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Research Article

Mobility Status and Fall-Related Predictors among Older Adults in Nigeria: A Cross-Sectional Study

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A B S T R A C T

Introduction: This study investigated sociodemographic and behavioural predictors of mobility status among older adults in southeastern Nigeria, where evidence on fall risk and mobility outcomes remains limited.

Methods: A facility-based cross-sectional survey was conducted from August 2025 to January 2026 across 20 healthcare facilities selected through multistage sampling from five states in the Southeast geopolitical zone. A total of 303 older adults (≥60 years; mean age 71.5 years) were recruited through simple random sampling technique. Data were collected using a structured, prevalidated questionnaire (Cronbach's $\alpha = 0.84$) assessing socio-demographics, mobility status, fall history, knowledge, attitudes and preventive practices. Chi-square tests and multivariate logistic regression were applied, with statistical significance set at $p < 0.05$.

Results: Among participants, 58.7% reported mild mobility difficulty and 41.3% reported severe difficulty. Mobility status was significantly associated with sex ($p = 0.022$), religious affiliation ($p < 0.001$) and marital status ($p < 0.001$), but not with age, education level or living arrangement. Multivariate analysis identified male sex (OR = 1.73; 95% CI: 1.10–2.72), Christian affiliation (OR = 3.78; 95% CI: 2.30–6.20) and being married (OR = 4.38; 95% CI: 2.60–7.36) as predictors of mild mobility difficulty. Fall-related attitudes ($p < 0.001$), knowledge of fall risks ($p = 0.016$) and preventive practices ($p = 0.040$) were significantly associated with mobility status.

Conclusion: With a 94.7% response rate and 80% statistical power, findings underscore the influence of sociodemographic and behavioral factors on mobility among older Nigerians, supporting culturally tailored fall-prevention interventions.

Keywords: Fall Prevention, Mobility Status, Nigeria, Older Adults, Sociodemographic Predictors

1. Introduction

Mobility is a cornerstone of healthy ageing, directly influencing older adults' independence, psychosocial well-being and overall quality of life[1]. As global populations age, maintaining functional mobility and preventing falls have become critical public health priorities, particularly in low- and middle-income countries (LMICs), where geriatric care remains under-resourced[2]. Falls are the second leading cause of unintentional injury deaths worldwide, contributing to over 684,000 deaths annually, with LMICs carrying the greatest burden due to inadequate health infrastructure, limited awareness and poor access to preventive interventions[2].

In Nigeria, an LMIC with a rapidly expanding ageing population, the prevalence of falls among older adults is estimated at 20-35%[3]. Mobility impairment acts both as a predictor and a consequence of falls, creating a reinforcing cycle of decline that is often shaped by underlying social and behavioural factors. Although previous studies in Nigeria have explored fall prevalence and select risk factors[4], few have systematically examined how sociodemographic characteristics such as gender, marital status and religious affiliation, interact with behavioural components, including knowledge, attitudes and practices (KAP) related to fall prevention, to influence mobility outcomes. This gap is especially critical in sub-Saharan Africa, where cultural, environmental and religious factors may shape the ageing process in distinct ways compared to high-income contexts[5,6]. Existing research often prioritizes clinical correlates while neglecting psychosocial dimensions fundamental to health behaviour in older adulthood[7].

This study addresses these limitations by investigating key sociodemographic and behavioural predictors of mobility status, specifically differentiating between mild and severe difficulty, among older adults in southeastern Nigeria. This study integrates validated KAP indicators with demographic data to provide a multidimensional understanding of mobility challenges. It contributes to ageing research in LMICs by identifying culturally relevant, modifiable predictors that can inform targeted interventions. Aligned with the WHO's Decade of Healthy Ageing (2021-2030), the study offers practical implications for improving geriatric care, guiding policy and designing community-based programs that preserve mobility and extend independence among Nigeria's older population.

2. Materials and Methods

2.1. Study design and setting

This study employed a facility-based cross-sectional design, conducted between August 2025 to January 2026, across 20 healthcare facilities located within 10 Local Government Areas (LGAs) in southeastern Nigeria. The geographical scope included the five states of the southeast geopolitical zone (Abia, Anambra, Ebonyi, Enugu and Imo), offering a balanced representation of both urban and rural populations.

2.2. Sampling technique

A multistage sampling strategy was implemented to enhance a true representation. In the first stage, each of the five states was considered a distinct cluster, from which two LGAs were randomly selected using a balloting method. In the second stage, two healthcare facilities, one urban and one rural, were randomly sampled from each LGA, resulting in a total of 20 study sites. Finally, approximately 16 eligible participants were recruited from each facility, yielding a target sample size of 320 older adults.

2.3. Eligibility criteria

Eligible participants were individuals aged 60 years or older, residing in either community settings or institutional facilities such as care homes. Inclusion criteria required participants to possess sufficient cognitive ability to provide informed consent and to experience either mild or severe mobility difficulties, as determined by the Mobility Status and Fall-Associated Indicators Questionnaire (MoS-FIQ). Exclusion criteria included: age below 60 years, severe cognitive impairment, current acute medical instability (e.g., hospitalization), unwillingness to participate or absence of formal shelter, except where such individuals were explicitly targeted.

2.4. Sample size determination

The minimum sample size was determined using Cochran's formula: $n = 18SM/F^2$, where: S = 73.8% (estimated prevalence of fall risk among older adults[8]), M = 26.2% (calculated as 100 - S), F = 15% of S (i.e., 11.12). This yielded a minimum required sample size of 283 participants. To account for possible non-responses, the final sample was increased to 320. With 303 valid responses obtained, the study achieved a statistical power of 80% to detect medium effect sizes (Odds Ratio ≥ 1.5) at a 5% significance level ($\alpha = 0.05$), aligning with Cohen's recommendations for observational research[9]. Of the 320 older adults approached, 303 completed the study, yielding a response rate of 94.7%. Fifteen individuals declined participation for personal reasons, while two completed questionnaires were excluded due to missing or incomplete responses.

2.5. Data collection instrument

Data were collected using a structured questionnaire titled the Mobility Status and Fall-Associated Indicators Questionnaire (MoS-FIQ). The instrument was developed by integrating validated domains from the Fall Risk Behaviors and Perceptions Scale (FRB&PS)[10] and comprised six key sections: Section A: Socio-demographic information; Section B: Mobility status; Section C: Fall history; Section D: Knowledge of fall risks; Section E: Attitudes toward fall prevention; and Section F: Self-reported preventive practices. To ensure clarity, cultural relevance and comprehensibility, the instrument was pretested on 20 older adults in non-participating healthcare facilities. An expert panel comprising seven public health specialists further evaluated the instrument for content validity. The tool demonstrated high internal consistency, with a Cronbach's alpha of 0.84. To accommodate diverse linguistic backgrounds, the questionnaire was translated and back-translated into four languages: Igbo, Hausa, Yoruba and English.

2.6. Data collection procedure

Data collection was conducted by 20 trained research assistants, each assigned to one healthcare facility. All research assistants were licensed nurses who underwent a standardized 20-minute training session conducted by the principal investigator (U.C.U). The training focused on ethical principles, informed consent procedures and standardized administration of the questionnaire. Interviews were conducted in private

settings within the healthcare facilities to ensure confidentiality. For participants with visual impairments, literacy challenges or mild cognitive limitations, necessary assistance was provided, including support from caregivers or legal representatives when appropriate. All participants provided written informed consent, either via signature or thumbprint, in accordance with ethical guidelines[11].

2.7. Ethical statement

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki[11] and adhered to the guidelines of the American Psychological Association[12]. Ethical approval was granted by the Federal Ethics Committee of Nigeria (Ref: REC/FE/2024/00027) and administrative permissions were obtained from the Chief Medical Directors of all participating facilities. Voluntary, anonymity and confidentiality were emphasized throughout the recruitment and data collection process. No financial or material incentives were provided to participants.

2.8. Statistical analysis

Following data collection, all completed questionnaires were reviewed, cleaned, coded and entered into IBM SPSS Statistics Version 28[13]. Descriptive statistics, including frequencies and percentages, were computed to summarize participants' socio-demographic characteristics **(Table 1)**, as well as mobility status and fall-related indicators. Inferential analyses included: Chi-square tests to assess associations between mobility status and both socio-demographic and fall-related variables **(Tables 2 and 3)**. Multivariate logistic regression analysis to identify predictors of mobility status. Results were presented as Odds Ratios (ORs) with 95% Confidence Intervals (CIs) **(Table 4)**. All statistical tests were two-tailed, with significance set at $p < 0.05$. The study conformed to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for observational research reporting[14].

3. Results

3.1. Participant characteristics

A total of 303 older adults participated in the study, with a response rate of 94.7%. The majority were aged ≥70 years (57.8%), female (56.1%) and married (66.3%). Most participants lived with family (93.1%) and identified as Christian (62.0%). Regarding education, 59.7% had non-formal, primary or secondary education, while 40.3% had tertiary education. In terms of mobility status, 58.7% reported mild mobility difficulty and 41.3% reported severe difficulty **(Table 1)**.

3.2. Associations between mobility status and fall-related indicators

Significant associations were observed between mobility status and several fall-related indicators. Respondents with incorrect knowledge of fall risks were more likely to have mild difficulty (73.1%) than severe difficulty (26.9%), compared to those with correct knowledge ($p = 0.016$). A strong association was found between attitudes toward fall prevention and mobility status: participants who agreed with fall prevention strategies had lower odds of severe mobility difficulty (21.5%) compared to those who disagreed (76.9%) ($\chi^2 = 82.1$; $p < 0.001$). Furthermore, preventive practices were significantly associated with mobility status ($p = 0.040$), with more preventive behavior observed among those with mild difficulty (67.0%) than those with severe difficulty (33.0%). No statistically significant associations were observed between mobility status and fall history ($p = 0.085$) or knowledge of fall prevention strategies ($p = 0.094$) **(Table 2)**.

Table 1: Sociodemographic Profile of Older Adults in Southeastern Nigeria.

Variables	Category	F(%)
Age	≥70 years	175(57.8)
	60-69 years	128(42.2)
Sex	Male	133(43.9)
	Female	170(56.1)
Religion	Christianity	188(62.0)
	Others (Pagan, African Traditional Religion, Islam)	115(38.0)
Education	Tertiary	122(40.3)
	Others (non-formal, primary, secondary)	181(59.7)
Marital Status	Married	201(66.3)
	Others (single, divorced/separated, widowed)	102(33.7)
Living Situation	With family	282(93.1)
	Others (alone, institutionalized)	21(6.9)
Mobility Status	Mild difficulty	178(58.7)
	Severe difficulty	125(41.3)

Keys: n = sample size, () = bracket sign, ≥ = greater than sign, ≤ = less than sign, f = frequency, % = percentage.

Table 2: Association Between Mobility Status and Fall-Related Indicators among Older Adults.

Parameter	Category	N	Mild difficulty f(%)	Severe difficulty f(%)	X^2	P - value
Fall History (in the past 12 months)	Present	258	146(56.6)	112(43.4)	2.97	0.085
	Absent	45	32(71.1)	13(28.9)		
Fall Risk Knowledge	Correct	236	129(54.7)	107(45.3)	5.76	0.016
	Incorrect	67	49(73.1)	18(26.9)		
Fall Prevention Knowledge	True	142	76(53.5)	66(46.5)	2.80	0.094
	False	161	102(63.4)	59(36.6)		
Fall Prevention Attitude	Agreed	195	153(78.5)	42(21.5)	82.1	0.001
	Disagree	108	25(23.1)	83(76.9)		
Fall Prevention Practice	Yes	112	75(67.0)	37(33.0)	4.20	0.040
	No	191	103(53.9)	88(46.1)		

Keys: n = sample size, () = bracket sign, ≥ = greater than sign, ≤ = less than sign, f = frequency, % = percentage.

3.3. Associations between mobility status and sociodemographic variables

Statistically significant associations were found between mobility status and sex (p = 0.022), religious affiliation (p < 0.001) and marital status (p < 0.001). Males were more likely to report mild mobility difficulty (66.2%) than females (52.9%). Participants identifying as Christians had higher odds of mild difficulty (70.7%) compared to those of other faiths (39.1%). Similarly, married respondents exhibited predominantly mild difficulty (70.6%) versus 35.3% among those unmarried, divorced, separated or widowed. No significant associations were observed for age group (p = 0.841), education level (p = 0.920) or living situation (p = 0.480) **(Table 3)**.

Table 3: Association Between Mobility Status and Selected Sociodemographic Variables: Results of Chi-Square Tests.

Variables	Categories	N	Mild difficulty f(%)	Severe difficulty f(%)	X^2	P - value
Age	≥70 years	175	102(58.3)	73(41.7)	0.04	0.841
	60-69 years	128	76(59.4)	52(40.6)		
Sex	Male	133	88(66.2)	45(33.8)	5.23	0.022
	Female	170	90(52.9)	80(47.1)		
Religion	Christianity	188	133(70.7)	55(29.3)	29.18	0.001
	Others (Pagan, African Traditional Religion, Islam)	115	45(39.1)	70(60.9)		
Education	Tertiary	122	72(59.0)	50(41.0)	0.01	0.920
	Others (non-formal, primary, secondary)	181	106(58.6)	75(41.4)		
Marital Status	Married	201	142(70.6)	59(29.4)	33.14	0.001
	Others (single, divorced/separated, widowed)	102	36(35.3)	66(64.7)		
Living Status	With family	282	164(58.2)	118(41.8)	0.50	0.480
	Others (alone, institutionalized)	21	14(66.7)	7(33.3)		

Keys: n = sample size, () = bracket sign, ≥ = greater than sign, ≤ = less than sign, f = frequency, % = percentage.

3.4. Multivariate predictors of mobility status

Logistic regression analysis identified sex, religious affiliation and marital status as significant independent predictors of mobility status. Male participants had significantly higher odds of mild mobility difficulty compared to females (OR = 1.73; 95% CI: 1.10–2.72; p < 0.05). Participants identifying as Christians were nearly four times more likely to have mild mobility difficulty than others (OR = 3.78; 95% CI: 2.30–6.20; p < 0.001). Married individuals were more likely to experience mild difficulty compared to those not married (OR = 4.38; 95% CI: 2.60–7.36; p < 0.001). Other variables including age group, education level and living situation were not statistically significant predictors of mobility status (all p > 0.05) **(Table 4)**.

Table 4: Multivariate Logistic Regression of Sociodemographic Predictors of Mobility Status among Older Adults.

Variable	Category	N	Mild difficulty f(%)	Severe difficulty f(%)	Odds	Odds Ratio	95% CI
Age	≥70 years	175	102(58.3)	73(41.7)	1.40	0.96	0.64 – 1.45
	60-69 years	128	76(59.4)	52(40.6)	1.46		
Sex	Male	133	88(66.2)	45(33.8)	1.96	1.73	1.10 – 2.72
	Female	170	90(52.9)	80(47.1)	1.13		
Religion	Christianity	188	133(70.7)	55(29.3)	2.42	3.78	2.30 – 6.20
	Others (Pagan, African Traditional Religion, Islam)	115	45(39.1)	70(60.9)	0.64		
Education	Tertiary	122	72(59.0)	50(41.0)	1.44	1.02	0.68 – 1.55
	Others (non-formal, primary, secondary)	181	106(58.6)	75(41.4)	1.41		
Marital Status	Married	201	142(70.6)	59(29.4)	2.41	4.38	2.60 – 7.36
	Others (single, divorced/separated, widowed)	102	36(35.3)	66(64.7)	0.55		
Living Status	With family	282	164(58.2)	118(41.8)	1.39	0.70	0.28 – 1.74
	Others (alone, institutionalized)	21	14(66.7)	7(33.3)	2.00		

Keys: n = sample size, () = bracket sign, ≥ = greater than sign, ≤ = less than sign, f = frequency, % = percentage.

4. Discussion

This study examined sociodemographic and fall-related predictors of mobility status among older adults in southeastern Nigeria. Our findings revealed that 58.7% of participants reported mild mobility difficulty, while 41.3% experienced severe mobility limitations. Notably, sex, religious affiliation and marital status independently predicted mobility status, even after adjusting for other variables. Additionally, constructs related to fall knowledge, attitude and preventive practice were significantly associated with mobility outcomes. These results offer novel insights into the intersection of social, behavioral and demographic factors influencing mobility in older adults within a low-resource context. Our finding that male older adults were significantly more likely to report mild rather than severe mobility difficulty aligns with gender-based differences observed in global gerontology literature. Men tend to maintain greater muscle mass and physical strength into older age, delaying the onset of functional decline compared to women[15,16].

Moreover, studies have documented that men often experience a slower trajectory of mobility deterioration[17], a phenomenon that could partially account for our observed sex effect. This finding supports the need for gender-sensitive mobility interventions. In many LMICs, including Nigeria, older women disproportionately face socioeconomic disadvantages such as limited education, restricted health access and lifetime occupational disparities, that may hasten mobility decline[5].

The strong association between religious affiliation and mobility status is particularly noteworthy. While religion may initially appear tangential to physical health, this association likely reflects deeper psychosocial and behavioural mechanisms. Religious communities often serve as sources of social support, communal caregiving and health education in African settings[3,7]. Faith-based engagement may facilitate social participation, emotional well-being and practical assistance, factors that collectively buffer against functional decline. These findings suggest a potentially underutilized avenue for health promotion: religious institutions could act as culturally acceptable and resource-efficient platforms for mobility enhancement and fall prevention programming. Marital status emerged as a robust predictor of mobility, with married individuals having significantly greater odds of mild difficulty compared to their unmarried or widowed counterparts. This aligns with literature indicating that spousal cohabitation enhances emotional support, facilitates daily living assistance and encourages timely health-seeking behaviour[7,18,19]. Conversely, widowhood and social isolation have been widely associated with accelerated physical and cognitive decline[5,20]. These patterns underscore the importance of strengthening social networks for older adults, particularly those without spousal support, through community-based interventions and peer support systems. Interestingly, age group, education level and living status did not retain statistical significance in adjusted models. This may be due to variable operationalization. For example, categorizing age into only two brackets might have obscured subtler gradients of decline. Similarly, the influence of education and cohabitation may be mediated by more proximal variables such as income, health literacy or social capital, factors potentially captured through marital status or religious affiliation[19]. Thus, while these variables are traditionally recognized as determinants of health outcomes, their predictive power may vary depending on contextual interplay.

The associations between mobility and fall-related knowledge, attitude and practice (KAP) are both statistically and conceptually significant. Participants with incorrect knowledge of fall risk were more likely to experience mild rather than severe difficulty, suggesting that limited awareness does not necessarily equate to severe decline, but may predispose individuals to worsening outcomes over time. More critically, negative attitudes toward fall prevention and lack of preventive practices were associated with more severe mobility challenges. These findings echo previous work emphasizing the centrality of behavioural and attitudinal change in fall and mobility management[8,10,21,22]. Globally, it is well-established that knowledge alone is insufficient to influence health behavior-positive attitudes and consistent practices are key to effective prevention[21,23-25]. For instance, engaging in balance exercises, modifying home environments and wearing appropriate footwear are empirically supported strategies that prevent falls and preserve mobility. However, studies in Nigeria and similar settings report persistent gaps between knowledge and practice, even among healthcare professionals[26]. This implementation gap may reflect systemic barriers (e.g., access, cultural norms) as well as individual limitations (e.g., motivation, physical capability).

An important nuance in our findings is the potential bidirectional relationship between mobility and preventive practice. Poor mobility may hinder engagement in preventive behaviours, such as exercising or making environmental modifications, thereby exacerbating further decline, a pattern consistent with the frailty [8], mobility cycle. This underscores the need for early intervention, before functional deterioration limits the feasibility of behaviour change. Interestingly, fall history and knowledge of fall prevention were not significantly associated with mobility status. Several factors may explain this. Fall history data are subject to recall bias, particularly in older adults with cognitive challenges. Furthermore, experiencing a fall may not uniformly impact mobility; some older adults recover function, while others decline more precipitously. Similarly, generalized knowledge of prevention may lack depth or fail to translate into behaviour change, as supported by prior research[3,10].

Our findings align with the broader global public health literature, which identifies mobility decline and fall risk as critical issues in aging populations. The World Health Organization[2] estimates over 684,000 fall-related deaths annually, with disproportionate burdens in LMICs like Nigeria. Contributing factors include weak geriatric infrastructure, low public awareness and inadequate health system responsiveness. National studies report high prevalence of fall-related morbidity, yet policy prioritization remains limited. Fall risk factors such as visual impairment, arthritis, polypharmacy and unsafe home environments are common across sub-Saharan Africa. Our data support a more nuanced view: mobility status in older adults is shaped not just by fall occurrence, but by a confluence of behavioural, psychosocial and demographic factors[8,21,22]. Accordingly, preventive efforts should address upstream determinants-not just reactive treatment of fall injuries. The WHO's Decade of Healthy Ageing agenda emphasizes enabling environments, integrated care and community engagement[1,27], all of which align with our findings.

There is a strong case for integrating fall prevention with mobility promotion in national and sub-national health strategies. Given the predictive role of religious affiliation, faith-based organizations may serve as accessible, trusted platforms for health messaging and intervention delivery[3]. Incorporating mobility and fall screening into routine primary care could help identify high-risk individuals early[4]. Moreover, health workforce training should emphasize not just knowledge acquisition but also attitude transformation and behavioural skill-building[8]. Community-based initiatives could include group exercise programs, environmental risk assessments and peer-led education, interventions shown to improve mobility and reduce fall risk[1,9]. Social interventions targeting widowed and isolated older adults may also mitigate the absence of spousal support. Researchers and policymakers should explore cost-effectiveness of such interventions, especially in resource-constrained settings where budget allocation requires evidence-based justification[6].

This study has several strengths. The multistage sampling

design across 20 healthcare facilities in five states ensures broader representation. Use of validated instruments, the Mobility Status and Fall-Associated Indicators Questionnaire (MoS-FIQ), enhances measurement accuracy and contextual appropriateness. The high response rate (94.7%), bilingual translation and well-trained data collectors further contribute to data quality and inclusiveness. The study also provides a multifaceted perspective by combining sociodemographic and behavioral predictors. Nonetheless, some limitations must be acknowledged. The cross-sectional design precludes causal inference. Reliance on self-reported data may be influenced by recall or social desirability bias. Fall history and cognitive function were not objectively assessed. Moreover, dichotomization of continuous variables may have limited analytical precision.

5. Conclusion

This study provides regionally grounded insights into how sociodemographic characteristics and fall-related behaviors affect mobility among older adults in southeastern Nigeria. The findings support the need for community-based interventions that integrate screening, education and behavioral change strategies. Religious and marital networks represent valuable yet underutilized platforms for outreach. Future longitudinal and implementation research should explore causal pathways, objective mobility tracking and scalable interventions. Proactive mobility preservation is critical to promoting healthy aging and this study offers essential evidence to guide policy and program development in resource-constrained settings.

6. Declarations

6.1. Acknowledgements

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6.2. Authors' contributions

All the authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by UCU, ANO, CCE, CCU, OCE, CMJ. The first draft of the manuscript was written by UCU and all the authors commented on previous versions of the manuscript. All the authors have read and approved the final manuscript.

6.3. Availability of data and materials

The data that support the findings of this study are available from the corresponding author [Ugwu, UC; uchennacos.ugwu@unn.edu.ng; +2348037786068], upon reasonable request.

6.4. Financial support and sponsorship

No funding was received for conducting this study.

6.5. Competing interests

The authors have no conflicts of interest to declare that are relevant to the content of this article.

6.6. Ethics approval and consent to participate

The approval for the study was obtained from the Federal Ethics Committee of Nigeria for providing ethical clearance (Ref: REC/FE/2024/00027). This was in accordance with the tenets of the Declaration of Helsinki. Informed consent was obtained from all individual participants included in the study.

6.7. Consent for publication

The participants consented to the submission of the original article to the journal.

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