

VOLUME 40, NUMBER 1

January 2023

ISSN 0189 - 160X

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# WAJMJ

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**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



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## 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. Enikuomehin, 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. Ebede	
<b>INDEX TO VOLUME 40, NO. 1, 2023</b>	
<b>Author Index</b> .....	125
<b>Subject Index</b> .....	126



### Physical Activity among Healthcare Workers in a Major Tertiary Hospital, Southeast Nigeria

#### *L'Activité Physique chez les Travailleurs de la Santé dans un Grand Hôpital Tertiaire du Sud-Est du Nigeria*

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#### ABSTRACT

**BACKGROUND:** Physical inactivity (PIA) is the fourth leading risk factor in an estimated global death of 3.2 million annually. To reverse this negative impact of PIA, there is a need to increase physical activity (PA). This could be achieved through creation of awareness, promotion, and good practice of PA by healthcare workers.

**OBJECTIVE:** To evaluate physical activity among healthcare workers (HCW) in a major tertiary hospital, southeast Nigeria

**METHODS:** The Global Physical Activity Questionnaire (GPAQ) was researcher-administered to investigate PA level among consenting HCW who met the inclusion criteria. Participants were recruited from their workstations in the hospital. The questionnaire recorded age, anthropometrics, demographics, and physical activity. Data were summarized with descriptive statistics of frequency and percentages. The spearman rank correlation test was used to assess for the relationship between PA and socio-demographic factors.

**RESULTS:** There were 209 participants with 93 (44.5%) males and 116 (55.5%) females. The mean age was 34.32±9.88 years. Amongst different professions, Nurses were 53(25.3%), Doctors, 31 (14.8%), and Dietitians, 21 (10%), Accountants, 19 (9.1%). The majority of the participants 100 (47.8%) had physical activity level that was high (extra sufficient), 31 (14.8%) had a moderate PA level while 78 (37.3%) had a low physical activity level. There was a significant negative relationship between PA and age, marital status, number of children, and other dependents respectively, whereas there was no significant relationship between PA and gender, income, and family type.

**CONCLUSION:** HCWs have the minimum required PA in a week. About 63% met the minimum required PA in a week. Age, marital status, and having children or dependents reduce participation in PA. However, there is a need for conscious awareness and practice of PA among HCW in the hospital. **WAJM 2023; 40(1): 72–77.**

**Keywords:** Physical inactivity, Risk factors, Nigeria, Global Physical Activity Questionnaire, Metabolic equivalent.

#### RÉSUMÉ

**CONTEXTE:** L'inactivité physique (AIP) est le quatrième facteur de risque dans une mortalité mondiale estimée à 3,2 millions de personnes par an. Pour inverser cet impact négatif du PIA, il est nécessaire d'augmenter l'activité physique (AP). Cela pourrait être réalisé par la sensibilisation, la promotion et les bonnes pratiques de l'AP par les travailleurs de la santé.

**Objectif :** Évaluer l'activité physique chez les travailleurs de la santé (HCW) dans un grand hôpital tertiaire, au sud-est du Nigeria

**METHODES:** Le questionnaire global sur l'activité physique (GPAQ) a été administré par des chercheurs pour étudier le niveau d'activité physique chez les travailleurs de la santé consentants qui répondaient aux critères d'inclusion. Ils ont été recrutés à partir de leurs postes de travail à l'hôpital. Le questionnaire enregistrait l'âge, l'anthropométrie, la démographie et l'activité physique. Les données ont été résumées avec des statistiques descriptives de fréquence et de pourcentages. La corrélation du rang de Spearman a été utilisée pour tester la relation entre l'AP et les facteurs sociodémographiques.

**RESULTATS:** Il y avait 209 participants avec 93 (44,5 %) hommes et 116 (55,5 %) femmes. L'âge moyen était de 34,32 ± 9,88 ans. Parmi les différentes professions, les infirmières étaient 53 (25,3%), les médecins, 31 (14,8%), et les diététiciens, 21 (10%), les comptables, 19 (9,1%) etc. La majorité des participants 100 (47,8%) avaient des problèmes physiques niveau d'activité élevé (extra suffisant), 31 (14,8 %) avaient un niveau d'AP modéré tandis que 78 (37,3 %) avaient un niveau d'activité physique faible. Il y avait une relation négative significative entre l'AP et l'âge, l'état matrimonial, le nombre d'enfants et d'autres personnes à charge, respectivement, alors qu'il n'y avait pas de relation significative entre l'AP et le sexe, le revenu et le type de famille, respectivement.

**CONCLUSION:** les travailleurs de la santé ont l'AP minimale requise en une semaine. 62,6 % ont atteint l'AP minimale requise en une semaine. L'âge, l'état matrimonial et le fait d'avoir des enfants ou des personnes à charge réduisent la participation à l'AP. Cependant, il existe un besoin de sensibilisation consciente et de pratique de l'AP parmi les travailleurs de la santé à l'hôpital. **WAJM 2023; 40(1): 72–77.**

**Mots-clés:** Inactivité physique, Facteurs de risque, Nigéria, Questionnaire global sur l'activité physique, Équivalent métabolique.

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## INTRODUCTION

Physical inactivity has been documented as the fourth leading risk factor in causing a global estimation of 3.2 million deaths annually, which is approximately 6% of global deaths.<sup>1,2</sup> It is estimated to be responsible for 6–10% of deaths related to coronary heart disease, diabetes, and site-specific cancers globally<sup>3</sup>, with almost three-quarters of the death occurring in the low and middle-income countries.<sup>4,5</sup>

Physical inactivity increases the risk of developing several non-communicable diseases (NCDs) such as type 2 diabetes mellitus (T2DM) and cardiovascular diseases,<sup>1,6,7</sup> therefore, directly and indirectly constituting a great economic burden. It accounts for 1.5–3.0% of healthcare costs in developed countries.<sup>6,8</sup>

To reverse the great negative impact of physical inactivity, there is a need to increase physical activity, which studies have shown to reduce the burden of NCDs by 6–10%.<sup>6,9</sup> Healthcare workers are not exempted from the effects of physical activities. A healthy practice among healthcare workers (HCW) may ensure good health for themselves and better care given to their clients.

Physical activity (PA) which is defined as any bodily movement produced by skeletal muscles that substantially elevates energy expenditure,<sup>1</sup> could be made an active lifestyle.<sup>5,10,11</sup> This has been documented to protect against the onset of several NCDs such as cardiovascular diseases and T2DM, among others.<sup>6,9</sup> The most common tool for assessment of PA is the Global Physical Activity Questionnaire (GPAQ). Physical Activity is estimated by metabolic equivalent (MET) per minute in a week (MET/Min/Week). MET is the amount of energy spent when at rest or performing activity. One MET is defined as 1 kilocalorie per kilogram per hour and is the caloric consumption of a person while at complete rest. MET is categorized into low (less than 600 MET/min/week), moderate (above 600 MET/min/week but less than 3000 MET/min/week) and high (above 3,000 MET/min/week).<sup>7,8</sup> Low MET has been associated with many noncommunicable diseases such as Parkinson's disease, autoimmune

diseases, strokes, cardiovascular diseases, certain types of cancers, type 2 diabetes, renal diseases, osteoarthritis, osteoporosis, Alzheimer's disease, cataracts, and others.<sup>6</sup>

For optimal maximization of PA and subsequent decrease in the associated disease burden, there is a need for healthy practices and promotion of PA.<sup>6</sup> Since healthcare workers are at the gateway to providing care for the ailing population, it is necessary that they should have adequate practice of PA, to easily translate such into the care given to the sick.

Healthcare workers (HCW) are workers trained to deliver care and services to the sick and ailing directly or indirectly.<sup>12</sup> By the virtue of their training and expertise, HCWs are expected to have good understanding and practice of PA in order to be the heralds of its related health benefits.<sup>6</sup> This places on them the burden of promotion, and in some cases, prescription of exercise to patients/clients and the general public. Therefore, it is important to identify their PA behavior and factors that influence it, which could be directly or indirectly translated to the general populace.<sup>13–15</sup> This study aimed to evaluate the physical activity among HCW at Alex Ekwueme Federal University Teaching Hospital, Abakaliki, southeast Nigeria.

## MATERIALS AND METHODS

### Design

The study was a cross-sectional and correlational study designed to evaluate the level of physical activity and their socio-demographic correlates among healthcare workers in Alex Ekwueme Federal University Teaching Hospital, Abakaliki.

### Ethical Statement

Ethical approval was obtained from the Research and Ethics Committee of Alex Ekwueme Federal University Teaching Hospital, Abakaliki, (REC Approval number: 02/04/2019 – 07/05/2019). Informed consent was obtained from each participant before the study.

### Setting

The study area was Abakaliki. It is the capital city of Ebonyi State,

Southeast Nigeria. It is bounded by latitudes 6° 16' N and 6°21' N and Longitudes 8° 05' E and 8° 10' E covering an area of about 83 square Kilometers.<sup>16</sup> The area is home to a major tertiary health institution, Alex Ekwueme Federal University Teaching Hospital, Abakaliki. This is a 720-bed hospital with over 5000 staff. It is the only tertiary health facility that serves the entire state and the bordering states. The workforce is made up of clinical and non-clinical staff.

### Participants

HCWs from Alex Ekwueme Federal University Teaching Hospital Abakaliki, were recruited as participants using a convenience sampling method. The sample size was calculated to be 254 in a population of 5,000 HCW at 95% confidence level, marginal error of 6 and population proportion of 50%, using a sample size calculator.<sup>18</sup> HCWs that were pregnant, had a physical disability that could impede PA and those who had any medical condition that kept them on the bed in the past two months before this study, were excluded.

### Instrument

The research instrument was a researcher-administered questionnaire. The questionnaire consisted of two sections: section one gathered information on socio-demographics, while section two gathered information on physical activity. The physical activity questionnaire used was Global Physical Activity Questionnaire (GPAQ). The GPAQ was developed by WHO for physical activity surveillance in countries. It collects information on physical activity participation in three settings (or domains) as well as sedentary behaviour, comprising sixteen questions (P1- P16). The domains are - activity at work, travel to and from places, and recreational activities.<sup>17</sup>

### Data Collection

The socio-demographic information which included age, gender, profession, marital status, having children and income status (among others), were collected alongside the GPAQ. Both questionnaires were issued to participants at their workstations in the hospital

by the researchers and/or the research assistants. The research assistants were intern physiotherapists that understood the use of GPAQ and had series of scenario trainings before going to the field. The information collected using the GPAQ were converted and calculated into metabolic equivalent (MET) per minute in a week (MET/Min/Week), and categorized into low (less than 600 MET/min/week), moderate (above 600 MET/min/week but less than 3000 MET/min/week) and high (above 3,000 MET/min/week). MET is the amount of energy spent when at rest or performing activity.

**Statistical Analysis**

Descriptive statistics of mean, standard deviation, frequency, and percentage were used to summarize the data. Test of relationship was conducted using Spearman rank correlation for testing of non-parametric data with alpha level  $p < 0.05$ . Data were analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 25 developed by IBM developers Corporation, 1 New Orchard Road, Armonk, New York, USA.

**RESULTS**

A total of 260 questionnaires were distributed, however, 209 were returned filled, thus giving a total response rate of 80%. There were 93 males and 116 females: representing 44.5% and 55.5% of the sample size, respectively. Table 1 shows the age distribution of the participants in ranges, gender, marital status, profession income level and family type.

The majority (35.4%) of the participants are aged 29–39 years, followed closely by participants aged 18–28 years which constituted 33.5% of the study participants. The female gender constituted the majority of the participants 116 (55.5%), while married staff accounted for 120 (57.4%) of the participants. The distribution of the participants by their profession showed that nurses comprised the majority of the participants (25.3%), closely followed by doctors 31 (14.8%).

Table 2 shows the mean values of the physical activity level of different professionals that participated in the study. The nursing profession had the highest individual maximum physical

**Table 1: Socio-demographic Characteristics of HCW involved in the Study**

Variable	Frequency	Percentage (%)
<b>Age (years)</b>		
18–28	70	33.5
29–39	74	35.4
40–50	54	25.8
51–61	11	5.3
<b>Total</b>	<b>209</b>	<b>100</b>
Mean±SD	34.32±9.88	
<b>Gender</b>		
Male	93	44.5
Female	116	55.5
<b>Total</b>	<b>209</b>	<b>100</b>
<b>Marital Status</b>		
Single	87	41.6
Married	120	57.4
Widowed	1	0.5
Separated	1	0.5
<b>Total</b>	<b>209</b>	<b>100</b>
<b>Profession</b>		
Doctors	31	14.8
Nurses	53	25.3
Dietitians	21	10.0
Physiotherapist	13	6.2
Medical Lab Scientists	15	7.2
Information Officers	9	4.3
Accountants	19	9.1
Admin Officers	18	8.6
Dental Professionals	14	6.7
Others	16	7.7
<b>Total</b>	<b>209</b>	<b>100</b>
<b>Monthly income in Naira N</b>		
Below 50,000	33	15.8
50,000–99,000	40	19.1
100,000–200,000	107	51.2
200,000–499,000	25	12.0
Above 500,000	4	1.9
<b>Total</b>	<b>209</b>	<b>100</b>
<b>No of Children</b>		
Nil	99	47.4
1–2 Children	43	20.6
3–4 Children	47	22.5
> 4 Children	20	9.6
<b>Total</b>	<b>209</b>	<b>100</b>

activity value (13440 MET/min/week) while the administrative officers had the lowest individual physical activity value (3360 MET/min/week). Table 3 presents the physical activity by professional distribution among the different professionals.

of the participants (47.8%) had physical activity level that was high (extra

sufficient), 14.8% met the minimum PA level required to elicit a healthy physiologic response, while 37.3% had a low physical activity level. The dietitians recorded the highest percentage 17 (81%) of high physical activity level (extra sufficient) while the health information officers recorded the highest percentage 7 (77.8%) of low physical activity level

**Table 2: Mean Value of the Physical Activity Level of Different Professionals**

Profession	N	Minimum Activity Value (MET/min/week)	Maximum Activity Value (MET/min/week)	Mean (SD) (MET/min/week)
Doctors	31	0.00	8400	2071.93±2325.63
Nurses	53	0.00	13440	2127.59±3420.36
Dietitians	21	0.00	8160	3414.29±2938.27
Physiotherapist	13	0.00	10440	2512.31±3370.38
Med Lab Scientists	15	0.00	10800	3492.00±3658.11
Information Officer	9	0.00	8400	1200.00±2814.25
Accountants	19	0.00	11160	1718.94±2771.38
Admin Officers	18	0.00	3360	741.33±1123.86
Dentistry	14	0.00	9600	2418.57±2757.88
Others	16	0.00	8480	2417.37±2633.84

**Table 3: Physical Activity by Professional Distribution among the Healthcare Workers**

Profession		Physical Activity Level			Total
		Low PA	Sufficient (Moderate) PA	High PA Level	
Doctors	N	11	4	16	31
	% within Profession	35.5%	12.9%	51.6%	100.0%
Nurses	N	28	13	21	62
	% within Profession	45.2%	20.9%	33.9%	100.0%
Dietitians	N	4	0	17	21
	% within Profession	19.0%	0.0%	81.0%	100.0%
Physiotherapists	N	5	3	5	13
	% within Profession	38.5%	23.1%	38.5%	100.0%
Medical Laboratory Scientists	N	3	2	10	15
	% within Profession	20.0%	13.3%	66.7%	100.0%
Medical Information Officers	N	7	0	2	9
	% within Profession	77.8%	0.0%	22.2%	100.0%
Accountants	N	9	4	6	19
	% within Profession	47.4%	21.1%	31.6%	100.0%
Administrative Officers	N	12	1	5	18
	% within Profession	66.7%	5.6%	27.8%	100.0%
Others	N	3	3	10	16
	% within Profession	18.8%	18.8%	62.5%	100.0%
Dentists	N	5	1	8	14
	% within Profession	35.7%	7.1%	57.1%	100.0%
<b>Total (Prevalence)</b>	N	78	31	100	209
	% within Profession	37.3%	14.8%	47.8%	100.0%

when compared to other professions among the HCWs.

The spearman rank correlation for the test of the relationship between PA and socio-demographic factors (age, gender, marital status, profession, income, family type, number of children,

children less than 18 years, other dependents) are presented in Table 4.

There was a significant but low negative relationship between PA and age, marital status, number of children, and other dependents, whereas there was no significant relationship between

PA and gender, profession, income, and family type.

**DISCUSSION**

Physical activity or PA contributes to the prevention or delay of early onset of many chronic ailments that could lead to morbidity or in some cases mortality.<sup>19</sup> HCWs are unique, trained, and exposed to health information. They are thus expected to be physically active (by the virtue of their work and exposure to the importance of PA), which is expected to translate to the promotion and advocacy for improved PA among the patients and the general populace.

The participants in this study were predominantly females, young adults, and married. This is a pattern that has been revealed in several studies.<sup>6,20-22</sup> This may be attributed to some factors that include a local cultural belief that the nursing care is a job for women, and a high birth rate cum low life expectancy that has left the country with a very young population.

This study revealed that among all the professions studied, the nurses had the highest maximum PA value while those in administration had the most sedentary, with a record low value of PA. The average percentage of PA above the minimum requirement among the HCWs was 62.6% with the dietitians recording the highest percentage of 81%, the health information management officers had the lowest PA rate of 22.2%. The average percentage of PA recorded in this study falls within the range of the percentage recorded by Saridi<sup>22</sup> and Song *et al.*<sup>23</sup> Their studies involved administrative and technical staff of the hospital just like ours. They stated that “healthcare workers, for the most part, had low levels of PA, corresponding to those of the general Greek population”. However, this percentage of PA is low when compared with the HCWs in the works of Jun.<sup>21</sup> This could be because non-clinical HCWs were not included in their study. The recorded low PA among the non-clinical HCWs could be because their academic training does not draw any consciousness towards the need for PA as it relates to health. Moreso, the nature of their duty at work requires prolonged sitting.

**Table 4: Correlation between Physical Activity and Age, Gender, Marital Status, Profession, Income Level**

Variable	Frequency	Percentage (%)	r	p-value
<b>Age (years)</b>				
18–28	70	33.5	-0.313	<0.001*
29–39	74	35.4		
40–50	54	25.8		
51–61	11	5.3		
<b>Total</b>	<b>209</b>	<b>100</b>		
<b>Gender</b>				
Male	93	44.5	0.014	0.843
Female	116	55.5		
<b>Total</b>	<b>209</b>	<b>100</b>		
<b>Marital Status</b>				
Single	87	41.6	-0.241	<0.001*
Married	120	57.4		
Widowed	1	0.5		
Separated	1	0.5		
<b>Total</b>	<b>209</b>	<b>100</b>		
<b>Profession</b>				
Doctors	31	14.8	-0.070	0.311
Nurses	53	25.3		
Dietitians	21	10.0		
Physiotherapist	13	6.2		
Medical Lab Scientists	15	7.2		
Information Officers	9	4.3		
Accountants	19	9.1		
Admin Officers	18	8.6		
Dental Professionals	14	6.7		
Others	16	7.7		
<b>Total</b>	<b>209</b>	<b>100</b>		
<b>Income</b>				
Below 50,000	33	15.8	-0.004	0.958
50,000–99,000	40	19.1		
100,000–200,000	107	51.2		
200,000–499,000	25	12.0		
Above 500,000	4	1.9		
<b>Total</b>	<b>209</b>	<b>100</b>		
<b>No of Children</b>				
Not Yet	99	47.4	-0.268	<0.001*
1 – 2 Children	43	20.6		
3 – 4 Children	47	22.5		
> 4 Children	20	9.6		
<b>Total</b>	<b>209</b>	<b>100</b>		

Among the clinical HCWs, it could have been anticipated that Physiotherapists should be the leading profession in PA, because they are specialists in the use of PA in the treatment of series of ailments,<sup>24</sup> but the study revealed that they placed 7<sup>th</sup> position in a pool of 10 HCWs. Their record of 61.6% participating in PA did not match up with the PA level recorded

in an Australian study of PA level among physiotherapists.<sup>25</sup> This could be attributed to the anecdotal belief among physiotherapists that their work procedure is a form of PA but is not considered in the GPAQ formulation. However, explanation for the low involvement of physiotherapists in PA is beyond the scope of this study.

The nurses had a higher percentage

of people that met the minimum PA level than the doctors and dentists; this could be attributed to the nature of their jobs which entails standing and walking most of the day. This is in discordance with the work of Jun et al<sup>21</sup> that studied the PA of workers in a hospital and reported a higher PA among Doctors when compared with nurses.

This study also revealed that an increase in age, being married, and having children were all associated with a slight decline in the PA of participants independently. This is in agreement with the work of Hull *et al*<sup>26</sup> which examined the influence of marriage and parenthood on PA, and affirmed that there is a slight decline in PA as one advances in age, but recorded no statistically significant relationship between marital status and PA. They also agreed with the results of this research work that parenthood could cause a decline in PA level. They attributed this to new responsibilities and time commitments, ‘shift of parents’ priorities from self to child and far less available time.<sup>26</sup> Rapp and Schneider<sup>27</sup> in their research concluded that marriage and parenthood cause a decline in PA. They hinged it on the marriage market hypothesis that implied that PA reduces when individuals feel secured about their release or removal from the marriage market.

**Limitations**

The limitations to this study include possible discrepancies in the report of levels of PA which could come as under- or over-reporting by the participants. The study is also a single-center study.

**CONCLUSION**

We conclude that among the HCWs studied, 62.6% met the minimum required PA in a week. Also, age, marital status, and having children or dependents reduced participation in PA. Although this percentage is fair relatively, the study showed that this is met mainly by the clinical professionals among the HCWs. There is therefore a need for conscious awareness and promotion of PA among the people working in the hospital because they are the people that the general populace look up to and are expected to model their life after.

## ACKNOWLEDGEMENTS

We acknowledge Adaobi Esther Anamazobi of Dietetic Department of Alex Ekwueme Federal University Teaching Hospital for her role in collecting the data.

## Funding

The authors did not receive any form of funding from any source for this study.

## Conflict of Interest

The authors have no competing interest.

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