

VOLUME 40, NUMBER 1

January 2023

ISSN 0189 - 160X

---

# WAJMJ

---

**WEST AFRICAN JOURNAL OF MEDICINE**

ORIGINALITY AND EXCELLENCE IN MEDICINE AND SURGERY



**OFFICIAL PUBLICATION OF**  
THE WEST AFRICAN COLLEGE OF PHYSICIANS *AND*  
WEST AFRICAN COLLEGE OF SURGEONS



[www.wajmed.org](http://www.wajmed.org)



## TABLE OF CONTENTS

GENERAL INFORMATION	1C
INFORMATION FOR AUTHORS	1F
EDITORIAL NOTES – <b>Peripartum Cardiomyopathy: An Important Cause of Maternal Morbidity and Mortality!</b> .....	1
G. E. Erhabor	
<b>ORIGINAL ARTICLES</b>	
<b>Anthropometric Indices for Predicting Hypertension among General Outpatient Clinic Attendees of Federal Medical Centre, Bida, Nigeria</b> .....	3
M. Mamman, P. N. Gara, S. A. Adefemi, O. M. Imade	
<b>Clinical Correlates of Common Acute Heart Failure Syndrome</b> .....	11
E. J. Ogbemudia, O. D. Aghimien	
<b>Determinants of Interest in Nephrology Career Choice among Internal Medicine Junior Residents in Nigeria</b> .....	17
O. A. Adejumo, O. G. Egbi, E. Okaka, M. O. Ogiator, B. L. Ademola, S. C. Ngoka, A. C. Enikuomihin, O. S. Abolarin, I. R. Edeki	
<b>Addressing Unmet Surgical Needs in an Underserved Nigerian Community: Report of a ‘Town and Gown’ Initiative</b> .....	25
O. Olasehinde, A. Adesunkanmi, A. O. Aaron, A. O. Adetoye, A. Talabi, S. O. A. Olateju, T. A. Ojumu, M. S. Adam, R. K. Babade, T. O. Mohammed, A. A. Aderounmu, B. Mustapha, P. Ojeyemi, K. Yusuf, O. E. Adejumo, K. N. Badru, J. Soji-Adereti, A. Adeyemo, A. S. Olowookere, Y. B. Amusa, O. O. Adegbehingbe, B. O. Adegbehingbe, O. A. Sowande	
<b>Clinical Characteristics, Management, and Six-Month Outcomes after Discharge of Patients Admitted for Acute Heart Failure in Ibadan, Nigeria</b> .....	30
O. Adebayo, O. S. Ogah, A. Adebisi, A. Aje, A. M. Adeoye, O. Oladapo	
<b>Effects of Integrated Vector Management in the Control of Malaria Infection: An Intervention Study in a Malaria Endemic Community in Nigeria</b> .....	45
D. Nwaneri, E. Ifeji, O. O. Oviawe, R. Roberts, R. Parker, E. Rich, A. Yoder, J. Kempeneer, M. Ibadin	
<b>Prevalence and Pattern of Feeding Problems and Relationship to Motor Function Severity in Children with Cerebral Palsy in Umuahia</b> .....	55
R. I. Chidomere, I. K. Ukpabi, N. K. Chukwudi, U. U. Onyeonoro, N. C. Ojinnaka	
<b>Evaluation of Impact of Ophthalmology Rotation on Family Medicine Practice in Northern Nigeria: A Multicenter Study</b> ....	60
F. J. Oyediji, R. J. Alfin, N. Bupwatda	
<b>Outcome of Community-Based Antiretroviral Drug Refill among Stable Human Immunodeficiency Virus Patients Accessing Care at a Tertiary Center in Abuja, Nigeria: A 3-Year Review</b> .....	67
V. G. Kwaghe, I. Abubakar, N. Kumtong, L. Rapnap, M. Jamda	
<b>Physical Activity among Healthcare Workers in a Major Tertiary Hospital, Southeast Nigeria</b> .....	72
U. U. Nnadozie, E. M. Anekwu, N. C. Asouzu, C. C. Maduba, C. I. Madu, A. A. Nnadozie, E. O. Anekwu, N. C. Asouzu, C. Odo, U. S. D. Unigwe	
<b>Prescription Patterns and Patient Care Practices in Two Tertiary Hospitals in South-South Nigeria</b> .....	78
S. O. Oghuvwu, A. Isah	
<b>Smartphone Ownership and the Willingness to receive Mobile Health Services among Patients with Hypertension in Nigeria</b>	84
B. F. Dele-Ojo, O. D. Ojo, O. A. Omopariola, T. I. A. Oseni, J. A. Ogunmodede, O. Busari, E. O. Amu, A. Adefioye	
<b>The Burden of Unsafe Abortion Six Years before the COVID-19 Era in a Nigerian Tertiary Hospital: An Analytical Retrospective Study</b> .....	90
O. D. Obadina, A. E. Ubom, A. A. Adewole, P. C. Oriji, A. Musa, P. O. Fiebai, T. G. Onile, S. Nyeche, E. Gbejebge, S. O. Sule, T. O. Adebawojo, J. I. Ikimalo	
<b>Prevalence, Risk Factors, Maternal and Perinatal Outcome of Patients with Eclampsia in University of Maiduguri Teaching Hospital, Maiduguri, Nigeria: A 15-Year Retrospective Review</b> .....	97
A. D. Geidam, A. Atterwahmie, A. Usman, A. Idrisa	
<b>REVIEWARTICLE</b>	
<b>Peripartum Cardiomyopathy: A Review Article</b> .....	104
K. M. Karaye, M. N. Shehu, M. Ngantcha, A. Bonny, M. A. Awad	
<b>Educational Interventions for Antibiotics Misuse and Self-Medication in Africa: A Systematic Review and Meta-Analysis [Protocol]</b> .....	114
Y. A. Misau, D. Mogere, S. Mbaruk, U. S. Usman, S. Bello, O. Oduwole, C. Moriam	
<b>Multi-Pathogen Innovative (5 in 1) Vaccine for Viral Haemorrhagic Fevers will Save More Lives</b> .....	121
M. Ohanu, U. C. Ezenwugo, I. Nwafia, S. Ebode	
<b>INDEX TO VOLUME 40, NO. 1, 2023</b>	
<b>Author Index</b> .....	125
<b>Subject Index</b> .....	126



### Determinants of Interest in Nephrology Career Choice among Internal Medicine Junior Residents in Nigeria

#### *Déterminants de l'Intérêt pour le Choix de Carrière en Néphrologie chez les Jeunes Résidents en Médecine Interne au Nigeria*

<sup>1</sup>O. A. Adejumo, <sup>2</sup>O. G. Egbi, <sup>3</sup>E. Okaka, <sup>4</sup>M. O. Ogiator, <sup>5</sup>B. L. Ademola, <sup>6</sup>S. C. Ngoka, <sup>1</sup>A. C. Enikuomhin, <sup>7</sup>O. S. Abolarin, <sup>3</sup>I. R. Edeki

#### ABSTRACT

**INTRODUCTION:** There has been decreased interest in postgraduate nephrology training over the years. This trend could worsen the shortage of nephrologists and inability to meet the health needs of patients with kidney diseases if not urgently addressed.

**AIM:** To determine interest in and determinants of nephrology career choice among junior internal medicine residents in Nigeria.

**METHODOLOGY:** This was a cross-sectional study that enrolled 273 junior residents in internal medicine across Nigeria. A self-administered questionnaire that was adapted from two previous studies was used for data collection.

**RESULTS:** The mean age of the respondents was 33.6±4.4 years with a male: female ratio of 1.8:1. This study showed that 16.8% and 21.6% of junior residents in internal medicine considered nephrology as their first and second choice area to specialize, respectively. Factors that ranked high as determinants of a decision to do nephrology were personal interest (94.3%), opportunities to perform renal procedures (93.3%), and exposure to nephrology training (85.7%). Factors that discouraged a choice of nephrology according to respondents were high mortality of renal patients (67.3%), poor outcomes of renal patients (70.2%), inability to fund treatment by renal patients (66.1%), unsatisfactory life-work balance among nephrologists (60.7%), and late presentation of renal patients (59.0%). Others were high workload compared to available doctors (59.0%) and poor job satisfaction (55.4%). Factors that could stimulate more interest in nephrology according to respondents included creation of better working environment with adequate equipment for training (96.3%), provision of health insurance with adequate coverage for renal patients (97.4%), and increased government support for renal care services (99.3%).

**CONCLUSION:** There is a need to promote and sustain interest of residents in nephrology by ensuring improved survival of patients through better access to renal care, ensuring an adequate and well-motivated work force, provision of adequate facilities and health insurance services. *WAJM 2023; 40(1): 17–24.*

**Keywords:** Nephrology, Career, Interest, Residents, Internal medicine.

#### RÉSUMÉ

**INTRODUCTION:** L'intérêt pour la formation postuniversitaire en néphrologie a diminué au fil des ans. Cette tendance pourrait aggraver la pénurie de néphrologues et l'incapacité de répondre aux besoins de santé des patients atteints de maladies rénales si l'on n'y remédie pas de toute urgence.

**OBJECTIF:** Déterminer l'intérêt et les déterminants du choix de carrière en néphrologie chez les jeunes résidents en médecine interne au Nigeria. Méthodologie: Il s'agit d'une étude transversale à laquelle ont participé 273 résidents juniors en médecine interne au Nigeria. Un questionnaire auto-administré, adapté de deux études précédentes, a été utilisé pour la collecte des données.

**RÉSULTATS:** L'âge moyen des répondants était de 33,6±4,4 ans avec un ratio homme/femme de 1,8:1. Cette étude a montré que 16,8 % et 21,6 % des résidents juniors en médecine interne considéraient la néphrologie comme leur premier et deuxième choix de spécialisation, respectivement. Les facteurs les plus déterminants dans la décision de se spécialiser en néphrologie étaient l'intérêt personnel (94,3 %), la possibilité de pratiquer des interventions rénales (93,3 %) et l'exposition à la formation en néphrologie (85,7 %). Les facteurs qui découragent le choix de la néphrologie selon les répondants sont la mortalité élevée (67,3 %), les résultats médiocres (70,2 %), l'incapacité de financer le traitement (66,1 %), l'équilibre vie-travail insatisfaisant (60,7 %) et la présentation tardive des patients rénaux (59,0 %). D'autres facteurs sont la charge de travail élevée par rapport aux médecins disponibles (59,0 %) et la faible satisfaction au travail (55,4 %). Les facteurs qui pourraient susciter un plus grand intérêt pour la néphrologie, selon les répondants, sont la création d'un meilleur environnement de travail avec des équipements adéquats pour la formation (96,3%), la mise en place d'une assurance maladie avec une couverture adéquate pour les patients atteints de maladies rénales (97,4%), et un soutien accru du gouvernement pour les services de soins rénaux (99,3%).

**CONCLUSION:** Il est nécessaire de promouvoir et de soutenir l'intérêt des résidents pour la néphrologie en assurant une meilleure survie des patients grâce à un meilleur accès aux soins rénaux, en assurant une main-d'œuvre adéquate et bien motivée, en fournissant des installations adéquates et des services d'assurance maladie. *WAJM 2023; 40(1): 17–24.*

**Mots clés:** Néphrologie, Carrière, Intérêt, Résidents, Médecine interne.

<sup>1</sup>Department of Internal Medicine, University of Medical Sciences Teaching Hospital, Ondo State, Nigeria. <sup>2</sup>Department of Internal Medicine, Niger Delta University, Bayelsa State, Nigeria. <sup>3</sup>Department of Internal Medicine, University of Benin Teaching Hospital, Benin City, Edo State, Nigeria. <sup>4</sup>Department of Internal Medicine, Benue State University Teaching Hospital, Makurdi, Benue State, Nigeria. <sup>5</sup>Department of Internal Medicine, Aminu Kano Teaching Hospital, Kano State, Nigeria. <sup>6</sup>Department of Internal Medicine, Federal Medical Centre, Imo State, Nigeria. <sup>7</sup>Department of Internal Medicine, Federal Medical Centre, Ogun State, Nigeria.

\*Correspondence: Dr. Oluseyi Ademola Adejumo, Department of Internal Medicine, University of Medical Sciences Teaching Hospital, Ondo City, Ondo State, Nigeria. Email: oluseyiadejumo2017@gmail.com +2348034225294.

## INTRODUCTION

Diseases of the kidney and urinary tract affect about 750 million people globally.<sup>1</sup> They rank 12<sup>th</sup> and 17<sup>th</sup> as diseases causing the highest mortality and disability, respectively, globally.<sup>2</sup> The burden of kidney diseases is higher in Sub-Saharan African countries such as Nigeria compared to other regions like Europe.<sup>3</sup>

Nephrologists play an important role in the prevention and management of kidney diseases and in the reduction of the associated physical, psychological and socio-economic burden. However, it has been reported that the number of nephrologists available across various high-income countries (HICs) and low-income countries (LICs) is inadequate to cater for the growing population of kidney disease patients.<sup>4-8</sup> Osman *et al*<sup>8</sup> reported the global nephrologist density and global nephrology trainee density to be 8.83 per million population (PPM) and 1.87 PPM, respectively. The global nephrologist density in HICs is about 95 times greater than in LICs while the global nephrology trainee density in HICs is about 30 times greater than in LICs. It was reported that some African countries do not even have a single nephrologist to manage patients with renal diseases.<sup>7</sup>

The factors responsible for the global shortage of nephrologists are multi-faceted. These include increasing burden of chronic kidney disease (CKD), decreasing interest in nephrology, aging workforce, inadequate training, heavy workload, and increasing cost of medical training.<sup>6</sup> In addition to these factors, the brain drain affecting LICs especially in the health sector in recent years has also reduced the nephrology workforce in these countries.<sup>9,10</sup>

Over the years, it has been observed that there has been a decrease in number of internal medicine residents who showed interest in postgraduate nephrology training.<sup>11-14</sup> A similar observation has also been reported in paediatric nephrology.<sup>15</sup> In the United States, Pivert<sup>16</sup> reported that 56% of nephrology fellowship training track was unfilled and 37% of the available positions for nephrology match were unfilled in 2019. Daniels *et al*<sup>12</sup> also reported that less than ten percent of

internal medicine residents chose nephrology as first choice for specialization in the United States. This trend could adversely affect the future of nephrology practice and lead to inability of the available nephrologists to meet the health needs of children and adults with kidney diseases if not urgently addressed.

The aim of this study was to determine the interest in and determinants of nephrology career choice among junior internal medicine residents in Nigeria. Findings of this study will provide useful information for stakeholders in nephrology training and practice such as Nigerian Association of Nephrology and postgraduate training colleges to implement recommendations and policies that will encourage interest in nephrology and guarantee adequate nephrology workforce required to meet the increasing demand.

## METHODOLOGY

This was a cross-sectional descriptive study that was conducted among internal medicine residents in tertiary hospitals in Nigeria across the geopolitical zones. The inclusion criterion was consenting junior residents in internal medicine. Senior residents in internal medicine were excluded from the study. Participants for this study were recruited using a non-probability convenience sampling method.

The minimum sample size was calculated using Leslie-Kish formula for cross-sectional studies. The proportion (p) of internal medicine residents interested in pursuing a career in nephrology was taken as 6.5% from a previous study<sup>12</sup> with a two tailed normal deviate, d of 1.96.

Sample size

$$(n) = Z^2P(1-p)/d^2$$

$$n = \frac{1.96^2 \times 0.065 \times (1-0.065)}{(0.05)^2}$$

n = 93; adding a 10% non-response rate gives a minimum sample size of 102. However, this was increased to 273.

Data were obtained for the study through a self-administered pretested questionnaire which was a modified version of what was used in previous studies by Nadir *et al*<sup>13</sup> and Oyejisi

*et al*.<sup>14</sup> The questionnaire had 4 sections. Section A included questions on the socio-demographic information, training hospital, undergraduate and post-graduate training and career interest in nephrology. Section B included 13 questions on factors that encouraged interest in nephrology. Section C was comprised of 15 questions on factors that discouraged interest in nephrology. Section D comprised 10 questions on ways of improving interest in nephrology. All participants answered questions in sections A and D. Participants who had interest in nephrology as first or second choice answered questions in section B while those who did not have interest in nephrology answered questions in section C. The study participants answered 'yes' or 'no' for each question under sections B, D and E. (Appendix 1).

## Ethical Consideration

Ethical approval for the study was obtained from the Ethics and Research Committee of Niger Delta University, Bayelsa. The protocol number of the approval was NDUTH/REC/0047/2021. Informed consent was obtained from all participants in the study and confidentiality of information was ensured by coding questionnaires without names or other personal identifiers.

## Data Analysis

Data generated were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21.0 software 9 (IBM-SPSS, Armonk, NY: IBM Corporation). Missing data for individual variables were automatically excluded during data analysis by statistical software. Discrete variables were presented as frequencies and percentages. Continuous variables were presented as means and standard deviations.

## RESULTS

Two hundred and seventy-three respondents were involved in this survey; 176 (64.5%) were male, 180 (65.9%) were married and their mean age was 33.6±4.4 years with the youngest being 26 years of age and the oldest 57

years. They were all junior residents across most of the geopolitical zones in the country. Two-thirds of respondents had worked as doctors for 5–10 years while 13.6% had worked as doctors for more than 10 years. Most respondents (205; 75.4%) were exposed to nephrology as undergraduates while 219 (80.2%) had done a posting in nephrology as residents. Majority of respondents (92.7%) had a functional dialysis unit in their centre but only 44 (16.1%) of them had a functional kidney transplant program in their centre. (Table 1).

This study showed that 46 (16.8%) and 59 (21.8%) of junior residents in internal medicine considered nephrology as their first and second choice area to specialize, respectively. The five internal medicine subspecialties of first choice among respondents were cardiology, nephrology, neurology, endocrinology and dermatology. (Figure 1). However, the top five second choice internal medicine subspecialty areas were nephrology, endocrinology, cardiology, neurology and rheumatology. (Figure 1).

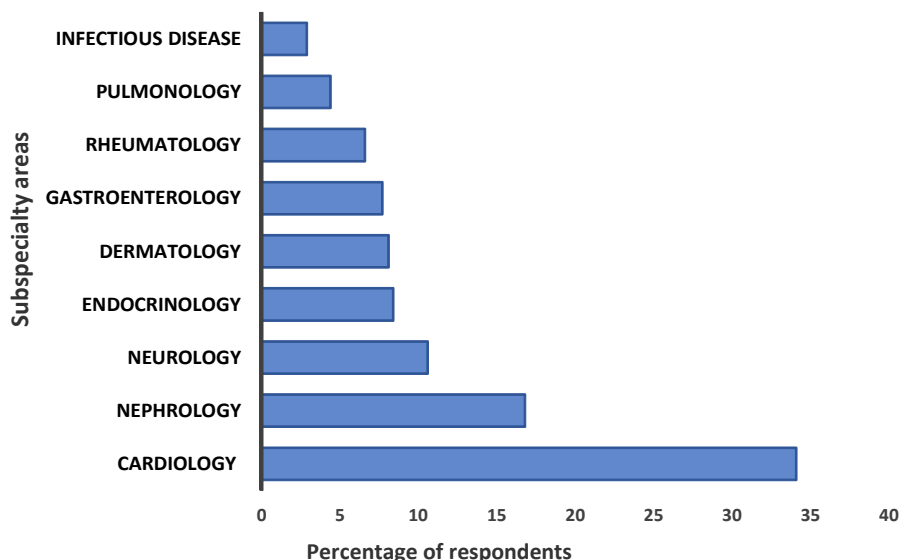
Factors that ranked high as determinants of a decision to do nephrology according to interested respondents were personal interest, adequate training facilities, quality mentoring as well as good job and research opportunities post-fellowship. Financial reward, respect and prestige ranked low as determining factors compared to the aforementioned (Table 2).

Among residents not interested in nephrology, the following factors ranked high as discouraging factors: high mortality and poor outcomes among renal patients, late presentation of renal patients, high workload compared to available doctors. However, inadequate exposure and training in nephrology as well as lack of role models ranked low as discouraging factors (Table 3).

Factors that could stimulate more interest in nephrology according to respondents included creation of better working environment with adequate equipment for training, provision of health insurance with adequate coverage for renal patients and increased government support for renal care services (Table 4).

**Table 1: Characteristics of Study Respondents (N=273)**

Parameter	Frequency (%)
<b>Gender</b>	
Male	176 (64.5)
Female	97(35.5)
<b>Marital Status</b>	
Single	93 (34.1)
Married	180 (65.9)
<b>Location of Practice</b>	
South-West	96(35.2)
South-South	74(27.1)
North-Central	45(16.5)
South-East	34(12.5)
North-West	22(8.0)
North-East	2(0.7)
<b>Years of Work Experience</b>	
< 5 years	65 (23.8)
5–10 years	171 (62.6)
>10 years	37 (13.6)
<b>Did you have undergraduate exposure to nephrology?</b>	
Yes	205 (75.4)
No	67(24.6)
<b>Have you done a posting in nephrology?</b>	
Yes	219 (80.2)
No	54 (19.8)
<b>Does your centre have a functional dialysis unit?</b>	
Yes	253 (92.7)
No	20 (7.3)
<b>Does your centre have a functional kidney transplant program?</b>	
Yes	44 (16.1)
No	229 (83.9)
<b>Are you interested in nephrology as a subspecialty?</b>	
Yes	105 (38.5)
No	168 (61.5)



**Fig. 1: First Choice Subspecialty Areas of Respondents.**

**Table 2: Factors important to Respondents in choosing Nephrology Subspecialty (n= 105)**

Factors	Frequency (%)
Personal interest	99 (94.3)
Opportunities to perform renal procedures	98 (93.3)
Exposure to nephrology training	90 (85.7)
Job opportunities post fellowship	88 (83.8)
Further training opportunities post fellowship	88 (83.8)
Research opportunities post fellowship	86 (81.9)
Work balance post fellowship	85 (81.0)
Access to quality mentors	84 (80.0)
Academic prospects post fellowship	72 (68.6)
Opportunities for private practice	72 (68.6)
Encouragement by colleagues and seniors	70 (66.6)
Financial reward	58 (55.2)
Respect and Prestige	48 (45.7)

**Table 3: Factors important to Respondents in deciding against Nephrology Subspecialty (n=168)**

Factors	Frequency (%)
Poor outcome of patients with kidney diseases	118 (70.2)
High mortality among renal patients	113 (67.3)
Patients' inability to fund treatment	111 (66.1)
Unsatisfactory work balance	102 (60.7)
Late presentation of patients	99 (59.0)
High workload for few doctors	99 (59.0)
High demand of time	98 (58.3)
Poor job satisfaction	93 (55.4)
Unavailable surgical intervention	89 (53.0)
Lack of role models and mentors in nephrology	53 (31.5)
Inadequate exposure to nephrology during training	52 (31.0)
Inadequate training/ supervision	50 (29.8)
Lack of interest	46 (27.4)
Poor financial reward	36 (21.4)
Difficulty of the subspecialty	19 (11.3)

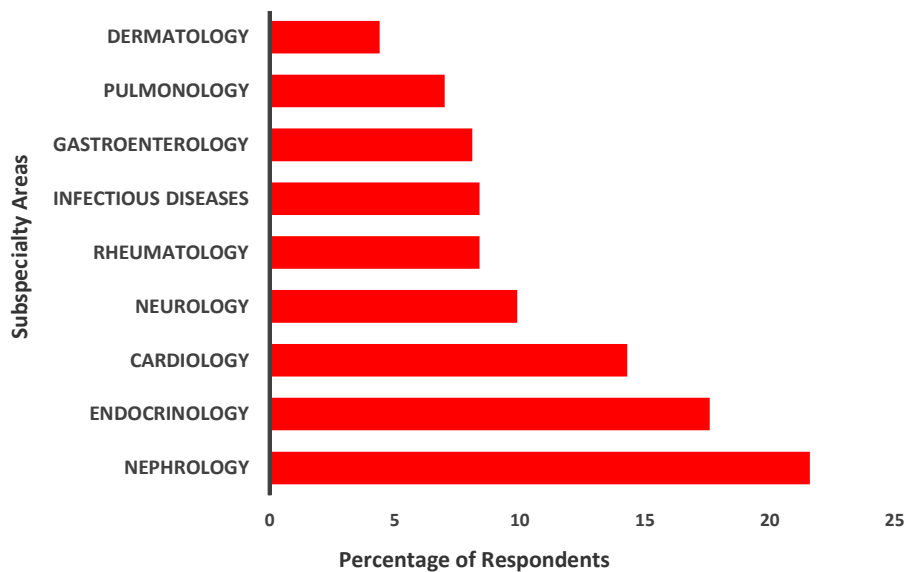
**Table 4: Factors that could stimulate more interest in Nephrology as a Subspecialty according to Respondents (N=273)**

Factors	Frequency (%)
Increased government interest with support to renal care services	271 (99.3)
Provision of standard equipment for nephrology practice	269 (88.5)
Provision of health insurance covering renal care services	266 (97.4)
Better training environment for residents	263 (96.3)
Provision of local and foreign training opportunities for renal care staff	263 (96.3)
Incorporation of critical care with nephrology	259 (94.9)
Mentorship of young doctors	258 (94.5)
Improving nephrology education at undergraduate and postgraduate levels	244 (89.4)
Allocate more slots for nephrology training to increase manpower	231 (84.6)
Provide incentives to nephrologists	213 (78.0)

## DISCUSSION

This study showed that 16.8% and 21.6% of junior residents in internal medicine across various training centres in Nigeria considered nephrology as their first and second choice area to specialize, respectively. A higher proportion of internal medicine junior residents have interest in nephrology compared to a study conducted in the United States by Daniels *et al*<sup>12</sup> who reported that 14.8 % of their residents showed interest in nephrology as area of specialization. Although low interest has generally been observed in the nephrology subspecialty in recent times,<sup>11-14,17</sup> the situation may vary based on prevailing peculiarities in different countries. An earlier study in Nigeria by Oyebisi *et al*<sup>14</sup> reported that 47.6% of residents showed interest in nephrology which is higher than the finding of this present study. This difference may be explained by the fact that study participants were junior residents across all the major training centres in Nigeria unlike the study by Oyebisi *et al*<sup>14</sup> that involved a combination of both junior and senior residents who were from a limited number of training centres in Nigeria. However, Oyebisi *et al*<sup>14</sup> reported that majority of those who had interest in nephrology later changed their minds to specialize in other areas of internal medicine. This may therefore suggest that even though a relatively significant proportion of internal medicine residents showed interest in nephrology, a reasonable number may later change to other specialties. This underscores the need to promote the factors that encourage interest in the nephrology specialty while addressing the possible deterrents in order to guarantee that adequate number of residents eventually specialize in nephrology to meet the demand of the increasing population of kidney disease patients.

The most important factors reported to influence career interest in over 90% of the respondents in this study were personal interest in the subject and opportunities to perform renal procedures. Similarly, personal interest in nephrology was identified as the most critical factor influencing nephrology choice amongst residents and medical



**Fig. 2: Second Choice Subspecialty Areas of Respondents.**

students in a study involving thirty institutions in the United States.<sup>13</sup> Other studies have also alluded to the importance of personal interest in choosing a career,<sup>18–20</sup> as well as in developing the right attitude for career advancement and development.<sup>21</sup> Egbi *et al*<sup>22</sup> also reported that opportunities to perform procedures such as renal biopsy, ultrasonography, and vascular access creation, positively influenced the choice of nephrology among medical interns across three Southern Nigerian tertiary hospitals. This suggests that improving training in interventional nephrology may increase interest in nephrology.

The most important deterrents to choosing nephrology among the respondents were patient-related factors such as poor outcome and survival of kidney disease patients. This finding is at variance to the findings of Beck *et al*<sup>11</sup> who reported that non-patient related factors such as lack of exposure to nephrology subspecialty and advances in the field, high complexity, low prestige and non-competitive nature of nephrology specialty were the main barriers to choosing nephrology. This difference may be explained by the fact that treatment of patients with chronic kidney disease, which accounts for a large proportion of patients seen by the nephrologist, poses a huge challenge in low resource countries like Nigeria

compared to high resource countries. These challenges include late presentation of patients, a more rapid progression to end-stage renal disease, and inability of patients to afford and sustain renal replacement therapy and other modalities of treatment with resultant high morbidity and mortality. Physicians are more likely to prefer a specialty that has better patients' outcome compared with those with poor patients' outcome like nephrology especially in low resource countries. This may be attributable to the possible positive effect of treatment outcome on job satisfaction and overall career fulfilment. Previous studies have shown that physicians' job satisfaction may be related to the type of patients they treated or were expected to treat.<sup>25</sup>

Other important factors that dissuaded residents in this study from nephrology practice were high workload experienced by the few available nephrologists, high demand for time and unsatisfactory work-life balance. Some of these factors were also identified in some previous studies as barriers to choosing nephrology subspecialty.<sup>12,13</sup> Less stressful work-life balance and favourable working hours have been identified as factors that influence the choice of specialties including nephrology.<sup>12,13,23</sup> Perceived workload, work and family life balance are increasingly being cited as important

considerations when making specialty choices in modern times.<sup>24</sup> There is an increasing appreciation of the need to meet work requirements without self or family neglect as a medical practitioner or student.<sup>26</sup>

Financial interest was considered to be of less importance among factors that deter interest in nephrology by our respondents. This is at variance to some previous reports that identified monetary factors as important barriers to the choice of nephrology specialty.<sup>11–13</sup> The finding of this study may be explained by the fact that most consultants are employed in government hospitals where all specialists are at the same cadre and receive the same emoluments irrespective of their specialties. This is in contrast to the situation in some other climes where specialists' wages vary, possibly based on perceived value or need for the specialty.<sup>27</sup>

Factors that could stimulate interest in nephrology subspecialty identified by majority of the respondents included governmental support for renal care services, provision of equipment for management of kidney diseases and health insurance services for renal patients. This was in keeping with the fact that the most important deterrents to nephrology choice in this study were related to patients' outcome. Other factors suggested by majority were provision of better training opportunities and work environment for staff in nephrology units.

The provision of governmental support and health insurance services will make renal care more affordable, guarantee improved survival of patients and eventually make nephrology subspecialty more appealing. The current coverage of the National Health Insurance Scheme should be expanded to include adequate care for patients with renal diseases. There is need for employment and training of more residents in nephrology so that they can adequately care for patients with kidney diseases. Efforts must be made to retain them in order to reverse the trend of brain drain that is being experienced in Nigeria.<sup>28</sup> The government should provide better remuneration for the medical workforce and ensure a better

training environment for residents and other staff so that they can be sufficiently equipped to manage these patients. Further studies should be carried out to explore factors that affect job satisfaction among medical trainees. Most of these recommendations are consistent with previous reports in the study by Egbi *et al.*<sup>22</sup>

The study had a few limitations. It adopted a quantitative method of data collection. In this context, a mixed method approach would have provided deeper understanding of the complexities that underpin career decision. The non-probability sampling method used may also be a limitation. The study did not include a follow-up of the participants to identify time-related changes in specialty choice because it was a cross-sectional study. Future prospective studies could aim at determining whether and how these opinions change over time. However, a major strength of this study was that it involved only junior residents in centres across most of the geopolitical zones of the country, therefore giving a good representation of the opinions of residents about factors that may determine their career choice in nephrology.

In conclusion, nephrology was among the highly preferred sub-specialties by junior residents in internal medicine. Their decision was influenced mainly by personal interest and opportunities to perform procedures. On the other hand, the desire to forgo nephrology was influenced principally by poor outcome of the patients. There is a need to promote and sustain the interest of residents in nephrology by ensuring improved survival of patients through better access to renal care, ensuring an adequate and well-motivated work force, provision of adequate facilities and health insurance services.

#### Conflict of Interest

Authors have no conflict of interest.

#### ACKNOWLEDGMENT

Nil.

#### REFERENCES

- Kassebaum NJ, Arora M, Barber RM, Brown J, Carter A, Casey D, *et al.* GBD 2015 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life-years (DALYs) for 315 diseases and injuries and healthy life expectancy (HALE), 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*. 2016; **388**: 1603–1658.
- Dirks J, Remuzzi G, Horton S, Schieppati A, Rizvi SA. Diseases of Kidney and the Urinary System. In: Jamison DT, Breman JG, Measham AR. *Disease Control Priorities in Developing Countries*. 2<sup>nd</sup> Edition. Washington (DC): Chapter 36. Co-published by Oxford University Press, New York.
- Bikbov B, Purcell CA, Levey AS, Smith M, Abdoli A, Abebe M, *et al.* Global, regional, and national burden of chronic kidney disease, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2020; **395**: 709–733.
- Obrador GT, De Arrigunaga S, Cuadra M, Villa AR. Mismatch between Kidney Disease Burden and Nephrology Workforce in Mexico. *Kid Int Reports*. 2020; **5**: 973–976.
- Hassen M, Archer E, Pellizzon A, Chikte UM, Davids MR. Human resources for nephrology in South Africa: A mixed-methods study. *PLoS One*. 2020; **15**: e0228890.
- Sharif MU, Elsayed ME, Stack AG. The global nephrology workforce: emerging threats and potential solutions. *Clinical Kidney Journal*. 2016; **9**: 11–22.
- Naicker S, Eastwood JB, Plange-Rhule J, Tutt RC. Shortage of healthcare workers in sub-Saharan Africa: a nephrological perspective. *Clinical Nephrology*. 2010; **74**: 129–133.
- Osman MA, Alrukhaimi M, Ashuntantang GE, Bellorin-Font E, Gharbi MB, Braam B, *et al.* Global nephrology workforce: gaps and opportunities toward a sustainable kidney care system. *Kid Int Suppl*. 2018; **8**: 52–63.
- Pang T, Lansang MA, Haines A. Brain drain and health professionals: a global problem needs global solutions. *BMJ*. 2002; **324**: 499–500.
- Mlambo VH, Adetiba TC. Effects of Brain Drain on the South African Health Sector; Analysis of the Dynamics of its Push Factors. *Journal of Economics and Behavioral Studies*. 2017; **9**: 62–72.
- Beck N, Furgeson S, Chonchol M, Kendrick J. Internal Medicine Residents' Perceptions of Nephrology as a Career: A Focus Group Study. *Kidney 360*. 2020; **10**: 1052–1059.
- Daniels MN, Maynard S, Porter I, Kincaid H, Jain D, Aslam N. Career interest and perceptions of nephrology: a repeated cross-sectional survey of internal medicine residents. *PLoS One*. 2017; **12**: e0172167.
- Nair D, Pivert KA, Baudy A, Thakar CV. Perceptions of nephrology among medical students and internal medicine residents: a national survey among institutions with nephrology exposure. *BMC Nephrol*. 2019; **20**. <https://doi.org/10.1186/s12882-019-1289-y>.
- Oyebisi OO, Adeyera O, Alebiosu CO. Factors associated with choosing Nephrology as a subspecialty by Internal Medicine Residents in Nigeria. *Research Journal of Health Sciences*. 2019; **7**: 265–271.
- Ashoor I, Weidemann D, Elenberg E, Halbach S, Harshman L, Kula A, *et al.* ASPN Workforce Summit Action Groups. The Pediatric Nephrology Workforce Crisis: A Call to Action. *J Pediatr*. 2021; **239**: 5–10.e4. doi: 10.1016/j.jpeds.2021.03.033.
- Pivert KA. 2019 Nephrology Match – Preliminary Results: ASN Data Brief. *American Society of Nephrology*. 2018, 2019. Available from: <https://asndataanalytics.github.io/AY2019-Match>.
- Barat A, Goldacre MJ, Lambert TW. Career choices for nephrology and factors influencing them: surveys of UK medical graduates. *Journal of the Royal Society of Medicine Open*. 2018; **9**: doi:10.1177/2054270418793024
- Eze BI, Okoye OI, Maduka-Okafor FC, Aguwa EN. Factors influencing choice of medical specialty of pre-residency medical graduates in southeastern Nigeria. *J Grad Med Educ*. 2011; **3**: 367–371.
- Chang PY, Hung CY, Wang KI, Huang YH, Chang KJ. Factors influencing medical students' choice of specialty. *J Formos Med Assoc*. 2006; **105**: 489–496.
- Huda N, Yousuf S. Career preference of final year medical students of Ziauddin Medical University. *Educ for Health*. 2006; **19**: 345–353.
- Van Iddekinge CH, Roth PL, Putka DJ, Lanivich SE. Are you interested? A meta-analysis of relations between vocational interests and employee performance and turnover. *Journal of Applied Psychology*. 2011; **96**: 1167–1194.
- Egbi OG, Madubuko CR, Ndu VO, Adejumo OA. Factors affecting career preferences for nephrology among medical interns in south-south Nigeria.



*Niger Delta Journal of Medical Sciences.* 2021; **3**: 48–56.

23. Jhaveri KD, Sparks MA, Shah HH, Khan S, Chawla A, Desai T, *et al.* Why not nephrology? A survey of US internal medicine subspecialty fellows. *American Journal of Kidney Diseases.* 2013; **61**: 540–546.

24. Grasreiner D, Dahmen U, Settmacher U. Specialty preferences and influencing factors: a repeated cross-sectional survey of first- to sixth-year medical students in Jena, Germany. *BMC Med Educ.* 2018; **18**: 1–11.

25. Liu J, Yu W, Ding T, Li M, Zhang L, Cross-sectional survey on job satisfaction and its associated factors among doctors in tertiary public hospitals in Shanghai, China. *BMJ Open* 2019; **9**: e023823.doi:10.1136/bmjopen-2018-023823.

26. Picton A. Work-life balance in medical students: self-care in a culture of self-sacrifice. *BMC Med Educ.* 2021: 1–12.

27. Leigh JP, Tancredi D, Jerant A, Kravitz RL. Physician wages across specialties: informing the physician reimbursement debate. *Arch Intern Med.* 2010; **170**: 1728–1734.

28. Okeke, E. N. Brain drain: Do economic conditions “push” doctors out of developing countries? *Soc Sci Med.* 2013; **98**: 169–178.

**QUESTIONNAIRE**

**Title: Determinants of Interest in Nephrology Career Choice among Internal Medicine Junior Residents in Nigeria**

**SECTION A:**

**Biodata and Training Experience**

1. Age: \_\_\_\_\_
2. Gender: Male [  ] Female [  ]
3. Marital status: single [  ] Married [  ] Divorced [  ] Separated [  ] Widowed [  ]
4. Duration of work experience post qualification? <5yrs [  ] 5-10yrs [  ] >10yrs [  ]
5. Which year of residency training are you? 1st [  ] 2nd [  ] 3rd [  ] 4th [  ] 5th [  ]
6. Did you rotate through a renal unit during your undergraduate training? Yes [  ] No [  ]
7. Have you done nephrology posting during your residency program? Yes [  ] No [  ]
8. Does your Hospital have a functional dialysis unit? Yes [  ] No [  ]
9. Does your Hospital have a functional transplant program? Yes [  ] No [  ]
10. What is the name of your training centre?.....
11. How many nephrologists do you have in your training centre?

**SECTION B.**

**Specialization**

1. Which area of Internal Medicine do you consider as first choice or preference for specialization?.....
2. Which area of Internal Medicine do you consider as second choice or preference for specialization?.....

*If Nephrology is a consideration for you to specialize as first or second choice, go to Section C. If not, skip Section C and continue from Section D.*

**SECTION C**

***The following factors are important in your decision to choose nephrology as area of specialization.***

*Tick as appropriate*

S/N	Factor	Yes	No
1	Personal interest in Subject		
2	Encouragement by peers/Senior colleagues		
3	Suitable Post-fellowship work balance		
4	Better financial rewards for Nephrologist relative to other specialists		
5	High prestige and respect associated with nephrology		
6	Better opportunity for a private practice		
7	Better future academic prospects		
8	Good access to high quality mentors		
9	Adequate exposure to specialty during training		
10	Good Post-fellowship research opportunities		
11	Good Post-fellowship training opportunities		
12	Good Job opportunities after qualification		
13	Opportunities to perform procedures eg. dialysis, renal biopsy, vascular access		

**SECTION D**

*The following factors are important in your decision not to choose nephrology as area of specialization*

*Tick as appropriate*

S/N	Factor	Yes	No
1	Lack of interest in the subject		
2	Inadequate financial reward after fellowship		
3	Expensive treatment which is unaffordable to the patients		
4	High mortality rate of renal patients		
5	High demand for time		
6	Inadequate training and supervision during residency		
7	Late presentation of patients		
8	High patient workload with few doctors		
9	Perception of unsatisfactory work life balance		
10	Inadequate exposure to the specialty during early career development		
11	Unavailable surgical interventions		
12	Perception of Poor job satisfaction		
13	Difficulty of subject		
14	Poor outcome of most patients with renal condition		
15	Lack of mentors and role models in nephrology		

**SECTION E**

*The following recommendations are important in stimulating resident's interest in Nephrology*

*Tick as appropriate*

S/N	Factor	Yes	No
1	Provision of standard equipment and working tools		
2	Incorporating Critical Care with Nephrology		
3	Provision of health insurance for patients with renal care		
4	Building governmental interest, financial support and subsidized fees for renal patients		
5	Mentorship to younger doctors		
6	Allocation of more training slots in the subspecialty in order to increase manpower		
7	Better and friendly training environment		
8	Improving medical education in nephrology for undergraduates and postgraduates		
9	Provision of additional incentives to nephrologists		
10	Provision of regular opportunities for local and international training of renal staff		