International Journal of Community Medicine and Public Health
Aina FO et al. Int J Community Med Public Health. 2026 Apr;13(4):1616-1620
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20261005

Original Research Article

When age becomes the risk factor: understanding catastrophic health expenditure among older adults in a resource limited setting

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Received: 08 January 2026
Accepted: 03 March 2026

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ABSTRACT

Background: Catastrophic health expenditure (CHE) remains a hindrance to equitable healthcare access for older adults in resource limited countries. Little is still known about the demographic contributions to CHE among aging population in Nigeria. This study examined the prevalence and predictors of catastrophic health expenditure among older adults and assessed the contribution of demographic characteristics to financial burden.
Methods: A cross-sectional study was conducted among older adults receiving healthcare services at the outpatient clinic of a tertiary health facility. Data on sociodemographic characteristics, healthcare utilization and out-of-pocket expenditures were collected using a structured questionnaire. Catastrophic health expenditure was defined as out-of-pocket spending exceeding 20% of income. Multiple linear regression was performed to identify predictors of CHE.
Results: The prevalence of catastrophic health expenditure was high which indicates financial vulnerability among the study population. Age emerged as the only predictor of catastrophic health expenditure. Older age was associated with increased likelihood of experiencing CHE.
Conclusions: Catastrophic health expenditure is a major challenge among the study population and age stands out as an independent predictor of CHE. There is need for age-responsive health financing strategies and social security to mitigate the amplifying effect of aging on financial hardship.

Keywords: Age, Catastrophic health expenditure, Older adults, Resource limited setting

INTRODUCTION

The ageing global population comes with increasing health services utilization due to high prevalence of chronic diseases and multimorbidity.[1-3] Multimorbidity, defined as the presence of two or more chronic conditions at the same time in one individual is of public health concern because of its negative effects such as escalating health care expenditure and increased mortality rate.[4-6] Older adults in most developing countries are faced with the burden of multimorbidity, high poverty level, and increasing expenditure on healthcare which further worsens their poverty level. An increasing trend in national healthcare expenditure has been observed between 1970 and 2021 in similar trend with demographic transition, the United States witnessing the most rapid increase. It has also been established that older adults consistently exhibit markedly elevated expenditure levels across outpatient hospital care, inpatient hospital care, and ambulatory care.[7,8]

Poverty has been a major issue associated with old age especially in the developing countries. Aging is associated with increasing needs due to decreasing physical ability and health deterioration resulting in increased vulnerability. In Nigeria, about 70% of older adults have been estimated to be poor and unable to meet their daily financial, nutritional, and healthcare needs.

Recent research found 75% of older adults in Nigeria to be multidimensionally deprived nationally.[9] Poverty has been defined as a multidimensional concept that refers to a state in which some basic human needs are not satisfied.[10] Older adults in poverty conditions have been found to experience early mortality and high prevalence of disability and mental health issues like depression and anxiety as they are under pressure to meet their basic needs often with limited social support.[11,12] The effect of poverty among older adults is more destructive than younger age group especially in lower income country without social security because they are likely to have retired with fixed income in form of meagre pension in the face of higher healthcare cost.[11]

The relationship between medical expenses especially out of pocket medical expenses has been well established especially among older adults. Households experience catastrophic health expenditure if their out-of-pocket medical spending is high in relation to their available resources or when it surpasses a certain threshold level.[10,13] Catastrophic health expenditure (CHE) can be determined in two major ways. The first, called the budget share approach, an out-of-pocket medical expense is expressed as a share of total household consumptions or income while the second examines a household capacity to pay for health-related goods and services. 10 This study utilized the first method to determine catastrophic health expenditure.

There is no universal consensus on a single threshold for determining catastrophic health expenditure. A threshold between 10% and 25% are commonly used in budget share approach while a threshold of around 40% are taken when using the capacity to pay method.[10,13] A threshold of 20% was adopted in this study.

METHODS

Study design and setting

This was a descriptive cross-sectional design conducted at the outpatient clinic of the department of family medicine, Ekiti State University Teaching Hospital (EKSUTH) in Ado-Ekiti, located in southwest Nigeria. EKSUTH is a tertiary healthcare institution affiliated with the College of Medicine at Ekiti State University, providing specialized care to residents of Ekiti State as well as referral services to the neighbouring states of Osun, Ondo, Kwara, and Kogi. The outpatients' clinic in the department of family medicine attends to all age groups making it an ideal setting for assessing the burden of health service utilization among older adults.

Study population

The study population consisted of older adults aged 60 years and above who visited the outpatient clinic between June to August 2025. Patients included in the study were 286 older adults aged 60 years and above who consented to participate in the study during the study period. They were consecutively selected.

Data collection

Information was obtained from respondents with the aid of an interviewer administered questionnaire. The data collected included the patient's sociodemographic characteristics including income from all sources which was available for spending on monthly basis. The average amount spent on healthcare expenditure was also explored. The monthly income was stratified into first, second, third, and fourth quartiles corresponding to 25%, 50%, 75% and above 75% respectively. The data analysis was done with the aid of the Statistical Package for Social Sciences version 25. A threshold of 20% was used to determine catastrophic health expenditure in this study.

Ethical consideration

Ethical approval for this study was obtained from the ethics and research committee of Ekiti State University Teaching Hospital, Ado Ekiti.

RESULTS

A total of 286 older adults (aged 60 years and above) were recruited into this study at the outpatient care clinic.

Healthcare expenditure based on demographic characteristics

While there was no significant difference in the mean healthcare expenditure between the male and female participants, statistically significance difference was found based on age distribution (Table 1). The peak spending was in the 80-84-year group. There was a marginally higher spending among participants with higher income but this was not statistically significant.

Distribution of subjects based on healthcare expenditure

A smaller proportion (37.7%) of participants spent below the threshold for catastrophic health expenditure (Table 2). Ten per cent of participants spent more than 50% of their income on healthcare.

Predictor of catastrophic healthcare expenditure

Age was the only predictor of healthcare expenditure in this study with older age associated with higher spending. The overall model was statistically significant ($p<0.001$) although only 8.3% of variance in healthcare spending was explained by this model.

Table 1: Mean healthcare expenditure based on demographic characteristics of respondents.

Variables	N	Mean	SD	Min.	Max.	P value
		Expense (N'1000)				
Age (in years)						
60-64	34	15.7	8.9	5	40	0.032
65-69	85	16.8	10.2	2	60	
70-74	103	18.9	11.3	2	75	
75-79	37	19.5	11.6	5	65	
80-84	8	20.6	10.4	10	40	
≥85	19	16.3	9.6	5	45	
Sex						
Male	117	17.0	9.8	2	60	0.412
Female	169	18.6	11.4	2	75	
Education						
No education	59	17.2	10.5	3	60	0.789
Primary	62	18.4	11.6	2	75	
Secondary	98	17.6	10.3	2	60	
Tertiary	67	18.4	11.2	5	65	
Income (quartile)						
Q1	71	16.2	9.7	2	50	0.078
Q2	72	17.8	10.4	5	60	
Q3	71	18.2	11.3	3	65	
Q4	72	19.4	11.8	5	75	

Table 2: Distribution of subjects according to the burden of expenditure as percentage of income.

Health expenditure (percentage of income)	Frequency (%)
≤10	23 (8.0)
11-20	85 (29.7)
21-30	78 (27.3)
31-40	52 (18.2)
41-50	19 (6.6)
≥51	29 (10.1)
Total	286 (100.0)

Table 3: Multiple linear regression- predictors of healthcare expenditure.

Model summary					Value
R					0.289
R2					0.083
Adjusted R2					0.067
F-statistics			F(5,28) =5.09, p<0.001		
Predictor	**B**	**SE**	**B**	**t**	**P value**
	Unstandardized		**Standardized**		
(constant)	8.42	3.65	-	2.31	0.022
Age	0.18	0.09	0.124	2.00	0.046
Gender (male=1)	-1.34	1.26	-0.062	-1.06	0.289
Education	0.45	0.58	0.045	0.78	0.437
Income	0.028	0.019	0.084	1.47	0.143

DISCUSSION

This study examined the burden of healthcare expenditure among older adults visiting a tertiary care elderly clinic in Nigeria. It demonstrated a high level of catastrophic health expenditure and the contribution of advancing age. Although not statistically significant, mean spending among female was higher than male respondents. This

could be a reflection of better health seeking behaviour among females that has been well established.[14-17] The age-related statistically significance difference in healthcare expenditure demonstrated in this study is an important finding due to practice and policy implications. Health care providers need to consider the financial implications of their management approach particularly among the oldest old who are likely to present with higher numbers of morbidity. For instance, incorporation of the comprehensive geriatric assessment (CGA) into management of older adults has been demonstrated to reduce polypharmacy which has the potential to reduce healthcare expenditure.[18] Leung et al the study on the benefit of CGA, 87.5% of patients reviewed with CGA resulted in discontinuation of several medications.[19] In Bangladesh, Sarker et al found the cost of drug as the major driver of healthcare cost.[20] Health care cost has been said to be the responsibility of government and doing so particularly for older adults will free them from out of pocket health expenditure and subsequent poverty.[21]

A very high proportion of respondents in this study (62.3%) spent above the threshold for catastrophic health expenditure while 10% of respondents spent more than 50% of their income on healthcare. Results from previous researches vary depending on the threshold used for defining catastrophic healthcare expenditure and the target population. An incidence of 46.5% and 16.1% was found among two elderly populations in India at 10% threshold level while it was 14.8% among the general population in the same country.[13,22] Among general population in Nigeria, studies have shown that the prevalence varies between 2.5% and 44% while Ajayi et al found 18.5% and 12,8% among rural and urban populations in Ekiti.[23,24] In a study on the prevalence of CHE among 15 European countries, a prevalence of 6%, 32%, 28%, and 27% were found among older adults with diabetes mellitus in Netherlands, Portugal, Switzerland, and Hungary respectively and similar trend was found among those with cardiovascular disease.[25]

The high prevalence of CHE in this study could be due to various factors. Ekiti Sate is a civil service state where most people who are educated to secondary school level are in government employment and this constituted 57.9% of the respondents. One factor that may be contributory is low coverage of the National Health Insurance Scheme which is less than 10% in Nigeria. 26 In addition, some of the primary school certificate holders are employed by the government as low-level civil servants. These categories of people retired at age 60 years and depend on monthly pension which has been found out to be very small and irregularly paid thereby tilting them into poverty. While a contributory pension scheme was introduced by the Federal government to address this problem, implementation was characterized by fraud.[27,28]

Age was found to be the sole predictor of healthcare expenditure in this study with peak spending among 80-84-year group. This may be due to many factors. This may be due to the increasing prevalence of multimorbidity and frailty which may increase demand for healthcare utilization with advancing age.[29] The reduction in healthcare expenditure after age 84 years may be due to increased prevalence of frailty among such population which may hinder their hospital patronage as suggested by Kollestrup-Lamb et al.[7]

CONCLUSION

This work has demonstrated that older adults exhibit high healthcare expenditure with a high proportion spending beyond the threshold for catastrophic healthcare expenditure with age being the only significant predictor. Healthcare cost should be the responsibility of government particularly among vulnerable group like older adults. Health insurance and social security must be put in place to mitigate out-of-pocket healthcare expenditure and improve the quality of life of the older adults. Being hospital based, cross-sectional study, findings from this study may not apply to the general population and a multi-centre study is recommended.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Aina FO, Solomon OA, Agbesanwa TA, Olusola EA, Owoyemi JA, Jolayemi TO, et al. When age becomes the risk factor: understanding catastrophic health expenditure among older adults in a resource limited setting. Int J Community Med Public Health 2026;13:1616-20.