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Uptake and Satisfaction with NHIA: A Study of Formal and Informal Sector Employees in Kano, Nigeria

HM Mijinyawa[1*], Z Iliyasu[2]
[1]*School of Public Health, Texila American University, Guyana*
[2]*Department of Community Medicine, Aminu Kano Teaching Hospital & Bayero University Kano, Nigeria*

Abstract

Universal health coverage (UHC) is a global imperative, yet Nigeria's National Health Insurance Authority (NHIA) continues to reflect deep inequalities, particularly between formal and informal sector workers. This cross-sectional comparative study surveyed 440 NHIA enrollees (205 formal, 235 informal) from all 44 Local Government Areas in Kano State, Nigeria, to assess NHIA uptake, satisfaction, and service utilization. Participants were adults enrolled for ≥6 months and had accessed NHIA-accredited outpatient services in the preceding three months. Socio-demographic characteristics, enrollment pathways, satisfaction across financial and service domains, and key predictors of satisfaction and continued enrollment were analyzed. Formal sector workers reported higher NHIA awareness (87.3% vs. 83.0%), longer enrollment duration (≥7 years: 27.6% vs. 5.6%; p*<0.001), and greater satisfaction across financial indicators including co-payments (81.4% vs. 31.1%;* p*<0.001) and co-contributions (71.7% vs. 28.5%;* p*<0.001). While 98.5% of formal and 98.3% of informal respondents desired to continue enrollment, informal enrollees were significantly more likely to report neutrality on key satisfaction metrics. Notably, informal respondents were more likely to believe that NHIA improved their health (66.8% vs. 36.1%;* p*<0.001). Qualitative data highlighted affordability, trust, and family coverage as motivators, but also underscored persistent awareness and access barriers for informal workers. While satisfaction with NHIA services is high overall, structural disparities persist between sectors. Formal workers benefit from embedded payroll systems and employer facilitation, whereas informal enrollees face awareness, affordability, and access barriers. Targeted reforms such as simplified enrollment, premium subsidies, and expanded community outreach are essential to achieve equitable UHC in Nigeria.*

Keywords: *Equity, Informal Sector, NHIA, Nigeria, Service Satisfaction, Universal Health Coverage.*

Introduction

The 1978 Alma-Ata Declaration affirmed health as a fundamental human right and called for "Health for All" through universal access to primary care, equity, and financial protection [1, 2]. More than four decades later, this vision remains elusive in many low- and middle-income countries (LMICs), where health systems are underfunded and access to essential care remains inequitable. In Nigeria, one of Africa's largest and most populous nations, health financing is dominated by out-of-pocket (OOP) payments, which account for more than 70% of total healthcare expenditures among the highest rates on the continent [3, 4]. This heavy reliance on OOP financing exposes households to catastrophic health expenditures (CHE) [5, 6], often leading to delayed care, treatment abandonment, or medical impoverishment [7].

Nigeria's health system mirrors global inequities, where access to quality care is stratified by income, geography, and

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****Corresponding Author: halimamijinyawa@yahoo.com***

employment status [8, 9]. Wealthier, urban residents tend to access better-equipped facilities and specialized services, while poorer and rural populations often contend with under-resourced public clinics or avoid care altogether. Recognizing these disparities, the Nigerian government launched the National Health Insurance Scheme (NHIS) in 2005 now transitioned to the National Health Insurance Authority (NHIA) under the 2022 Act to promote universal health coverage (UHC) by reducing financial barriers and enhancing access to quality care [3].

As of recent estimates, health insurance coverage in Nigeria stands at under 10%, with only approximately 3% of the population enrolled through the formal NHIS/NHIA channel [10, 4]. Enrollment is heavily concentrated among formal sector employees, particularly federal civil servants [11], due to structured payroll deductions and automatic scheme participation. In contrast, the vast informal sector which constitutes over 80% of the Nigerian labour force remains largely excluded [11]. This exclusion not only undermines UHC goals but perpetuates deep inequalities in health service utilization and financial protection [3, 11].

Barriers to NHIA enrollment among informal sector workers include irregular income, limited scheme awareness, administrative complexity, and skepticism regarding benefit reliability [12, 13]. Even among those enrolled, satisfaction with NHIA services varies widely. Studies suggest that perceived quality of care, responsiveness, availability of essential drugs, and waiting time all influence beneficiary satisfaction [14] which is a critical determinant of trust, retention, and continued participation [15]. Yet, few studies have directly compared satisfaction and access experiences between Nigeria's formal and informal sectors, two groups with vastly different socioeconomic profiles, expectations, and modes of insurance engagement.

This study aims to fill that gap by examining NHIA uptake and satisfaction in Kano State a populous and culturally diverse region in northern Nigeria that reflects the broader national mix of employment types and healthcare access challenges. By assessing sector-specific disparities in enrollment pathways, service perceptions, and satisfaction levels, this research provides actionable insights for health policy reform. The findings contribute to the evidence base needed to expand equitable coverage, particularly among underserved informal sector populations, and inform broader efforts towards achieving UHC in Nigeria and comparable LMIC settings [16].

Methods

Study Setting

This study was conducted in Kano State, located in northwestern Nigeria. As the most populous state in the country, Kano is home to more than 9.4 million residents according to the 2006 national census. It shares borders with Katsina, Jigawa, Bauchi, and Kaduna states. The capital city, Kano, is Nigeria's largest urban center and a major commercial and cultural hub. The population is predominantly composed of Hausa-Fulani Muslims, with minority Christian groups concentrated in urban districts.

Administratively, Kano comprises 44 Local Government Areas (LGAs), including 8 metropolitan and 36 rural LGAs. The economy is largely informal, with most residents engaged in subsistence farming, trading, and small-scale businesses. A smaller proportion is employed in the civil service or organized private sector.

The state's healthcare infrastructure includes two federal tertiary hospitals, three state-owned teaching hospitals, 35 secondary health facilities (33 state-run and 2 federal), 22 primary healthcare centers, seven military health institutions, and 72 NHIA-accredited private hospitals. Despite this broad distribution of facilities, healthcare access

remains inequitable, particularly for informal sector workers and rural communities.

The National Health Insurance Authority (NHIA), previously the National Health Insurance Scheme (NHIS), was established to promote universal health coverage and provide financial risk protection for all Nigerians. However, coverage remains heavily concentrated among formal sector employees due to payroll-based enrollment mechanisms. In contrast, informal sector uptake remains low, hindered by irregular incomes, poor awareness, and logistical barriers [17].

Study Design and Population

This was a cross-sectional comparative study involving NHIA-enrolled individuals who had accessed outpatient services at NHIA-accredited healthcare facilities in Kano State. Participants were drawn from all 44 LGAs and categorized into two groups: formal sector enrollees (government and private sector workers) and informal sector enrollees (self-employed individuals enrolled through programs such as GIFSHIP) [18].

Eligible participants were adults aged 18 years and above, who had been enrolled in NHIA for at least six months and had received care at a registered facility within the past three months. Only one respondent per household was selected to avoid intra-household duplication.

Sample Size Determination

The minimum sample size was determined using standard formulas for comparing two proportions, based on previously reported NHIA enrollment rates for formal and informal sector workers. With an alpha level of 0.05, a power of 80%, and a 10% adjustment for non-response, a total sample of 440 respondents was deemed sufficient to detect statistically significant differences between the two groups.

Ethical Approval

Ethical clearance was obtained from the Ethics Committee of Kano State Ministry of Health. Permission was obtained from the Kano State NHIA Office, the Hospital Management Board under which the State Hospitals are, and Aminu Kano Teaching Hospital. Clearance was also obtained from Texila American University. Written informed consent was secured from all participants after they received detailed information about the study objectives, procedures, risks, and confidentiality measures. Participation was voluntary, and participants were informed of their right to withdraw at any point without penalty.

Results

Socio-demographic Characteristics

A total of 440 NHIA enrollees participated in the study 205 from the formal sector and 235 from the informal sector. Among informal participants, 43.8% accessed services through private facilities, while only two received care at primary healthcare centers.

Most respondents were male (64.4% formal, 59.1% informal). The mean age differed significantly between groups: 39.5 years (±10.5) for formal and 43.4 years (±8.7) for informal enrollees ($p < 0.05$), with the majority in their 30s and 40s.

The ethnic profile was predominantly Hausa (64.9% formal, 51.4% informal; $p < 0.001$). The majority identified as Muslim (90.2% formal, 85.5% informal). A higher proportion of formal enrollees were married (79.0% vs. 72.0%; $p < 0.001$), while informal participants tended to have more children, with 33.6% reporting three and 25.5% reporting four ($p < 0.001$) as shown in “Table 1”.

Table 1. Socio-Demographic Characteristics of Respondents

Variable		Formal n (%)	Informal n (%)	$\chi 2$	p-value
Type of facility	Federal Tertiary	61(29.8)	61(25.9)	5.87	0.21
	State Tertiary	61(29.8)	61(25.9)		
	State Secondary	10(4.9)	10(4.3)		
	Private	71(34.6)	103(43.8)		
	PHC	2(0.9)	0(0.0)		
	Total	205(100.0)	235(100.0)		
Gender	Male	132(64.4)	139(59.1)	1.27	0.28†
	Female	73(35.6)	96(40.9)		
	Total	205(100.0)	235(100.0)		
Age group (years)	18-24	14(6.8)	5(2.1)	37.52	<0.001*
	25-34	66(32.2)	31(13.2)		
	35-44	70(34.1)	104(44.3)		
	45-54	35(17.1)	77(32.8)		
	≥55	20(9.8)	18(7.7)		
	Total	205(100.0)	235(100.0)		
Ethnic group	Hausa	133(64.9)	130(51.4)	20.64	<0.001*
	Fulani	30(14.6)	61(36.0)		
	Yoruba	27(13.2)	31(13.2)		
	Igbo	3(1.5)	11(4.7)		
	Others	12(5.8)	2(0.9)		
	Total	205(100.0)	235(100.0)		
Religion	Islam	185(90.2)	201(85.5)	2.26	0.15†
	Christianity	20(9.8)	34(14.5)		
	Total	205(100.0)	235(100.0)		
Marital Status	Single	28(13.7)	26(11.1)	11.10	<0.001*
	Married	162(79.0)	169(72.0)		
	Divorced	11(4.4)	34(10.2)		
	Widow	4(2.0)	5(2.1)		
	Separated	0(0.0)	1(0.4)		
	Total	205(100.0)	235(100.0)		
No. of Children	None	36(17.6)	39(16.6)	23.30	<0.001*
	≤2	45(22.0)	33(14.0)		
	3	48(23.4)	79(33.6)		
	4	32(15.6)	60(25.5)		
	5	19(9.3)	14(6.0)		
	≥6	25(12.2)	10(4.3)		
	Total	205(100.0)	235(100.0)		

**= Significant at p<0.05*

†=Fisher exact test

Household and Employment Characteristics

Polygamous households were more common among informal enrollees (43.5% vs. 14.7%; p < 0.001). Most formal enrollees resided in urban areas (95.1%), whereas 17.9% of informal respondents lived in rural settings (p < 0.001).

Educational attainment was generally higher among formal participants, with 51.2% holding a diploma or bachelor's degree and 8.9% possessing postgraduate qualifications. Among informal workers, 69.8% held tertiary degrees, but only 3.4% had postgraduate education (p = 0.002).

More informal workers reported monthly earnings between ₦51,000 and ₦200,000 (71.9% vs. 46.8%), while 19.0% of formal enrollees earned less than ₦10,000, compared to just 4.7% of informal workers (p < 0.001).

Employment duration differed significantly: 41.3% of informal workers had been employed for 6–10 years, versus 25.4% of formal respondents (p < 0.001). The above data is represented in "Table 2".

Table 2. Socio-Demographic Characteristics of Respondents

Variable		Formal n (%)	Informal n (%)	$\chi 2$	p-value
Type of family	Polygamy	26(14.7)	91(43.5)	37.77	<0.001†
	Monogamy	151 (85.3)	118(56.5)		
	Total	177(100.0)	209(100.0)		
Place of Residence	Urban	195(95.1)	193(82.1)	17.74	<0.001†
	Rural	10(4.9)	42(17.9)		
	Total	205(100.0)	235(100.0)		
Level of Education	No formal	2(9.8)	2(0.9)	19.29	0.002*
	Primary	4(2.0)	2(0.9)		
	Secondary	52(25.4)	34(14.5)		
	Voc/Technical	24(11.7)	25(10.6)		
	Diploma/Bachelor	105(51.2)	164(69.8)		
	Postgraduate	18(8.9)	8(3.4)		
	Total	205(100.0)	235 (100.0)		
Income (Naira)	<10,000	39(19.0)	11(4.7)	38.82	<0.001*
	10,000-50,000	53(25.9)	37(15.7)		
	51,000-100,000	59(28.8)	88(37.4)		
	101,000-200,000	37(18.0)	81(34.5)		
	≥201,000	17(8.3)	18(7.7)		
	Total	205(100.0)	235(100.0)		
Duration employed (years)	<1	28(13.7)	12(5.1)	21.36	<0.001*
	1-5	65(31.7)	64(27.2)		
	6-10	52(25.4)	97(41.3)		
	11-15	31(15.1)	42(17.9)		
	≥16	29(14.1)	20(8.5)		
	Total	205(100.0)	235(100.0)		

**= Significant at p<0.05*

†=Fisher exact

Employment Type and Occupation

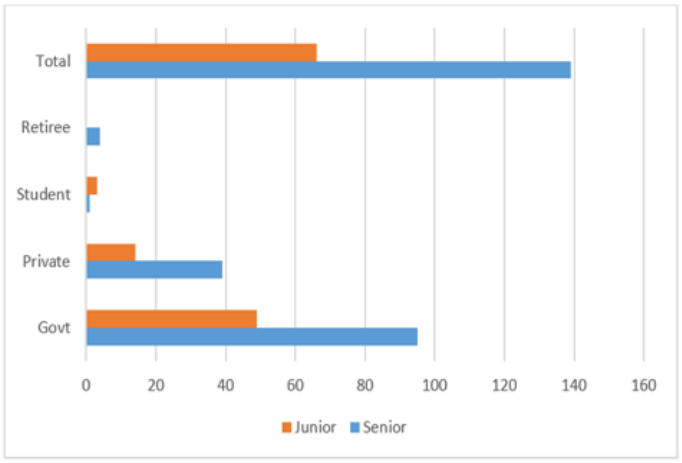

Figure 1. Level and Type of Employment of Formal sector Enrollees

The type and level of employment of the various enrollees is represented in "Figure 1". The majority of formal enrollees were government employees, either junior or senior staff.

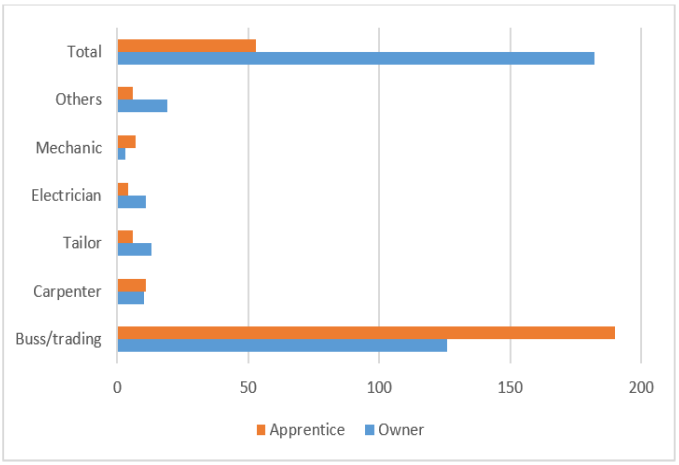

Figure 2. Occupation of the Informal Sector Enrollees

The occupation of informal enrollees is shown in "Figure 2" above. Informal enrollees were predominantly small-scale traders (53.6%), followed by artisans.

Awareness and Enrollment Patterns

"Table 3" shows awareness of NHIA was high across both groups, 87.3% in the formal sector and 83.0% in the informal sector. Employers were the main source of NHIA information for formal workers (52.2%), while informal participants primarily relied on friends or colleagues (50.6%) ($p < 0.001$).

Current enrollment was nearly universal, 98.5% of formal and 97.4% of informal respondents were active enrollees. However, principal enrollee status was more common in the informal group (83.8%) than the formal group (70.8%) ($p = 0.002$).

Table 3. Source of Information and Enrolment of Respondents

Variable		Formal n (%)	Informal n (%)	χ2	p-value
Source of information	Employer	107(52.2)	32(13.6)	121.50	0.00*
	Govt/public	61(29.8)	53(22.6)		
	Friends/colleague	23(11.2)	119(50.6)		
	HCP	5(2.4)	27(11.5)		
	Others	9(4.4)	4(1.7)		
	Total	205(100.0)	235(100.0)		
Awareness of NHIA	Yes	179(87.3)	195(83.0)	1.29	0.26
	No	26(12.7)	40(17.0)		
	Total	205(100.0)	235(100.0)		
Source of awareness	Employer	90(50.3)	25(12.8)	120.06	0.00*
	Govt/public	63(35.2)	42(21.5)		
	Friends/colleague	15(8.4)	107(54.9)		
	HCP	6(3.4)	20(10.3)		
	Others	5(2.8)	1(0.5)		
	Total	179	195		
Current enrolment	Yes	202(98.5)	229(97.4)	0.65	0.51†
	No	3(1.5)	6(2.6)		
	Total	205	235		
Status	Principal	143(70.8)	192(83.8)	10.56	0.002†
	Dependent	59(29.2)	37(16.2)		
	Total	202(100.0)	229(100.0)		

**=Significant at p<0.05*

†=Fisher exact test

Formal enrollers were more likely to register larger families, with 19.5% enrolling six or more dependents compared to 6.0% of informal respondents ($p < 0.001$). Informal enrollers generally enrolled only a spouse or small nuclear family.

Enrollment duration differed notably 27.6% of formal enrollees had been enrolled for seven or more years, compared to just 5.6% of informal enrollees ($p < 0.001$) as seen in "Table 4" below.

Table 4. Family Registered and Duration of Enrolment of Respondents

Variable		Formal n (%)	Informal n (%)	χ2	p-value
No. of family enrolled	Only 1	33(16.1)	38(16.2)	62.39	0.00*
	2	19(9.3)	68(28.9)		
	3	34(16.6)	71(30.2)		
	4	44(21.5)	28(11.9)		
	5	35(17.1)	16(6.8)		
	≥6	40(19.5)	14(6.0)		
	Total	205(100.0)	235(100.0)		

Family registered	Spouse only	38(18.5)	60(25.5)	91.85	0.00*
	2 spouses	12(5.9)	49(20.9)		
	2 spouses & 1child	21(10.2)	67(28.5)		
	2 spouses & 2child	48(23.4)	29(12.3)		
	2 spouses & 3child	45(22.0)	15(6.4)		
	2 spouses & 4child	36(17.6)	10(4.3)		
	1 spouse & 4child	4(2.0)	1(0.4)		
	Only me	1(0.5)	4(1.7)		
	Total	205(100.0)	235(100.0)		
Duration of enrolment (years)	<1	27(13.3)	24(10.3)	46.60	0.00*
	1-3	69(34.0)	133(57.8)		
	4-6	51(25.1)	62(26.7)		
	≥7	56(27.6)	13(5.6)		
	Total	203(100.0)	232(100.0)		

**=Significant at p<0.05*

†=Fisher exact test

Utilization and Motivation for NHIA Enrollment

Motivations for Enrollment and Continuation

Motivations differed by sector.

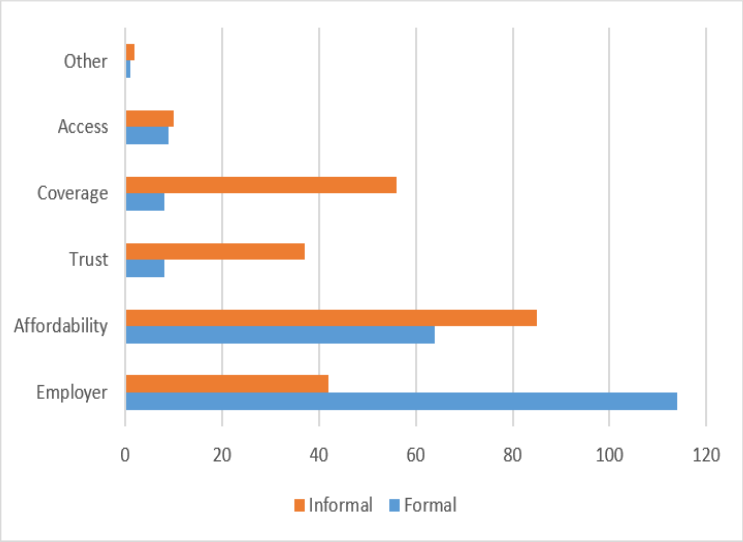

Figure 3. Motivations for Continuing Enrolment with NHIA

Formal respondents cited employer requirements as the primary reason for enrollment, while informal respondents prioritized affordability as displayed in "Figure 3". These trends persisted for continued enrollment.

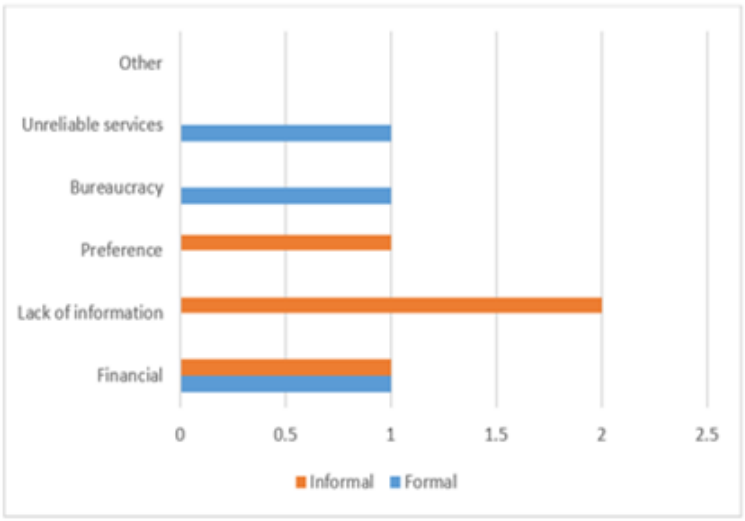

Figure 4. Reasons for Not Continuing Enrolment with NHIA

"Figure 4" displays some of the reasons why informal respondents stopped participation in the NHIA services. Lack of information was the main reason cited by informal respondents who discontinued participation.

Enrollment Continuity and Financial Satisfaction

Nearly all respondents indicated a desire to continue enrollment (98.5% formal vs. 98.3% informal; p = 1.00). However, formal sector respondents reported significantly higher satisfaction with pharmacy co-payments (81.4% vs. 31.1%; p < 0.001) and co-contribution arrangements (71.7% vs. 28.5%; p < 0.001). In contrast, informal participants were mostly neutral on financial indicators, with 67.2% to 73.2% expressing indifference.

More informal respondents reported high healthcare costs despite NHIA coverage (38.3% vs. 25.9%; p < 0.001). Interestingly, 66.8% of informal enrollees believed NHIA improved their health, compared to 36.1% in the formal group (p < 0.001) as seen in "Table 5" below.

Table 5. Assessment of Service Satisfaction as Motivators for Enrollment

Variable		Formal n (%)	Informal n (%)	$\chi 2$	p-value
Continue enroll	Yes	202(98.5)	231(98.3)	0.04	1.00†
	No	3(1.5)	4(1.7)		
	Total	205(100.0)	235(100.0)		
Pharmacy-co-payment	Very satisfied	23(11.2)	16(6.8)	134.93	0.00*
	Satisfied	144(70.2)	57(24.3)		
	Neutral	33(16.1)	158(67.2)		
	Dissatisfied	5(2.4)	4(1.7)		
	Very dissatisfied	0(0.0)	0(0.0)		
	Total	205(100.0)	235(100.0)		
Co-contribution	Very satisfied	30(14.6)	20(8.5)	125.02	0.00*
	Satisfied	117(57.1)	47(20.0)		
	Neutral	37(18.0)	156(66.4)		
	Dissatisfied	15(7.3)	12(5.1)		
	Very dissatisfied	6(2.9)	0(0.0)		
	Total	205(100.0)	235(100.0)		

Deduction vs cost (before enrolment)	Very satisfied	20(9.8)	12(5.1)	96.52	0.00*
	Satisfied	119(58.0)	46(19.6)		
	Neutral	60(29.3)	172(73.2)		
	Dissatisfied	6(2.9)	4(1.7)		
	Very dissatisfied	0(0.0)	1(0.4)		
	Total	205(100.0)	235(100.0)		
Deduction vs cost (after enrolment)	Very satisfied	21(10.2)	16(6.8)	101.26	0.00*
	Satisfied	127(62.0)	50(21.3)		
	Neutral	53(25.9)	167(71.1)		
	Dissatisfied	4(2.0)	2(0.9)		
	Very dissatisfied	0(0.0)	0(0.0)		
	Total	205(100.0)	235(100.0)		
Cost of health still high with NHIA	Yes	53(25.9)	90(38.3)	21.81	0.00*
	No	110(53.7)	130(55.3)		
	Same	42(20.5)	15(6.4)		
	Total	205(100.0)	235(100.0)		
Improve health With NHIA	Yes	74(36.1)	157(66.8)	47.71	0.00*
	No	20(9.8)	15(6.4)		
	Same	49(23.9)	31(13.2)		
	Not sure	53(25.9)	31(13.2)		
	Don't know	9(4.4)	1(0.4)		
	Total	205(100.0)	235(100.0)		

**=Significant at p<0.05*

†=Fisher exact test

Financial Satisfaction Summary

"Table 6" illustrates high satisfaction with financial components. Satisfaction with pharmacy co-payments exceeded 97% in both groups, with slightly higher satisfaction for co-contributions among informal participants (94.9% vs. 89.8%; p = 0.06).

Perceived value for money was high, over 97% of respondents in both groups agreed that their contributions were justified by the services received. Dissatisfaction remained below 3% for all financial measures.

Table 6. Rate of NHIA Service Satisfaction

Aspect of care	**Satisfaction status**	**Formal n (%)**	**Informal n (%)**	χ^2	**p-value**
Co-payment	Satisfied	200(97.6)	231(98.3)	0.04	0.84
	Dissatisfied	5(2.4)	4(1.7)		
Co-contribution	Satisfied	184(89.8)	223(94.9)	3.46	0.06
	Dissatisfied	21(10.2)	12(5.1)		
Deduct vs. cost B4	Satisfied	199(97.1)	230(97.9)	0.05	0.82
	Dissatisfied	6(2.9)	5(2.1)		
Deduct vs. cost after	Satisfied	201(98.0)	233(99.1)	0.34	0.56
	Dissatisfied	4(2.0)	2(0.9)		

**Statistically significant*

†=Fisher exact test

Satisfaction with NHIA Clinic Services

"Table 7" indicates high satisfaction with clinical services. Respondents across both sectors were satisfied with accessibility, cleanliness, staff availability, records management, medication supply, lab services, delivery care, staff attitude, and communication. There were no statistically significant differences between groups ($p > 0.05$), except for satisfaction with waiting times, where informal respondents reported higher satisfaction (94.0% vs. 82.9%; $p < 0.05$).

Table 7. Satisfaction with Quality of NHIA Clinic Services

Aspect of care	Satisfaction status	Formal n (%)	Informal n (%)	χ^2	p-value
Access@ clinic	Satisfied Dissatisfied	202(98.5) 3(1.5)	233(99.1) 2(0.9)	0.02	0.88
Cleanliness	Satisfied Dissatisfied	203(99.0) 2(1.0)	232(98.7) 3(1.3)	0.00	1.00
Availability of staff	Satisfied Dissatisfied	201(98.0) 4(2.0)	232(98.7) 3(1.3)	0.03	0.86
Records	Satisfied Dissatisfied	200(97.6) 5(2.4)	232(98.7) 3(1.3)	0.31	0.58
Medication	Satisfied Dissatisfied	192(93.7) 13(6.3)	224(95.3) 11(4.7)	0.31	0.58
Laboratory	Satisfied Dissatisfied	197(96.1) 8(3.9)	223(94.9) 12(5.1)	0.14	0.71
Delivery	Satisfied Dissatisfied	199(97.1) 6(2.9)	232(98.7) 3(1.3)	0.78	0.38
Waiting code	Satisfied Dissatisfied	170(82.9) 35(17.1)	221(94.0) 14(6.0)	12.6	0.00*
Waiting services	Satisfied Dissatisfied	197(96.1) 8(3.0)	227(96.6) 8(3.4)	0.00	0.98
Attitude	Satisfied Dissatisfied	198(96.6) 7(3.4)	232(98.7) 3(1.3)	1.39	0.24
Information	Satisfied Dissatisfied	200(97.6) 5(2 .4)	232(98.7) 3(1.3)	0.31	0.58

**Statistically significant*

†=Fisher exact test

General Satisfaction and Recommendations

Overall satisfaction and likelihood to recommend NHIA differed markedly by sector. Among formal respondents, 85.4% were satisfied or very satisfied, compared to only 25.6% in the informal group. Most informal participants (73.2%) remained neutral ($p < 0.001$).

Formal respondents were also more inclined to recommend NHIA: 80.0% were likely or very likely to do so, versus just 26.8% of informal respondents ($p < 0.001$) as shown in "Table 8".

Table 8. Overall Satisfaction and Recommendation for Enrolment with NHIA

Variable		Formal n (%)	Informal n (%)	χ2	p-value
Overall satisfaction	Very satisfied	68(33.2)	10(4.3)	174.28	0.00*
	Satisfied	107(52.2)	50(21.3)		
	Neutral	25(12.2)	172(73.2)		
	Dissatisfied	3(1.5)	3(1.3)		
	Very dissatisfied	2(1.0)	0(0.0)		
	Total	205(100.0)	235(100.0)		
Recommend NHIA to others	Very likely	67(32.7)	7(3.0)	144.63	0.00*
	Likely	97(47.3)	56(23.8)		
	Neutral	35(17.1)	167(71.1)		
	Unlikely	5(2.4)	4(1.7)		
	Very unlikely	1(0.5)	1(0.4)		
	Total	205(100.0)	235(100.0)		

**Statistically significant*

†=Fisher exact test

Overall Satisfaction Summary

After collapsing the Likert scale to binary categories, both groups showed high satisfaction levels, 97.6% among formal sector and 98.7% among informal sector participants as in "Table 9". These findings affirm strong positive perceptions of NHIA services, despite differing underlying experiences.

Table 9. Overall Satisfaction Rate

Aspect of care	Satisfaction status	Formal n (%)	Informal n (%)	χ^2	p-value
Overall satisfaction	Satisfied Dissatisfied	200(97.6) 5(2.4)	232(98.7) 3(1.3)	0.31	0.58

Incentives to Encourage Informal Sector Enrollment

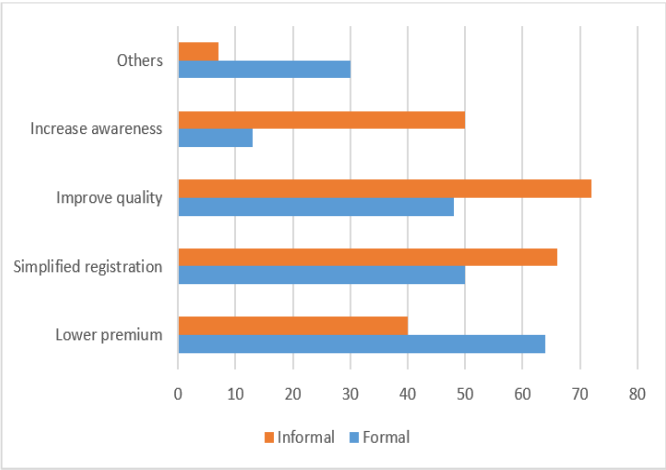

Figure 5. Types of Incentives to Encourage Informal Sector Enrollees

As shown in "Figure 5", informal respondents recommended improving healthcare quality (n = 120), simplifying the registration process (n = 116), and reducing premium costs (n = 104) as the most effective strategies to boost enrollment.

Qualitative Findings

NHIA Enrolment and Service Access

In-depth interviews with formal and informal sector participants revealed key themes around NHIA enrolment, sources of awareness, perceived benefits, service accessibility, quality, and adequacy. While many experiences were shared across groups, important distinctions emerged.

Awareness and Source of Information

Formal sector workers primarily learned about NHIA through their employers, describing enrolment as compulsory. In contrast, informal sector enrollees relied on social networks and personal initiative. Both groups noted some flexibility in choosing or changing healthcare facilities.

"It is my job that gave me the opportunity to know about it… my place of work placed me in it." (Formal)

"I heard about the benefits, so I enrolled." (Informal)

"You can choose any hospital and change it later if you are not okay with the services." (Formal)

Reasons for Enrolment and Perceived Benefits

For formal sector workers, enrolment was often mandatory. Informal participants joined voluntarily, citing financial benefits. Across both groups, NHIA was valued for its affordability and family coverage.

"Because of the benefits… it makes things a lot easier financially." (Informal)

"You have access to healthcare even when you have no money… tests are always free." (Formal)

"NHIA helps with my family's healthcare needs and eases the financial burden." (Informal)

Access to Healthcare Facilities

Proximity to accredited facilities shaped satisfaction. While some participants reported convenient access, others especially informal workers and mobile professionals, cited distance as a barrier.

"It's very close to my residence; I can go by foot." (Formal)

"Distance is a problem… my chosen facility is far." (Informal)

"We might wake up and be transferred elsewhere; distance is a concern." (Formal)

Perceived Service Quality and Equity

Participants generally perceived no discrimination between enrollees. NHIA units were often described as distinct, ensuring standardized care regardless of sector.

"Everyone is treated the same." (Informal)

"You can hardly differentiate between us." (Formal)

Facility Operating Hours

Most respondents found clinic hours satisfactory, though some mentioned limitations in service scope.

"Very good, you get attended to when you go." (Formal)

"Some services are not included; that needs correction." (Informal)

Satisfaction with NHIA and Retention

Participants' motivations for joining and continuing with NHIA centered on financial protection, trust in the system, and access to affordable care.

Financial Protection as a Key Motivator

Across sectors, the 10% co-payment model and coverage during health emergencies were frequently cited.

"Even when you don't have money, you can get care. You only pay 10%." (Formal)

"It helps financially, when my wife gave birth, NHIA saved me a lot of money." (Informal)

Family Coverage and Peer Influence

Family health needs and peer recommendations were especially important among informal sector participants.

"Because you often find someone sick in the family." (Informal)

"I tell my friends in business to join." (Informal)

Motivation to Continue

Participants reported continued enrolment due to reduced financial strain, trust in service quality, and timely care access.

"Immediately you feel unwell, you go to a healthcare center because you have insurance." (Formal)

"It has made things easier for me financially." (Informal)

"The system looks good to me; that's why I accepted it." (Informal)

Healthcare Providers' perspectives

Healthcare workers involved in NHIA implementation provided additional insights into operational realities, challenges, and areas for improvement.

Roles and Training

Providers described their roles in diagnosis, prescription, and referral. Most had received NHIA-specific training and adhered to treatment guidelines.

"I attend to patients by making diagnoses and giving prescriptions."

"We received training on emergency cases and the benefit package."

Service Coverage and Availability

Facilities generally offered outpatient, emergency, and maternity care under NHIA. Most essential drugs and lab services were available.

"Almost all services are covered, we try to make them available."

Service Integration and Referrals

NHIA services were usually offered in dedicated units, with referrals made when specialized care was needed.

"All in one unit, except for the lab."

"We refer to tertiary centers when services are unavailable."

Perceptions of Service Quality

Providers were largely positive about NHIA services but identified gaps in coverage and enrollee awareness.

"The services are very good and efficient."

"There's a need to increase awareness and expand service coverage."

Challenges in Service Delivery

Most providers did not report major operational challenges or sector-based discrimination but highlighted occasional patient-related issues.

"No difference between formal and informal sector patients… sometimes, attitude is an issue."

Discussion

This study examined uptake, utilization, and satisfaction with the National Health Insurance Authority (NHIA) among formal and informal sector enrollees in Kano State, Nigeria. The findings reveal both encouraging trends and persistent disparities in access, perceived value, and motivation for participation findings that mirror, yet also depart from, previous research across Nigeria and other LMICs.

Consistent with national patterns, formal sector participants in this study had greater NHIA awareness, longer enrollment durations, and higher rates of family coverage than their informal sector counterparts. These findings echo those of [19] and [20], who documented

structurally higher enrollment among salaried federal workers due to mandatory payroll deductions and institutional awareness campaigns. In contrast, informal sector enrollees primarily relied on peer/friends or family networks for information supporting earlier findings [21] and highlighting continued gaps in outreach to this group.

Notably, the current study observed near-universal self-reported enrollment and strong satisfaction across financial indicators in both groups, including pharmacy co-payments and perceived value for money. This contrasts with other studies [22-24], which found lower satisfaction due to drug stock outs and administrative inefficiencies. These improved satisfaction levels may reflect recent NHIA reforms aimed at standardizing service delivery and broadening the benefit package.

However, the observed neutrality and occasional dissatisfaction among informal sector enrollees regarding affordability even under the 10% co-payment model suggests that cost perceptions remain a barrier, as noted by [8]. Additionally, while informal respondents were more likely to believe that NHIA improved their health, they also more frequently cited persistent high out-of-pocket costs, a paradox seen in another study [6].

This study aimed to assess NHIA uptake, satisfaction, and sectorial disparities. The results affirm that while both groups report high overall satisfaction, their experiences diverge significantly. Formal sector participants, supported by employer mandates and structured payment systems, engage more comprehensively with NHIA registering more family members, enrolling earlier, and reporting higher satisfaction with financial procedures. Informal sector participants, despite high satisfaction in binary scoring, are more likely to report neutrality and face enrollment barriers such as limited awareness and cost sensitivity.

The strong agreement across groups on service quality including cleanliness, provider attitude, and communication suggests that clinic-level operations under NHIA may be more standardized than previously thought. However, informal sector enrollees expressed greater satisfaction with waiting times, potentially due to seeking care at private or lower-volume facilities, a phenomenon documented in other LMIC settings. This finding is in contrast to a study [25], where the highest proportion of Respondents expressed dissatisfaction with waiting time.

These findings have direct implications for UHC efforts in Nigeria. The current NHIA model remains disproportionately favorable to formal sector enrollees, undermining equity and financial protection for the majority of Nigeria's workforce. Tailored strategies are urgently needed to improve informal sector participation, including simplified registration, flexible payment options, and community-based outreach campaigns [26].

The high satisfaction with NHIA clinic services suggests that once enrolled, informal sector participants derive significant benefit which is a critical entry point for retention and advocacy. Investing in public trust through awareness campaigns, peer referrals, and streamlined access may enhance enrollment and utilization. Furthermore, leveraging community leaders and cooperative groups could bridge trust and information gaps for informal workers.

Several limitations must be acknowledged. First, selection bias may have influenced results, as the study relied on enrollees present at healthcare facilities, potentially excluding those who dropped out or never utilized services. Second, the cross-sectional design limits causal inferences regarding satisfaction drivers. Third, social desirability bias may have led respondents to overstate satisfaction or conceal dissatisfaction, particularly in face-to-face interviews.

Moreover, while the study attempted to control for key sociodemographic variables, unmeasured confounders such as chronic

illness burden, previous negative experiences, or provider behavior may have influenced satisfaction ratings. Finally, self-reported data on income and service utilization are vulnerable to recall bias and potential misclassification, especially among informal workers with variable earnings.

In conclusion, this study underscores persistent disparities in NHIA enrollment experiences between Nigeria's formal and informal sectors. While overall satisfaction with NHIA services is high, informal workers face unique challenges including limited awareness, shorter duration of enrollment, smaller family coverage, and perceived residual costs. Yet, their strong belief in NHIA's health benefits and willingness to recommend enrollment signal a critical opportunity for targeted policy reform.

To advance equitable universal health coverage (UHC) in Nigeria, the National Health Insurance Authority (NHIA) must prioritize the inclusion of the informal workforce through a multi-pronged strategy. This includes intensifying community-based awareness campaigns to increase understanding and trust in the scheme; simplifying and digitalizing the enrollment process to reduce administrative barriers; and introducing premium subsidies to ease financial burdens for low-income informal workers. Additionally, adopting more flexible co-payment arrangements can enhance affordability, while expanding the network of NHIA-accredited facilities particularly in underserved private and rural areas will help improve accessibility and service equity across population groups.

Conclusion

Future studies should adopt longitudinal designs to track satisfaction and dropout rates over time, while incorporating broader health system indicators. As Nigeria navigates health insurance reform under the NHIA Act, addressing informal sector disparities remains essential to achieving truly universal health coverage.

Conflict of Interest

There is no conflict of interest.

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