

Predictors of health insurance uptake among residents of Lagos, Nigeria

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ABSTRACT

INTRODUCTION Health insurance is a health-financing mechanism to protect people from catastrophic healthcare costs and limits out-of-pocket spending on healthcare, which is directly linked to poverty. This study assesses the extent of health-insurance uptake and associated factors in Lagos, Nigeria.

METHODS We conducted a cross-sectional survey of consenting adults residing in Lagos, Nigeria. Participants were enrolled at general outpatient clinics of four public health facilities in Lagos State. Sociodemographic characteristics and data on health-insurance uptake were obtained and grouped into uninsured, National Health-Insurance Scheme (NHIS) and Private Health-Insurance (PHI). Factors associated with health-insurance uptake were determined using chi-squared tests and logistic regression models. Statistical significance was placed at $p < 0.05$.

RESULTS A total of 1000 respondents were enrolled in the

study. Overall, 9.5% of participants had health-insurance: NHIS (5.6%) and PHI (3.9%). Males had a higher health-insurance uptake than females ($p = 0.035$). Respondents who were married had higher odds of health-insurance uptake than those that were single (AOR=2.23; 95% CI: 1.20–4.16; $p = 0.01$). Similarly, respondents who had a secondary-school diploma had higher odds of having a health insurance compared to those with less than a secondary-school education (AOR=5.20; 95% CI: 1.14–23.68; $p = 0.03$).

CONCLUSIONS Our findings suggest a low rate of health-insurance uptake in the population. Being male, married and possessing a secondary school diploma or higher were associated with higher odds of health insurance uptake. Policy measures should focus on expanding access to health insurance, particularly among the less educated and the informal employment sector.

INTRODUCTION

Innovations and technology in healthcare have led to increased healthcare costs, which have been accompanied by limited access to the highest quality of care in underserved populations¹. Health insurance is a health financing mechanism to protect people from catastrophic healthcare costs and is one approach to ensuring Universal Health Coverage (UHC)². UHC implies that all people have access to the full range of quality health services they need, when and where they need them and without financial hardship. It is a key strategy to achieve the third sustainable development goal, which aims to ensure healthy lives and promote well-

being for all ages. It covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation, and palliative care across the life course.

The World Health Organization (WHO) proposed the UHC to promote increased access to quality healthcare and combat the financial implications of out-of-pocket health payments². Achieving UHC is challenging since it involves financial risk mitigation, identifying the critical elements that advance or limit access to services, such as affordability and availability of healthcare services, and removing these barriers while also addressing inequities

and inequalities³. UHC is a multisectoral issue that requires legislation, budgetary allocations, and regulatory oversight, and it involves several governmental and non-governmental sectors for its implementation. Financing health services is essential to achieving UHC, and health insurance is a critical component of financing options to achieve qualitative healthcare⁴.

In Nigeria, healthcare is funded through different sources; however, current estimates suggest that over 70% of Nigerians still depend on out-of-pocket payments, making it the country's major source of healthcare financing⁵. According to the World Bank, out-of-pocket spending on healthcare is directly linked to an increase in the number of people who fall into extreme poverty⁶. With over 90 million Nigerians living in poverty⁷, financial protection is crucial so more people are not pushed into extreme poverty due to healthcare costs.

The Nigerian government established the National Health Insurance Scheme (NHIS) in response to increased out-of-pocket payments and the call for a movement towards UHC⁸. Although NHIS started its operation in 2005, as of 2016, less than 5% of the Nigerian population had been enrolled in this program, with higher coverage amongst people in the federal sector, leaving the greater part of the population uninsured^{9,10}. Another source of health financing is private health insurance (PHI) which covers less than 1% of the Nigerian population¹¹. In addition to the NHIS and PHI schemes, state health insurance schemes may also provide citizens with health financing opportunities^{8,12}. Based on the last Demographic and Health Survey in Nigeria, the prevalence of coverage of health insurance was 2.8%, which was very low compared to South Africa, with a prevalence of 13.3%¹³.

Lagos is currently the most populous city in Sub-Saharan Africa, with over 20 million inhabitants, widely distributed in several rural and urban communities. It is a densely populated state and the economic and business hub of Nigeria, with almost half of the commercial activities in the country taking place in the city¹⁴. In contrast to other states in Nigeria, Lagos has the highest number of health facilities, including 26 general hospitals and 256 primary health centers managed by the state government, and over 2800 private hospitals, specialist clinics and laboratories¹⁵. In 2015, the Lagos state government enacted the Lagos State Health Management Agency Law to guide the establishment of the Lagos State Health Management Agency (LASHMA) to ensure that residents of Lagos State have access to quality healthcare and limit out-of-pocket healthcare spending¹². The agency launched the Lagos State Health Insurance Scheme (LSHS)¹², which began enrolling users in the third quarter of 2019. Prior to the inauguration of the LSHS, Lagos State inaugurated three Community Based health insurance (CBHI) schemes. At the same time, several of the residents in the state are registered with the National Health Insurance Scheme (NHIS) and private health insurance plans through Health Maintenance Organizations (HMOs)^{16,17}.

Inadequate coverage and low uptake have bedeviled these schemes, while both enrollees and providers have expressed dissatisfaction about these arrangements^{17,18}. However, since the inception of LASHMA, there has been a dearth of literature assessing the uptake of health insurance in the state. Data on health insurance coverage before and in the early stages of the agency's launch can provide baseline information to guide monitoring and evaluation of the scheme to ensure it meets its target of increasing health insurance coverage in the state over time.

Surveillance of health insurance uptake is important for planning outreach activities to increase enrollment and access to healthcare financing within the population. Ultimately, these measures can reduce the burden of disease and poverty linked with the high cost of healthcare, especially for the underserved. This study aims to assess the extent of health insurance uptake and factors associated with health insurance uptake in Lagos, Nigeria.

Findings from this study will help policymakers identify sociodemographic groups within the population without health insurance coverage in the state and support measures to increase health insurance uptake within the state.

METHODS

Study design and population

This study used a cross-sectional design. Study participants comprised individuals aged ≥ 18 years residing in Lagos State, Nigeria. A multi-stage sampling method was used, using the list of secondary health facilities in Lagos State, Nigeria, as the sampling frame. The secondary care facilities in the state were utilized because they are the main providers for public sector employees, who were the first set of people to assess the scheme. In the first stage, a simple random technique with ballot papers was used to select four health facilities from the sampling frame of 20 facilities. The selected healthcare facilities were located in urban areas in Lagos State, namely: Lagos Island, Gbagada (Kosofe local government area), Ikeja, and Alimosho, which serve a combined population of 12.6 million people. In the second stage, a simple random sampling method was used to enroll consenting first-time patients attending the general outpatient clinics of the selected health facilities over a period of four weeks (January 2020), utilizing the attendance register as the sampling frame. Two hundred and fifty participants were daily enrolled from the general outpatient clinics in the selected facilities, representing the population in this study.

Study measures

The instrument was developed from a previously validated measure¹⁹. Information was obtained on the age, sex, marital status, education level, and health insurance use among respondents (defined as 'health insurance uptake' throughout the article). Health insurance uptake was assessed by asking respondents to select their health

insurance plan among four options: No insurance, National Health Insurance Scheme (NHIS), Community Based Insurance (CBIS) and Private Insurance (PI). The Lagos State Health Insurance Scheme was excluded, as enrolment had not begun at the time of study design.

Statistical analysis

Sociodemographic information and health insurance uptake were expressed using descriptive statistics. The association between sociodemographic variables and health insurance uptake was investigated using chi-squared and bivariate logistic regression analysis. A $p < 0.05$ was considered statistically significant, and tests were 2-tailed. Statistical analysis was done using STATA 15.0 software (StataCorp LLC Lakeway Drive, College Station, Texas).

RESULTS

General description

A total of 1000 respondents completed the survey. The mean age of participants was 38.6 ± 15.02 years, with females accounting for 53.4%. Most (53.1%) were married, and 48.1% had a college education or higher (Table 1).

Health insurance uptake

About 90.5% of the study population had no health insurance plan, while 5.6% were enrolled under the NHIS scheme and 3.9% were enrolled in a PHI scheme. None was enrolled in a CBIS (Table 1). Table 2 shows a chi-squared

Table 1. Sociodemographic characteristics and health insurance use in the study population, residents of Lagos, Nigeria, 2020 (N=1000)

Characteristics	n (%)
Age (years), mean \pm SD	38.6 \pm 15.0
Sex	
Male	466 (46.6)
Female	534 (53.4)
Marital status	
Single	397 (39.7)
Married	531 (53.1)
Divorced/separated	20 (2.0)
Widowed	52 (5.2)
Education level (n=998)*	
Less than secondary school diploma	115 (11.5)
Secondary school diploma	403 (40.4)
College diploma or higher	480 (48.1)
Health insurance	
No insurance	905 (90.5)
National Health Insurance Scheme (NHIS)	56 (5.6)
Private Health Insurance (PHI)	39 (3.9)

*Two respondents did not indicate education level.

Table 2. Chi-squared test of independence between sociodemographic factors and health insurance uptake in the study population, residents of Lagos, Nigeria, 2020 (N=1000)

Variables	No health insurance n (%)	Health insurance n (%)	Total n	p
Sex				
Male	412 (88.41)	54 (11.59)	466	0.035*
Female	493 (92.32)	41 (7.68)	534	
Marital status				
Single	376 (94.71)	21 (5.29)	397	0.001*
Married	469 (88.32)	62 (11.68)	531	
Divorced/separated	15 (75.0)	5 (25.0)	20	
Widowed	45 (86.54)	7 (13.46)	52	
Education level				
Less than secondary school	113 (98.26)	2 (1.74)	115	<0.001*
Secondary school	383 (95.04)	20 (4.96)	403	
College or higher	407 (84.79)	73 (15.21)	480	
Variables	No health insurance n (%)	NHIS n (%)	PHI n (%)	
Sex				
Male	412 (88.41)	29 (6.22)	25 (5.36)	
Female	493 (92.32)	27 (5.06)	14 (2.62)	

Continued

Table 2. Continued

Variables	No health insurance n (%)	NHIS n (%)	PHI n (%)
Marital status			
Single	376 (94.71)	6 (1.51)	15 (3.78)
Married	469 (88.32)	42 (7.91)	20 (3.77)
Divorced/separated	15 (75.0)	5 (25.0)	0 (0)
Widowed	45 (86.54)	3 (5.77)	4 (7.69)
Education level			
Less than secondary school	113 (98.26)	2 (1.74)	0 (0)
Secondary school	383 (95.04)	13 (3.23)	7 (1.73)
College or higher	407 (84.79)	41 (8.54)	32 (6.67)

NHIS: National Health Insurance Scheme, Nigeria. PHI: Private Health Insurance. *p<0.05.

Table 3. Logistic regression model demonstrating association between sociodemographic factors and health insurance uptake in the study population, residents of Lagos, Nigeria, 2020 (N=1000)

Variable	OR (95% CI)	p	AOR (95% CI)	p
Age (years)	1.02 (1.00–1.03)	0.01*	1.01 (0.99–1.03)	0.18
Sex				
Male (Ref.)	1		1	
Female	0.63 (0.41–0.97)	0.04*	0.68 (0.43–1.07)	0.09
Marital status				
Single (Ref.)	1		1	
Married	2.37 (1.42–3.95)	0.001*	2.23 (1.20–4.16)	0.01*
Divorced/separated	5.97 (1.98–17.99)	0.002*	7.44 (2.0–27.69)	0.003*
Widowed	2.79 (1.12–6.92)	0.03*	5.99 (1.75–20.53)	0.004*
Education level				
Less than secondary school (Ref.)	1		1	
Secondary school	2.95 (0.68–12.81)	0.15	5.20 (1.14–23.68)	0.03*
College or higher	10.13 (2.45–41.93)	0.001*	23.43 (5.18–105.97)	<0.001*

AOR: adjusted odds ratio; adjusted for age, sex, marital status, and education level. Multivariate regression model R²=0.12. *p<0.05.

test of independence between sociodemographic factors and health insurance uptake. Based on gender, more males used health insurance than females (11.59% vs 7.68%, respectively). Further, more single respondents were uninsured compared to those that were married or ever married (divorced, separated, widowed) (94.71% vs 88.32% vs 83.33%, respectively) (Table 2). In addition, there was increasing health insurance uptake with better education level (p<0.001), and most respondents in all three categories of education level used NHIS rather than PHI (Table 2).

Factors associated with health insurance uptake

On a bivariate logistic regression model, there was a 2%

increase in the odds of health insurance uptake for every one-year increase in age (OR=1.02; 95% CI: 1.00–1.03, p=0.01). However, after adjusting for gender, marital status, and education level, there was no significant relationship between age and health insurance uptake (p=0.18) (Table 3).

Based on gender, females had lower odds of health insurance uptake compared to males in a bivariate model (OR=0.63; 95% CI: 0.41–0.97, p=0.04). In the multivariate model, after adjusting for demographic factors, there was no significant relationship between gender and health insurance uptake (p=0.09). Further, married respondents had higher odds of health insurance uptake than single respondents (OR=2.37; 95% CI: 1.42–3.95, p=0.001). Similarly, ever

married respondents (divorced, separated, widowed) had significantly higher odds of health insurance uptake than single respondents (Table 3). This relationship remained the same in the multivariate regression model after adjusting for age, gender, and education level.

Regarding education level, respondents with a college diploma or more had higher odds of health insurance uptake than participants with less than a secondary school diploma (OR=10.13; 95% CI: 2.45–41.93, $p=0.001$) (Table 3). After adjusting for demographic factors, having a secondary school diploma was significantly associated with higher odds of health insurance uptake than having less than a secondary school diploma (AOR=5.20; 95% CI: 1.14–23.68, $p=0.03$). In addition, having a college diploma or more remained significantly associated with higher odds of health insurance uptake (AOR=23.43; 95% CI: 5.18–105.97, $p<0.001$) (Table 3).

DISCUSSION

The present study investigated the extent of health insurance uptake and associated factors in Lagos, Nigeria. Predictors of health insurance uptake include socioeconomic factors such as employment status, income level, and the specific type of available health insurance providers. Other factors such as age, education level, occupation, gender, attitude, other available benefits, and modes of payment are intervening factors that influence the uptake of health insurance. As a construct, these can be summarized as factors related to satisfaction (willingness to pay), health insurance, organizational factors (type of services covered, type of conditions covered, and type of health facilities recognized), individual factors (age, knowledge, occupation, gender, and chronic diseases), socioeconomic factors, and the types of health insurance available^{20,21}. Our findings suggest that nine out of ten respondents were uninsured and possibly financed healthcare out-of-pocket. In addition, 5.6% of the population surveyed currently uses the NHIS, while 3.9% use PHI plans.

Reports of NHIS coverage in Nigeria in 2016 reported less than 5% uptake in the population^{9,10}. Our findings suggest the rate of NHIS uptake in the population is slightly higher at 5.6%. Other reports using Department of Health Services (DHS) data in 2015 have also reported similarly low uptake rates, with Amu et al.¹⁹ reporting 3.1% and 1.1% in males and females, respectively. Similar to the findings of Amu et al.¹⁹, our work shows that more males have health insurance plans than females (11.6% and 7.7%, respectively). The higher proportion of health insurance uptake we report may be explained by the growing number of Health Maintenance Organizations (HMOs) and the growing coverage of the NHIS in Nigeria²². In addition, sampling hospital-based populations may also explain the higher rates in our findings. Whereas the higher health insurance uptake among males may be due to socioeconomic disparity based on gender and employment in the region²³, as more females are employed in informal sectors, such as small-scale farming or trading, as service workers and caregivers, which do not provide health

insurance plans²³.

The current study also investigated the use of NHIS compared to PHIs. Overall, we found that a higher proportion of the population used NHIS than PHIs. Interestingly, a larger proportion of respondents with less than a secondary school diploma were uninsured compared to more educated respondents, and none in the least educated category used a PHI plan. Semi-literate and illiterate individuals are usually employed in the informal sector and primarily engaged in semi-skilled or unskilled occupations. On the other hand, prior studies suggest the formal private sector mostly enrolls its staff under PHI plans in Nigeria^{10,24}, while public workers and Federal staff have mostly adopted the NHIS since its inception. These sectors employ highly skilled and more educated staff and pay higher wages. Hence the higher rate of health insurance uptake in the most educated demographic group. The relationship between education and income may explain the low rate of uptake of NHIS and the absence of PHI plans in the least educated demographic group in this study.

Many LMICs, including Nigeria, have indicated an interest in promoting health insurance enrolment within the population²⁵. This effort aims to increase uptake and, by effect, access to healthcare and reduce the cumulative cost driven by a late presentation for treatment¹⁰. Concerning the factors associated with health insurance uptake, we found that a better education level, i.e. having a secondary school diploma or higher, was significantly associated with higher odds of health insurance uptake. Similarly, being married or ever married was significantly associated with higher odds of health insurance uptake. These findings suggest that single adults with less than a secondary school diploma had a lower likelihood of health insurance uptake. A prior study¹⁹ reported similar findings, and reasons for this disparity may be linked to lower education being associated with poverty²⁶. Further, poorer people are more prone to risk, are usually daily wage-earners or unemployed, and may consider the monthly premiums expensive²⁷. Marital status has significantly influenced health insurance coverage, especially for working women²⁸. Higher health insurance uptake among married respondents can be explained by the opportunity for individuals to be enrolled in health insurance plans through their spouse²⁰. Also, marriage can increase family income and make health insurance more affordable for both partners²⁸. However, a more concerted effort must be made to reach this demographic group, as this is crucial to widening access and reducing the overall burden of health costs and disease in the State.

The State sponsored Lagos State Health Insurance Scheme may increase coverage in the informal sector over time¹². The scheme began enrollment in the third quarter of 2019, starting with State government employees. Repeated surveillance measures to assess uptake are needed and will help demonstrate this new scheme's success in increasing health insurance uptake in Lagos State.

Limitations

There are several limitations in the current study. First, we relied on self-reported information on health insurance uptake, and this might have been over- or under-reported due to recall bias among respondents. Second, the study population was hospital-based; hence, our findings may not be generalizable to the larger population or those using private health facilities. Lastly, the survey mainly focused on urban areas in Lagos State and may not be generalizable to rural areas, where health insurance uptake may differ. Nonetheless, we present a relatively large population survey demonstrating the extent of health insurance uptake and associated sociodemographic factors.

CONCLUSIONS

Our findings show a low rate of health insurance uptake in the State. These findings also underline the disparity in health insurance uptake, with more educated respondents having an increased likelihood of health insurance uptake. Future research could investigate the extent of health insurance uptake in non-hospital-based populations, barriers and facilitators to the uptake of NHIS plans, and the recently launched Lagos State Health Insurance Scheme, to enable targeted approaches to encouraging uptake in the population. Understanding the uptake of health insurance plans across various sociodemographic levels in the population is crucial for health planning and the design of health finance systems with adequate coverage.

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CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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ETHICAL APPROVAL AND INFORMED CONSENT

Ethical approval was obtained from the Health Research Ethics Committee of the Lagos State University Teaching Hospital, protocol

number and date are not kept by the hospital. Participants provided informed consent.

DATA AVAILABILITY

The data supporting this research are available from the authors on reasonable request.

PROVENANCE AND PEER REVIEW

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