Older persons and malaria treatment in Nigeria

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Abstract

This study examined the prevalence and pattern of health-seeking behavior of older people on malaria fever among the elderly in Nigeria. Data from the Nigeria Malaria Indicator Survey were used with a weighted sample of 1819 older persons aged 60 and above across the six geopolitical regions in Nigeria. The odds of fever as well as treatment seeking were predicted using logistic regression models. The prevalence rate of fever among the aged in Nigeria is 28%. About half of the respondents did not receive treatment in a standard health facility. There is high patronage of chemist/patient medicine vendor/shops for malaria fever treatment among older people in Nigeria. Findings suggest that older people may use healthcare facility if it is affordable. The lifelong approach that can reduce poverty and illiteracy is recommended since the rural-urban differences in treatment seeking reduced with the inclusion of other socio-demographic variables in the model.

Keywords: Aging, malaria, fever, health-seeking, regional variation, Nigeria

Résumé

Cette étude examine la prévalence et les tendances de la demande de soins des personnes âgées sur la fièvre du paludisme chez les personnes âgées au Nigeria. Les données de l'Enquête sur les indicateurs du paludisme au Nigeria ont été utilisés avec un échantillon pondéré de 1 819 personnes âgées de 60 ans et plus dans les six régions géopolitiques au Nigeria. Les chances de fièvre ainsi que la recherche de traitement ont été prédits en utilisant des modèles de régression logistique. Le taux de prévalence de la fièvre chez les personnes âgées au Nigeria est de 28%. Environ la moitié des répondants n'ont pas reçu de traitement dans un établissement de santé standard. Il est haut patronage du chimiste / patient, la médecine vendeur / magasins pour le traitement de la fièvre de paludisme chez les personnes âgées au Nigeria. Les résultats suggèrent que les personnes âgées peuvent utiliser des installations de soins de santé si elle est abordable. La démarche permanente qui permet de réduire la pauvreté et l'analphabétisme est recommandé car les différences rurales-urbaines dans la recherche de traitement réduits avec l'inclusion d'autres variables socio-démographiques dans le modèle.

Mots clés: vieillissement, le paludisme, la fièvre, de recours aux soins, la variation régionale, Nigeria

Introduction

Malaria, a life-threatening parasitic disease transmitted by the female Anopheles mosquitoes, causes over 200 million cases of illness each year, creating tremendous burdens of morbidity and mortality in areas of the world where it is endemic (New York Academy of Science, 2013). According to WHO (2010) statistics, malaria caused an estimated 660,000 deaths with 95% of these occurring in Africa. It is a major cause of death for about 40 per cent of the world's population that live in the poorest countries (WHO, 2000). A study of written narratives of a large, nationally representative, sample of all deaths (Dhingra, Jha, Sharma, Cohen, Jotkar, Rodriguez, Bassani, Suraweera, Laxminarayan, and Peto, 2010) suggests that malaria might be a cause of about 200000 deaths per year before the age of 70 years in India. This estimate includes the 120000 deaths per year at ages 15-69 years. Brown (2012) observed that the number of people who die annually of malaria is roughly double the current estimate, with a huge overlooked death toll in older people. As malaria typically produces fever, headache, vomiting, loss of appetite and other flu-like symptoms (Akpan, 1996; Ekanem, 1996), it compromises the health and development of all age categories in the malaria-endemic regions of the world. Despite decades of significant input of resources and efforts at control, malaria is still highly endemic and has remained a major public health problem in both rural and urban communities of sub-Saharan Africa, including Nigeria (UNICEF, 2004) where the health systems are not being strengthened.

Most studies on management of malaria have often focused on pregnant women and their unborn babies as well as children under-five years of age as the most vulnerable groups. It has been reported

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that 60 percent of outpatient visits and 30 percent hospitalizations attributable to malaria, an estimated 300,000 mortality due to malaria among children each year in sub-Saharan Africa, and about 11 per cent maternal mortality are caused by malaria (WHO, 2000; FMOH, 2008). To date, there is inadequate information about the behavior of older persons concerning management of malaria and fever, yet the elderly are vulnerable to diseases and illnesses due to their physiological state (Asiyanbola, 2008).

Literature review and theoretical framework

Several studies pertaining to the health seeking behavior of different demographic groups have been carried out in Nigeria (Salami and Brieger, 2006; Salami and Olugbayo, 2013), yet little attention is often paid to the older persons. A study (Unanka, 2002) that documents the living condition of the elderly in south-east Nigeria, ranked malaria top (72%) on the list of illnesses common to the elderly; yet there is dearth of information on their patterns of health seeking behavior pertaining to fever and malaria.

Globally, the population of the elderly is increasing at a high rate due to improved life expectancy and decline in disability and mortality at older age (Freeman *et. al*., 2002; Manton and Gu, 2001). Troisi, (2004) projected that by 2025, 71.9% of the world elderly population will be found in developing nations. In Nigeria, the elderly formed a significant group, with increasing rate, which may be doubled in the next decade (Ajomale, 2007). While the progression in the rate of the population of the elderly demands the attention of gerontologists, the review by Asiyanbola (2008) indicated that focused studies on the elderly in Nigeria are few. In spite of the dearth of studies on the elderly, the few existing ones are focused on issues ranging from elderly destitute (Fajemilehin, Ayandiran and Salami, 2007), the description of the traditional form of care of the elderly (Okoye, 2004) and living condition and physical well-being of the elderly in urban Nigeria (Asiyanbola, 2004). Others are life-satisfaction of the elderly (Adeokun, 1986), effects of the structural adjustment programme on the elderly (Ekpenyong, 1995), and the nutritional assessment and health status of the elderly (Bakare *et al*., 2004). No study has significantly documented the behaviour of the elderly not only in the management of malaria but also in a national coverage platform. There is therefore the need to document the behaviour of the elderly concerning prevention, treatment and management of malaria in Nigeria.

The same deprivation factors that often pose challenges to aging such as gender roles, norms, cultural practices, and behaviors (Asiyanbola, 2005; 2008; Kimuna, 2005; Ajomale, 2007) can strongly influence disease prevention, care seeking, and access to treatment of illnesses such as malaria. In a study of risk factors for mortality from imported malaria in the United Kingdom (Checkley, Smith, Smith, Blaze, Bradley, Chiodin and Whitty, 2012), mortality was found to increase steadily with age, and with a case fatality of 25/548 (4.6%) in people aged 65 and above. Those born in African countries with endemic malaria had a case fatality of 0.4% (36/8937) compared with 2.4% (142/5849) in others.

Although men and women of all age groups could be affected by malaria, physiological, social and chronological factors contribute to the different impact that malaria has on older persons. Dhingra, *et al*. (2010) also reported about 1.3 million deaths from infectious diseases before age 70 in rural areas with fever as the main symptom. These data are supported by previous reports of increased case fatality (Greenberg and Lobel, 1990) and higher level of parasitaemia in elderly people (Checkley *et al*., 2012). Such impact facilitates vulnerability to other diseases and illnesses, which may result in elderly mortality. Onyeneho, Orji, Okeibunor and Brieger (2013) found several demographic factors, such as older age bracket, ever attended school, currently living with a partner, ever married, and wealth, as significantly associated with compliance. Compliance was also found higher among respondents who had ever been married than among those who had never been married, and compliance was also higher among those in paid employment and those in a higher wealth quintile. A study by Dhingra *et al*., (2010) that attributed about 90% of deaths to malaria in India were reported in rural areas and 86% were not in any health-care facility. Death rates attributed to malaria correlated geographically in India.

Current circumstances that have helped malaria to thrive include the unhygienic situation in which many citizens live (Brieger *et. al*., 2001). For instance, torpid water, pervasiveness of wreckages and wild grass create breeding grounds for the mosquito vector to thrive. Unfortunately, government allocation of funds for malaria is insufficient to channel a wider coverage in the preventive and treatment measures against the spread of malaria. In spite of the substantial progress that had been made towards malaria control and, in some places, towards elimination, the gains were still fragile. The malaria situations have caused both economic and social burdens on the country (Roll Back Malaria, 2005). This study, therefore, focuses on the health

seeking behavior of older persons in Nigeria, sources of support and treatment during malaria episodes, and factors that influence malaria management among the elderly in Nigeria.

Data and method

This study utilized a secondary based data from the 2010 Nigeria Malaria Indicator (MIS) Survey 2010. The survey is the first MIS in Nigeria that provided information on malaria indicators and prevalence for the six geopolitical regions from a nationally representative sample size of 5859 households (National Population Commission (NPC) and National Malaria Control Programme (NMCP) and ICF International 2012). Approval to use the MIS 2010 data set was received from the MEASURE DHS, the organization in charge of the dataset. The household member dataset was analyzed to show the patterns of malaria fever health seeking behavior of the elderly in Nigeria. Since the focus of this study is on older people, household member aged 60 years and above were selected. Age 60 years was used as the cut-off point for the elderly population in consonance with the definition of the WHO (2013); it is also the base age of retirement in the Nigerian public service. However, in recent times, debates on retirement age in Nigeria have favoured moving the age of retirement to 65 or 70 years for different professions. Household sampling weight was used to correct sampling error in the study population. This gives a weighted sample of 1819 older persons across the six geopolitical regions in Nigeria.

The main dependent variable is seeking treatment for malaria fever. Other malaria treatment related dependent variables considered include 1) the experience of fever two weeks preceding the survey, 2) the place malaria treatment was sought, and 3) cost of treatment. The independent variables are sex, educational level, region, wealth index, residence and relationship structure and use of mosquito nets. The variables were re-classified for this study as follows:

Prevalence of fever	yes, no (*response to question: last two weeks sick with fever*)
Sought for treatment	yes; no (*response to question: did get any treatment for fever in last two weeks*)
Place of treatment	Government hospital/ health centre /clinic; Mobile clinic; Private hospital/health centre/clinic; Self treatment Chemist/Patients Medicine Vendors (PMV); Shop/drug/hawker; Traditional practitioner;
Cost of treatment	Actual cost of treatment in Naira
Use of mosquito nets	yes, no (*response to question: type of mosquito nets person slept under last night)*
Sex	male, female
Age	60-69, 70- 79, 80 and above
Educational level	none, primary, secondary, tertiary
Region	North west, north east, north central, south east, south west, south south
Residence	urban, rural
Wealth index	poor, middle, rich

The pattern of health seeking behavior for malaria fever among older people in Nigeria was examined using descriptive statistics. Logistic regression was used to investigate the odds of seeking treatment for fever among different groups; a ratio greater than one implies that the group has higher likelihood of seeking treatment for fever than the reference category. The study is limited because of the proxy nature of reporting for fever; although, some household members were interviewed together, there were instances where the information on fever for the household members in the 2010 NMIS is from proxy reports (NPC, NMCP and ICF International, 2012).

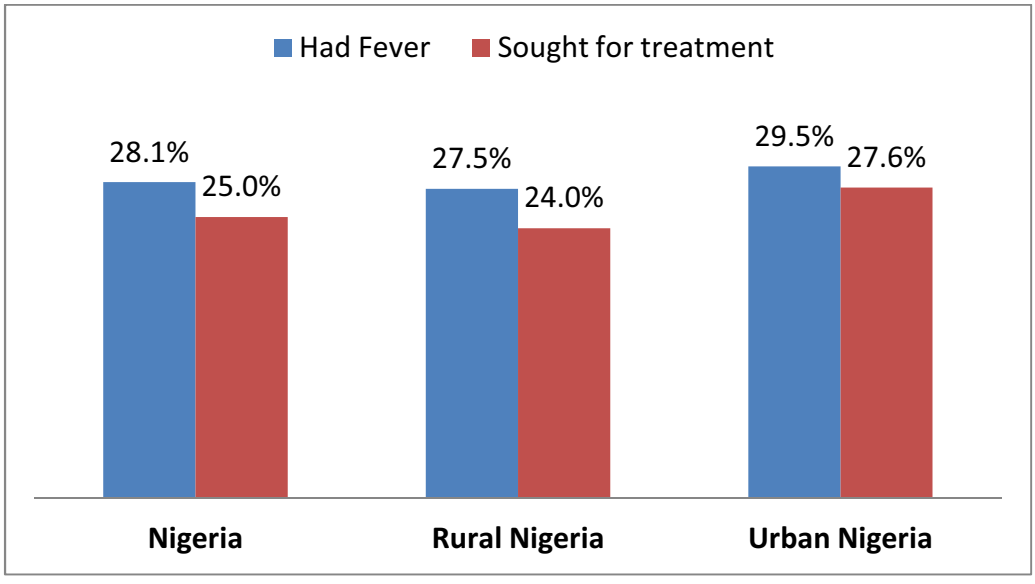
Results

The percentage distributions of selected socio-demographic characteristics of the aged in this study are presented in Table 1. The proportion of male is slightly greater than female older persons in this study. More than 70% of the current cohort of elders in Nigeria do not have any formal education, live in rural area and are below 80 years. The wealth index is a well-known indicator of the economic status of the household that is consistent with expenditure and income measures (NPC, NMCP and ICF International, 2012). The result shows that at least one third of the elders live in a poor household.

Table 1 Background characteristics of the selected older people (n=1819)

Characteristics	Frequency	Percentage
Sex of respondents		
² Male	1045	58
² Female	773	43
Highest Educational level		
² No formal education	1276	71
² Primary education	363	20
² Secondary and above	157	9
Residence		
² Urban	477	26
² Rural	1342	74
Region		
² North Central	54	11
² North East	63	13
² North West	72	14
² South East	79	16
² South South	54	11
² South West	178	35
Wealth index		
² Poor	716	39
² Middle	392	22
² Rich	712	39

Figure 1: Incidence and seeking for treatment of malaria fever among the aged in Nigeria



Prevalence and pattern of treating malaria fever among the aged in Nigeria

Figure 1 shows the prevalence of fever and health seeking behavior among the older people sixty years and above in Nigeria. At least one out of four older people experienced fever in the last two weeks preceding the survey. Although, there is no significant difference in the prevalence of fever by residence ($p>0.05$, ^{2}:0.663), the percentage of urban elders who experienced fever is slightly more than the rural elders. The result also shows that irrespective of the location, not all the elder who had fever sought for treatment.

Table 2 presents the prevalence and seeking of treatment for fever with selected socio-demographic characteristics of the elderly in Nigeria. With the exception of sex of respondents, all other variables were significantly associated ($p<0.05$) with health seeking behavior of the elderly in Nigeria. Elders who live in the urban area of the southern part of Nigeria, have higher education and are rich were more likely to seek treatment than other groups. Although the south western part has the highest prevalence of malaria fever two weeks preceding the survey, majority of these elders sought for treatment. Prevalence of fever is high among female elders in Nigeria, especially in urban area where the rate for female is 35% compared to 25% for male. This pattern is also similar for treatment seeking for fever for male and female elders. The elders in Nigeria with at least secondary education have the lowest prevalence rate of fever, and are likely to seek for treatment.

Table 2 Background characteristics of the selected older people (n=1819)

Characteristics	Nigeria		Rural		Urban	
	Prevalence	Sought treatment	Prevalence	Sought treatment	Prevalence	Sought treatment
Region*						
• North Central	15.6	14.1	13.5	13.1	22.8	18.0
• North East	29.4	22.4	27.8	20.5	34.6	26.9
• North West	30.8	24.3	32.8	24.9	20.5	20.5
• South East	22.6	20.9	25.8	23.2	15.0	15.0
• South South	29.2	26.0	27.7	23.8	37.9	37.9
• South West	39.3	37.8	38.6	36.9	40.5	39.3
Sex of respondents						
• Male	27.8	25.2	28.8	28.3	24.9	22.0
• Female	28.6	25.0	26.0	23.6	35.0	29.9
Highest Educational level*						
• No formal education	26.1	25.7	25.0	20.9	30.1	26.8
• Primary education	36.7	33.4	37.3	35.3	34.6	34.6
• Secondary and above	24.4	21.5	29.0	27.6	20.7	20.7
Wealth index*						
• Poor	27.6	22.8	27.3	22.3	30.6	25.3
• Middle	23.7	21.4	21.0	19.3	37.5	33.6
• Rich	31.0	29.3	33.9	32.5	27.8	25.8

* Significant at 0.05 level

The results presented in Table 3 show that the place of treatment for malaria fever differs significantly in rural and urban area of Nigeria. More than half of the elders received treatment in nearby chemist shops or patient medicine vendors. Seeking treatment from the traditional practitioners is significantly higher in rural area than urban as expected. Conversely, self-treatment is higher in urban than the rural area.

Table 3 Pattern of health seeking behavior on fever among older people in Nigeria

Characteristics	Percentage of *(n)*		
	Nigeria	Rural	Urban
Place of treatment			
• Government hospital/ health centre /clinic	18.0	18.3	17.5
• Private hospital/health centre/clinic	15.4	11.5	25.4
• Mobile clinic	1.2	1.6	0.8
• Chemist/PMV	49.7	52.2	42.9
• Shop/drug/hawker	5.9	6.1	5.6
• Traditional practitioner	4.0	5.1	0.8
• Self-treatment	5.8	5.1	7.1
	(n=438)	(n=312)	(n=126)

Further descriptive analysis in Table 4 on the cost of treatment by place of treatment reveals that at least half of the elder who used either government or private health facilities paid more than N1000 for treatment of fever. This amount is relatively high for older people who face financial constraints. This explains why the overwhelming majority of them patronize Chemists, PMV, shops, drug hawkers and traditional practitioners (Table 4) where the cost of treatment was relatively lower.

Table 4 Association between the place and cost of treatment of fever

Place of treatment	*Cost of treatment (%)			
	Free	Below N500	N500-N1000	Above N1000
• Government hospital/ health centre /clinic	15.2	16.5	16.5	51.9
• Private hospital/health centre/clinic	3.0	9.0	31.3	56.7
• Mobile clinic	20.0	40.0	20.0	20.0
• Chemist/PMV	1.8	61.9	20.6	15.6
• Shop/drug hawker	-	38.5	46.2	15.4
• Traditional practitioner	70.6	5.9	5.9	17.6

Cost in Naira (official rate is N158 = $1)

A mobile clinic is a government-owned health facility with qualified personnel usually managed at the local government level, especially in rural areas. Twenty percent reported that they were treated free while 40 percent paid below N500 for treatment. The majority of the respondent who sought treatment from the traditional practitioner received free treatment.

Factors affecting health seeking behavior for fever among older people

The odds of having fever and, seeking treatment were further estimated using logistic regression because of the dichotomy nature of the two dependent variables; a ratio greater than one implies that the group has higher likelihood of having fever or seeking treatment than the reference category. Three models were estimated for the prevalence of malaria fever among people aged 60 and above in Nigeria. Another three models were also examined for the likelihood of seeking for treatment as shown in Table 5. The first model considered the rural-urban residence; the second model included geo-political regions of Nigeria, while the third model shows an overall effect of selected background char-

acteristics.

Table 5 Estimated odds ratio of fever and treatment seeking on fever among the elderly

Characteristics	**Odds of Malaria Fever**			**Odds of Treatment seeking**		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Residence						
• Rural (ref.)	1.00	1.00	1.00	1.00	1.00	1.00
• Urban	1.09	1.01	0.94	2.12*	1.76	1.60
Region						
• North East (ref)		1.00	1.00		1.00	1.00
• North Central		0.44*	0.43*		3.30*	2.88
• North West		1.05	1.07		1.30	1.19
• South East		0.70	0.53*		3.81*	3.05
• South South		0.99	0.81		2.57	1.96
• South West		1.54*	1.34		7.68*	6.45*
Sex of respondents						
• Female (ref.)			1.00			1.00
• Male			0.89			1.90*
Highest Educational level						
• No formal education (ref.)			1.00			1.00
• Primary education			1.65*			1.24
• Secondary and above			0.84			4.38
Wealth index						
• Poor (ref.)			1.00			1.00
• Middle			0.80			1.14
• Rich			1.17			1.43

* Significant at 0.05 level

There is no significant difference in the odds of malaria fever by residence in all the models. The inclusion of geopolitical region in model 2 shows some difference across the country; the likelihood of the aged having malaria in the North Central is significantly lower than all the regions of the country. On the contrary in this study, the South Western region has the highest significant odds of having malaria fever. While the effect of sex and wealth index are not significant on the chances that the older people in Nigeria will have fever, educational attainment is a significant predictor in this study. Surprisingly, elders with primary education have significant higher odds of fever than other educational groups.

The result on malaria treatment seeking further shows that older people who reside in urban areas have twice the odds of seeking for treatment for fever than those in the rural area of Nigeria. There is significant regional difference in the health seeking behavior of older people in Nigeria. A remarkable finding in this study is that the elders in the South west have the highest likelihood of seeking for treatment for malaria fever than other regions. Although, older people in North Central and South East Nigeria are three times more likely to seek for treatment for fever than those in the North East, those in South West are seven times more likely to do so. This difference persists albeit with slight variation after the introduction of sex, educational level, and wealth index in the third model.

These background variables removed the significant differences observed with respect to region and residence and health seeking behavior of the older people in Nigeria. The percentage change in odds of seeking treatment for fever declined by 25% between the values in model 1, where only residence was considered, to model 3, where all the variables were included. This suggests that the differences in health seeking behavior between the regions as well as rural and urban can be significantly reduced if the background variables are relatively similar.

Discussion

The twenty-eight percent prevalence rate for malaria fever among older people in Nigeria observed in this study is consistent with the findings from NMIS 2010 (NPC, NMCP and ICF International, 2012). It also supports findings by Iloh *et al*. (2012) and Unanka (2002) that acute malaria is among the three most common geriatrics emergencies in Nigeria. Apart from children, the older people aged 60 and above have the highest prevalence rate in Nigeria. The immunity level of the elderly is relatively lower than other age cohorts because of their physiological state (Asiyanbola, 2008).

Although the proportion of those who received treatment for fever is high, about one out of two did not receive treatment in a standard health facility. This is of great concern in the course of peaceful and successful aging. Older people in Nigeria are not predisposed to presenting illness in the hospital (Adebusoye *et al,* 2011*)*; they rather prefer to attend a chemist or drug store where auxiliary pharmacy assistant have little training on prescribed drugs (Oshiname and Brieger, 1992). In Nigeria, having a chemist or being a patient medicine vendor does not necessarily require higher educational attainment or training; the art of selling drugs is learnt in apprenticeship or as a trade. This has implications for the prescription of drug among other issues for ailments and sickness (Oladepo, *et. al.*, 2007); they are likely to prescribe wrongly and sell expired drugs (Brieger, Osamor**,** Salami, Oladepo and Otusanya, 2004). Even in a localized study where awareness of "Artemisinin-Based Combination Therapy" was shown to be high among chemist owners, knowledge of correct timing for drug administration was low (Chukwuocha, Nwakwuo, and Mmerole, 2013). As overmedication and wrong prescription of drugs are detrimental to health of individuals generally, such practices can actually trigger severe consequences on the health of older persons

Conversely, older people's patronage of hospitals, clinics or health centres, either government or private owned, is low. This is a reflection of low accessibility and utilization of health care in Nigeria. The effect of high cost on utilization of medical treatment among the older people is clearly demonstrated in this study. The Chemist/PMVs, who are always within the neighborhood, can manage fever and malaria for older persons at a cost less than the health facility. It seems that older persons are satisfied with the treatment that they received from the Chemist/PMVs owing to intrinsic values that they derived from it which may include proximity, full attention of the attendants and low cost attracted. About seventy percent of those who received treatment from the traditional practitioner claimed that it was free. There is need for an ethnographic study that can detail the reasons for differences in the choice of malaria treatment sources for the elderly.

Regional differences exist in the health seeking behavior of older people in Nigeria. Older people in northern Nigeria are less likely to receive treatment for fever than those in the southern part. The study confirms that the usual north-south dichotomy on health seeking is also applicable to the older people (NPC and ORC Macro, 2009; NPC, NMCP and ICF International, 2012). Likewise, older people who live in urban area, have higher education, and belong to the high wealth index group sought for treatment than other groups. This also is an extension of the rural-urban differentials in malaria-related health-seeking practices that had been observed among various demographic groups in Nigeria (Obikeze, *et al.,* 2010; Okeke and Okeibunor, 2010; Onabanjo and Nwokocha, 2012). The estimated odds shows that the significant differences observed for region and place of residence with respect to health seeking behavior of older people could be obliterated if there were similarity in education and wealth among the elderly.

Conclusion

Malaria fever, one of the most common geriatric illnesses, can significantly cause mortality among older people irrespective of country and culture. This study empirically documents the pattern of health seeking behavior pertaining to malaria treatment of the elderly in Nigeria using a nationally representative sample from the most recent survey (2010). Most of the older people received treatment for malaria fever; however, about half of them did not receive treatment in a standard health facility. The high patronage of chemist, patient medicine vendor and shop raises health concern because of the likelihood of overmedication and wrong prescription of drug. This study suggests that regional difference in health seeking can be avoided if there is a lifelong approach that curbs poverty and illiteracy. Accessibility and affordability of health care is also pertinent for effective use of health care facility by older people in Nigeria.

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