



Prevalence and Factors Associated with Depression Among the Older Adults in Calabar Municipality, Cross River State, Nigeria

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Abstract

Context: Depression among older adults is an important public health concern, particularly in low- and middle-income countries where ageing populations are increasing and access to geriatric mental health services remains limited. In Nigeria, socio-economic conditions, chronic illnesses, functional limitations, and social circumstances may increase the vulnerability of older adults to depression.

Objective: To determine the prevalence and identify factors associated with depression among older adults resident in Calabar Municipality, Cross River State, Nigeria.

Materials and Methods: A descriptive cross-sectional study was conducted among older persons aged 60 years and above who reside in Calabar Municipality. Using multistage sampling, 369 participants were recruited. Data were collected using a semi-structured, interviewer-administered questionnaire incorporating the Hamilton Depression Rating Scale (HAM-D) and analyzed using IBM SPSS version 25.0. Statistical significance was set at $p < 0.05$.

Results: The mean age of respondents was 66.47 ± 5.71 years. The prevalence of depression among the respondents was 51.2%, with mild depression being the most common (32.8%), followed by moderate (16.8%) and severe depression (1.6%). Significant factors associated with depression included advanced age (65 years and above), no formal education, unemployment, low income, unmarried (single, divorced, separated and widowed), presence of chronic illness and difficulty with daily activities ($p < 0.05$). Commonly reported coping mechanisms included praying (31.2%), resting (29.8%), and family or social connections (20.9%). Suggested interventions included provision of free healthcare services (36.3%) and government financial support (33.1%).

Conclusion: Depression was highly prevalent among older adults resident in Calabar Municipality and was associated with socio-economic, health-related, and lifestyle factors. Routine and accessible screening for depression, integration of geriatric mental health services into primary healthcare and community-based interventions are recommended to improve the early identification and management of depression among older adults in Nigeria.

Keywords: depression, older adults, prevalence, factors, coping mechanisms, Calabar Municipality

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Introduction

Older adults are a vulnerable population exposed to biological, psychological, social, and socioeconomic challenges that may adversely affect mental health. Changes in social relationships, functional ability, living conditions, financial resources, and access to healthcare can increase

vulnerability to depression. Depression is characterized by persistent sadness, loss of interest, low energy, impaired concentration, sleep and appetite disturbances, and feelings of guilt or low self-worth.¹ Among older adults, these symptoms may be overlooked or attributed to normal ageing, chronic medical conditions, or functional decline, resulting in under-recognition and delayed treatment.

The population of older adults is increasing rapidly worldwide, with sub-Saharan Africa experiencing substantial demographic ageing. Nigeria's National Policy on Ageing defines an older person as an individual aged 60 years and above. The number of Nigerians aged 60 years and above increased from approximately 6.4 million in 2005 to an estimated 12 million in 2025 and is projected to reach 26 million by 2050.²⁻⁴ This demographic transition, together with increasing life expectancy, makes the mental health of older adults an important public-health concern.

Depression is one of the most common mental health conditions in later life and is associated with impaired quality of life, disability, functional dependence, and increased morbidity and mortality. The World Health Organization estimated that 14.75% of adults aged 70 years and above were living with a mental disorder in 2023, with anxiety and depression among the most common conditions.¹ However, estimates of depression among older adults vary considerably across settings because of differences in assessment tools, diagnostic criteria, population characteristics, and study periods. Two separate community-based studies conducted in India reported depression prevalence estimates of 37.3% and 75.5%, respectively, with the latter study conducted in Karnataka, a state in southern India. In Assiut, Egypt, depression was reported in 25.3% of older adults.⁶ In Nigeria, the Ibadan Study of Ageing reported lifetime and 12-month prevalence of major depressive disorder of 26.2% and 7.1%, respectively, among adults aged 65 years and above. Community-based studies in other parts of Nigeria have also reported substantial levels of depressive symptoms. A systematic review and meta-analysis of 23 African studies estimated a pooled prevalence of 26.3% among older adults, including 24.6% for Nigeria.²

Late-life depression presents particular challenges for recognition because symptoms such as fatigue, sleep disturbance, reduced appetite, impaired concentration, and social withdrawal may overlap with ageing, chronic illness, or functional impairment. Stigma and limited access to mental healthcare may further contribute to under-recognition and inadequate treatment.⁵⁻⁷ Depression is influenced by interacting biological, psychological, social, and socioeconomic factors. Bereavement, reduced income, retirement, declining functional ability, social isolation, chronic illness, and limited social support have been identified as important factors associated with poor mental health in older adults.⁵ Studies in Nigeria similarly indicate associations between depression and socioeconomic circumstances, physical health, social support, bereavement, and living conditions. The consequences of late-life depression extend beyond psychological distress. Depression is associated with greater healthcare utilization, increased healthcare costs, functional dependence, and greater demands on family caregivers.¹⁰ These concerns are particularly relevant in Nigeria, where shortages of trained mental-health personnel, financial barriers, limited service availability, and inadequate integration of mental healthcare into primary healthcare have constrained access to appropriate care.^{11,12} Consequently, identifying depression and its associated factors within community and primary healthcare settings is important.

Evidence on depression among older adults in South-South Nigeria, particularly Cross River State, remains limited. Calabar Municipality, with its diverse socioeconomic and living conditions and changing demographic environment, provides an important setting for examining depression among older adults. Local evidence may support the development of context-specific interventions and strengthen the integration of mental-health services into primary healthcare.

Therefore, this study aimed to determine the prevalence of depression and identify factors associated with depression among older adults in Calabar Municipality, Cross River State, Nigeria.

Materials and methods

Study Design: This descriptive cross-sectional

study was conducted among 369 older adults who were residents of Calabar Municipality, Calabar, Cross River State.

Study Setting

This study was carried out amongst the older adults in Calabar Municipality local government area in Calabar, Cross River State. Calabar Municipality is the headquarters of the southern senatorial district. It is bounded by Odukpani local government area in the north east by the Great River Kwa. Its southern shores are bounded by the Calabar River and Calabar south local government area.

There are 10 wards in this local government and it has an area of 142km² and a population of 179,392 at the 2006 census. Some of the communities in Calabar municipality includes Ikot Ansa, Ikot Omin, Ikot ishie, Ikot Effanga, Ekorinim 1&2, Essien town, Ediba town, Big Qua, Nyahasang/Atimbo and Akim, etc. The Quas and Efiks are the two indigenous ethnic groups in Calabar municipality but due to its cosmopolitan status, there are people from all parts of the state and Nigeria in the city.

The Quas occupies a major part of the hinterland of Calabar where farmers, hunters, traders, and blacksmiths are found. Due to its location along the waterfront, the Efiks embraced western culture. They carried on successful trade with early Europeans. Fishing is also another occupation identified with them.

There are no Primary health facilities that offer mental health services to the older adults. The secondary health facility that covers this region will usually refer older adults with depressive symptoms to the tertiary facility or the neuropsychiatry hospital in Calabar. This referral pathway highlights important gaps in the provision of geriatric mental-health services within the municipality as there are no special programs for this course besides the geriatric clinic that holds once a week.

Study Population

This consisted of older adults aged 60 years and above residing in Calabar Municipality.

Sample Size Calculation

Cochran's formula for a single proportion was used with a minimum calculated sample size of approximately 400.

$$n = Z^2 pq / d^2$$

Where;

n= minimum sample size required

Z= Standard normal deviation taken at 95% confidence level which is 1.96

p= prevalence of elders who have depression

q= 1-p

d= precision or degree of accuracy (5% is used)

For this study,

p = prevalence of older adults who have depression, 59.6 % was used, taken from a study carried out in Aminu Kano Teaching Hospital (AKTH) (Salihu and Udofia, 2021)

p = 0.596

q = 1 - 0.596 = 0.404

d = precision or degree of accuracy = 5% = 0.05

Therefore,

$n = 1.96^2 \times 0.596 \times 0.404 / 0.05^2$

= 369.998, approximately = 370

Estimated non-response = 10%

$N = n / 1 - R$

where, R = 10% = 0.1

$n = 370 / 1 - 0.1$

= 411.11, approximately = 411

minimum sample size n = 411

Eligibility Criteria

Inclusion: Older adults aged 60 years and above who provided consent to participate in our study. Those who were resident in Calabar Municipality for up to 5 years and above and persons who did not experience any form of bereavement two months before the assessment. This was to ensure that the internal validity of the study was safeguarded and that the observed symptoms were actually associated with clinical depression rather than the natural, transient process of grief.

Exclusion Criteria: Older adults who were critically ill at the time of data collection or who were unable to communicate in either English or Pidgin English.

Sampling Technique

Multistage Sampling Technique which comprised of three stages.

Stage one: Selection of wards

Simple random sampling technique by balloting was used to select 5 out of a total of 10 wards in

Calabar municipality

Stage two: Selection of streets

Simple random sampling by balloting was employed in the selection of four streets in each of the five wards resulting in a total of 20 streets.

Stage three: Selection of households

Using systematic sampling technique, a household was selected with a calculated interval of 2. The starting household was selected using the simple random sampling technique by balloting while maintaining the interval of 2. Any household without an older adult was skipped and the next available household selected. For households with more than one older adult, only one was picked through balloting technique.

Data Collection

Data collection was carried out using a semi-structured interviewer administered questionnaire after obtaining informed consent. The questionnaire was administered in English or Pidgin English, as appropriate. Data were obtained from respondents after due explanation of the purpose of the study had been done. Filled questionnaires were meticulously inspected to ensure that they were properly filled before collection.

Assessment of Depression and Training of Data Collectors

Depressive symptoms were assessed using the 17-item Hamilton Depression Rating Scale (HAM-D). The instrument was selected because the study aimed not only to estimate the prevalence of depression but also to assess the severity of depressive symptoms and examine their association with socio-demographic and health-related factors among older adults. Its structured assessment of different symptom domains provided a consistent framework for evaluating participants and categorizing symptom severity.

Data collection was conducted by OMI, OCI and OMC. Before data collection, the data collectors received training from physicians in the Department of Community Medicine and guidance from consultant psychiatrists experienced in the care and health needs of older adults. This training and guidance were intended to promote consistency in questionnaire administration, symptom assessment and application of the scoring criteria.

Data Management

The data collected were inspected, sorted and coded into the SPSS tool. Data were analyzed using IBM SPSS Statistics version 25.0 after entry and cleaning of data was done. Data were presented using tables and charts. Categorical data were summarized using frequencies and percentages while numerical data were summarized using mean and standard deviation. The Hamilton Depression Rating Scale (HAM-D) was used to assess depression which is widely used to evaluate the severity of depressive symptoms. The scale consists of 17 items assessing various domains including depressed mood, feelings of guilt, insomnia, psychomotor changes, anxiety and suicidal ideation.

The cut-off intervals are frequently set by benchmarking total HAM-D scores against structured diagnostic criteria or global clinical impression, such as the clinical Global Impression scale, where 0-7 is no depression, 8-13 is mild depression, 14-18 is moderate depression, 19-22 is severe depression and >23 is very severe depression.

Ethical Consideration

Ethical approval with number UCTH/HREC/33/VOL.IV/046 was sought and obtained from the Health Research and Ethics committee of the University of Calabar Teaching Hospital. Informed written consent was obtained from all participants before the administration of the questionnaire. Participants were assured of confidentiality, their rights to withdraw from the study at any given time as well as the benefits of participation.

Operational Definitions

Older adult: Person aged 60 years and above.

Depression: HAM-D score ≥ 8 .

Functional disability: Difficulty performing one or more activities of daily living.

Chronic illness: Self-reported diagnosis of a chronic medical condition.

Results

A total of 411 questionnaires were administered out of which 369 were returned accounting for a response rate of 90%. The mean age was 66.47 ± 5.71 years with more respondents being between 65

years and above (57.5%). More respondents were female (51.5%), married (58.0%), obtained tertiary level of education (34.7%) resided with their families 309(83.7%) and had their primary source of income from personal businesses 173(46.9%). Christianity was the predominant religion among respondents 360(97.6%) and a higher proportion of respondents 102(27.6%) were of the Efik tribe and earned a monthly income of N100,000 or less (71.3%). [Table 1]

Table 1: Socio-demographic characteristics of older adults in Calabar Municipality (n=369).

Variable	Frequency(n=369)	Percentage(%)
Age (years)		
<65	157	42.5
≥65	212	57.5
Gender		
Male	179	48.5
Female	190	51.5
Marital Status		
Single	11	3.0
Married	214	58.0
Widowed	105	28.4
Divorced	12	3.3
Separated	27	7.3
Educational level		
No Formal Education	37	10.3
Primary	116	31.4
Secondary	87	23.6
Tertiary	129	34.7
Employment Status		
Employed	138	37.4
Unemployed	99	26.8
Retired	132	35.8
Living Arrangement		
Alone	59	16
With family	309	83.7
In a Care Facility	1	0.27
Primary Source of Income		
Pension	116	31.4
Family Support	69	18.7
Personal Business	173	46.9
None	11	3.0
Income		
<100000	263	71.3
100000	26	7.0
>100000	80	21.7
Religion		
Christianity	360	97.6
Islam	2	0.54
Traditional	1	0.27
Others	6	1.6
Language Spoken		
English	82	21.7
Efik	102	27.6
Pidgin	31	8.4
Ibibio	90	24.4
Igbo	30	8.1
Anang	12	3.3
Others	20	5.4

The prevalence of depression among the older adults in Calabar municipality was determined by adapting the Hamilton rating depression scale, a standardized screening tool. A total of 369 older adults participated in this study and 180 (48.8%) showed no signs of depression, while the remaining 189(51.2%) showed varying degrees of depression. [Figure I]

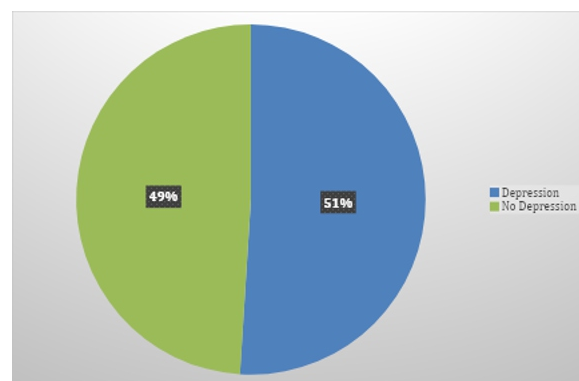


Figure I: A pie chart showing the prevalence of depression among the older adults in Calabar Municipality, 2025

Among those with depression, mild depression was the most common category affecting 121(32.8%) respondents. Moderate depression was identified in 62(16.8%), while severe depression was rare and reported in 6(1.6%). No cases of very severe depression were recorded. (Figure II)

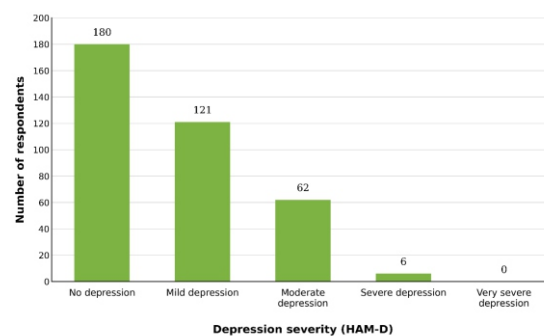


Figure II: Patterns of depression among the older adults in Calabar Municipality.

Bivariate analysis revealed that a significantly higher proportion of respondents who were >65 years, unmarried, had no formal level of education, unemployed and earned less than 100,000 monthly

were more likely to be depressed compared to those who were less than 65 years, married, attained a tertiary level of education, employed and those that earned more than 100,000 ($p < 0.05$) (Table 2A).

Table 2a: Association between sociodemographic characteristics and depression among older adult respondents in Calabar Municipality (n=369).

Variable	Prevalence of Depression		Total	X ²	p-value
	Depression	No Depression			
Age				22.293	<0.001*
<65	58(15.7)	99(26.8)	157(42.5)		
≥65	131(35.5)	81(22.0)	212(57.5)		
Gender				1.562	0.458
Male	88(23.8)	91(24.7)	179(48.5)		
Female	101(27.4)	89(24.1)	190(51.5)		
Marital Status				FE	0.039*
Single	7(1.9)	4(1.1)	11(3.0)		
Married	96(26.0)	118(32.0)	214(58.0)		
Widowed	65(17.6)	40(10.8)	105(28.4)		
Divorced	5(1.4)	7(1.9)	12(3.3)		
Separated	20(4.3)	7(3.0)	27(7.3)		
Educational Level				17.994	<0.001*
No Formal Education	31(8.4)	6(1.6)	37(10.0)		
Primary	58(15.7)	58(15.7)	116(31.4)		
Secondary	39(10.7)	48(13.0)	87(23.6)		
Tertiary	61(16.5)	68(18.4)	129(35.0)		
Employment Status				28.329	<0.001*
Employed	45(12.2)	93(25.2)	138(37.4)		
Retired	67(18.2)	65(17.6)	132(35.8)		
Unemployed	77(20.9)	22(6.0)	99(26.8)		
Living Arrangement				FE	0.242
Alone	35(9.5)	24(6.5)	59(16.0)		
In a care facility	0(0.0)	1(0.0)	1(0.3)		
With family	154(41.7)	155(42.0)	309(83.7)		
Income				110.188	<0.001*
<100000	134(51.7)	127(48.3)	263		
100000	12(50.0)	12(50.0)	24		
>100000	39(48.6)	41(51.3)	82		
Religion				FE	0.079
Christianity	181(49.1)	179(48.5)	360(97.6)		
Islam	1(0.3)	1(0.3)	2(0.5)		
Others	6(1.6)	0(0.0)	6(1.6)		
Traditional	1(0.3)	0(0.0)	1(0.3)		

**FE- Fischer's exact test

Table 2b: Association between health-related factors and depression amongst respondents

Variable	Prevalence of depression		Total	X ²	p-value
	Depression	No Depression			
Chronic Illness					
No	91(24.7)	123(33.3)	214(58.0)	15.420	<0.001*
Yes	98(26.6)	57(15.4)	155(42.0)		
Difficulty with daily activities					
No	83(22.5)	40(10.8)	123(33.3)	20.270	<0.001*
Yes	106(28.7)	140(38.0)	245(66.4)		
Presence of caregiver					
No	138(37.4)	147(39.8)	285(77.2)	3.924	0.048*
Yes	51(13.8)	33(8.9)	84(22.8)		

Similarly, other health related factors found to be significantly associated with depression were presence of chronic illnesses, difficulty carrying out

their daily activities and having a care giver ($p < 0.05$) (Table 2B)

Discussion

This study found a prevalence of depression of 51.2% among adults aged over 60 years. This was higher than estimates reported in Delta State (44.7%), Kano (49.8%), Uyo (42.9%), Port Harcourt (28%), Sudan (47.5%), and Kerala, India (37.3%).³⁻⁸ These differences may reflect variations in study settings, socioeconomic conditions, and assessment instruments. Notably, the present study used the Hamilton Depression Rating Scale (HAM-D), which assesses depressive symptoms, including somatic manifestations, whereas some previous studies used the Geriatric Depression Scale (GDS) or Patient Health Questionnaire-9 (PHQ-9). Differences in study populations and measurement tools limit direct comparisons. Nevertheless, the high prevalence observed highlights the need for greater attention to the mental health of older adults. Unlike several previous studies, we found no statistically significant difference in depression between males and females.⁹ This may suggest that socioeconomic difficulties, chronic illness, and other shared stressors contribute substantially to depression in later life, although the absence of a significant association does not exclude a possible influence of gender.

Marital status was associated with depression, with a lower prevalence among married respondents (44.9%) than among separated (71.1%), single (63.6%), and widowed (61.9%) respondents. This is consistent with evidence that marital relationships may provide emotional, social, and financial support in later life.^{10,11} Conversely, bereavement, loneliness, reduced social interaction, and financial difficulties may increase vulnerability to depression among widowed and separated individuals. These findings underscore the importance of social support and interventions that reduce isolation among older adults.

Depression was more prevalent among retired and unemployed respondents (62.3%) than among those who were formally or informally employed (32.6%). This finding suggests that loss of income, reduced social engagement, and inadequate retirement security may contribute to psychological distress in later life. Although retirement has been

associated with improved mental health in some European settings, its effects may differ according to socioeconomic circumstances and the availability of social protection.¹² Strengthening pension systems, social welfare programmes, and opportunities for meaningful social participation may therefore help protect the mental well-being of older Nigerians.

Educational attainment was significantly associated with depression ($p < 0.001$), with the highest prevalence among respondents without formal education (31/38; 81.6%). This is consistent with findings from Port Harcourt, where depression was more prevalent among individuals of lower socioeconomic status.⁷ Limited education may restrict employment opportunities, earning potential, and access to social protection, thereby increasing financial insecurity and psychological stress in old age.^{10,13-14} These findings support the need for social protection measures that address the socioeconomic disadvantages experienced by older adults, particularly those with limited educational opportunities and inadequate retirement income.

Age and chronic illness were also significantly associated with depression, with a higher prevalence among respondents older than 65 years. Advancing age is often accompanied by multimorbidity, functional decline, and reduced participation in physical and social activities.¹⁵ Chronic illnesses may further limit mobility and independence, contributing to loneliness and social isolation, which are associated with depressive symptoms.^{13,16} Integrating mental health assessment into routine care for older adults with chronic illnesses may facilitate early identification and appropriate management of depression.

Difficulty performing daily activities was associated with a higher prevalence of depression among respondents who reported such difficulties (67.5%) compared with those who did not (43.3%). Functional limitations may reduce autonomy, increase dependence on others, diminish self-esteem, and restrict social participation. Conversely, depression may reduce motivation and physical activity, potentially worsening functional difficulties. Given the cross-sectional design, the direction of this relationship cannot be established. Interventions that promote mobility, rehabilitation, and functional independence may nevertheless

form part of a comprehensive approach to improving mental health in older adults.

The presence of a caregiver was also significantly associated with depression ($p = 0.048$), with a higher proportion of depressive symptoms among respondents who had a caregiver. Although caregivers can provide essential practical and emotional support, the need for caregiving may indicate underlying chronic illness, functional dependency, or reduced independence. Dependence on others may also affect an individual's sense of autonomy and self-worth.¹⁷ Therefore, this association should not be interpreted as evidence that caregiving increases depression; rather, it may reflect the underlying health and functional circumstances of respondents requiring assistance. Further studies incorporating detailed measures of functional status, illness severity, caregiving needs, and perceived social support are needed to clarify this relationship.¹⁸

Overall, the findings demonstrate that depression among older adults is associated with several interconnected demographic, socioeconomic, and health-related factors. The high prevalence observed supports the integration of routine depression screening into primary and geriatric healthcare services, particularly for older adults experiencing chronic illness, functional limitations, bereavement, or socioeconomic disadvantage. Community-based social support, accessible mental healthcare, rehabilitation, and stronger social protection systems may help address the multiple vulnerabilities associated with depression in later life. However, the cross-sectional design limits causal interpretation, and the findings should be interpreted in light of the study setting and the depression assessment instrument used.

Conclusion/Recommendations

The study establishes that depression is highly prevalent among the older adults in Calabar Municipality, affecting over half of respondents (51.2%). This rate is higher than many previous Nigerian and international findings, underscoring a pressing public health concern. Factors such as advanced age, lower education, low income, unemployment or retirement, chronic illness and functional limitations were key associated factors. Therefore, interventions must extend beyond

clinical treatment to address poverty and functional disability through socio-economic support, community engagement and an urgent need to integrate early and accessible mental health services, to better the lives of this vulnerable group. This aligns with WHO's call for age-friendly health systems that integrate mental health screening into primary care for the older adults.

Limitations and future directions

While this study provides useful insights into depression and factors associated with it among older adults in Calabar Municipality, its cross-sectional design limits causal inference between depression and associated factors. The use of the Hamilton Depression Rating Scale as a screening instrument may not fully capture clinically diagnosed depressive disorders; structured psychiatric interviews would be required for diagnostic confirmation. Finally, although this study provides important quantitative evidence, qualitative research exploring older adults' lived experiences of retirement, chronic illness, caregiving, loneliness, and social support in Calabar Municipality would provide deeper contextual understanding and inform culturally appropriate interventions.

The use of HAM-D may have influenced our findings because some physical symptoms of depression, such as fatigue, poor sleep and reduced appetite, may also result from chronic illnesses common among older adults. This could have led to an overestimation of depressive symptoms in some participants. Although HAM-D helped us assess symptom severity, tools such as the Geriatric Depression Scale (GDS) or PHQ-9 could also have been considered for community-based screening. Future studies may benefit from combining appropriate screening tools with clinical assessment to improve the identification of depression among older adults.

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Authors Contributions

OMI designed and coordinated the study; she carried out statistical analysis and drafted the manuscript. ME and OAO guided, supervised and

reviewed the manuscript critically for its intellectual content. OCI, OMI & OMC participated in the conception and design of the study as well as in the data collection.

Conflict of Interest: None

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