	10.5	111	89.5
11	Smoking excessively can increase the risk of CKD	1	5.6	17	94.4	1	3.7	26	96.3	16	12.6	111	87.4	11	8.9	113	91.1
12	Swollen hands and feet could be a sign of CKD	1	5.6	17	94.4	1	3.7	26	96.3	15	11.8	112	88.2	13	10.5	111	89.5
13	Sugar-sweetened beverages, sodas, and cola drinks can harm the kidneys and cause CKD	2	11.1	16	88.9	3	11.1	24	88.9	28	22.0	99	78.0	14	11.3	110	88.7
14	Too much salt intake especially adding salt to cooked meals increases the risk of CKD	9	50.0	9	50.0	3	11.1	24	88.9	17	13.4	110	86.6	15	12.1	109	87.9
15	Genetic factors are associated with CKD	2	11.1	16	88.9	7	25.9	20	74.1	31	24.4	96	75.6	23	18.5	101	81.5
	Aggregate	**3**	**16.7**	**15**	**83.3**	**4**	**14.8**	**23**	**85.2**	**21**	**16.5**	**106**	**83.5**	**18**	**14.5**	**106**	**85.5**

Table 4 shows the level of knowledge of CKD and its risk factors among civil servants in Rivers State ranging from 83.3%, 85.2%, 83.5%, and 85.5% for ages between 18 and 25 years, 26 and 35 years, 36 and 45 years, and 46 years and above respectively. Based on this table, the level of knowledge of chronic kidney disease and its risk factors among civil servants in River State is not related to age.

Table 5: Analysis of the Level of Knowledge of Chronic Kidney Disease based on level of Education.

S/N	Items	Level of Education															
		Non-Formal				Primary				Secondary				Tertiary			
		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	CKD is a reduction in Kidney's ability to remove waste from the body	1	20	4	80	2	14.3	12	85.7	10	17.5	47	82.5	27	12.3	193	87.7
2	CKD is gradual damage to the kidneys	1	20	4	80	4	28.6	10	71.4	12	21.1	45	78.9	18	8.2	202	91.8
3	Hypertension increases the risk of CKD	2	40	3	60	7	50.0	7	50.0	15	26.3	42	73.7	26	11.8	194	88.2
4	Diabetes increases the risk of CKD	1	20	4	80	5	35.7	9	64.3	19	33.3	38	66.7	19	8.6	201	91.4
5	CKD results in pain in the upper back	1	20	4	80	7	50.0	7	50.0	16	28.1	41	71.9	66	30.0	153	69.5
6	Being overweight or obese can increase the risk of CKD	1	20	4	80	5	35.7	9	64.3	17	29.8	40	70.2	39	17.7	181	82.3
7	Untreated urinary tract infection can increase the risk of CKD	0	0	5	100	2	14.3	12	85.7	7	12.3	50	87.7	19	8.6	201	91.4
8	Excessive and prolonged use of herbal concoctions can result in CKD	0	0	5	100	5	35.7	9	64.3	19	33.3	38	66.7	21	9.5	199	90.5
9	Excessive and prolonged use of painkillers like Ibuprofen is associated with CKD	1	20	4	80	1	7.1	13	92.9	10	17.5	47	82.5	30	13.6	190	86.4
10	Not drinking enough water can result in CKD	0	0	5	100	1	7.1	13	92.9	12	21.1	45	78.9	23	10.5	197	89.5
11	Smoking excessively can increase the risk of CKD	0	0	5	100	1	7.1	13	92.9	8	14.0	49	86.0	20	9.1	200	90.9
12	Swollen hands and feet could be a sign of CKD	0	0	5	100	2	14.3	12	85.7	9	15.8	48	84.2	19	8.6	201	91.4
13	Sugar sweetened beverages, sodas, and cola drinks can harm the kidneys and cause CKD	1	20	4	80	2	14.3	12	85.7	12	21.1	45	78.9	32	14.5	188	85.5
14	Too much salt intake especially adding salt to cooked meals increases the risk of CKD	0	0	5	100	6	42.9	8	57.1	6	10.5	51	89.5	32	14.5	188	85.5
15	Genetic factors are associated with CKD	0	0	5	100	3	21.4	11	78.6	15	26.3	42	73.7	45	20.5	175	79.5
	Aggregate	**1**	**12**	**4**	**88.0**	**4**	**25.2**	**10**	**84.8**	**12**	**21.9**	**45**	**88.1**	**29**	**13.2**	**191**	**86.8**

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Table 5 summarizes the level of knowledge of CKD and its risk factors as 88%, 84.8%, 88.1%, and 86.8% for non-formal, primary, secondary, and tertiary education respectively. Based on this table, the level of knowledge of chronic kidney disease and its risk factor is not related to the level of education.

Discussion

The summary of results in table 2 showed that respondents had an overall good knowledge of CKD and its risk factors (84.6%). This finding may be related to the fact that 74.3% of the study population had tertiary education as well as the relatively small sample size (296). A high level of education can lead to a more accurate health belief and knowledge, and thus to better lifestyle choices. By implication, having a higher level of education enhances a better understanding of health. The findings obtained cannot be generalized to the entire population however, this is the knowledge of chronic kidney disease and its risk factors among civil servants in Rivers State, so this study is important in providing the much-needed data. This agrees with Khalil and Abdalrahim, (2014), who stated that the higher the level of education, the more knowledge a person will have. Some Reports showed that moderate educational level contributed to the knowledge of CKD which agrees with the present study, Asmelash et al. (2020) in Northwest Ethiopia, a moderate educational level of 68.7%, and Ogundele (2016) in South Africa moderate educational level was 60.4%. A divergent report was seen in studies by Ngendahayo et al. (2019) in Rwanda, Alsharani et al. (2022) in Saudi Arabia, and Kumela Goro et al. (2019) in Ethiopia with only 22%, 28.6%, and 36.5%, having good knowledge of CKD and its risk factors. Also, poor knowledge was reported in Nigeria by Dada et al. (2015) in Ado Ekiti, and Oluyombo et al. (2016). This divergent report may be related to sample size, differences in health literacy of the studied populations, differences in the knowledge items of the instruments for data collection, or poor level of education of the participants, like in the study by Kumela Goro et al. (2019) only 5.8% (12) of the participants had tertiary education.

In table 2 regarding the definition of CKD, 86.5% (82 males and 174 females) correctly answered that CKD is a reduction in the kidney's ability to remove waste from the body. This may be due to the small sample size as well as the high level of education of the study population. This is in line with a study by Alsharani et al. (2022) where 80.8% of participants correctly defined CKD as a condition in which the kidney is unable to filter waste, toxins, and fluids from the body and Ogundele, (2016), where 90.97% of the study population knew the main function of the kidney is to remove waste from the blood. However, lower percentages were reported by Ngedenhayo et al. (2019) in which 64.6% of participants knew that CKD is a reduction in the kidney's ability to remove waste from the blood and Kumela Goro et al. (2019) whereas over half 109 (52.4%) knew that CKD is the reduced ability of the kidneys to remove waste from the blood. These disparities may be due to differences in geographical location. This agrees with Hill et al. (2016), who stated that geographical stratification influences the prevalence of CKD. More developed areas such as Europe, the USA, Canada, and Australia have higher rates of CKD prevalence in comparison to areas where economies are growing such as sub-Saharan Africa.

In table 2, regarding knowledge of signs and symptoms, 69.6% (66 males and 139 females) correctly answered that CKD results in pain in the upper back (flank) in the current study. This may be because 74.3% of the study population had tertiary education and as such may have read about CKD. A similar finding was reported by Ngendahayo et al. (2019), where 60% correctly answered that CKD results in pain in the upper (flank). Also, in the present study, 90.5% correctly answered that swollen hands and feet (water retention) could be a sign of CKD. This may be education because the tertiary educational level of the majority of the participants may have exposed them to health knowledge of CKD. This agrees with Alobaidi (2021), who stated that a significantly higher level of knowledge of CKD prevailed among respondents from higher education and higher economic backgrounds. Similar studies were carried out by Alobaidi (2021) and Khalil and Abdalrahim (2014), they reported the prevalence of individual who recognizes swollen hands and feet (water retention) as a sign of CKD as 79.8% and 70% respectively. Gheewala et al. (2018) and Oluyombo et al. (2016) found a lower prevalence of individuals who recognize swollen hands and feet (water retention) as a sign of CKD, with 61.1% and 31.2%, respectively.

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These disparities could be attributed to sampling size, study settings, and participant socio-demographic characteristics.

Regarding responses on knowledge of significant risk factors of CKD in the present study, 88.1% (77 males and 169 females) of participants correctly responded that high blood pressure (HBP) is a significant risk factor for CKD. This may be because the majority of the participants knew they had high blood pressure. Medical knowledge of HBP will make one aware of more information about that condition, its consequences, and its prevention. This is similar to reports by Asmelash et al. (2020), in which 85.7% of the study population identified HBP as a risk factor for CKD. A moderately high response of 60% was reported in the study by Ahmed et al. (2018) and Ghweewala et al. (2018), while lower responses of 54.3%, 44.5%, and 43.6% were reported by Alobaidi (2021), Dada et al. (2015), and Oluyombo et al. (2016), respectively. This difference may be due to study settings, socio-demographic characteristics of the populations, as well as sample size. Also, regarding knowledge of risk factors for CKD, in the present study, 85% of the participants (79 males and 173 females) knew that diabetes mellitus (DM) is a risk factor for CKD. Participants in the present study know about diabetes mellitus and, as such, know the consequences of poorly controlled blood glucose levels, hence the high response. The knowledge of DM as a risk factor for CKD in the present study is higher than the 69.2% reported by Alobaidi et al. (2021), the 62.3% reported by Ahmed et al. (2018), and the 60.6% reported by Gheewala et al. (2018). This may be due to differences in sample sizes, study settings, and socio-demographic characteristics of the study populations.

Conclusion

The findings from this study indicate a high knowledge of CKD and its risk factors (84.6%) which did not differ based on age, gender, and educational qualification thus there is a need for sustained health awareness campaigns to increase and maintain knowledge of CKD and its risk factors in health facilities, increase training of general physicians, and nurses in CKD prevention programs.

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Cite this article as:
Ajie, P.C., Achalu, E.I., Samuel, G.K., Victor, P.D., Atuzie,Q.A., Keguna, B.N., & Kofi, B.I. (2023). Knowledge of chronic kidney disease and its risks factors among Rivers State civil servants. *FNAS Journal of Scientific Innovations,4*(1), 132-139.

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Cite this article as:
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