

Effectiveness of the Kano State Health Contributory Scheme in Improving Healthcare Accessibility among Polytechnic Staff in Kano State, Nigeria

Author: Nuraddeen Nasiru Ahmed, Yusuf Maitama Sule College of Education and Advanced Studies, Department of Social Studies

Co-Authors: Aliyu Shitu Said, Kano State Polytechnic. Aminatu Sani Ibrahim, Kano State Polytechnic

Abstract

Contributory health insurance schemes have been widely adopted across Nigerian states to address healthcare financing gaps, yet evidence on their institutional-level effectiveness remains limited. This study assessed the effectiveness of the Kano State Health Contributory Scheme (KSHCS) in improving healthcare accessibility among staff of Kano State Polytechnic. A descriptive survey design was adopted, and structured questionnaires were administered to 200 respondents comprising polytechnic staff, healthcare providers, and scheme administrators, selected through stratified random sampling. Data were analyzed using descriptive statistics, and chi-square goodness-of-fit tests were used to assess whether observed response patterns differed significantly from a chance (equal) distribution. Findings show that 52% of respondents were actively enrolled and utilizing the scheme, with over two-thirds reporting at least some reduction in out-of-pocket healthcare expenditure; however, these patterns did not differ significantly from an even distribution ($p > .05$), indicating substantial variability in beneficiary experience rather than a uniform effect. Two patterns were statistically robust: administrative dissatisfaction was significantly more prevalent than chance would predict ($\chi^2 (3) = 10.08, p = .018$), as was the unevenness in the ranking of implementation challenges, led by an inadequate number of accredited facilities ($\chi^2 (4) = 10.40, p = .034$). Respondents nonetheless overwhelmingly supported the continuation of the scheme and recommended digitization, expanded facility coverage, staff training, and stronger awareness campaigns. The study concludes that the KSHCS has made measurable but uneven progress toward improving healthcare accessibility for public institution staff, with administrative weaknesses and facility shortages standing out as statistically significant, targetable constraints. Findings offer practical guidance for policymakers and scheme administrators seeking to strengthen contributory health insurance implementation in Nigeria's public sector.

Keywords: health insurance, contributory healthcare scheme, healthcare accessibility, public sector, Kano State, Nigeria

1. Introduction

Healthcare financing remains a central challenge to achieving universal health coverage (UHC) in Nigeria. The sector is constrained by inequitable resource distribution, decaying infrastructure, and a severe shortage of health personnel; in 2019, Nigeria had only 24,640 doctors, far below the World Health Organization's recommended ratio of one doctor per 600 people (Abubakar et al., 2022). Health service delivery is structured around the National Health Act (2014), with the federal government overseeing tertiary care, state governments managing secondary care, and local governments responsible for primary healthcare (PHC). Despite initiatives such as the Basic Healthcare Provision Fund (BHC PF), funding gaps and urban–rural disparities in access persist.

At the national level, the National Health Insurance Authority (NHIA) has sought to expand UHC through formal, informal, and vulnerable-group coverage schemes, but insurance penetration remains low, leaving most Nigerians reliant on out-of-pocket payments (NHIS, 2022). In response, several states have introduced their own contributory schemes. Kano State, the country's most populous state, established the Kano State Health Contributory Scheme (KSHCS) in 2016 through the Kano State Contributory Healthcare Management Agency (KSCHMA), with the aim of pooling resources to finance healthcare and reduce the financial burden of medical expenses for residents (USAID, 2022). By the scheme's own reporting, it had enrolled over 370,000 people across 245 accredited facilities, comprising 134 primaries, 37 secondary, and 74 private healthcare facilities (USAID, 2022).

Health insurance coverage is also closely linked to workforce productivity: employees with health coverage are more likely to seek preventive care, experience reduced absenteeism, and report greater job security and morale (Tajudeen & Olukayode, 2015). For an institution such as Kano State Polytechnic, whose staff are among the scheme's formal-sector beneficiaries, the extent to which the KSHCS delivers on its promise of accessible, affordable, and quality healthcare has direct implications for staff welfare and institutional productivity.

Although several studies have examined contributory health schemes in Nigeria at the state or national level (Abubakar et al., 2022; Tajudeen & Olukayode, 2015), there remains limited institution-specific evidence on how the KSHCS performs among staff of public tertiary institutions, and little is known about beneficiary satisfaction, service quality, and affordability within this setting. This gap raises unresolved questions about coverage, service availability, and the extent to which the scheme has reduced the financial burden of healthcare for polytechnic staff.

This study therefore assessed the effectiveness of the KSHCS in improving healthcare accessibility among staff of Kano State Polytechnic, with specific objectives to: (i) examine the level of healthcare accessibility under the scheme; (ii) identify barriers to effective utilization of services; (iii) assess staff satisfaction with service quality and affordability; (iv) determine whether the scheme has reduced out-of-pocket healthcare expenses; and (v) identify implementation challenges and policy gaps.

2. Literature Review and Theoretical Framework

2.1 Contributory Health Insurance in Nigeria

Health insurance provides financial protection against the cost of medical care through risk-pooling, in which contributors pay premiums into a fund used to cover healthcare costs when needed (WHO, 2021). Nigeria's National Health Insurance Scheme (NHIS), established in 1999, has struggled to achieve universal coverage, prompting many states to introduce their own contributory schemes (NHIS, 2022). Under such schemes, including the KSHCS, both employees and employers contribute a percentage of salary to a pooled health fund used to finance care at designated facilities (Kano State Contributory Healthcare Management Agency, 2023). While this model helps spread financial risk, implementation challenges persist nationally, including low enrollment, poor awareness, delayed reimbursement to providers, and uneven service quality (Onoka et al., 2019; Agofure, 2021).

2.2 Dimensions of Healthcare Accessibility

The World Health Organization defines healthcare accessibility along four dimensions: availability, affordability, acceptability, and geographic accessibility (WHO, 2020). *Availability* is constrained in northern Nigeria by a shortage of facilities, personnel, and medical supplies relative to population size, resulting in long wait times even for insured patients (Abubakar et al., 2022; Onoka et al., 2019). *Affordability* has improved through risk-pooling, but hidden costs, co-payments, and limited coverage for specialized treatment continues to discourage utilization in some cases (Oyekale, 2017). *Acceptability* is shaped by service quality and provider attitudes; enrollees frequently report differential and sometimes dismissive treatment compared with out-of-pocket patients (Adewole et al., 2019; Onoka et al., 2019). *Geographic accessibility* remains a constraint for workers in peri-urban and rural areas, where distance and transportation costs discourage timely care-seeking even when services are technically covered (Aregbeshola & Khan, 2018).

2.3 Measuring Scheme Effectiveness

Effectiveness of contributory schemes is typically gauged through enrollment and coverage rates, service utilization, financial risk protection, health outcomes, and beneficiary satisfaction and trust (WHO, 2020). Evidence from Nigerian states shows considerable variation in performance, driven by differences in enrollment strategy, fund management, and service quality (Onoka et al., 2019). Comparative experience, such as Ghana's integration of digital registration and community outreach under its National Health Insurance Scheme (Agyepong et al., 2017), suggests that administrative innovation can meaningfully improve enrollment and utilization outcomes an approach with relevance for the KSHCS.

2.4 Common Implementation Challenges

Across the literature, recurring challenges facing Nigerian contributory schemes include low enrollment and awareness, inadequate healthcare infrastructure, funding and disbursement delays, inconsistent service quality and provider attitudes, and bureaucratic inefficiencies in claims processing and registration (Adewole et al., 2019; Aregbeshola & Khan, 2018; Onoka et al., 2019; NHIS, 2022). These constraints frequently discourage both enrollees and private providers from fully engaging with the schemes, limiting their reach and credibility.

2.5 Theoretical Framework

This study adopts the Health Belief Model (HBM), developed by Hochbaum, Rosenstock, and Kegels, as its theoretical lens (Rosenstock, 1974). The HBM explains health-related behavior through six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Applied to this study, the model helps explain why public servants enroll in and utilize (or fail to utilize) the KSHCS, linking beneficiaries' perceptions of the scheme's benefits and barriers to their healthcare-seeking behavior, and offering insight into how policy design and communication can influence uptake and utilization.

3. Methodology

A descriptive survey design combining quantitative and qualitative methods was adopted. The study population comprised Kano State Polytechnic staff enrolled in the KSHCS, healthcare providers under the scheme, and officials of the Kano State Contributory Healthcare Management Agency (KSCHMA). Using Taro Yamane's (1967) formula for sample size determination at a 95% confidence level, a sample of 200 respondents was drawn through stratified random sampling, with simple random sampling applied within each stratum to minimize selection bias.

Data were collected using a structured questionnaire and key informant interviews (KIIs). The questionnaire comprised four sections: (A) demographic information; (B) service utilization; (C) perceived effectiveness (affordability, service quality, timeliness); and (D) challenges and recommendations, with most items measured on a 5-point Likert scale. Content validity was established through review by experts in public health, health administration, and research methodology, while internal consistency was assessed using Cronbach's Alpha (≥ 0.70 threshold; Tavakol & Dennick, 2011); a test-retest procedure was also conducted on a small subset of respondents. Secondary data were drawn from KSCHMA reports, official Ministry of Health records, and WHO/NHIS publications. Ethical clearance was obtained from relevant institutional authorities, and respondent confidentiality and anonymity were maintained throughout. Quantitative data were analyzed using descriptive statistics (frequencies and percentages) in SPSS, while qualitative interview data were analyzed thematically to complement the survey findings.

3.1 Statistical Analysis

To assess whether the distribution of responses within each categorical variable reflected a genuine pattern rather than chance variation, one-sample chi-square goodness-of-fit tests were conducted for the key outcome variables (usage frequency, distance to facility, expense reduction, service quality, timeliness, overall access, administrative satisfaction, complaint resolution, key challenges, and improvement suggestions), against a null hypothesis of equal distribution across categories. Significance was assessed at $\alpha = .05$ and tests were computed using Python's SciPy library (Virtanen et al., 2020). This approach tests whether the spread of responses across categories is statistically meaningful; it does not test association between two variables, as the dataset available for this analysis consisted of aggregated frequency counts rather than respondent-level cross-tabulations.

4. Results

4.1 Demographic Profile of Respondents

Of the 200 respondents, 51.5% were male and 48.5% female. The largest age group was 51 years and above (29.0%), followed by 31–40 years (24.5%), 41–50 years (24.0%), and 20–30 years (22.5%). In terms of educational attainment, respondents were fairly evenly distributed across secondary school certificate (26.5%), Bachelor's degree/HND (25.5%), Master's/PhD (25.0%), and Diploma/NCE (23.0%) holders. Most respondents had 11–20 years of service (29.0%), while grade-level distribution was similarly broad, spanning Levels 12–14 (28.5%) to Level 6 and below (18.5%) (Table 1).

Table 1. Demographic Profile of Respondents (N = 200)

Variable	Category	Frequency	Percent (%)
Gender	Male	103	51.5
	Female	97	48.5
Age	51 years and above	58	29.0
	31–40 years	49	24.5
	41–50 years	48	24.0
	20–30 years	45	22.5
Education	Secondary school certificate	53	26.5
	Bachelor's Degree/HND	51	25.5
	Master's/PhD	50	25.0
	Diploma/NCE	46	23.0
Years of Service	11–20 years	58	29.0
	5–10 years	50	25.0
	Over 20 years	47	23.5
	Less than 5 years	45	22.5
Grade Level	Levels 12–14	57	28.5
	Level 15 and above	54	27.0
	Levels 7–10	52	26.0
	Level 6 and below	37	18.5

Source: Fieldwork, 2025

4.2 Enrollment and Service Utilization

While enrollment in the KSHCS is compulsory for Kano State civil servants, 52.0% of respondents reported actively engaging with (rather than merely being nominally enrolled in) the scheme, with 90% of insured respondents affiliated with the KSHCS and 10% holding private insurance. Utilization frequency was mixed: 27.0% reported never using scheme services, while 26.5%, 25.5%, and 21.0% reported frequent, occasional, and rare use, respectively; a chi-square goodness-of-fit test showed this spread did not differ significantly from an even distribution,

$\chi^2(3) = 1.80$, $p = .615$. Distance to the nearest accredited facility was a notable barrier, with 30.0% of respondents located more than 10 km away and only 20.0% within 5 km, though this variation was also not statistically significant, $\chi^2(3) = 5.00$, $p = .172$. Nearly half (47.5%) of respondents reported having been denied service at some point (Table 2).

Table 2. Enrollment and Service Utilization

Indicator	Category	Frequency	Percent (%)
Actively enrolled/using scheme	Yes	104	52.0
	No	96	48.0
Scheme type	KSHCS	190	90.0
	Private insurance	10	10.0
Usage frequency	Never	54	27.0
	Frequently	53	26.5
	Occasionally	51	25.5
	Rarely	42	21.0
Distance to facility	More than 10 km	60	30.0
	5–10 km	55	27.5
	Don't know	45	22.5
	Less than 5 km	40	20.0
Ever denied service	No	105	52.5
	Yes	95	47.5

Source: Fieldwork, 2025

4.3 Perceived Effectiveness: Affordability, Quality, and Access

Regarding affordability, 69.5% of respondents reported some level of reduction in out-of-pocket expenditure (23.5% significant, 23.5% moderate, 22.5% slight), while 30.5% reported no reduction at all; this distribution did not differ significantly from chance, $\chi^2(3) = 3.28$, $p = .350$. Service quality was rated positively by more than half of respondents (31.0% good, 22.5% excellent) against 26.5% fair and 20.0% poor ratings, also not a statistically significant spread, $\chi^2(3) = 5.56$, $p = .135$. Timeliness of service delivery was similarly mixed and non-significant, $\chi^2(3) = 0.80$, $p = .850$, with 27.0% describing services as “very timely” against 47.0% reporting some degree of delay. Access to services under the scheme was rated as low by 28.0% of respondents and high by 25.0%, with the remainder rating it moderate or reporting no access; again, this variation was not statistically significant, $\chi^2(3) = 1.08$, $p = .782$.

By contrast, administrative satisfaction showed a statistically significant departure from an even distribution, $\chi^2(3) = 10.08$, $p = .018$, driven by dissatisfaction (32.0%) outweighing “very satisfied” (29.0%), “satisfied” (20.0%), and “neutral” (19.0%) responses. This is the only affordability/quality/access indicator in Table 3 where the observed pattern is unlikely to be due to chance (Table 3).

Table 3. Perceived Affordability, Service Quality, and Access

Indicator	Category	Frequency	Percent (%)
Reduction in out-of-pocket expenses	Not at all	61	30.5
	Significantly	47	23.5
	Moderately	47	23.5
	Slightly	45	22.5
Service quality	Good	62	31.0
	Fair	53	26.5
	Excellent	45	22.5
	Poor	40	20.0
Timeliness of service	Very timely	54	27.0
	Sometimes delayed	52	26.0
	Often delayed	48	24.0
	Not timely at all	46	23.0
Overall access to services	Low	56	28.0
	High	50	25.0
	Moderate	47	23.5
	No access	47	23.5
Administrative satisfaction	Dissatisfied	64	32.0
	Very satisfied	58	29.0
	Satisfied	40	20.0
	Neutral	38	19.0

Source: Fieldwork, 2025

4.4 Challenges and Recommendations

Nearly half of respondents (49.5%) had lodged a complaint regarding the scheme at some point, of whom only 30.5% reported resolution, 32.5% reported no resolution, and the remainder were not applicable; among those who had lodged a complaint, resolution status was evenly split and not statistically significant, $\chi^2(1) = 0.13$, $p = .722$. The most frequently cited challenges were an inadequate number of accredited hospitals (26.5%), poor staff attitude (22.5%), long waiting times (20.5%), poor awareness (17.5%), and referral delays (13.0%); this ranking differed significantly from an even distribution, $\chi^2(4) = 10.40$, $p = .034$, indicating that facility shortage is a genuinely dominant concern rather than one of several equally weighted issues. When asked for improvement suggestions, respondents most often proposed digitization of scheme administration (25.5%), expansion of healthcare facilities (21.5%), staff training (19.5%), reduced bureaucracy (17.0%), and increased awareness campaigns (16.5%), though this spread of preferences was not statistically significant, $\chi^2(4) = 5.40$, $p = .249$ (Table 4).

Table 4. Challenges Faced and Recommendations for Improvement

Category	Item	Frequency	Percent (%)
Complaint lodged	No	101	50.5
	Yes	99	49.5
Complaint resolved	Not applicable	74	37.0
	No	65	32.5
	Yes	61	30.5
Key challenges	Few accredited hospitals	53	26.5
	Poor staff attitude	45	22.5
	Long waiting time	41	20.5
	Poor awareness	35	17.5
	Referral delay	26	13.0
Improvement suggestions	Digital system	51	25.5
	More facilities	43	21.5
	Staff training	39	19.5
	Cut bureaucracy	34	17.0
	Awareness campaign	33	16.5

Source: Fieldwork, 2025

4.5 Summary of Chi-Square Goodness-of-Fit Tests

Table 5 summarizes all significance tests conducted. Of the ten indicators tested, only administrative satisfaction and the ranking of implementation challenges showed a statistically significant departure from an even distribution across categories.

Table 5. Chi-Square Goodness-of-Fit Test Results ($\alpha = .05$)

Indicator	df	χ^2	p-value	Significant
Usage frequency	3	1.80	.615	No
Distance to facility	3	5.00	.172	No
Reduction in out-of-pocket expenses	3	3.28	.350	No
Service quality	3	5.56	.135	No
Timeliness of service	3	0.80	.850	No
Overall access to services	3	1.08	.782	No
Administrative satisfaction	3	10.08	.018	Yes
Complaint resolution (among those who lodged)	1	0.13	.722	No
Key challenges	4	10.40	.034	Yes
Improvement suggestions	4	5.40	.249	No

5. Discussion

The findings present a more nuanced picture than raw percentages alone would suggest. For most indicators of accessibility, usage frequency, distance to facilities, expense reduction, service quality, timeliness, and overall access the observed spread of responses was not statistically distinguishable from what would be expected by chance. This does not mean these issues are unimportant; it means the beneficiary population is genuinely divided, with roughly comparable proportions reporting positive and negative experiences, rather than the scheme performing consistently well or poorly. This pattern is consistent with prior findings that contributory scheme performance in Nigeria is highly uneven across enrollees, driven by factors such as distance, provider behavior, and awareness that vary considerably from person to person (Onoka et al., 2019; Oyekale, 2017).

Two findings, however, stood out as statistically robust rather than attributable to chance variation. First, dissatisfaction with scheme administration was significantly more prevalent than would be expected under an even distribution, pointing to administrative weakness not service delivery per se as a distinct and disproportionate concern. This aligns with Onoka et al.'s (2019) observation that administrative inefficiency, rather than clinical service quality alone, undermines trust in Nigerian health insurance schemes. Second, the ranking of implementation challenges was also statistically significant, with an inadequate number of accredited facilities emerging as the clearly dominant concern rather than one of several equally weighted issues consistent with the documented shortage of healthcare infrastructure in northern Nigeria relative to population size (Abubakar et al., 2022).

Read through the Health Belief Model, these results suggest that perceived barriers among KSHCS beneficiaries are not diffuse but concentrated in two specific areas facility access and administrative responsiveness, while perceptions of service quality, affordability, and timeliness are more evenly split across the beneficiary population. This distinction matters for policy: interventions aimed at the statistically significant barriers (facility expansion, administrative and grievance-handling reform) are likely to yield more concentrated returns than interventions targeting the more evenly distributed concerns, where impact would need to be broader and more sustained to shift the overall pattern. The strong respondent support for the scheme's continuation, paired with concrete demands for digitization and expanded facilities, is consistent with this reading.

6. Conclusion and Recommendations

The KSHCS has had a measurable but uneven effect on healthcare accessibility among Kano State Polytechnic staff. For most accessibility indicators utilization, distance, expense reduction, service quality, timeliness, and overall access beneficiary experience is genuinely divided rather than uniformly positive or negative, and statistical testing confirms these splits are consistent with normal variation across a diverse beneficiary population rather than systemic failure. Two constraints, however, are statistically distinct and disproportionate: weak scheme administration (reflected in significant dissatisfaction and low complaint resolution) and an inadequate number of accredited facilities, which emerged as the clearly dominant challenge rather than one among several equally weighted concerns. Based on these findings, the study recommends that KSCHMA and relevant state authorities prioritize: (1) expanding the number of accredited facilities, particularly in underserved and peri-urban areas, as the single most statistically

significant gap identified; (2) investing in digital enrollment, referral, and complaint-management systems to address the significant administrative dissatisfaction and low complaint-resolution rate; (3) strengthening provider training and performance monitoring to support the broader, more evenly distributed concerns around service quality and staff attitude; (4) intensifying awareness campaigns to improve beneficiaries' understanding of their entitlements; and (5) instituting a routine monitoring and evaluation framework, ideally capturing respondent-level data, to enable future bivariate analysis of how accessibility outcomes vary by demographic and institutional factors. These measures would help consolidate the scheme's gains and move Kano State closer to equitable, effective healthcare coverage for its public sector workforce.

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