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Knowledge and Practice of Nurses in a Teaching Hospital towards Causes, Treatment Options and Prevention of Kidney Diseases in South-East Nigeria

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Abstract

Background: The prevalence of kidney diseases is on the rise in Nigeria, and cost of treatment is not affordable. Preventive strategies for kidney diseases are cheaper than cure, yet disease awareness is low, even among paramedical personnel. Nurses spend more time with patients than doctors, and therefore, this can greatly impact the quality of health information accessible to patients. Assessing the level of knowledge of kidney diseases, their causes and therapeutic options and creating the correct awareness among nurses will help disease prevention. **Objectives**: To assess the knowledge, and practice of nurses towards causes, treatment options and prevention of kidney diseases. To compare their level of awareness of childhood kidney diseases with that of adult kidney diseases. **Methods**: This study took place at the Abia State University Teaching Hospital (ABSUTH), Aba, South-East Nigeria. A pre-tested interviewer-administered structured questionnaire comprising sociodemographic characteristics and knowledge-based questions was deployed. Total knowledge scores were categorized as poor knowledge, if <50%, and good knowledge if ≥50%. One hundred and thirty-two consenting nurses were consecutively recruited. Data were analyzed using SPSS version 25.0. **Results:** There were 132 respondents with a mean age of 40.30 ± 8.11 years. One hundred and twenty-six (95.5%) of the 132 respondents were females, 121 (91.7%) were married, and 122 (92.4%) of the respondents had children. Many, 62.1% and 75.8% of the respondents had poor knowledge concerning causes of kidney diseases both adults and children respectively. Less than 20% of the respondents could mention at least one drug that causes kidney injury in adults and children. None of these 20% named analgesics as a cause of kidney injury. More than

60% of the respondents did not know that bleaching creams and soaps can damage the kidneys. Of the respondents, 54.5% had good knowledge concerning the availability of treatment for kidney diseases, kidney transplant and haemodialysis in adults, whereas 84.8% demonstrated very poor knowledge on the same parameters concerning children with kidney diseases. More than 80% had poor knowledge about peritoneal dialysis in both children and adults with kidney diseases. Although >90% of the respondents had good knowledge that kidney diseases could be prevented and that drinking a good quantity of water daily can prevent kidney diseases in adults, they had very poor knowledge on how to prevent kidney diseases. More than 69% of respondents had poor knowledge of prevention of childhood kidney diseases. Less than 30% of respondents could correctly estimate the number of glasses of water needed by adults daily to maintain a healthy kidney. None of the respondents could attempt the daily quantity of water needed by children. **Conclusion:** The average knowledge of the respondents on kidney disease is poor. The knowledge domain scores were worse for childhood kidney diseases compared to adult kidney diseases. More education on kidney diseases among paramedical personnel is another strategy for reducing the prevalence of renal diseases.

Keywords

Knowledge, Kidney Disease, Nurses, Prevention, ABSUTH, Nigeria

1. Introduction

The prevalences of kidney diseases in both children and adults are on the rise globally [1]. This rise is more in the developing countries where access to early diagnosis and treatment is not easily affordable [2]. Many deaths due to poor access to renal replacement therapy and a rising number of end-stage kidney diseases is contributing to a substantial burden to developing countries [2] [3]. The 2010 global ranking of premature causes of death shows that kidney diseases moved up from position 32 in 1990 to position 24 in 2010 [4].

Recently, Deng *et al.* described a continued increase in the disease burden for CKD between 1990 and 2021 using the data from Global Burden of Diseases of 2021 [5].

The cost of management of ESRD is exorbitant and far beyond the reach of an average patient in our communities, especially in developing nations, like Nigeria [6] [7]. In most African countries, Nigeria inclusive, the burden of kidney disease is borne solely by the patient and relatives [7].

The need for more strategies for prevention of kidney diseases cannot be overemphasized. This is in view of the great morbidity and mortality associated with renal diseases. The burden of creating awareness of kidney diseases cannot be on doctors alone. Some paramedical personnel like nurses who obviously spend more time with patients are in a better position to influence them with medical infor-

mation. The quality of medical information delivered to patients by these paramedical personnel depends on how much correct information they have.

Previous studies in Nigeria have tried to assess the level of awareness of kidney diseases among the non-clinical hospital health workers and people in the rural communities [3] [7]-[11]. Majority of such works agreed that level of awareness of kidney diseases by non-clinical health workers and the masses is low [3] [7]-[11].

Assessing knowledge, attitudes and practices towards kidney diseases is an effective preventive approach that promotes awareness. Increasing awareness among paramedical personnel will enhance awareness among the public. For instance, nurses have longer and closer contact with patients and can influence the quantity and quality of medical information accessible to these patients.

There is a wide knowledge gap between doctors and other paramedics in the hospital settings on kidney diseases, causes, prevention and therapeutic options. This study is an attempt to address this knowledge gap starting with nurses at the Abia State University Teaching Hospital, Aba, Nigeria.

2. Materials and Methods

This was a prospective descriptive cross-sectional one-day study conducted at the Abia State University Teaching Hospital (ABSUTH), Aba, South-East Nigeria. ABSUTH is the only government academic hospital in the state.

A 40-item questionnaire designed by the authors in line with the objectives of the study was used to collect data. A pre-tested interviewer-administered structural questionnaire was used to collect information on socio-demographic data, knowledge of the symptoms and causes of kidney diseases, treatment options for kidney diseases and prevention of kidney diseases. The responses were obtained for both childhood and adult kidney diseases.

The focus of the study was on bridging the knowledge gap between doctors and other paramedical personnel for better kidney care in children and adults. Nurses were chosen as the target population because of their closeness to and longer contact/ care time with patients.

One hundred and thirty-two consenting nurses were consecutively recruited during a one-day verification exercise conducted on employed nurses by ABSUTH management board in May 2024. Nurses who were working at the nephrology and dialysis units were excluded from the study. All the questionnaires were properly completed and returned giving a return rate of 100%.

As this was a cross-sectional descriptive study, no formal sample size calculation was required or performed.

Data collected were analyzed with Statistical Package for Social Sciences (SPSS) version 25.0. Frequencies tables and percentages were generated for all variables of interest. For the domain scores, knowledge for questions asked had the highest possible score of 10 and the lowest score of zero points. The sum of correct responses divided by the total number of questions, multiplied by 100 yielded a per-

centage knowledge score. Respondents were considered to have an overall good knowledge if they scored at least the mean score (≥50%) and poor knowledge if below the mean score [9].

Most KAP studies used a modified Bloom's cut-off point of either 60% or 80% for a good response, and then categorized knowledge into poor, moderate or good. In this index study, we felt categorizing our assessment into either poor or good knowledge would be easier in view of the limited time frame for our study. Therefore, a cut-off good knowledge score of ≥50% was used, as seen in 2 previous studies [9] [10].

The content validity of the questionnaire was determined to be 1, the Cronbach's coefficients for all variables in the questionnaire were 0.849 - 0.880, and the overall Cronbach's alpha coefficient of the questionnaire was 0.864, which indicated good reliability [11].

A pilot study was conducted among 15 nurses working at the Abia State School of Nursing which is in the same compound as ABSUTH. These nurses are not working with ABSUTH, and they were not part of the study. The aim of the pilot study was to reveal difficulties in understanding the meaning of the questions and estimate the amount of time needed to complete the questionnaire. Based on the outcome, responses were limited to poor or good responses to save time on the day of the ABSUTH nurses verification exercise.

Ethical clearance was obtained from the Ethics Committee of ABSUTH, Aba, before commencing the study.

3. Results

Table 1 shows the age group of the participants. Age-group 41 - 60 years (49.2%) constitutes the greatest number of the participants while those aged below 20 years (1.5%) were the least in number. Among the 132 participants, there were 95.5% females and 4.5% males giving a female: male ratio of 21:1. Age significantly affected knowledge ($p < 0.0003$), with nurses aged 41 - 60 years scoring highest.

Table 1. Socio-demographic parameters of the respondents.

Variables		Frequency	Percentage
Age group	≤20 yrs	2	1.5
	20 - 40 yrs	32	24.3
	41 - 60 yrs	65	49.2
	≥60 yrs	33	25
Total		**132**	**100**
Sex	Male	6	4.5
	Female	126	95.5
Total		**132**	**100**

The majority (91.7%) of the respondents were married (Table 2).

Table 2. Marital status of respondents.

Variables		Frequency	Percentage %
Marital status	Married	121	91.7
	Single	10	7.5
	Separated	1	0.8
Total		132	100.0

Many, 122 (92.4%) of the respondents have children (Table 3).

Table 3. Respondents with children.

Variables		Frequency	Percentage %
Respondents with children	No	10	7.6
	Yes	122	92.4
Total		132	100.0

Table 4 showed that many of the respondents had poor knowledge concerning causes of kidney diseases, for both adults and children. Less than 20% of the respondents could mention at least one drug that causes kidney injury in adults and children. None of these 20% named analgesics as a cause of kidney injury. Majority of the respondents did not know that bleaching creams and soaps can damage the kidneys. Their responses to the bad effects of herbal concoction, non-prescribed medications, diabetes and hypertension on the kidneys were good for adult kidney diseases, but poor for childhood kidney disease.

Table 4. Knowledge of causes of kidney disease.

Variables	State of knowledge	Adult kidney Diseases	Percentage (%)	Children's kidney diseases	Percentage (%)
Hereditary as a cause of kidney disease	Good	55	41.7	20	15.1
	Poor	77	58.3	112	84.9
Dehydration as a cause of kidney disease	Good	50	37.9	30	22.7
	Poor	83	62.1	102	77.3
Prescription drugs that can cause kidney injury	Good	22	16.7	10	7.6
	Poor	110	83.3	122	92.4
Can hypertension affect the kidney	Good	105	79.5	32	24.2
	Poor	27	20.5	100	75.8
Can diabetes affect the kidney	Good	100	75.8	4	3.0
	Poor	32	24.2	128	96.9
Non-prescription drugs that can affect the kidney	Good	101	76.5	12	9.1
	Poor	31	23.5	120	90.1
Can herbal medications affect the kidney	Good	125	94.7	130	98.5
	Poor	7	5.3	2	1.5
Can skin lightening creams/soaps affect the kidney	Good	50	37.9	30	22.7
	Poor	82	62.1	100	75.8

Table 5 showed that many of the respondents had good knowledge concerning availability of treatment for kidney diseases, kidney transplant and haemodialysis in adults, but demonstrated very poor knowledge on the same parameters concerning children with kidney diseases. Majority of them had poor knowledge about peritoneal dialysis in both children and adults with kidney diseases. Majority believed in alternative forms of treatment for kidney diseases both in adults and children.

Table 5. Knowledge of the treatment of kidney diseases.

Variable	State of Knowledge	Adult kidney disease	Percentage (%)	Childhood kidney disease	Percentage (%)
Availability of treatment for kidney diseases	Good	104	78.8	20	15.2
	Poor	28	21.2	112	84.8
Knowledge of kidney transplant	Good	128	97.0	10	7.6
	Poor	4	3.0	122	92.4
Knowledge of hemodialysis	Good	129	97.7	12	9.1
	Poor	3	2.3	120	90.9
Knowledge of peritoneal dialysis	Good	45	34.1	8	6.1
	Poor	87	65.9	124	93.9
Recommendation of alternative treatment for kidney diseases	Good	30	22.7	50	37.9
	Poor	102		82	62.1

In Table 6, more than 90% of the respondents had good knowledge that kidney diseases could be prevented and that drinking a good quantity of water daily can prevent kidney diseases in adults, but their response was poor concerning children. Less than 30% of respondents could correctly estimate the number of glasses of water needed by adults daily to maintain a healthy kidney. None of the respondents could attempt the quantity of water needed by children daily to maintain healthy kidneys. Majority (≥90%) demonstrated very poor knowledge on the need to make NSAIDS (Non-steroidal anti-inflammatory drugs) a prescription drug in both children and adults with kidney diseases.

Table 6. Knowledge of prevention of kidney disease.

Variables	State of the knowledge	Adult kidney disease	Percentage (%)	Childhood kidney disease	Percentage (%)
Can kidney disease be prevented?	Good	129	97.2	15	11.4
	Poor	3	2.3	117	88.6
Does drinking plenty of water during the day help human kidney?	Good	129	97.7	40	30.3
	Poor	3	2.3	92	
How many glasses of water are appropriate for the kidney in a day?	Good	34	25.8	0	0.0
	Poor	98	74.2	132	100.0
Should drugs like NSAIDS* be pinned to "prescription only medications"?	Good	9	6.8	32	24.2
	Poor	123	93.2	100	75.8

Continued

Herbal medications should be avoided by all means	Good	10	7.6	50	37.9
	Poor	122	92.4	82	62.1
Maintaining a good BMI can prevent kidney diseases	Good	60	45.5	20	15.2
	Poor	70	53.0	112	84.8
Downplaying the idea of alternative medicine can prevent CKD	Good	30	22.7	12	9.1
	Poor	100	75.8	120	90.9

*NSAIDS = Non-Steroidal Anti-Inflammatory Drugs.

Finally, Table 7 shows that majority of the respondents had an overall poor knowledge of the causes, treatment options and prevention for kidney diseases (both adult and childhood kidney diseases).

Table 7. Distribution of kidney disease domains scores.

Knowledge Domain	State of the knowledge	Adult kidney disease	Percentage (%)	Childhood kidney disease	Percentage (%)
Causes of kidney diseases	Good	50	37.9	32	24.2
	Poor	82	62.1	100	75.8
Treatment of kidney diseases	Good	72	54.5	10	7.6
	Poor	60	45.4	112	84.8
Prevention of kidney diseases	Good	62	47.0	40	30.3
	Poor	70	53.0	92	69.7

4. Discussion

The sustained rise in kidney diseases cannot be halted without hiking preventive strategies which center on disease awareness among the masses. Unfortunately, knowledge and awareness of causes, therapy and prevention of kidney diseases is still low in the developing nations [3] [7]-[9] [12]-[15].

The nurses in this study had a general poor knowledge of the symptoms and causes of kidney diseases for both adults and children. Less than 20% of the respondents could mention at least one drug that causes kidney injury in adults and children. These nurses had poor knowledge of kidney diseases despite working closely with patients in the hospital. This suggests that physicians' existing education strategies do not sufficiently meet the needs of these cohorts of paramedical personnel. This finding may reflect a gap in doctors' and nurses' communication. At times physicians assume that nurses know a lot about kidney diseases and entrust patients into their hands for counselling and information dissemination without regularly assessing how much medical information this cohort of staff knows. Previous studies also found very low knowledge of kidney diseases among paramedical personnel [3] [7] [14] [15].

Nurses and other paramedical personnel should benefit from regular health promotions and education on diseases of public health importance, including kid-

ney diseases. This is because they work within the hospital setting, and are more often sought out by family members, friends and individuals in the community for advice on health-related issues before presenting in the hospital [3] [16].

The poor knowledge exhibited by the respondents on kidney diseases was worse for childhood kidney diseases compared to adult kidney diseases. Some of the nurses were able to identify hypertension and diabetes as causes of adult kidney disease, whereas majority of them were not aware that children can suffer from kidney diseases! It must be remembered that some kidney diseases in adults have their aetiology in childhood.

Many of the respondents had good knowledge concerning the availability of treatment for kidney diseases in adults, kidney transplants and haemodialysis.

This good knowledge by our index nurses on treatment for kidney diseases is in contrast to the findings from some previous "Knowledge Attitude and Practice" (KAP) studies [3] [7]-[9] [12]-[15]. Many of these previous studies had their participants recruited from adults in the general population. It is expected that nurses will have better knowledge of the treatment of kidney diseases compared to the masses. Although Eleki *et al.* recruited non-medical hospital personnel for their PortHarcourt study, nurses are expected to have better knowledge of renal diseases than other paramedical personnel.

Majority of the respondents had poor knowledge about peritoneal dialysis in both children and adults with kidney diseases. This may be because our hospital has not started peritoneal dialysis for Chronic Kidney Diseases (CKD). Although we do peritoneal dialysis for some children with acute kidney disease, it is not a frequent procedure.

Many of our respondents believed in alternative forms of treatment for kidney diseases. This is very unacceptable because if not corrected, they will counsel same belief to patients. The belief in alternative forms of treatment for medical illnesses has led to late presentation to the hospital for treatable illnesses.

Again, a huge majority of our respondents demonstrated very poor knowledge of treatment and prevention of renal diseases in children. Majority of these nurses were married and had children. One should have expected them to know more about childhood diseases, including kidney diseases. Every health education and prevention campaign on renal diseases must bring to limelight that children are not left out in the battle against kidney diseases. Creating more awareness of childhood renal diseases cannot be overemphasized.

Despite the overall poor knowledge of kidney disease among our study participants, there were some important items on the survey instrument on which they scored well. In particular, the respondents had good knowledge that kidney diseases could be prevented and that drinking a good quantity of water daily can prevent kidney diseases in adults. This may reflect a positive impact from the increased awareness campaigns on kidney diseases over time, especially the annual worldwide celebrations for "World Kidney Day" in recent years.

The poor knowledge demonstrated towards other parameters used to assess

knowledge on the prevention of kidney diseases is a cause for worry. Less than 20% could remember how many glasses of water are needed to maintain a healthy kidney in adults. None knew the quantity of water needed by children daily. Some do not understand how the reduction in the use of NSAIDS and complete avoidance of herbal concoctions can prevent kidney disease. Contrary to our study findings, two previous studies [17] [18] reported more than half correct responses in all the parameters of treatment and prevention knowledge. The reason could be that the study participants in the 2 previous studies were patients already on treatment for CKD. The health literacy of these cohorts of patients with kidney diseases is obviously expected to be higher than that of the general population.

The nurses in this study had an overall poor knowledge of the causes, treatment options and prevention of kidney disease. This finding is in keeping with previous works [3] [7]-[9] [12]-[15] [19], majority of which were done among medical personnel that are not nurses.

Sula *et al.* [20] reviewed fifteen studies conducted in 10 different countries on the KAP of nurses on nosocomial infections. The results suggested that in most studies, nurses demonstrated a good level of knowledge. Nosocomial infections are a more common health issue faced by nurses every day. This contrasts with our findings. Kidney diseases are not that common, and it is therefore understandable if nurses do not demonstrate as much knowledge. Two other recent studies, [21] [22], on nurses' KAP for neurological examination and patient safety respectively, concluded that nurses had moderate knowledge on the subjects. Again, patient safety and examination are everyday practices in the hospital, and it is not surprising that nurses demonstrate moderate to good knowledge of the subjects.

The last 2 studies, [21] [22] agree with our work that age is significantly associated with knowledge scores. Majority of the younger age cohort of nurses in these studies had higher knowledge scores in neurological examination and patient safety. In our index study, higher scores were scored by many of the middle-aged nurses who have stayed in the hospital long enough to have seen and nursed a good number of kidney diseases which are not as common as other diseases in the hospital.

This study demonstrates the need for a change of education strategies to ensure that nurses are equipped with improved knowledge on kidney diseases, causes, treatment options and specific preventions.

5. Conclusion

The average knowledge of the respondents on kidney diseases is poor. The knowledge domain scores were worse for childhood kidney diseases compared to adult kidney diseases. More education on the causes, treatment and prevention of kidney diseases among paramedical personnels is another strategy for reducing the prevalence of renal diseases. Knowledge and prevention of childhood kidney diseases will have a positive impact on the prevention of adult kidney diseases in the future.

Limitations

Our study was limited by our study design and a small sample size. Nurses were our target population, but we did not capture the exact units and departments where the respondents were working in the hospital. This could have added more colour to the study. Again, being a one-day verification exercise, the nurses who missed the verification did not participate in the study. Finally, we did not capture years of service and levels of education of the nurses in the study population.

Conflicts of Interest

We have no conflict of interest to disclose.

We did not use generative AI and AI-assisted technologies in the writing process.

Authors Contributions

Dr Onwuchekwa U. N. conceived and designed the manuscript, helped in the acquisition of data, analysis and interpretation of data, writing of the manuscript, and gave final approval of the version to be published.

Dr Okoronkwo N. C. contributed to the design of the manuscript, interpretation of the analyzed data, writing of the manuscript, revision of the manuscript, and gave final approval of the version to be published.

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