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Research Article

# Accessibility of Medications by Chronically Ill Older Patients: A Cross-Sectional Assessment of Universal Health Coverage Among the Elderly in Nigeria

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## Abstract

**Background:** United Nations in 2017 reported that over the coming decades, the number of older persons is expected to grow fastest in Africa, including Nigeria. As population aging increases, it comes with health system burden of age-related chronic illness which has become prominent cause of morbidities and mortalities among the elderly, especially in absence of reliable access to medications. Nigeria is challenged with poor accessibility and affordability of quality health care and medications, impeding the achievement of Universal Health Coverage (UHC) goal. To address this challenge in face of increasing age-related chronic illnesses, attention must be given to status of UHC among the elderly in order to inform intervention strategies. We aimed to assess UHC among the elderly through assessing the accessibility of medication by chronically ill older patients in Nigeria.

**Methods:** Using a cross-sectional study design, study was conducted in three communities in Nigeria from Dec 2016 to Aug 2017. From total 6,632,730 population of older persons in Nigeria, minimum sample size of 385 was calculated. Using a systematic random sampling technique, participants who met inclusion criteria were selected from list of older persons who attended community projects held in study areas. A guided structured questionnaire was used to conduct an in-depth interview among participants. Participants' demographics were recorded along with self-reported chronic medical conditions and UHC assessment questions. Key questions on accessibility of medication and UHC were "Can you always afford the medicine that you need for your chronic medical condition?" and "Are you under the National Health Insurance scheme that aids health access?" Data was analyzed using SPSS version 20, comparing demographic characteristics of respondents and responses from assessments of UHC.

**Findings:** Respondents were 521 (above minimum sample size of 385), with age range of 55–95 years. 365 (70%) were female, 302 (58%) had a minimum of primary education, and 240 (46%) reported farming as their occupation. 235 (45%) reported hypertension, 229 (44%) arthritis, and 57 (11%) had diabetes. Only 22% (114/521) responded yes to the question "Can you always afford the medicine that you need for your chronic medical condition?"; 19% (44/234) of hypertensive patients, 24% (55/229) of arthritic patients, and 7% (4/57) of diabetic patients. The remaining 78% had missed medications owing to unaffordability/cost. Those who stated "business" as occupation were most likely to afford medications compared to others (X2 =129.71, $p < 0.00001$ at 95% CI). On the other hand, only 18% are enrolled into health insurance program to aid health and medication access.

**Conclusion:** Chronically ill older patients in Nigeria cannot always afford medications and majority are not enrolled into health insurance program to aid health and medication access. Thus aim of UHC is short of being achieved among the elderly in Nigeria. Innovative strategies - such as enrollment of elderly persons into health insurance program to aid access to health care and medication and providing socioeconomic support for the elderly - are recommended to improve UHC among the elderly in Nigeria.

**Keywords:** Accessibility of Medications; Chronically Ill; Older Persons; Universal Health Coverage; Nigeria

## Introduction

### Population aging

The pace of population ageing is much faster than in the past. According to WHO, [1] between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. And by 2020, the number of people aged 60 years and older will outnumber children younger than 5 years. United Nations [2] in 2017 reported that over the coming decades, the number of older persons is expected to grow fastest in Africa, where the population aged 60 or over is projected to increase more than threefold between 2017 and 2050, from 69 to 226 million. In 2015, 4.5 per cent of Nigeria's population was aged 60 years or over and that proportion is projected to change (to 4.8 per cent) through 2030. By 2050, however, the proportion of older persons in Nigeria is expected to have begun to grow more significantly, reaching 6.3 per cent in the medium variant projection [3]. According to CIA, [4] Nigeria has a number of older persons with 5.1% elderly dependency. Thus out of the large population of 203,452,505 (July 2018 est.), [4] the absolute number of older persons that form the dependency ratio is relatively high. Nigeria, population of older persons aged 60 years and over are 3.26% of the population comprising of 3,138,206 males and 3,494,524 female (total of 6632730) [4,5]. This crude numbers represents an increase of 600,000 during the 5-year period; 2012 - 2017 [6].

Exponential increase in population aging unfortunately is not proportional to quality of life for the elderly. In 2013, global health Africa shared report of the Global Age Watch Index [7], on the quality of life of older people in 91 nations. The report included several factors such as income security, health and well- being, employment and education. African nations did not fare well. South Africa was the highest ranked African nation at number 65 while Ghana, Morocco, Nigeria, Malawi, Rwanda and Tanzania came in at numbers 69, 81, 85, 86, 87 and 90 respectively. Another survey done among African countries [8] showed that in 11 of 15 African countries, the proportion of older people living in poverty was higher than the national average. And specifically in Nigeria, a study done in Ibadan [9] reported that economic status was the most consistent predictor of the four domains of quality of life, thus economic support ought to be integrated into the plan to improve health care among the elderly in Nigeria. This is more so as poverty is widespread and elderly persons are at higher risk, and especially that the elderly persons in Nigeria reside more in rural communities, particularly those who have retired from their place of work [10] where health enabling factors are not always available.

### Chronic illness among the elderly

Moreover, as population aging increases, it comes to meet already unprepared health care system in Nigeria, which ought to be preparing to embrace and manage increasing age-related chronic illness coming with increasing number of older persons. Chronic non-communicable diseases become prominent causes of morbidities and mortalities as people grow older [11,12]. The co-occurrence of two or more chronic disease conditions in the same person over a specific period is termed multimorbidity, [12,13] and the prevalence of multimorbidity tends to increase with age [12]. Ageing is associated with both intrinsic and extrinsic changes and increased incidence of chronic diseases which leads to increased morbidity. In many instances, older patients present with comorbidities which have drug load, compliance, and financial implications [14]. According to National council on aging (NCOA), [15] 80% percent of adults 65 and older have at least one condition, while 68% have two or more. The top ten age-related chronic illnesses listed by NCOA thus include hypertension, high cholesterol, arthritis, ischemic heart disease, diabetes, chronic kidney disease, heart failure, depression, Alzeheimer disease and dementia and chronic obstructive pulmonary disease. In addition to these are ophthalmic and auditory impairments. A study by Osemekenwani., et al. [12] done in Nigeria on common chronic illnesses among the older persons, hypertension (51.0%) and diabetes mellitus (42.9%) are most common among the 341 older persons studied in Nigeria. Another study by Abdulraheem., *et al.* [16] found out that arthritis is a leading cause of disability among the elderly, ahead of stroke. Thus hypertension, diabetes and arthritis are among the leading chronic illness among the elderly in Nigeria. These age-related chronic illnesses among older populations require constant accessibility of medication to prevent complications and death while improving quality of life.

### Accessibility of medication by elderly persons

According to Glaxosmithkleine (GSK) [17], access to quality medication has been identified as one of the greatest challenges facing Africa. And many of the most neglected people in terms of healthcare live in the poorest countries often in Sub-Saharan Africa and in the rural areas, with Nigeria having over 70% of its population living in the semi urban and rural areas, where affordability and access to quality medications is a major challenge [17]. An author stated that despite the dislocation of healthcare systems leading to eclectic health-seeking behavior in response to the proliferation of healthcare services, most Nigerians especially those in the middle and lower class (where majority older persons belong), still have difficulties accessing these services due to their prohibitive costs [18]. The World Bank's estimates of over 60% of Nigerians living below the poverty line indicate that a significant portion of the Nigerian public cannot access quality health service and medications due to the concomitant high costs that are associated with neoliberal reforms of Nigeria health To address the gap in accessibility and affordability of health care and medication in face of age-related chronic illness, attention to the health needs of older people is especially timely in the context of universal health coverage (UHC). System [19]. Among the population of Nigeria living below poverty line as quoted by world bank, aging population who by virtue of reduction in income due to retirement and somewhat loss of physical strength due to aging process are undoubtedly found, thus affordability of medication could become a challenge among this population.

Universal health coverage is a critical component of the post-2015 agenda, bringing together various health and development

efforts to ensure health and well-being for all at all ages and that no one is left behind. A key dimension of this agenda relates to the availability, accessibility, acceptability and quality of essential medications and assistive devices for older people [20]. Also, the Sustainable Development Goals, adopted at the United Nations Summit in September 2015, emphasizes health and well-being for all at all ages. The goals set a new and ambitious paradigm for development in the context of rapid, unprecedented and potentially overwhelming environmental, social, demographic and political changes, including population ageing, drawing attention to the broader social determinants of health and related intersectional ties [20]. Specifically, SDG goal three which is to ensure healthy lives and promote wellbeing for all at all ages, should ensure all ages including older persons are carried along in plans to ensure the healthy lives and promote wellbeing. Thus relating this goal with UHC, WHO stated that, a lot of health programs have been skewed to children, pregnant women and young adults, leaving the elderly out, yet if goal of universal health coverage will be achieved, the health plan of the elderly must be considered [20]. Therefore meeting the health needs of vulnerable groups, such as older people, is a key aspect of meeting the universal health coverage agenda.

### Universal health coverage

Universal Health Coverage (UHC) is defined by WHO as ensuring that all people and communities receive the quality services they need, and are protected from health threats without financial hardship [21]. UHC includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care [22]. Thus the world health organization (WHO) suggests that UHC enables everyone to access the services that address the most significant causes of disease and death, and ensures that the quality of those services is good enough to improve the health of the people who receive them. And protecting people from the financial consequences of paying for health services out of their own pockets reduces the risk that people will be pushed into poverty because unexpected illness requires them to use up their life savings, sell assets, or borrow. Despite the need for UHC, it has been reported that achieving UHC has been poor, especially in poor lower and middle income countries like Africa. Thus, WHO [22] reported in 2019 that at least half of the world's population still do not have full coverage of essential health services needed for UHC to be achieved. And that about 100 million people are still being pushed into extreme poverty (defined as living on 1.90 USD or less a day) because they have to pay for health care. In addition, over 800 million people (almost 12% of the world's population) spent at least 10% of their household budgets to pay for health care. However, all UN Member States (including Nigeria) have agreed to try to achieve universal health coverage (UHC) by 2030, as part of the Sustainable Development Goals. Thus achieving UHC is one of the targets the nations of the world set when adopting the Sustainable Development Goals in 2015 [22].

However, though countries are already making progress towards UHC, in countries where health services have traditionally been accessible and affordable, governments are finding it increasingly difficult to respond to the ever-growing health needs of the populations and the increasing costs of health services [22]. Thus maintaining a sustainable plan can be innovated, such as used in drug revolving fund', which allows somewhat contribution from beneficiaries to share and cushion increasing cost of health care between the government and the population. In line with addressing cost of health care, moving towards UHC requires strengthening health systems in all countries. This is important while considering the increasing number of population aging who by virtue of aging are in need of health system strengthening including financial support. When people have to pay most of the cost for health services out of their own pockets, the poor are often unable to obtain many of the services they need, and even the rich may be exposed to financial hardship in the event of severe or long-term illness. Thus if the preceding statement is the case, then the older persons whose financial income depreciates due to retirement and need for health care increases due to emerging age related chronic illnesses, must critically be planned. WHO[2] suggests that pooling funds from compulsory funding sources (such as mandatory insurance contributions) can spread the financial risks of illness across a population, thus allowing population aging to benefit from support for health cost. The health financing will also cover sound systems of procurement and supply of modifications which the older persons will benefit from, especially that their illnesses are usually chronic, needing constant supply and adherence to medication to live a quality of life.

In addition to achieving UHC through support for health cost, WHO also recommended that improving health service coverage and health outcomes will depend on the availability, accessibility, and capacity of health workers to deliver quality people-centered integrated care, [22] in which affordability of medications can be integrated. This strategy speaks to training of health care providers specifically to provide quality health care centered on aging health. Moreover, investing in the primary health care workforce is the most cost-effective way to ensure access to essential health care will improve according to WHO [22]. Therefore preparing the workforce on health care of the elderly and investing in PHCs to provide age related health care will increase access of health care to older persons as PHCs are relatively closer to the communities where older persons live.

### National health insurance program to aid health and medication access

More also, investments in in health insurance program for older persons should be considered as a way of reducing/removing the financial burden of out of pocket spending on health and medication among this population. In Nigeria, National health insurance program was established in 2006 to support health care for the population, [23] including for the older persons who are in need of it. However, More than 90% of the Nigerian population is uninsured in spite of the establishment of a National Health Insurance Scheme (NHIS), in 2006, and while less than 5% of Nigerians in the formal sector are covered by the NHIS, only 3% of people in the informal sector are covered by voluntary private health insur-

ance. This leaves the uninsured patients (including old persons) at the mercy of a non-performing health System [24]. Older persons should therefore be supported to enroll into the NHIS program to increase access to health and medications for proper management of chronic illnesses common with aging including medications for age-related chronic illness. These would be actionable steps to achieving UHC, where health care of the elderly are considered including accessibility and affordability of medications as required. Thus considering the health and social care needs of the increasing numbers of older people- who make up 6.6 million of Nigerian population, is an important step to achieving the UHC in Nigeria.

### Significance of study

The aim of universal health coverage among the elderly cannot be achieved if issues- such as increasing accessibility and affordability of health care and medication- that speak directly to quality of health care of older persons are not assessed, reported and acted upon. Evidence from this study will inform geriatric program planning and implementation. The study will also contribute to body of knowledge on baseline data of level of affordability of health care among older adults and their enrollment into NHIS tp aid health and medication access. Table 1 displays the demographic characteristics of respondents. Though age range is 55 - 95, majority of respondents are in age 61 - 65(28%). Females form majority of respondents (70%). Majority are either married (42.0%) or widowed (51.1%). Address of majority (74.9%) are classified as rural setting. On education status, majority either had primary education (46.1%) or none (26.1%). Farming form major occupation (46.1%), followed by retiree (19.0%) and then business (13.6) and civil servant (8.1), however, 13.2% responded to not having any occupation.

### Purpose of study

In line with aim of achieving UHC, assessing medication accessibility and affordability among the elderly is crucial. Medication accessibility/affordability is one of the six assessment questions asked in UHC, that is; "can you get medicine and other products that you need?" Assessing this domain of UHC will provide information on level of UHC among the elderly and provide further information needed to plan for intervention program among this population. This study thus aimed to assess UHC among older patients in Nigeria in area of affordability of medication and enrollment into national health insurance program to aid accessibility of healthcare and medication.

## Materials and Methods

### Study design, setting and sampling

This is a qualitative study using cross-sectional design. Enrolment of older people into the study were done using community project approach. Study was conducted in three communities (Ukpo, Uburu, and Afikpo) across Nigeria, between December 16, 2016 and August 2017. The study area (communities) are in Anambra and Ebonyi states, eastern part of Nigeria with total population of 6354775, out of which 3.26% (209707) are elderly [6]. Using 6632730, the reported population of older persons in Nigeria [6], minimum sample size of 385 was calculated (at 95% CI and 5% margin error). Thus the number of respondents must lie on or above the minimum sample size. Community outreach projects were held in the study communities, and health services, education and materials were provided free for the elderly. Among the list of total 2124 of elderly persons that attended the community project, people who met inclusion criteria, (which are age ≥ 55 years and has at least one reported predominant common chronic illness in Nigeria (hypertension, diabetes, arthritis)), were selected into study using a systematic random sampling technique, ensuring minimum sample size of 385 is reached. Verbal consents were obtained among respondents before interview.

### Data collection and analysis

An in-depth interview using a guided structured questionnaire- adopted from WHO universal health coverage assessment questions- was conducted among participants. Participants' demographics were recorded along with self-reported chronic medical conditions. Three key UHC assessment questions asked include; "Can you always afford the medicine that you need for your chronic medical condition?"; ''Ever missed medication due to cost?''; "Are you under the National Health Insurance scheme that aids health and medication access?" Data was analyzed using SPSS version 20.0. Demographic characteristics of respondents were analyzed using descriptive statistics. Percentage analysis was done of; those that can afford their medication, those who missed medication due to cost and those who are on NHIS to aid health and medication access. Data was presented in frequency distribution table. Chi square was used to compare strength of association between demographic characteristics, affordability of medication and NHIS enrollment. Significance was defined at $p < 0.05$ at 95% confidence interval.

## Result

521 participants who met the inclusion criteria were recruited into study. Data were collected (ensuring 100% completion of all sections in questionnaire for every participants), data were analyzed and result presented based on demographic variable and assessment of UHC (affordability of medication and enrollment in health insurance)

| Variables | N=521 Frequency (%) |
|---|---|
| **Age** | |
| 55-60 | 72(13.8) |
| 61-65 | 149(28.6) |
| 66-70 | 99(19.0) |
| 71-75 | 83(15.9) |
| 76-80 | 40(7.7) |
| 81-85 | 41(7.9) |
| 86-90 | 30(5.8) |
| 91-95 | 7(1.3) |
| 96-100 | 0(0) |
| >100 | 0(0) |
| **Sex** | |
| Male | 156(29.9) |
| Female | 365(70.1) |
| **Marital status** | |
| Single | 22(4.2) |
| Married | 219(42.0) |

| | |
|---|---|
| Divorced | 14(2.7) |
| Widowed | 266(51.1) |
| **Setting** | |
| Urban | 82(15.7) |
| Rural | 439(84.3) |
| **Education status** | |
| None | 136(26.1) |
| Primary | 302(58.0) |
| Secondary | 41(7.9) |
| Post-secondary | 42(8.0) |
| **Occupation** | |
| None | 69(13.2) |
| Farming | 240(46.1) |
| Business | 71(13.6) |
| Civil servant | 42(8.1) |
| Retiree | 99(19.0) |

Table 1 displays the demographic characteristics of respondents. Though age range is 55 - 95, majority of respondents are in age 61 - 65(28%). Females form majority of respondents (70%). Majority are either married (42.0%) or widowed (51.1%). Address of majority (74.9%) are classified as rural setting. On education status, majority either had primary education (46.1%) or none (26.1%). Farming form major occupation (46.1%), followed by retiree (19.0%) and then business (13.6) and civil servant (8.1), however, 13.2% responded to not having any occupation.

**Table 1:** Demographic characteristics (Age. Sex and marital status).

| Variable | Total N=521 Frequency (%) | Male Frequency (%) | Female Frequency (%) | $X^2$ (P value) |
|---|---|---|---|---|
| Hyper-tension | 235 (45.2) | 62(26.4) | 173(73.6) | 8.51(0.004)* |
| Arthritis | 229 (44.1) | 29(12.7) | 200(87.3) | 76.51(0.00001)* |
| Diabetes | 58 (11.0) | 26 (44.8) | 32(55.2) | 4.12(0.042)* |

**Table 2:** Predominant chronic illness

Note: *significant difference.

Among the predominant chronic illness among the respondents (in Table 3 above), hypertension is the predominant illness (45%), followed closely by arthritis (44%), whereas diabetes was less reported (11%).

Table 3 displays the assessment of UHC (affordability of medications and enrollment into health insurance program). Out of the 521 respondents with at least 1 chronic illness, only 22% responded yes to ability to always afford medication; more among arthritis patients (28.8%) and least among diabetic patients (7%). On the other hand, 77.9% agreed to have ever missed medication due to cost (unaffordability); mostly among diabetic patients (94.7%), followed by hypertensive patients (80.9%) and then arthritis patients (70.7%). Also, only 18% are on national health insurance scheme that aid health and medication access.

As displayed in table 5 above, there is statistical significance across demographic characteristic and affordability of medication; being a male(41.3%), married(29.7%), living in urban setting(37.8%), having post-secondary education (66.7%) and having business as occupation (59.2%) significantly increase the chance of affording medications, at $p < 0.05$ (95% CI).

Table 5 above displays statistical significant differences between demographic characteristics of respondents and enrollment into NHIS; while being married (25.1%), living in urban setting (37.8%), post-secondary education(92.9%) and civil servants (81.0%) have higher chance of being enrolled into NHIS ($p<0.05$), being male or female has no difference.

Table 6 shows significant difference between enrollments into NHIS and affordability of medication; those enrolled into NHIS has higher more than 50% chance of affording medication than those who are not enrolled, $p < 0.05$.

| Assessment categories | Hypertension (n=235) n='yes' (%) | Arthritis (n=229) n= 'yes' (%) | Diabetes (n=57) n='yes' (%) | Total (N=521). n='yes' (%) | $X^2$ (P value) |
|---|---|---|---|---|---|
| "Can you always afford the medicine that you need for your chronic medical condition?" | 44(18.7) | 66(28.8) | 4(7.0) | 114 (21.9) | 21.534(<0.01)* |
| ''Ever missed medication due to cost?'' | 190(80.9) | 162(70.7) | 54(94.7) | 406(77.9) | 21.798(<0.01)* |
| "Are you under the National Health Insurance scheme that aids health and medication access?" | 43(18.3) | 30(13.1) | 21(36.8) | 94(18.0) | 81.085(<0.01)* |

**Table 3:** Assessment of Universal health coverage (affordability of medications and enrollment into health insurance program).

Note: *significantly different.

| Demographic characteristics | N=521 | Can afford medication (N=114) Frequency (%) | Cannot afford medication (N=407) Frequency (%) | $X^2$ (P value) |
|---|---|---|---|---|
| **Sex** | | | | |
| Male | 172 | 71 (41.3) | 101(58.7) | 56.52(0.0001)* |
| Female | 349 | 43(12.3) | 306(87.7) | |
| ***Marital status*** | | | | |
| Single | 22 | 3 (13.6) | 19(86.4) | 13.58 (0.003)* |
| Married | 219 | 65(29.7) | 154(70.3) | |
| Divorced | 14 | 2(14.3) | 12(85.7) | |
| Widowed | 266 | 44(16.5) | 222(83.5) | |
| ***Setting*** | | | | |
| Urban | 82 | 31(37.8) | 51(62.2) | 14.44 (0.0001) |
| Rural | 439 | 83(18.9) | 356(81.1) | |
| ***Education*** | | | | |
| None | 136 | 16(11.8) | 120(88.2) | 57.93(0.00001)* |
| Primary | 302 | 61(20.0) | 241(79.8) | |
| Secondary | 41 | 9(22.0) | 32(78.0) | |
| Post-secondary | 42 | 28(66.7) | 14(33.3) | |
| ***Occupation*** | | | | |
| None | 69 | 13(18.8) | 56(81.2) | 72.18 (0.00001)* |
| Farming | 240 | 35(14.6) | 205(85.4) | |
| Business | 71 | 42(59.2) | 29(40.8) | |
| Civil servant | 42 | 12(28.6) | 30(71.4) | |
| Retiree | 99 | 12(12.1) | 87(87.9) | |

**Table 4:** Association between demographic characteristics and affordability of medication

*Statistically Significant.

| Demographic characteristics | N=521 | Enrolled into NHIS (N=94) Frequency (%) | Not enrolled into NHIS (N=427) Frequency (%) | $X^2$ (P value) |
|---|---|---|---|---|
| **Sex** | | | | |
| Male | 172 | 24 (41.3) | 148(58.7) | 2.903(0.088) |
| Female | 349 | 70(12.3) | 279(87.7) | |
| ***Marital status*** | | | | |
| Single | 22 | 5 (22.7) | 17 (77.3) | 15.18 (0.002)* |
| Married | 219 | 55 (25.1) | 164(74.9) | |
| Divorced | 14 | 3(21.4) | 11(78.6) | |
| Widowed | 266 | 31(11.7) | 235(88.3) | |
| ***Setting*** | | | | |
| Urban | 82 | 35(37.8) | 47(62.2) | 39.96 (0.00001)* |
| Rural | 439 | 59(14.4) | 380(86.6) | |
| ***Education*** | | | | |
| None | 136 | 6(4.4) | 130(95.6) | 164.48(0.00001)* |
| Primary | 302 | 46(15.2) | 256(84.8) | |
| Secondary | 41 | 3(7.3) | 38(92.7) | |
| Post-secondary | 42 | 39(92.9) | 3(7.1) | |
| ***Occupation*** | | | | |
| None | 69 | 3(4.3) | 66(95.7) | 129.71 (0.00001)* |
| Farming | 240 | 27(11.2) | 213(88.8) | |
| Business | 71 | 10(14.1) | 61(85.9) | |
| Civil servant | 42 | 34(81.0) | 8(19.0) | |
| Retiree | 99 | 20(20.2) | 79(79.8) | |

**Table 5:** Association between demographic characteristics and enrollment into NHIS

*Statistically Significant.

| Enrollment into NHIS | N=521 | Can afford medication | Cannot afford medication | $X^2$ (P value) |
|---|---|---|---|---|
| Number enrolled into NHIS | 94 | 56 (59.6) | 38 (40.4) | 58.49(<0.00001)* |
| Number not enrolled into NHIS | 427 | 88 (20.6) | 339 (79.4) | |

**Table 6:** Association between enrollment into National health insurance scheme (NHIS) and affordability of medication

*Statistically Significant.

## Discussion

Five hundred and twenty one older persons participated the study. Though age range is 55 - 95, majority of respondents are in age 61 – 65 (28%). Females form majority of respondents (70%) and majority are either married (42.0%) or widowed (51.1%). Majority of respondents having lost a spouse could be due to increase mortality at older age especially as a result of poor quality of life of elderly in Nigeria [7,9]. Address of majority (74.9%) are classified as rural setting. This is in line with Adebowale., et al. [10] who reported that elderly persons in Nigeria reside more in rural communities, particularly those who have retired from their place of work. On education status, majority either had primary education or have no formal education, demonstrating low education level of education among the elderly in Nigeria, though this could have been because majority of the elderly under study live in rural areas where education has been reportedly low. Farming form major occupation which is major occupation of rural dwellers. However, farming which is strength demanding could further affect the health and wellbeing of the elderly. Next to farming are retiree, which is not odd as age of retirement in Nigeria is 60 - 65 years, these fall into categories of pensioners with uneasy access to pension in Nigeria, thus increasing financial difficulty related to unaffordability of medication. Next is business and civil servant. However, 13.2% responded to not having any occupation. This could be due to retirement from non-formal jobs due to aging, which also increases financial difficulty related to unaffordability of medication.

Among the predominant chronic illness among the respondents, hypertension is the predominant illness (45%), followed closely by arthritis (44%), whereas diabetes was less reported (11%). This agrees with Osemekenwani., *et al.* [12] who reported that among the common chronic illnesses among the older persons, hypertension and diabetes mellitus are most common in Nigeria. Whereas Abdulraheem., *et al.* [16] found out that arthritis is a leading cause of disability among the elderly. Thus intervention to provide focused intervention for chronic illnesses among the elderly in Nigeria should consider prioritizing hypertension, diabetes and arthritis for greater impact

### Universal health coverage; assessing accessibility of medication among the elderly

To assess universal health coverage among the elderly, affordability of medications and non-adherence to medication due to financial cost were assessed. Out of the 521 respondents with at least 1 chronic illness, only 22% responded to being able to always afford medication. This shows that there is poor level of affordability of medications among the elderly in Nigeria. Age related chronic illnesses are common among the elderly, and come with cost demanding health and medication needs, making it difficult for the elderly to always afford their medication. This is worse off among diabetic patients (7%), perhaps due to high cost of diabetic medications. There is therefore need to plan for strategies to cushion cost of medication for the elderly in Nigeria. This is important especially that Nigeria has over 70% of its population living in the semi urban and rural areas, where affordability and access to quality medications is a major challenge [17].

On the other hand, majority agreed to have ever missed medication due to cost (unaffordability). Non adherence to medication due to cost was mostly among diabetic patients, followed by hypertensive patients and then arthritis patients. This predisposes the elderly to complication of drug non-adherence and mismanagement of the condition, worsening quality of life and mortality rate among the population. Non adherence to medication due to cost observed among this group fails to meet the aim of Universal health coverage which according to WHO, is ensuring that all people and communities receive the quality services they need, and are protected from health threats without financial hardship [21]. Thus as chronic non-communicable diseases become prominent causes of morbidities and mortalities as people grow older, [11,12] there is eminent need to plan for intervention to reduce cost of medication for chronic illness among the elderly. This is aimed at avoiding complication and death due to poor management resulting from non-adherence to medication.

On comparing association of demographic characteristics and affordability of medication, males were more likely to afford medication than their female counterparts. This may be due to stronger economic capacity of men compared to women. Thus financial/economic empowerment for elderly women can be a strategy to increase their ability to afford the needed medication. Also, married persons reported higher chance of affording their medication than the unmarried (single, divorced or widowed). Perhaps this could be as a result of support and partnership provided by the spouse. Moreover, affordability of medication increases among urban than rural dwellers. This could be due to health enabling factors- such as presence of health facilities and higher economic opportunities- in urban than rural setting. Thus intervention could focus more on rural setting to meet needs of the elderly, where majority are reported to live in Nigeria [10]. In addition, having post-secondary education and having business as occupation significantly increase the chance of affording medications, at $p < 0.05$ (95% CI). This agrees

with Adebowale., *et al*. [10] who reported that increased education status increases well-being of older persons. And on the other hand, business perhaps increases financial capacity that invariably increases ability of the older person to afford medication. These factors could be considered while planning socioeconomic interventions related to health outcomes among elderly persons, in line with WHO declaration that if goal of universal health coverage will be achieved, the health plan of the elderly must be considered [20].

### Universal health coverage; enrollment into national health insurance scheme to aid health and medication access

Among the elderly studied, only 18% are on national health insurance scheme that aid health and medication access. This finding agrees with finding of Aregbeshola., *et al*. [24] that despite NHIS establishment over two decades ago, more than 90% of the Nigerian population is uninsured, and while less than 5% of Nigerians in the formal sector are covered by the NHIS, only 3% of people in the informal sector are covered by voluntary private health insurance. This leaves the uninsured patients (including old persons) at the mercy of a non-performing health System. Older persons should therefore be supported to enroll into the NHIS program to increase access to health and medications for proper management of chronic illnesses common with aging.

Comparing association between demographic characteristics of respondents and enrollment into NHIS, married people tend to have higher chance of being enrolled into NHIS probably due to support from spouse. And those living in urban setting, where information on NHIS could be assessed, enrolled more into the health insurance program than those in rural setting. Yet majority of the older persons live in rural setting, which increases the need to take the message of health insurance to rural settings and grassroots. Also, those with higher education who are learned are the most to be enrolled into the insurance program. Moreover, civil servants have the highest chance of being enrolled into NHIS than the other occupations. This is because the majority of those enrolled into NHIS are workers in formal sector [24]. However, there is no difference in chances of enrollment into NHIS among the genders.

Moreover, those enrolled into NHIS have more than 50% chance of affording medication than those who are not enrolled, $p < 0.05$. Therefore, since medication provision is among the serves provided to clients enrolled in health insurance programs at very subsidized or no cost, older persons will mostly benefit from this program. This will invariably increase affordability of medication for the age-related chronic illnesses among the elderly. This intervention would reduce morbidity and mortality among the elderly, improving their quality of life.

## Conclusion

Chronically ill older people in Nigeria cannot always afford medications. Majority of them are also not enrolled into national health insurance program to aid health and medication access. This predisposes them to non-adherence to medications with resultant effects such as complication of disease conditions, poor quality of life and increased mortality. Thus the aim of achieving the goal of universal health coverage, which is to ensure that all people and communities receive the quality services they need, and are protected from health threats without financial hardship, is still farfetched among the elderly in Nigeria. Therefore innovative strategies to improve affordability of health care and medication among the elderly should be critically planned for, especially as population aging continues to increase. Such strategies could include enrollment of older persons into national health insurance scheme to reduce out of pocket expense on health and medication. Also, since increased financial capacity increases affordability of medication, providing socioeconomic support (including good pension management for retiree) should be considered. Moreover, awareness creation on benefits of national health insurance program for the elderly should be taken to rural areas where majority of the elderly live to make greater impact.

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