Health Conditions and Vulnerability of the Elderly Population in Selected Communities of Plateau State, Nigeria

**Dongurum, Clement Kevin[1], Zachariya, Ismaila[1],
Kangyang Caleb Nyango[1], Anyamele, Chinedu Jeremiah[1],
Uguru, Wisdom Ibor[2]**

[1]Department of Geography & Planning, University of Jos, Nigeria
[2]Department of Geography, Federal University of Lokoja, Nigeria

Corresponding Author: Dongurum, Clement Kevin

ABSTRACT

The world's population is ageing faster, and most countries are experiencing a rise in the size and proportion of elderly people. The demographic shift has consequent rising burden of age-related health challenges. The study examined the health conditions and vulnerability to health risks among the elderly people in urban settings of Jos north LGA for ageing sustainable health and well-being. A snowballing identified the elderly people, where a simple random sampling assisted in the selection of 128 aged adults who responded to questionnaire interviews. SPSS version 28 aided the analysis of data using descriptive statistics, chi-square test, and logistic regression for association and odds between the socio-demographic variables and vulnerability of the elderly to health risk. Findings reveal that in all, 85.9% of elderly respondents reported health risks. Over two-quarters (68.8%) of the elderly people experienced limitations carrying out activity due to health conditions. Cost delayed medical visits for 64.8%, 36.7% restricted due to their health, and 35.9% had terminal illnesses. Access to healthcare varied with 68.0% had monthly and above visits and only 24.2% registered for the Health Insurance Scheme. Family and friends (83.6%) served as the primary health support network. Age groups, House ownership, levels of education, Monthly income, and Access to health insurance. Younger-older ages between 60-64 years, owning a house, attainment of tertiary education, Registering for Health Insurance Scheme showed significant reduced possibilities of becoming vulnerable to health risks among the elderly people in study settings. While absent at previous health visits for other reasons than solely due to cost monthly earnings between ₦50,001 - ₦100,000 had significant relations with high vulnerable to health risk. These suggest urgent need for improve healthcare access, financial security, and social support system for the elderly in study and the Nigeria at large.

Keywords: Ageing Population, Elderly Population, Elderly Adults, Health Conditions, Jos North LGA

INTRODUCTION

Aging population is a significant global phenomenon, with a growing proportion of older adults. Worldwide, one in every nine people are in their 60s and above years and expected to be one in every six people by

2050 (1, 2, 3). This event is attributed to advances in healthcare, improved living conditions, and declining fertility rates that have contributed to increased life expectancy in many countries (4) responsible for different social, economic, and cultural changes (5). However, this demographic shift has consequently rising burden of age-related health conditions. As populations age, the burden of chronic and degenerative health conditions rises, necessitating increased attention to elderly healthcare. Worldwide, the common health issues among elderly adults include non communicable diseases, musculoskeletal disorder, respiratory illnesses, and infectious diseases (6, 7, 8).

These elderly people often face multiple health challenges, including diseases such as hypertension, diabetes, cardiovascular diseases, tuberculosis, pneumonia, HIV/AIDS, and arthritis, which significantly impact on their quality of life and efficient independence (9, 10, 11). Moreover, mental health disorders such as depression, anxiety, and dementia are increasingly critical health concerns, aggravated by social isolation, economic hardship, and inadequate access to healthcare (12). The prevalence of infectious diseases, such as pneumonia and tuberculosis, and urinary infections also remain high due to weakened immune systems and limited healthcare access (13). The underdiagnosed and undertreated health conditions are responsible for over 70% deaths among the older adults (14).

Access to quality healthcare for elderly adults remains a significant challenge in most low developing countries due to economic constraints, weak healthcare systems, and inadequate health insurance coverage (15). Family and friends are often responsible for financial and social support, as pension systems and social protection schemes do not exist or are ineffective (16) and the conditions rarely prioritized, despite the high rates of neglect, stigma, depression, and loneliness (17, 18,19). Particularly, social isolation, urbanization, and the decline of traditional family caregiving structures have further worsened the elderly health challenges (20). As burgeoning literature highlights income level, education, housing, and social support play a key role in causing morbidity or influencing the outcomes of elderly health (21, 22,). Despite these pressing concerns, healthcare systems in many developing countries, particularly in most low resources settings, remain underfunded and ill-equipped to address the health needs of the elderly people (23, 24). Understanding the health conditions affecting elderly populations in urban communities is crucial for policy formulating and healthcare interventions that promote sustainable healthy ageing and reduce disease burden.

Despite the growing ageing population, research on the specific health conditions affecting elderly adults in urban communities such as in Jos north LGA remains limited (25). Existing studies primarily focus on developed countries or at the national levels, often overlooking the unique challenges faced by the elderly individuals in locally and rapidly urbanizing settings (25, 26). Urbanization has led to changing lifestyle patterns, increased exposure to pollution, dietary transitions, and a growing prevalence of sedentary behaviors, all of which contribute to the rise in the challenging health conditions of elderly adults (16, 18) as only a few studies explore the vulnerability of the older adults in urban settings (15). In Plateau State, challenges of care among a particular tribe, factors of healthy ageing, and the causes of nutritional status are examined among the elderly people (27, 28) as the conditions and vulnerability to health risked not attended to in urban communities. Hence, this study seeks to understand the health conditions and vulnerability to health risk among the elderly people in selected urban communities of Jos North LGA. Addressing this situation is essential for informing policy reforms, healthcare service delivery, and community-based interventions for sustainable health and well-being among the elderly adults (29, 30, 31) in urban

communities of Jos North LGA, Nigeria, and Sub-Saharan Africa at large.

MATERIALS & METHODS

The study setting consists of selected communities in Jos North Local Government Area (LGA) of Plateau State, Nigeria. The LGA is where the capital of Plateau State is situated, approximately at Latitude 9°.89'N and Longitude 8°.86'E. It covers a land area of about 291 km² and surrounded to the North and West by Bassa LGA, the adjoining East by Jos East LGA, and the South by Jos South LGA, respectively (see Figure 1). Jos North LGA has an estimated population of 729,300 people (32). The Berom, Anaguta, Afizere, Yoruba, Igbo, Hausa, and Fulani among other groups live in different communities of the LGA (32). Its climate is characterised by temperatures between 8 °C and 36 °C, dry and wet seasons in a year. The types of soil it has are suitable for farming cabbage, carrot, cucumber, tomatoes and Irish potato among other crops (32).
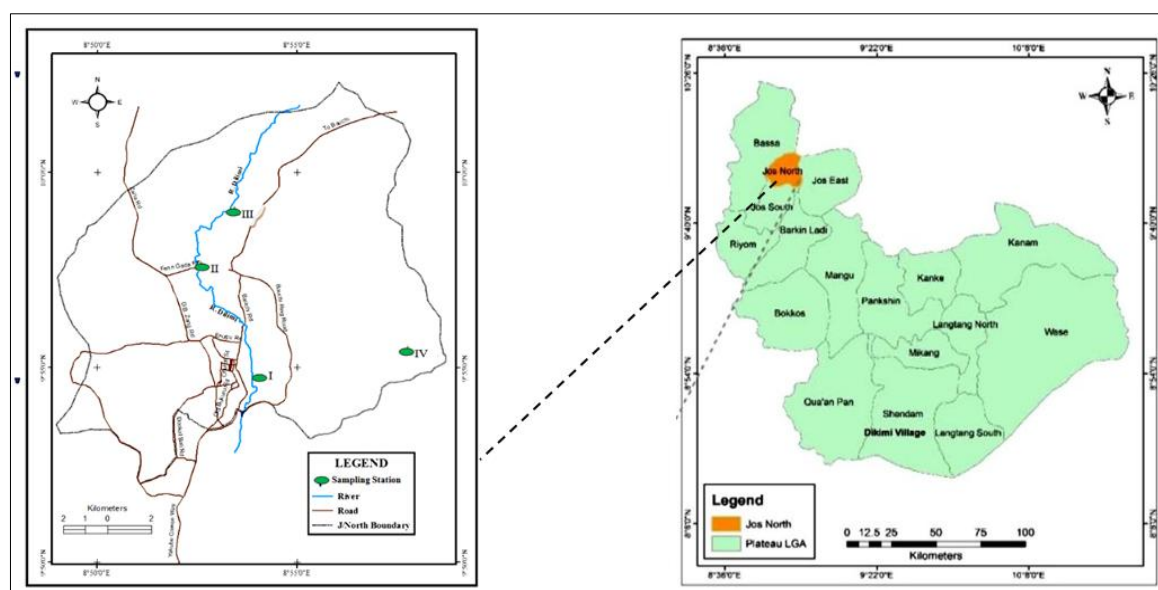

Figure 1: Maps of Plateau (right) State and Jos Noth LGA (left)

The Jos University Hospital (JUTH), Bingham University Teaching Hospital (BUTH), Plateau State Specialist Hospital (PSSH), the Hospital, the Plateau State Human Virology Research Centre (PLASVIREC), the AIDS Prevention Initiative (APIN) laboratory (APIN-Nigeria) are major healthcare facilities ensuring the elderly and other population access care. As the Central Bank sub-national Office, the numerous Commercial Banks, religious, and cultural organizations exist to support economic and socio-cultural activities that are valuable to the general population, including the elderly adults.

As a cross-sectional survey, the study targeted the elderly adults who were aged 60 years and above and sought health conditions and behaviors, and socio-demographic variables such as perceptions on personal health, including mental and physical health conditions, nature of visits for healthcare, Access to Health Insurance, and healthcare and sources of support. Others include the elderly sex, family attributes, age groups, educational experiences, and average monthly earnings, Multiple sampling approaches helped in the selection of the study communities and the elderly people. The selected communities were Abba Na She, Gangare and Jenta Adamu communities using a stratified methods and the snowballing for the documentation of the elderly people distributed in the communities. The snowball sampling allowed easy access to elderly people through stakeholders including the Gatekeepers, Retiree, Religious, and Tribal

Association Group Leaders whose referrals facilitated contacts with elderly people in the neighborhoods. The elderly individuals contacted also mentioned their contemporaries that expanded the elderly sampling frame, and addresses compiled. The database aided in creating codes used for simple random sampling that estimated the required elderly adults' sample size for the study.

STATISTICAL ANALYSIS

A total of 139 elderly people filled in a structured questionnaire each and 128 found fitting for statistical analysis. Microsoft Excel version 2020 and the Statistical Package for Social Sciences (SPSS) version 28 aided the creation of a database and statistical analysis. Descriptive analysis summarized the health and socio-demographic variable of the elderly in frequencies and percentages on tables and chart. A composite scoring of point value estimation (33, 34, 35), used nine variables comprising of: perception on Health Condition, Costly delayed seeing a Doctor, Restriction due to Health Condition, and Often have difficulties on (seeing, walking/combing or hearing). Other include Have a Terminal Health Condition, Place of Frequency of Healthcare, Assessing Health Insurance Scheme, and. Success of Support. A participant scores one (1) point for each variable that describes his/her positive health condition on a variable, else zero (0). The sum of all scores for each participant with a composite score of 5 - 9 implied having a "low vulnerable to health risk" and the scores of 0 – 4 indicated "highly vulnerable to health risk". The two categories of elderly vulnerability to health risk became the binary dependent variable. As "1" is assigned for *high risk* and "0" for low *risk*. The socio-demographic characteristics (independent variables) were computed with whether the elderly had low or high vulnerability to health risk conditions. The Chi-Square Test estimated the association between the independent and dependent variables, where Age groups, Nature of accommodation, levels of education, learning a skill, Monthly income, Reasons for missing Previous Health visits, and Health Insurance Scheme registration were the statistically significant factors. Binary Logistic Regression model was conducted for more insights into the predictors of the elderly vulnerability to health risk in the study area.

RESULT

Health Conditions of the Elderly

Healthy behaviour plays a crucial role in determining the overall well-being and quality of life of elderly adults. Table 1 presents the results on the personal health situations, healthcare access, functional difficulties, and sources of support among the elderly population studied. The result shows that majority of the elderly respondents (85.9%) reported having health challenges, while only 14.1% considered themselves healthy. A substantial proportion of the elderly adults (68.8%) experienced restrictions due to their health conditions that impacted their daily activities; 64.8% said financial constraints delayed their visits to see a doctor, 39.8% had difficulties in walking or climbing steps, 36.7% in seeing, and 7.8% in hearing. Over one-quarter (35.9%) said they had a terminal health ailment that further stresses the burden of life-threatening illnesses among the elderly.

Access to healthcare varied among the elderly, with 68.0% reported monthly or more frequent visits, 19.5% had weekly, and only 12.5% rarely or yearly visited a healthcare facility. Half of the elderly (50.0%) frequently visited the hospitals, followed by 25.8% who went to pharmacies/chemists, and 24.2% a Specialized Clinics. Despite the high healthcare needs of the elderly, only 24.2% registered for health Insurance Scheme, as the majority (75.8%) did not have health insurance cover. Family and friends, accounting for 83.6%, served as the primary sources of support for the elderly, 10.2% relied on religious leaders, and 6.3% on neighbours (Table 1).

Table 1: Health Behaviour of the Elderly in Selected Communities of Plateau State

Health Behaviour of the Elderly	Frequency (n=128)	Percentages
Perception on Personal Health		
Healthy	18	14.1
Have Health Challenges	110	85.9
Restriction due to Health Condition		
No	40	31.3
Yes	88	68.8
Cost delays Seeing a Doctor		
No	45	35.2
Yes	83	64.8
Often Have Difficulty on		
No Difficulty at all	20	15.6
Seeing	47	36.7
Hearing	10	7.8
Walking/Climbing Steps	51	39.8
Terminal Health Condition		
Yes	46	35.9
No	82	64.1
Nature of Visits to Healthcare		
Yearly/Rarely	16	12.5
Weekly	25	19.5
Monthly and More	87	68.0
Place of Frequent Healthcare		
Hospital	64	50.0
Specialized Clinic	31	24.2
Pharmacy/Chemist	33	25.8
Registered for Health Insurance		
Yes	31	24.2
No	97	75.8
Sources of Supports		
Family & Friends	107	83.6
Neighbours	8	6.3
Religious Leader	13	10.2

The incidence on reported health conditions among older adults in Figure 2 shows that the most common health condition was back and neck pain that affected 10.2%, and diabetes among 9.6% respondents. Other notable health conditions included skin problems (2.4%) and pneumonia (1.6%). The smaller proportion of conditions reported included dementia heart disease (0.9%), and arthritis (0.8%), dementia and cancer (0.6% each) which still pose substantial risks to health and well-being, particularly given the increased vulnerability of elderly adults to infectious diseases due to weakened immune responses.
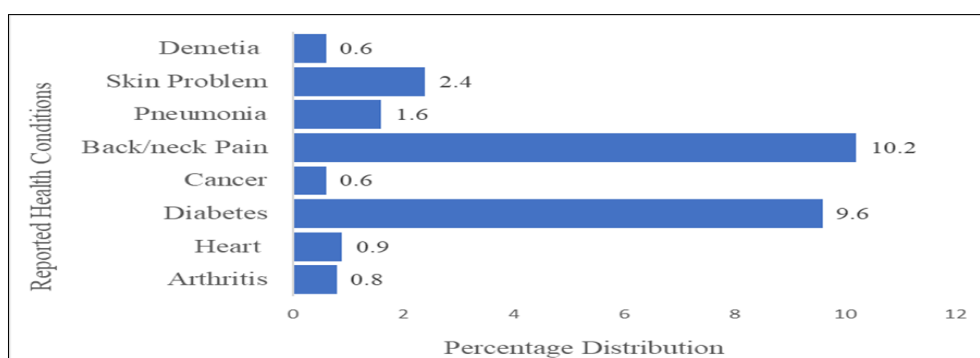

Figure 2: Distribution of Health Conditions of the Elderly in the selected Communities

Factors of Vulnerability to Health Risk

People become susceptible to difficult health conditions due to their personal traits, social and economic circumstances, or environmental (2, 36). This study found that most older people (78.9%) were at higher health risk, while 21.1% had low risk. Factors of health vulnerability among the older adults in the selected study communities were associated to socio-demographic characteristics. Table 2 shows that elderly people who were 75 years of age and older (44.5%) were particularly more vulnerable to those in other age groups (p = 0.004). As those who owned a house (25.0% vs 14.8%), Inherited (37.5% vs 5.5%) and Tenants/Rent free (16.4% vs 3.9%) significantly associated with vulnerability to health risk (p < 0.001). The elderly respondents who had no formal education (32.8 %), completed tertiary (18.0%), and primary (17%) education were more at risk

for health problems as those with secondary education (9.4.%) were less likely; revealing educational attainment influenced health vulnerability among the elderly (p = 0.002). Also, learning new skills significantly associated with health vulnerability (p < 0.001). Those who earned < N50,000 monthly (50.8%) had more Health risk outcomes than others (p < 0.001). Likewise, 69.5% of respondents reported financial constraints delayed medical visits significantly linked to health vulnerability (p < 0.001). While self-perceived health status is a significant factor to health condition (p < 0.001) with 77.3% of those who felt "not healthy" belonging to the high-vulnerability group. One important factor was access to health insurance (p < 0.01), which shows that older people who had no access to the Health Insurance Scheme (66.4%) were at a high risk of illness.

Table 2: Factor of Vulnerability to Health Risk among the Elderly in the Study Area

Socio-demographic Variables	Vulnerability to Health Risk		Total (n=128)	P=Value
	High(n-101)	Low n=27)		
Sex				0.789
Male	42 (32.8)	12 (9.4)	54 (42.2)	
Female	59 (46.1)	15 (11.7)	74 (57.8)	
Marital Status				0.381
Single	27 (21.1)	5 (3.9)	32 (25.0)	
Married	74 (57.8)	22 (17.2)	96 (75.0)	
Age Group				0.004*
60-64	27 (21.1)	14 (10.9)	41 (32.1)	
70-74	17 (13.3)	2 (1.6)	19 (14.8)	
75+	57 (44.5)	11 (8.6)	68 (53.1)	
Household Size				0.279
<7	53 (41.4)	11 (8.6)	64 (50.0)	
>7	48 (37.5)	16 (12.5)	64 50.0)	
Living Arrangement				0.214
Alone	24 (18.8)	3 (2.3)	27 (21.1)	
With Spouse	53 (41.4)	19 (14.8)	72 (56.2)	
With Grand Children	24 (18.8)	5 (3.9)	29 (22.7)	
Nature of Accommodation				<0.001*
Sole Ownership	32 (25.0)	19 (14.8)	51 (39.8)	
Inherited	48 (37.5)	7 (5.5)	55 (43.0)	
Tenant /Rent Free	21 (16.4)	1 (0.8)	22 (17.2)	
Nature of Access to Internet				0.767
Frequently	15 (11.7)	11 (8.6)	26 (20.3)	
Rarely	72 (56.3)	13 (10.2)	85 (66.4)	
Sometimes	14 (10.9)	3 (2.3)	17 (13.3)	
Levels of Education				0.002*
Non-Formal	42 (32.8)	6 (4.7)	48 (37.5)	
Primary	22 (17.2)	2 (1.6)	24 (18.8)	

Secondary	14 (10.9)	12 (9.4)	26 (20.3)	
Tertiary	23 (18.0)	7 (5.5)	30 (23.4)	
Learning a Skill				<0.000*
No	12 (9.4)	12 (9.4)	24 (18.7)	
Yes	89 (69.5)	15 (11.7)	104 (81.3)	
Monthly Income				<0.000*
<₦50,000	65 (50.8)	6 (4.7)	71 (5.55)	
₦50,000 - ₦10,000	13 (10.2)	7 (5.5)	20 (15.6)	
>₦100,000	23 (18.0)	14 (10.9)	37 (28.9)	
Reasons for missing my Previous Health Visit				<0.000*
Due to the Cost	39 (30.5)	0 (0.0)	39 (30.5)	
Not due to the Cost	62 (48.4)	27 (21.1)	89 (69.5)	
Personal Health Perception				<0.000*
Healthy and Hearty	2 (1.6)	19 (14.8)	21 (16.4)	
Not Healthy	99 (77.3)	8 (6.3)	107 (83.6)	
Place of Frequent Healthcare				0.146
Hospital	46 (35.9)	18 (14.1)	64 (50.0)	
Specialized Clinic	27 (21.1)	4 (3.1)	31 (24.2)	
Pharmacy/Chemist	28 (21.9)	5 (3.9)	33 (25.8)	
Registered for Health Insurance				<0.000*
Yes	16 (12.5)	15 (11.7)	31 (24.2)	
No	85 (66.4)	12 (9.4)	97 (75.8)	
Total	101 (78.9)	27 (21.1)	128 (100)	<0.000*

*= Statistically significant at p = < 0.01

Table 3 shows that the elderly people who were between ages 60-64 years old had lower probabilities (OR = 0.181, 95% CI = 0.047 - 0.696, p = 0.013) to experience higher vulnerability to health risk compared with those aged 75 years and above. The status of owning a house among the elderly also had reduced odds (OR = 0.246, 95% CI = 0.094 - 0.615, p = 0.005) of being vulnerable to health risk compare with those who were Tenants. Educational attainment of a Tertiary education (OR = 0.355, 95% CI = 0.113 - 1.115, p = 0.054); and accessing Health Insurance Scheme (OR = 0.151, 95% CI = 0.600 - 0.381, p = 0.000) had statistically significant reduced possibilities of becoming vulnerable to health risks among the elderly people in study settings.

Table 3: Logistic Regression Analysis on Elderly Vulnerability to Health Risk

Socio-demographic Variables	OR	95% (CI)	P-value
Age Group (in years)			
75+	1		
60 - 64	0.181	0.047 - 0.696	0.013*
65 - 69	0.293	0.070 - 1.220	0.092
70 - 74	0.797	0.121 - 5.240	0.813
House Ownership			
Tenant	1		
Inherited	3.062	0.354 - 26.479	0.309
Sole Ownership	0.246	0.0094 - 0.615	0.005**
Level of Education			
Non-Formal	1		
Primary	2.130	0.640 - 7.095	0.218
Secondary	3.348	0.626 - 17.903	0.158
Tertiary	0.355	0.113 - 1.115	0.054*
Monthly Income			
<₦50,000	1		
₦50,001 - ₦100,000	6.594	2.266 - 19.187	0.001**
>₦ 100,000	1.130	0.364 - 3.513	0.832

Reason for Missed Previous Health Visit			
Solely due to the Cost	1		
Not due to the Cost	9.267	2.67 - 41.256	0.003**
Registered for Health Insurance Scheme			
No	1		
Yes	0.151	0.600 - 0.381	0.000**

OR= Odd Ratio
CI= Confidence Interval
*<0.05 and ** <0.01 = Statistically significant

Whereas the elderly people who missed their previous health visits for other reasons (OR = 9.267, 95% CI = 2.67 - 41.256, p = 0.003) were over nine times significantly more likely to be vulnerable to health risk than those who missed solely due to cost. In addition, the elderly people who earned between ₦50,001 - ₦100,000 monthly, were seven times (OR = 6.594, 95% CI = 2.266 - 19.187, p = 0.001) more vulnerable to health risk compared with those who earned less than ₦50,000.

DISCUSSION

The findings of our study reveal being within age group 60-64 years, ownership of a house, completion of tertiary education, and registered for health Insurance Scheme significantly related with reduced likelihood of becoming vulnerable to health risk among the elderly population in selected communities of Plateau State. the outcome. As such, being at younger age (60-64 years) established an inverse relationship with the possibility of becoming vulnerable to health risk as those aged 75 years and above were the most susceptible. This finding is consistent with existing literature by (36, 37, 1, 2, 14) that suggest advanced age is strongly correlated with infirmity, higher prevalence of chronic diseases, and diminished physiological resilience that make the elderly people more to health threat. House ownership was another significant factor that was a protective, potentially due to financial freedom compared to tenants. Previous studies indicate that housing stability can impact on financial security and access to healthcare services (38, 39, 40). In contrast, housing instability is related to stress-related illnesses

and restricted healthcare access, as noted in studies on social determinants of health (41). Interestingly, the attainment of tertiary education significantly suggests that higher education levels may contribute to better decision-making and financial stability that reduced exposure to health risk in old age (42). This concurred with the findings of (43, 44, 45) on the role of education in fostering health literacy and enabling informed healthcare decisions that serve as protective social vaccine against health vulnerability that reduce the risk of cognitive decline and chronic disease (46, 14, 47). Meanwhile, income levels significantly influenced reduced exposure to health risk in old age; particularly, the elderly people who earned between ₦50,001 - ₦100,000. This finding aligns with economic theories that link higher income with increased financial resilience (48). Health Insurance Registration was a strong protective factor, reinforcing its role in reducing financial risks associated with healthcare access (49). Policies promoting health insurance enrolment may improve overall well-being and reduce health disparities, particularly in low-income settings (50). In contrast, the (14, 51) found that elderly adults who did not insured their health faced higher barriers to preventive care and medical intervention.

The elderly adults who missed their previous health visits due to other reasons than the cost and those who earned between slightly (below and above) the national minimum wage were those most vulnerable to health risk in the study setting. This situation is similarly to studies highlighting social determinants of health among older adults associated with underlying health system inefficiencies or personal barriers beyond

financial constraints (51, 52, 53, 54, 55) argued that financial constraints are a primary factor in worsening health conditions and higher long-term costs that limit healthcare access with adverse effects on elderly people.

These findings emphasize the urgent need for policy interventions targeting the vulnerable elderly people at health risk who live in communities Plateau State. Strengthening social and financial security through pension schemes and social assistance programs could alleviate economic barriers to healthcare. Expanding health insurance coverage and subsidized healthcare services would improve access medical services may enhance self-care practices and health outcomes among the elderly populations.

CONCLUSION
This study highlights the importance of younger - old age, housing security, higher education, health insurance, appropriate basic health system, and financial stability in mitigating health risk at olde age in the communities of Plateau State. Addressing sustainable elderly healthy life requires comprehensive health policy reforms, enhanced social support systems, and improved healthcare accessibility for the elderly people in the study area and similarly settings in Nigeria and Sub-Saharan Africa at large. Future research should explore a mixed methods study to understand the elderly health trends to inform evidence-based interventions tailored to their specific and unique needs.

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