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The Effectiveness of Health Insurance Schemes in Reducing Out-of-Pocket Health Expenditures: Evidence from Primary Healthcare Facilities in Lagos State, Nigeria

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Abstract

Out-of-pocket (OOP) health expenditure remains a major challenge to healthcare access and financial protection in Nigeria, particularly among users of primary healthcare (PHC) services. In Nigeria, more than 90% of households finance healthcare through direct out-of-pocket payments, representing one of the highest OOP reliance rates globally and creating significant barriers to access and risk of impoverishment[1] Despite health financing reforms and the introduction of health insurance schemes such as the Lagos State Health Scheme (LSHS), many patients continue to incur direct payments for healthcare services. This study examined the effectiveness of health insurance in reducing OOP health expenditure among PHC users in Lagos State, Nigeria. A comparative cross-sectional study design was employed using a mixed-methods approach. Quantitative data were collected from 400 insured and uninsured PHC users through a structured questionnaire, Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarize socio-demographic characteristics, healthcare utilization, and OOP expenditure patterns. Inferential analyses, including chi-square tests and independent samples t-tests, were conducted to assess associations between insurance status and OOP spending. The findings revealed that insured respondents were less likely to make healthcare payments compared with uninsured respondents; however, a substantial proportion of insured PHC users still incurred OOP expenses, particularly for drugs and diagnostic services. Key challenges identified included limited benefit coverage, drug stock-outs, inadequate awareness of insurance entitlements, and operational gaps at PHC facilities. The study concludes that while health insurance contributes to improved financial protection, significant gaps remain in reducing OOP expenditure at the PHC level. Strengthening benefit packages, improving supply-side readiness, and enhancing beneficiary awareness are recommended to optimize the performance of health insurance schemes in Lagos State.

Keyword: *Health Insurance, Lagos State Health Scheme, Out-of-pocket Payments, Primary Healthcare.*

Introduction

Out-of-pocket (OOP) health expenditure remains a dominant mode of healthcare financing in Nigeria, accounting for a substantial proportion of total health spending. Out-of-pocket expenditure refers to direct payments made by individuals at the point of service use [2, 3]. Out-of-pocket health expenditure is defined as any spending incurred by a household when any member uses a health good or service to receive any type of care (preventive, curative, rehabilitative, long-term or palliative care); provided by any type of provider; for any type of disease, illness or health condition; in any type of setting

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(outpatient, inpatient, at home). According to the World Health Organisation, Nigeria has the highest OOP health expenditure as a share of total health expenditure compared with African countries of which the highest OOP health expenditure is noted in Cameroon – 66% [4]. Out-of-pocket payments are defined as catastrophic at the 10% (25%) threshold when they represent 10% (25%) or more of household total consumption or income. They are defined as impoverishing if they push household consumption or income below the $2.15 or $3.65 ($ 2017 PPP) per day poverty lines or the relative poverty line of 60% of median consumption, or if they are incurred by households already living under the $2.15 or $3.65 ($ 2017 PPP) per day poverty lines or the relative poverty line of 60% of median consumption [5]. Despite the introduction of health insurance schemes such as the National Health Insurance Authority (NHIA) and the Lagos State Health Scheme (LSHS), many households continue to experience financial hardship when accessing healthcare services, particularly at the primary healthcare (PHC) level. High OOP payments have been widely recognized as a barrier to healthcare access and a major contributor to catastrophic health spending and poverty in low- and middle-income countries.

Existing studies in Nigeria have largely focused on health insurance coverage rates, enrollment challenges, and macro-level financing outcomes. However, there is limited empirical evidence examining the actual effectiveness of health insurance in reducing OOP spending specifically at PHC facilities, where the majority of the population seeks first-contact care. Moreover, few studies compare insured and uninsured patients within the same PHC settings or explore patient experiences regarding hidden costs such as payments for drugs, diagnostics, and informal fees. In Lagos State, where the LSHS was established to enhance financial risk protection and progress toward Universal Health Coverage, evidence on whether insured PHC users are adequately protected from OOP expenditure remains sparse. This gap in context-specific, facility-level evidence limits the ability of policymakers and scheme managers to assess the true performance of health insurance schemes and to identify operational weaknesses affecting financial protection. This study therefore seeks to fill this gap by evaluating the effectiveness of health insurance in reducing OOP spending among insured and uninsured patients accessing PHC services in Lagos State, while also exploring user perceptions and barriers to effective insurance implementation.

Methods

This study was conducted in selected Primary Healthcare Centres (PHCs) located within Local Government Areas (LGAs) of Lagos State, Nigeria. Lagos State is situated in the south-western part of Nigeria and is the country's most populous and economically vibrant state. It serves as a major commercial, industrial, and administrative hub, with a diverse population drawn from all regions of Nigeria. This study was conducted in five selected Primary Healthcare Centres (PHCs) across five Local Government Areas (LGAs) of Lagos State, purposively selected to reflect urban, rural, and mixed urban–rural settings. Two PHCs were located in urban LGAs (Ikeja and Surulere), characterized by high population density, better road networks, and relatively greater availability of health and social services. Two PHCs were situated in rural LGAs (Epe and Badagry), which are predominantly semi-rural to rural in nature, with dispersed settlements and comparatively limited access to healthcare resources. One PHC was located in Alimosho LGA, representing a mixed urban–rural setting, with rapidly expanding peri-urban communities and diverse socioeconomic characteristics.

The study adopst a comparative cross-sectional design. Whereby OOP spending between insured and uninsured patients

accessing primary healthcare services were compared. The stud analysed data to identify patterns, differences, and potential causal relationships between insurance status and financial burden. A total of 424 patient questionnaires were successfully administered through interviewer-assisted surveys. Informed consent was obtained from all participants, and anonymity and confidentiality of responses were ensured. Completed questionnaires were checked for completeness, coded, and entered into Microsoft Excel for data management. Quantitative data will be analyzed using Statistical Package for Social Sciences (SPSS).

Descriptive Analysis Frequencies and percentages for categorical variables Means and standard deviations for continuous variables (e.g., OOP expenditure).

Inferential Analysis. Chi-square test to assess associations between insurance status and categorical variables such as service utilization and payment incidence. Independent samples t-test to compare mean OOP expenditure between insured and uninsured respondents. Significance level will be set at $p < 0.05$.

Results/ Discussion

This study evaluated the effectiveness of health insurance schemes in reducing out-of-pocket (OOP) healthcare expenditure among patients accessing primary healthcare (PHC) facilities in Lagos State, Nigeria. This discussion is structured in line with the study objectives and situates the findings within existing empirical literature on health financing and financial risk protection.

Descriptive Statistics

Figure 1 below shows that less than half of respondents (40.9%) were enrolled in a health insurance scheme, with most enrolled in the Lagos State Health Scheme (68.6%). Among enrolled respondents, enrollment duration was fairly evenly distributed, with the highest proportion enrolled for 6–12 months (37.9%). The main reasons for enrollment were to reduce healthcare costs (62.1%) and to access quality health services (58.6%). Insurance coverage most commonly included drugs or medications (82.8%) and consultation services (70.4%). PHC utilization was largely bimonthly (40.0%) or monthly (26.6%). Outpatient consultations (79.9%) and access to drugs or medications (73.8%) were the most frequently reported services utilized at the facilities.

Insurance Statis of Respondents

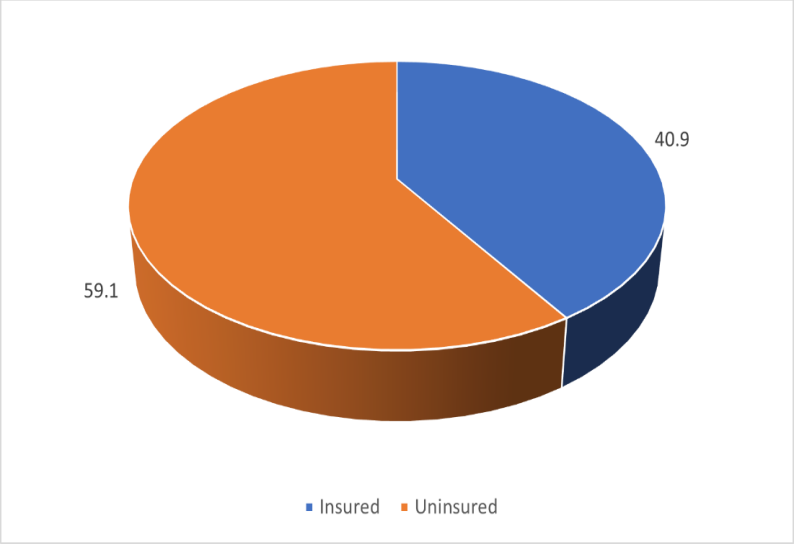

Figure 1. Insurance Status of Patients

1. Socio-Demographic /Economic Characteristics of Respondents

The demographic profile of respondents reflects the typical PHC-utilizing population in Lagos State, with a predominance of economically active adults Table 1. Income distribution clustered largely within the lower and middle-income brackets, the informal sector constituting the largest group as shown in Table 2, highlighting the vulnerability of PHC users to healthcare-related financial shocks. Similar demographic patterns have been reported in previous Nigerian studies examining health insurance and healthcare utilization at the primary care level [6, 9, 23]. These characteristics provide important context for interpreting OOP expenditure and catastrophic spending outcomes, as lower income levels are strongly associated with increased financial vulnerability.

Table 1. Socio-demographic Characteristics of Respondents

Variable (n=413)	Frequency (n)	Percentage (%)
Age		
18-29	132	32
30-39	111	26.9
40-49	71	17.2
50-59	83	20.1
60 and above	16	3.9
Gender		
Female	289	70
Male	124	30
Marital status		
Divorced	35	8.5
Married	242	58.6
Single	119	28.8
Widowed	17	4.1
LGA of residence		
Alimosho	110	26.6
Badagry	46	11.1
Ikeja	117	28.3
Ikorodu	68	16.5
Surulere	72	17.4

Table 1 shows that the majority of respondents were aged 18–29 years (32.0%), followed by those aged 30–39 years (26.9%). Females constituted a higher proportion of the study population (70.0%) compared with males (30.0%). Most respondents were married (58.6%), while 28.8% were single; divorced and widowed respondents accounted for smaller proportions of the sample. Regarding place of residence, respondents were fairly distributed across the selected LGAs, with Ikeja (28.3%) and Alimosho (26.6%) contributing the highest proportions.

Table 2. Socio-economic Characteristics of Respondents

Variable (n=413)	Frequency (n)	Percentage (%)
Educational status		
None	34	8.2
Primary	17	4.1
Secondary	132	32
Tertiary	230	55.7
Occupation		
Formal sector	109	26.4
Informal sector	126	30.5
Retired	5	1.2
Self-employed	74	17.9
Student	31	7.5
Unemployed	68	16.5
Income level		
<30,000	85	20.6
30,000-50,000	24	5.8
50,001-100,000	143	34.6
100,001 and above	161	39

As shown above in table 2 over half of the respondents had attained tertiary education (55.7%), while 32.0% had secondary education; only a small proportion had no formal education (8.2%) or primary education (4.1%). Respondents were engaged in a range of occupations, with the informal sector constituting the largest group (30.5%), followed by those in formal sector employment (26.4%). Self-employed and unemployed respondents accounted for 17.9% and 16.5% of the sample, respectively. In terms of income, the largest proportion of respondents earned ₦100,001 and above (39.0%), followed by those earning ₦50,001–₦100,000 (34.6%), while fewer respondents fell within the lower income categories.

2. Effect of Health Insurance on Out-of-Pocket Spending

The findings demonstrate that although health insurance enrollment was associated with lower average OOP expenditure, Out-of-pocket health expenditure was significantly associated with enrollment in a health insurance scheme, with a higher proportion of individuals not enrolled incurring payments (81.97%) compared to those enrolled (31.95%) ($p < 0.001$). In the table 3 below, insured patients still incurred substantial direct payments during healthcare utilization . This indicates that health insurance schemes in Lagos State provide partial but incomplete financial protection at the PHC level. This result aligns with earlier Nigerian studies which reported that insurance enrollment reduces healthcare spending but does not eliminate OOP payments. Uzochukwu, 2015 [6] and Odeyemi &Nixon 2013 [7] similarly found that insured households continued to pay for drugs, diagnostics, and informal fees despite being enrolled in the National Health Insurance Scheme (NHIS). The persistence of OOP spending among insured patients reflects gaps in benefit coverage, service availability, and implementation fidelity, particularly at primary care facilities.

Table 3. Chi-square Test of Association between Respondents' Health Insurance Status and Out-of-pocket Health Expenditure

Variable	**Out-of-pocket health expenditure**				
Insurance status	**No**	**Yes**	**X^2**	**df**	**p-value**
Uninsured	44(18.03)	200(81.97)	105.48	1	**<0.001**
Insured	115(68.05)	54(31.95)			

3. Catastrophic Health Spending and Financial Risk Protection

This study shows significant proportion (12.1%) of the respondents suffered catastrophic health expenditure while the majority (87.9%) of them did not as displayed in Figure 2.

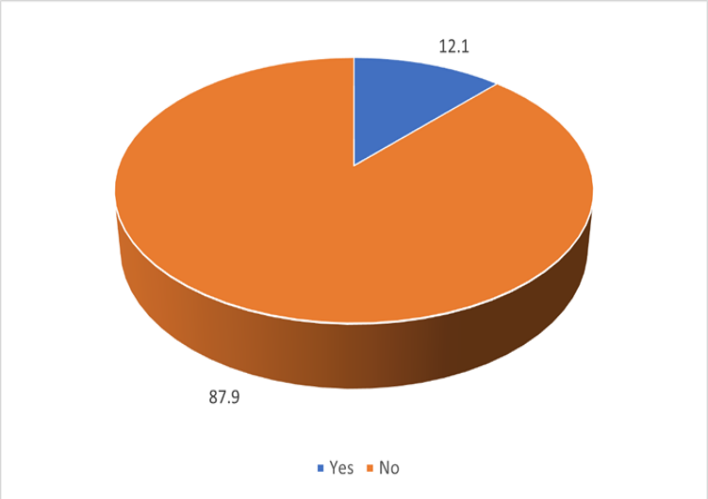

Figure 2. Catastrophic Health Expenditure among Respondents

Using the 10% income threshold, a notable proportion of respondents experienced catastrophic health spending, with a higher prevalence among uninsured patients ($p < 0.05$). Similar study among shows 13.6 %of correspondence with catastrophic health expenditure [9]. Onwujekwe et al. (2011/2012) found high, pro-poor levels of catastrophic health expenditure (CHE) in Nigeria, with roughly 14.8%–27% of households experiencing, or up to 36.5% using variable thresholds, with significant burdens from out-of-pocket (OOP) payments, especially for outpatient care [11]. While enrollment in a health insurance scheme was significantly associated with catastrophic health expenditure ($p < 0.001$). Also, result from the findings as shown in Tables 4 and Table 5 shows that 17.2% of respondents who were not enrolled in a health insurance scheme had a higher proportion of catastrophic health expenditure compared 4.7% of those who were enrolled.

Table 4. Chi-square Test of Association between Respondents' Health Insurance Status and their Catastrophic Health Expenditure Status

Variable	**Catastrophic health expenditure**				
Insurance status	**No**	**Yes**	**X^2**	**df**	**p-value**
Uninsured	202(82.8)	42(17.2)	14.61	1	**<0.001**
Insured	161(95.3)	8(4.7)			

Table 5. Out-of-Pocket Healthcare Costs among Insured and Uninsured Participants

Variable	**Out-of-pocket health expenditure**				
Health insurance status	**No**	**Yes**	**Minimum (₦)**	**Maximum (₦)**	**Mean (₦)**
Uninsured	44(18.03)	200(81.97)	1,500	28,000	9,455.0
Insured	115(68.05)	54(31.95)	2,500	75,000	6,628.7

Out-of-pocket health expenditure differed notably by health insurance status. Uninsured individuals were more likely to incur out-of-pocket payments (81.97%) compared to those insured (31.95%) ($p < 0.001$). The mean expenditure was higher among the uninsured (₦9,455.0) than the insured (₦6,628.7), with values ranging from ₦1,500 to ₦28,000 for the uninsured and ₦2,500 to ₦75,000 for the insured. This is supported by KO Wright et al, 2025 where a higher proportion of households not enrolled in any health insurance schemes (14.1%) were more likely to experience CHE compared to insured households [12]. This finding supports the central premise of Universal Health Coverage (UHC), which posits that lack of prepayment mechanisms exposes households to financial hardship [2]. However, the presence of catastrophic spending even among insured respondents suggests that current insurance arrangements under the Lagos State Health Scheme (LSHS) and NHIS may be insufficient to guarantee full financial risk protection. Similar findings have been reported in studies from Nigeria and other low- and middle-income countries, where limited benefit packages, drug stock-outs, and co-payments undermine the protective role of insurance [8, 9]. The use of income ranges and midpoint estimation to assess catastrophic spending is methodologically sound and consistent with prior health financing studies conducted in resource-constrained settings, where precise income reporting is often impractical.

The observed right-skewed distribution of OOP expenditure, with a small proportion of patients incurring very high costs as exhibited in Table 5, is consistent with global evidence that health expenditures are unevenly distributed and driven by episodes of illness requiring medications or diagnostics not fully covered by insurance [2].

Table 5. Shapiro-Wilk test of Normality

Variable	**Statistic**	**df**	**p-value**
Out-of-pocket health expenditure	0.69	254	**<0.001**

4. Health Insurance coverage, Awareness and Utilization

A substantial proportion of respondents reported being enrolled in a health insurance scheme, predominantly the Lagos State Health Scheme (LSHS). However, descriptive analysis showed that enrollment did not equate to full utilization of insured services. As shown in Table 6, Chi-square analysis demonstrated a statistically significant association between insurance status and healthcare payment patterns, indicating that insured respondents were less likely to make OOP payments compared to uninsured respondents (χ^2, $p < 0.05$). Despite this association, a notable 38.5% of insured patients still reported paying for services that should ordinarily be covered by insurance as seen in Figure 3.

Table 6. Mann-Whitney Test of Association between out-of-Pocket Health Expenditure and Insurance Status of Respondents

Descriptive								
Insurance status	**Median (₦)**		**Q1 (₦)**		**Q3 (₦)**		**IQR (₦)**	
Uninsured	8,000		6,000		12,000		6,000	
Insured	5,000		3,500		6,425		2,925	
Mann-Whitney test								
Variable	**Insurance status**	**N**	**%**	**Mean Rank**	**Sum of Ranks**	**U**	**Z**	**p-value**
Out-of-pocket health expenditure	Uninsured	200	78.7	141.65	28329.5	2570.5	-5.91	<0.001
	Insured	54	21,2	75.1	4055.5			
	Total	254						

The Mann-whitney test reveals OOP health expenditure differed significantly between insured and uninsured respondents. The median out-of-pocket health expenditure among insured respondents was ₦5,000 (IQR: ₦2,925) compared to ₦6,000 (IQR: ₦4,6000) among uninsured respondents. This difference was statistically significant as shown in Table 6. (Mann–Whitney U = 2,570.5, Z = −5.91, p < 0.001).

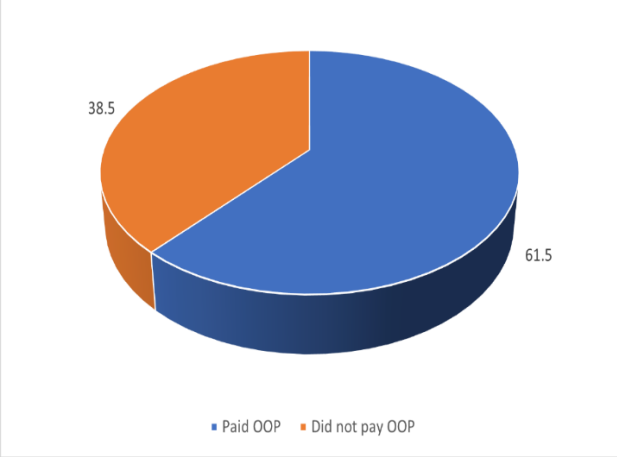

Figure 3. Out-of-Pocket Health Expenditure among Insured Clients at last PHC Visit

This finding shared similarity with a 2021 study on Ghana's National Health Insurance Scheme (NHIS) found that 46.9% of insured clients reported making out-of-pocket payments, despite having a valid insurance card [13]. This finding reinforces earlier evidence that insurance in Nigeria often provides partial financial protection rather than complete coverage [7, 8]. This study also revealed that awareness of health insurance was relatively high, yet enrollment was influenced by factors such as cost concerns, employer recommendation, and perceived value of benefits as seen in Table 7. This supports earlier research showing that knowledge alone does not guarantee enrollment, especially among informal sector workers who dominate PHC utilizatioin Lagos [9]. Moreover, utilization of insured services was constrained by reported challenges including limited-service coverage, drug unavailability, and administrative bottlenecks as earlier seen in Table 4. These barriers have been widely documented in Nigerian insurance schemes and contribute to low trust and suboptimal use of insurance benefits [9].

Table 7. Health Insurance Participation and Healthcare Utilization

Variable (n=413)	Frequency (n)	Percentage (%)
Enrolled in a health insurance scheme	169	40.9
Type of insurance scheme (n=169)		
LSHS	116	68.6
NHIS	5	3
Private	48	28.4
Duration since enrollment (n=169)		
<6 months	51	30.2
6-12 months	64	37.9
Over 1 year	54	32
Reason for enrollment* (n=169)		
To reduce healthcare costs	105	62.1
Recommendation by employer	46	27.2
Government mandate	29	17.2
Peer/family advice	54	32
For access to quality services	99	58.6
Health insurance coverage* (n=169)		
Consultation	119	70.4
Drugs/medications	140	82.8
Laboratory tests	88	52.1
Maternal care	47	27.8
Secondary referral	43	25.4
PHC visitation frequency		
Bimonthly	165	40
Monthly	110	26.6
Occasionally	124	30
Weekly	14	3.4
Services accessed in PHC*		
Outpatient consultation	330	79.9
Drugs/medications	305	73.8
Maternal and child care	108	26.2
Laboratory tests	123	29.8
Immunization	59	14.3

** Multiple-choice question*

Socio-economic characteristics of the respondents in this study as listed in Table 7 shows that educational status demonstrated a statistically significant association with catastrophic health expenditure ($p < 0.001$). The proportion of respondents experiencing catastrophic health expenditure was highest among those with no formal education (38.2%) and progressively dwindled among those with primary (23.5%), secondary (12.9%), and tertiary education (7.0%). Occupation was also significantly associated with catastrophic health expenditure ($p < 0.001$). The highest proportions were observed among the unemployed (39.7%) and students (38.7%). In contrast, respondents who were self-employed (6.8%) or engaged in the informal sector (4.8%) had much lower proportions of catastrophic

health expenditure. None of the respondents in formal employment or those who were retired reported catastrophic health expenditure. Table 8 shows test of association between socio-economic characteristics such as Income level, education and occupational status with catastrophic health expenditure demonstrated a strong and statistically significant association ($p < 0.001$). The burden was overwhelmingly concentrated among respondents earning below ₦30,000 per month, of whom 58.8% experienced catastrophic health expenditure. In contrast, none of the respondents earning ₦30,000 or more reported catastrophic health expenditure.

Table 8. Chi-square Test of Association between Respondents' Socio-economic Characteristics and their Catastrophic Health Expenditure Status

Variable	Catastrophic health expenditure		X^2	df	p-value
	No	Yes			
Educational status					
None	21(61.8)	13(38.2)	29.71	3	**<0.001***
Primary	13(76.5)	4(23.5)			
Secondary	115(87.1)	17(12.9)			
Tertiary	214(93)	16(7)			
Occupation					
Unemployed	41(60.3)	27(39.7)	93.38	5	**<0.001***
Student	19(61.3)	12(38.7)			
Self-employed	69(93.2)	5(6.8)			
Informal sector	120(95.2)	6(4.8)			
Formal sector	109(100)	0(0)			
Retired	5(100)	0(0)			
Income level					
Below 30,000	35(41.2)	50(58.8)	219.52	3	**<0.001***
30,000-50,000	24(100)	0(0)			
50,001-100,000	143(100)	0(0)			
100,001 and above	161(100)	0(0)			

** p-value for Fisher's exact was used*

5. Patient Perception and Satisfaction with Insurance Services

Perception analysis showed that while a majority of insured respondents believed that insurance reduced healthcare costs, a significant minority expressed dissatisfaction. Frequencies and percentages indicated mixed levels of satisfaction, with dissatisfaction linked to perceived poor service quality, limited coverage, and unexpected payments. Chi-square analysis demonstrated a significant association between insurance status and perceived reduction in healthcare expenses ($p < 0.05$), suggesting that insured respondents were more likely to report cost reduction benefits.

Nonetheless, dissatisfaction among insured respondents highlights implementation challenges that undermine trust in insurance schemes. These findings are consistent with previous studies indicating that perceived quality of care and provider behavior are key determinants of satisfaction and continued enrollment in health insurance schemes [6, 7]. Although a majority of respondents expressed moderate satisfaction with insurance services, dissatisfaction was linked to experiences of unexpected payments, delays, and perceived

inequity in service delivery between insured and uninsured patients. This mixed perception mirrors findings from other Nigerian studies, which highlight that perceived quality of care and provider behavior strongly influence satisfaction and trust in insurance schemes. Patient suggestions for improvement—including broader benefit coverage, improved drug availability, clearer communication, and reduced waiting times—underscore the need to strengthen both demand-side financing and supply-side readiness at PHCs (Table 9).

Table 9. Out-of-Pocket Healthcare Expenditure

Variable (n=413)	**Frequency (n)**	**Percentage (%)**
Paid out of pocket during last PHC visit	263	63.7
Service paid for out of pocket at last PHC visit*		
Drugs	219	83.3
Laboratory tests	116	44.1
Consultation	101	38.4
Registration	143	54.4
Others/informal	128	48.7
Thinks insurance helped reduce health expenses (n=169)	100	59.2
Paid for service that should be covered by insurance (n=169)	70	41.4
Insurance-covered service paid for* (n=169)		
Drugs	64	37.9
Laboratory tests	39	23.1
Consultation	22	13
Maternal and child care	7	4.1
Others	8	4.7
Challenges experienced with insurance coverage* (n=169)		
Drugs stocked out	77	45.6
Delays in service	76	45
Out-of-pocket payment despite insurance	36	21.3
Lack of understanding about coverage/information gap	13	7.7
Poor staff attitude	35	20.7
Others	27	16

** Multiple-choice question*

Nearly two-thirds of respondents (63.7%) reported paying out of pocket during their last PHC visit, most commonly for drugs (83.3%) and registration fees (54.4%). Among insured respondents, 59.2% perceived that insurance helped reduce healthcare expenses; however, 41.4% reported paying for services that should have been covered, particularly drugs and laboratory tests. Challenges reported by insured respondents included drug stock-outs (45.6%) and delays in service delivery (45.0%), while out-of-pocket payment despite insurance (21.3%) and poor staff attitude (20.7%) were also noted.

Over one-third (38.5%) of the insured respondents paid out of pocket for their last PHC visit, majority (61.5%) did not.

6. **Out-of-Pocket Expenditure Patterns**

Descriptive analysis revealed that OOP expenditure among respondents was highly

variable, as reflected by a relatively large standard deviation (6,547) compared to the mean (8,854). The histogram displayed as Figure 4 below and Shapiro–Wilk test confirmed that OOP expenditure was not normally distributed, exhibiting a positively skewed pattern with a long right tail. The mean OOP expenditure was driven upward by a small proportion of respondents incurring very high costs, while the majority reported relatively low payments. This distributional pattern is consistent with global health expenditure literature, which shows that healthcare costs are often concentrated among a small subset of users experiencing more severe health needs [2]. Independent samples t-test results Table 5 showed a statistically significant difference in mean OOP expenditure between insured and uninsured respondents ($p < 0.05$), with uninsured patients incurring higher average costs. This finding supports the protective role of health insurance while simultaneously underscoring its limitations.

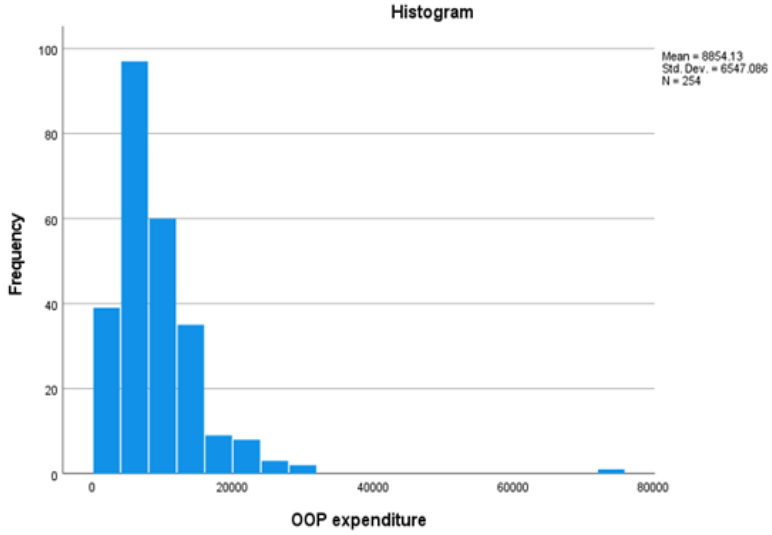

Figure 4. Histogram Illustrating the Normality of Distribution of Out-of-Pocket Health Expenditure of Respondents

Table 10. Chi-square Test Of association between Respondents' Socio-economic Characteristics and Out-of-Pocket Health Expenditure

Variable	**Out-of-pocket health expenditure**				
	No	**Yes**	**X^2**	**df**	**p-value**
Educational status					
None	10(29.41)	24(70.59)	14.93	3	**<0.001***
Primary	0(0)	17(100)			
Secondary	48(36.36)	84(63.64)			
Tertiary	101(43.91)	129(56.09)			
Occupation					
Unemployed	15(22.06)	53(77.94)	21.29	5	**<0.001***
Student	12(38.71)	19(61.29)			
Self-employed	22(29.73)	52(70.27)			
Informal sector	55(43.65)	71(56.35)			
Formal sector	55(50.46)	54(49.54)			
Retired	0(0)	5(100)			

Income level					
Below 30,000	28(32.94)	57(67.06)	27.73	3	**<0.001***
30,000-50,000	0(0)	24(100)			
50,001-100,000	49(34.27)	94(65.73)			
100,001 and above	82(50.93)	79(49.07)			

** p-value for Fisher's exact was used*

Out-of-pocket health expenditure was significantly associated with educational status, with the highest proportion observed among individuals with primary education (100%) and the lowest among those with tertiary education (56.09%) ($p < 0.001$). Occupation was also significantly related to out-of-pocket health expenditure, with retired individuals and the unemployed reporting the highest proportions of payments (100% and 77.94%, respectively), while those in the formal sector reported the lowest (49.54%) ($p < 0.001$). Similarly, income level showed a significant association, with individuals earning 30,000–50,000 reporting the highest proportion of out-of-pocket health expenditure (100%), while those earning 100,001 and above reported the lowest (49.07%) ($p < 0.001$) (Table 10).

7. Implications for Primary Healthcare and Universal Health Coverage

The findings suggest that while health insurance is a critical tool for reducing financial barriers to care, its effectiveness depends on the strength of the PHC system, availability of essential medicines, and robust provider payment mechanisms. Without addressing these structural issues, insurance schemes risk becoming symbolic rather than transformative. Strengthening PHC facilities, improving provider reimbursement timelines, and expanding benefit packages to cover commonly utilized services could significantly enhance the financial protection role of insurance schemes in Lagos State. Systematic reviews indicate that uptake of community-based health insurance (CBHI) in LMICs is primarily driven by socioeconomic factors (income, education), household demographics (size, age), and service quality. Key drivers for enrolment include high education levels of household heads, larger households, and trust in scheme management, while barriers include poverty, poor healthcare quality (long waits, lack of drugs), and low trust [16, 17, 24].

8. Contribution of the Study to Knowledge

This study contributes to the growing body of evidence on health insurance performance in sub-national contexts by focusing specifically on PHC-level utilization in Lagos State, an area that remains under-researched. By combining expenditure analysis, catastrophic spending estimation, and patient perception data, the study provides a comprehensive assessment of financial risk protection in real-world service delivery settings. Integrating descriptive and inferential statistics at the PHC level, this study also shows empirical evidence on the real-world performance of health insurance schemes in Lagos State. The combined use of OOP expenditure analysis, catastrophic spending estimation, and perception metrics adds depth to existing literature and offers actionable insights for policymakers.

9. Implications for Policy and Practice

The results highlight the need for Lagos State Health Management Agency (LASHMA) and other stakeholders to:

1. Expand insurance benefit packages to reduce OOP spending
2. Improve supply-side readiness at PHCs
3. Enhance communication and beneficiary education
4. Monitor catastrophic spending as a performance indicator for insurance schemes

However, going beyond enrollment expansion, findings suggest that strengthening insurance schemes must include:

1. Improved benefit package design
2. Reliable medicine supply chains at PHCs
3. Timely provider reimbursement
4. Continuous monitoring of catastrophic spending indicators

While it has been mandated for all residents of Lagos State, including public/private sector employees and the self-employed, to register for the Lagos State Health Scheme (ILERA EKO) or an accredited private HMO [19], without these measures, insurance schemes may fall short of their intended role in advancing Universal Health Coverage.

Alignment with Study Objectives

Overall, the results align with the study's primary objective of assessing whether health insurance reduces OOP spending at PHCs. While insurance enrollment was associated with lower average OOP expenditure and reduced risk of catastrophic spending, the persistence of significant OOP payments among insured respondents indicates that insurance effectiveness remains suboptimal. The secondary objective of exploring patient perceptions revealed that financial protection alone is insufficient to guarantee satisfaction; service quality, availability of medicines, and administrative efficiency are equally important.

Conclusion

In conclusion, health insurance in Lagos State contributes to reducing OOP healthcare expenditure and financial risk, but its protective effect is incomplete. Persistent OOP payments and catastrophic spending among insured respondents highlight critical gaps in implementation that must be addressed to achieve meaningful financial protection and equitable access to primary healthcare services. Addressing implementation gaps and strengthening PHC systems are essential for achieving the broader goals of Universal Health Coverage.

Recommendations

Based on the findings of this study, which demonstrated statistically significant differences in out-of-pocket (OOP) expenditure between insured and uninsured respondents, persistent catastrophic health spending, and mixed levels of patient satisfaction, the following recommendations are proposed.

1. **Strengthening Financial Protection under Health Insurance Schemes.**

The study revealed that although insured respondents incurred significantly lower mean OOP expenditure compared to uninsured respondents (t-test, $p < 0.05$), a substantial proportion of insured patients still made direct payments for services. This indicates gaps in financial protection.

Recommendation:

1. The Lagos State Health Management Agency (LASHMA) should expand and clarify benefit packages, particularly for commonly accessed PHC services such as essential medicines, laboratory investigations, and maternal and child health services.
2. Co-payments and informal fees should be minimized through clear enforcement of provider payment agreements.

2. **Reducing Catastrophic Health Spending.**

The prevalence of catastrophic health spending, especially among uninsured respondents, underscores the vulnerability of low-income households. The statistically significant association between insurance status and catastrophic spending (χ^2, $p < 0.05$) confirms the protective role of insurance, albeit incomplete.

Recommendation:

1. Policymakers should prioritize enrollment of informal sector and low-income

populations through subsidized premiums and targeted social protection mechanisms.
2. Routine monitoring of catastrophic health expenditure should be integrated as a performance indicator for health insurance schemes.

3. **Improving Service Availability at Primary Healthcare Facilities**

Findings from perception and satisfaction analyses showed that insured patients often paid OOP due to medicine stock-outs, unavailable diagnostics, and service delays. These challenges directly undermine the effectiveness of insurance.

Recommendation:

1. Strengthen PHC supply chains to ensure consistent availability of essential drugs and consumables.
2. Improve provider reimbursement timelines to prevent facilities from shifting costs to patients.
3. Strengthen supervision and accountability mechanisms at PHC level.

4. **Enhancing Patient Satisfaction and Trust in Insurance Schemes**

Chi-square analysis demonstrated a significant relationship between insurance status and perceived reduction in healthcare costs; however, satisfaction levels remained mixed. This suggests that cost reduction alone does not guarantee positive patient experience.

Recommendation:

1. LASHMA and PHC managers should invest in patient education and communication, ensuring beneficiaries clearly understand covered services and complaint channels.
2. Improve provider–patient interaction through training on client-centered care.
3. Introduce feedback mechanisms to routinely capture patient experience and satisfaction.

5. **Policy Integration toward Universal Health Coverage (UHC).**

The persistence of OOP payments among insured respondents indicates that insurance reforms must be aligned with broader health system strengthening efforts.

Recommendation:

1. Health insurance expansion should be implemented alongside PHC infrastructure strengthening, workforce development, and quality improvement initiatives.
2. Inter-sectoral collaboration between health, finance, and social protection agencies is critical to achieving sustainable UHC.

Future Scope of the Study

While this study provides important insights into the effectiveness of health insurance at the PHC level in Lagos State, several areas warrant further investigation:

1. Longitudinal Studies on Financial Risk Protection. This study employed a cross-sectional design, which limits causal inference. Future research should: use longitudinal or panel data to assess changes in OOP expenditure and catastrophic spending overtime following insurance enrollment.
2. Incorporation of Household Consumption Expenditure: Catastrophic health spending was estimated using income ranges and midpoint approximation.
3. Future studies could. Incorporate detailed household consumption data to allow assessment using the 25% non-food expenditure threshold, providing a more nuanced measure of financial hardship.
4. Provider-Side Analysis. This study focused primarily on patient perspectives. Future research should examine provider-side factors such as reimbursement delays, service costs, and facility readiness, which may explain persistent OOP payments among insured patients.

5. Comparative Analysis across States and Insurance Schemes. Given Nigeria's decentralized health financing system, findings from Lagos State may not fully reflect national patterns. Future studies could Conduct comparative analyses across states or between different insurance schemes (LSHS, NHIS, CBHI) to identify best practices.
6. Qualitative Exploration of Patient Experience: While quantitative analysis highlighted levels of dissatisfaction, deeper insights into patient experiences are needed. Future research should use in-depth Key informant interviews with stakeholders, LASHMA officials and implementers at PHC level, or focus group discussions to explore implementation challenges, perceptions of fairness, quality, and trust in health insurance schemes.

Study Limitations

Despite the valuable insights generated by this study, the following limitations are acknowledged.

1. Cross-Sectional Study Design. The study employed a cross-sectional design, capturing information at a single point in time. While this design is appropriate for assessing associations between health insurance status and out-of-pocket (OOP) expenditure, it limits the ability to establish causal relationships. Consequently, observed differences in healthcare spending between insured and uninsured respondents cannot be interpreted as definitive causal effects of insurance coverage.
2. Use of Self-Reported Data . Data on healthcare utilization, OOP payments, and income levels were self-reported by respondents. This introduces the possibility of recall bias and reporting bias, particularly for expenditure-related variables where respondents may under- or over-estimate actual amounts spent.
3. Income Measurement Using Ranges Household income was collected in ranges rather than exact values. Although midpoint estimation was applied to approximate income for catastrophic health expenditure analysis, this approach may not fully capture true household income variability and may lead to slight misclassification of catastrophic spending status.
4. Limited Scope to Primary Healthcare Facilities The study focused exclusively on primary healthcare facilities within selected LGAs in Lagos State. As such, the findings may not be generalizable to secondary or tertiary healthcare settings, where cost structures, service availability, and insurance reimbursement mechanisms may differ.
5. Potential Selection Bias. Respondents were drawn from individuals who accessed PHC services during the data collection period. This may exclude individuals who avoided seeking care due to financial constraints or dissatisfaction with healthcare services, potentially underestimating the true burden of unmet healthcare needs and financial hardship.
6. Incomplete Assessment of Household Expenditure. Catastrophic health spending was assessed using income-based thresholds rather than detailed household consumption expenditure, particularly non-food expenditure. This may limit comparability with studies that use more comprehensive expenditure-based catastrophic spending measures.
7. Absence of Provider-Side Data. The study primarily examined patient perspectives and experiences. Provider-side factors such as reimbursement delays, facility financing constraints, and supply chain challenges were not quantitatively assessed, which may have provided additional explanations for persistent OOP payments among insured respondents.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this article.

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Ethical Approval

Ethical approval for this study was obtained from the Lagos State Health Research Ethics Committee (LSHREC). Permission was also obtained from relevant Local Government Authorities and Primary Healthcare facility heads prior to data collection. Written informed consent was obtained from all participants.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Author Contributions

The author solely conceived and designed the study, conducted data collection, performed data analysis, interpreted the results, and drafted and revised the manuscript.

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