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Knowledge and Utilization of Health Insurance following the Rollout of the State Contributory Health and Basic Healthcare Provision Fund in Kaduna State, Nigeria

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Abstract

The availability of information to the public plays a fundamental role in creating awareness, building trust and improving utilization of health insurance schemes. Knowledge of health insurance is often limited, and results in low utilization rates of services among vulnerable groups or those in informal sectors. This study examines the knowledge and utilization of health insurance schemes in Kaduna State, using z-test of difference of two proportions at 5% level of significance for 1944 respondents. Statistical analysis (chi-square tests and Z-test of proportions) using Stata 16.0 revealed that 86.1% of respondents have heard of the general term 'Health Insurance". Knowledge declined significantly for specific schemes (KADCHMA: 67.0% and BHCPF: 59.2%). The State Contributory Health Scheme (KADCHMA) shows the highest mean utilization of services at 1,167.08 enrollees, National Health Insurance at 458.23 enrollees, private health insurance at 219.90 enrollees, BHCPF 179.61 at enrollees and Tertiary institutions Social Insurance scheme at 0.33. Despite the successes recorded, less than half of the population (49.6%) understands the operationality of the schemes, 29.3% only heard of the schemes with no understanding of their functionality, and 9.8% only heard of the schemes indicating low knowledge. The average percentage of the catchment population covered under all the schemes is extremely low, averaging 15.97% per facility. Addressing these issues requires multi-stakeholders' engagement to create awareness and mobilize citizens to understand and enrolled into the health insurance schemes.

Keywords: *BHCPF, Health Insurance and Schemes, Knowledge, KADCHMA, Utilization.*

Introduction

Understanding health insurance is crucial for the public, as it helps individuals grasp the reasoning behind its principles and operational procedures [1]. This knowledge will inform people about enrolment processes, available benefit packages, and the quality of services provided, among other important aspects [2]. Knowledge serves as the foundation of any society, offering essential information that leads to improved and higher-quality healthcare services [3]. The advantages of being informed are substantial, as they equip individuals with the guidance they need for daily activities, innovation, and health management [4]. This information can help protect against infectious diseases, enhance environmental management, and mitigate their spread.

Public awareness and trust are significant in health insurance schemes. Public awareness of health insurance is often limited, and trust in

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these systems can be fragile [5]. This trust is influenced by personal experiences, affordability, transparency, and effective communication. Several studies have indicated that there is significant awareness of health insurance schemes among Nigerians; however, this awareness does not lead to enrolment [6].

In Nigeria, especially in Kaduna State, low rates of insurance enrolment are primarily due to several factors, particularly those affecting vulnerable groups and the informal sector. Healthcare insurance is significantly underutilized, with most enrolees coming from the formal sector, which represents only about 10% of the country's population [7]. Meanwhile, most people in the informal sector primarily rely on out-of-pocket (OOP) expenditures for their healthcare costs [8].

Research Methodology

Research Design and Site

This study, a type of implementation research, employed a descriptive cross-sectional design to investigate adult residents of benefiting communities and healthcare providers in healthcare facilities within the selected communities, wards, and local government areas (LGAs) of Kaduna State, Nigeria.

Method of Data Collection

Data were collected from 18 wards (3 wards per Local Government Area) in Jema'a, Jaba, Chikun, Kaduna North, Makarfi, and Lere Local Government Areas of Kaduna State. Primary data were collected using structured questionnaire designed to test the research hypothesis. The questionnaire was administered to the respondents to capture their views, opinions, and observations [9]. Additionally, secondary data were sourced from 18 Primary Healthcare Centres, 6 Secondary Health Facilities, and either private or faith-based health facilities within the six LGAs mentioned above. Both primary and secondary data were used to test the research hypothesis and to answer the research questions [10].

Population of the Study

The study included a target population of 1,944 respondents, which consisted of both male and female heads of households from different socioeconomic background as well as 30 healthcare facility managers responsible for the daily operations of their health facilities [11]. Ethical consent was obtained, and gender status was considered during the study.

Sampling Procedure and Sample Size

Sample Size

The sample sizes for the respective populations are as follows:

Adult residents of benefitting communities: A sample size of 324 was calculated for each LGA using the formula given in equation (1).

$$n = \frac{z^2_{\alpha/2} P(1-P)}{d^2} = 324 \quad (1)$$

Where,

	Definition	Value
P	Proportion of the populations who reported benefiting from BHCPF & Health Insurance scheme[1]	0.26
$\mathbf{Z_{\alpha/2}}$	Z-score corresponding to level of statistical significance desired (0.05)	1.96
d	Desired level of precision	0.05
Adjusted for 10% non-response/ contingency factor 292		

Sampling Approach for the Quantitative Component: The study employed a multistage sampling approach to select respondents. The stage of the sampling is described as follows:

Stage 1, Simple random selection of LGAs: This involved a simple random selection of 6 LGAs from the 23 LGAs (approx. 26%) using the simple balloting method of 2 LGAs per each of the 3 senatorial zones in the State.

Stage 2, Simple random selection of wards: The sample framed for this stage is an alphabetically arranged list of all the wards in each of the selected LGA. Then 3 wards were selected through balloting from each of the 6 LGAs giving a total of 18 selected wards in all.

Stage 3, Simple random selection of communities: In each selected ward, 6 communities were selected using systematic random sampling approach.

Stage 4, Selection of Heads of households of benefiting communities: The households served as the secondary sampling unit. Eighteen households were selected per community through a systematic random sampling of housing structures and a simple random selection of household's heads.

Considering a non-response rate of 20%, the sample size was calculated as follows: n= (1,944×0.20) =388.8, approximately 389. Therefore, 1,555 households were considered in this study.

Selection of Health Facilities

Stage 1, Selection of Health Facilities

The one per ward priority PHC under the BHCPF were selected in each ward, one private or faith-based health facility offering KADCHMA/NHIA and one secondary health facility in the selected LGA offering referral services for BHCPF, KADCHMA/NHIA schemes were also selected.

Instruments for Data Collection

Data collection for this study involved both qualitative and quantitative methods [12]. Qualitative data were gathered using a focus group discussion guide, while quantitative data were obtained as secondary data from health facilities, specifically focusing on service utilization related to health insurance coverage [13]. In addition, secondary data were collected from sources such as the national health management information system and encounter registers for health insurance schemes.

Statistical Analyses

This section analyzes the public's understanding, showing that shallow awareness has not yet developed into the deep functional knowledge essential for widespread adoption.

Measurement of Variables

The study utilized a rigorous approach to measure key constructs related to Universal Health Coverage (UHC). The core variables were operationalized as follows:

Variable	Measurement Focus	Instrument(s)
Knowledge of Schemes	The populace's awareness of, and functional understanding of the schemes and their benefits.	Measured by assessing awareness of the scheme generally (Health Insurance Scheme) and specifically (KADCHMA, BHCPF), and the respondent's self-assessed understanding of how the schemes work and how to access them
UHC Attainment/Coverage	The extent of scheme expansion and its impact on financial risk protection.	Measured by perceived increase in access and affordability (Yes/No response and open-ended reasons), percentage of catchment population covered (provider

		survey), and reduction in Out-of-Pocket (OOP) expenditure (Yes/No response).

Validation of Instrument

The data collection tools underwent a thorough validation and pre-testing process to ensure accuracy, clarity, and cultural appropriateness prior to large-scale deployment.

1. **Expert Validation**: The data collection instruments, including the semi-structured questionnaires for adult residents and service providers, were reviewed and validated by five subject matter experts. This panel included public health officials, academic researchers with experience in healthcare financing, and executives from the health sector, ensuring the content aligned with established health system and policy constructs.
2. **Pre-testing**: The quantitative tools were pre-tested with 30 households in the Kaduna metropolis. This process was conducted to assess the ease of administration, test the logical flow of questions, confirm language appropriateness (in Hausa as well as English), and identify any questions that were difficult or ambiguous for respondents to understand or answer. The instruments were reviewed and updated based on all identified gaps.

Reliability of Instrument

Reliability ensures the consistency and stability of the measurement tools. Although a specific statistical reliability coefficient (such as Cronbach's Alpha) is not computed due to the non-uniform nature of the variables, measures were taken during the study design and data collection process to ensure the reliability of the data. This includes data tools digitized using electronic forms (Kobo Toolbox) pre-loaded onto Android tablets, ensuring standardized question administration and minimizing data entry error, and a three-day training for data collectors focusing on familiarity with the questionnaires, gaining informed consent, and ensuring adherence to standardized recruitment and administration methods, thereby ensuring consistency across the seven data collection teams.

Method of Data Analysis

The data analysis was conducted using Stata 16.0. For descriptive statistics, we applied frequency counts, percentages, means, and graphical analyses to summarize the demographic profile, coverage, knowledge, and acceptability variables. Inferential statistics were utilized to test the formal null hypotheses, which included the Chi-Square test and the Z-test of proportions [14].

Chi-Square Test

The z-test for the proportion was employed as an inferential statistic to test the significance of the difference between categorical variables with two dichotomous categories (yes/no). In the case of multiple variables, when there are more than two categories, the Chi-Square test of independence was employed as a key inferential statistic to evaluate the association. Both techniques were useful for testing the Null Hypotheses. They provided the quantitative evidence base for either rejecting or failing to reject the null hypotheses formulated against the research objectives.

Rule Decision (Statistical Decision Rule)

All statistical inferences derived from the quantitative analysis were anchored to a pre-determined criterion, ensuring consistency and rigor in hypothesis testing:

- **Level of Significance (α):** The study established 5% types-I error limit (α=0.05).

The decision rule applied to the null hypotheses was as follows:

1. If the calculated p-value is less than or equal to the significance level ($p \leq 0.05$):
   - The Null Hypothesis is **REJECTED**.
   - *Interpretation:* The observed difference or association is considered statistically significant and unlikely to have occurred by chance.
2. If the calculated p-value is greater than the significance level ($p > 0.05$):
   - The Null Hypothesis is **NOT REJECTED** (Fail to Reject).
   - *Interpretation:* The observed difference or association is considered statistically insignificant.

Results and Discussion

Table 1. Respondents' Knowledge of Health Insurance Schemes and Basic Healthcare Provision Fund

Level of knowledge	**Poor Frequency (percent)**		**Good knowledge Frequency (percent)**	
General knowledge of Health Insurance Scheme	254	(13.1)	1673	(86.1)
Knowledge of KADCHMA Scheme	618	(31.8)	1302	(67.0)
Knowledge of BHCPF Scheme	767	(39.5)	1150	(59.2)

Table 1 indicates that 86.1% of respondents were aware of the general "Health Insurance Scheme." However, awareness significantly dropped for the specific administering agencies: KADCHMA (67.0% Yes) and BHCPF (59.2% Yes), demonstrating a high level of awareness at the top level.

Table 2. Respondent's Understanding of Health Insurance Schemes and Basic Healthcare Provision Fund

Understanding Operational Modalities	**Frequency (N=1944)**	**Percentage**
Good understanding of the schemes	964	(49.6)
Average understanding of the schemes	570	(29.3)
Fair Understanding of the schemes	191	(9.8)
Poor Understanding of the schemes	287	(14.8)

Table 2 highlights that less than half of the population (49.6%) understands how the schemes function and how to access them. The rest either have heard of the schemes but do not understand their benefits (29.3%) or only recognize their names (9.8%). This indicates a significant gap in functional knowledge and understanding.

Understanding utilization of Health Insurance Schemes

This section contains critical data confirming low coverage and highlighting the gap between policy, training, and operational reality.

Table 3. Enrolment into the Health Insurance Schemes

Enrolment into the schemes	**Min**	**Max**	**Mean**	**Std. Dev.**
National Health Insurance Scheme	0	3,991	458.23	1,042.956
State Contributory Health Scheme	0	13,793	1,167.08	2,529.853
Private Health Insurance	0	5,934	219.90	1,081.274

BHCPF	0	653	179.61	209.873
Tertiary Institutions Social Health Insurance	0	8	0.33	1.633

Table 3 displays the enrollment volume for various schemes. The State Contributory Health Scheme (KADCHMA) has the highest average enrollment per facility, with a means of 1,167.08, indicating its effectiveness in providing coverage for the formal sector. In contrast, the Basic Health Care Provision Fund (BHCPF), which aims to assist the poor and vulnerable populations, has a much lower average enrollment of 179.61.

Table 4. Catchment Population

	Min	**Max**	**Mean**	**Std. Dev.**
Coverage Catchment Population	.00	98.00	15.9744	21.60375

Table 4 presents the overall coverage gap. Crucially, the average percentage of the catchment population actually covered under all health insurance schemes is extremely low, averaging only 15.97% per facility. This statistical confirmation reinforces the central argument that the risk pool is insufficient to reduce the state's catastrophic 84% Out-of-Pocket (OOP) expenditure rate. The vast majority of the population remains financially exposed despite the schemes' existence.

Discussion of Findings

The data confirmed the null hypothesis that the population, particularly those in the informal sector, has limited knowledge of the scheme [15]. While awareness of the general scheme is relatively high, with 86.1% having heard of it, functional understanding is low. Only 49.6% of the population understands how the schemes work and how to access them.

The operational modalities of the State Health Insurance and the BHCPF emphasize the importance of ongoing awareness creation among the general populace. This involves continuous engagement with both state and non-state actors.

State actors have played a crucial role in enrolling those who were previously uninsured, particularly through labour unions and organized labour groups. For the informal sector, community stakeholders and artisan groups are essential in raising awareness, which has significantly improved public knowledge of the health insurance schemes, as reflected in the results mentioned earlier. Utilizing local dialects and providing information and communication materials have significantly enhanced awareness and understanding of these schemes.

The inability to translate awareness into functional knowledge is the main reason for the lack of acceptance, with 70.7% citing poor understanding as the issue [16]. This knowledge gap prevents the unorganized informal sector, which comprises over 80% of those surveyed, from enrolling.

Community knowledge is directly linked to understanding, as shown in Tables 1 and 2, where the majority of those knowledgeable about the schemes also demonstrate an understanding of how they function. Stakeholders, particularly government actors, play a vital role in creating awareness that leads to comprehension, acceptance, and the utilization of services offered under these schemes [17].

The enrolee’s often express dissatisfaction because essential services, such as chronic disease management for hypertension and diabetes, as well as high-prevalence conditions like typhoid screening, are either excluded or poorly defined in the benefit package [18]. This

ambiguity further undermines their confidence in the scheme.

Despite some successes, the overall impact on the state's population remains minimal [19]. Facility data indicates that the average coverage rate across different areas is critically low, at just 15.97%. This confirms that the risk pool is insufficient to significantly reduce the state's out-of-pocket (OOP) expenditure, which remains alarmingly high at around 84% [20].

Enrolment in the state health insurance scheme is substantial, largely because the entire state workforce is enrolled in the formal sector. However, enrolment remains low since local government authorities have yet to onboard their staff into state schemes. The National Health Insurance demonstrates a significant enrolment rate, especially among those working for the Federal Government of Nigeria, as mandated by the revised NHIA Act. Private health insurance covers employees in private organizations, revealing a significant gap compared to the expected number of enrolees. This indicates that more efforts are necessary to ensure that private sector employers enrol their workers in health insurance schemes.

Unfortunately, the tertiary insurance scheme is underperforming, and regulatory bodies for tertiary institutions need to make it mandatory for all students across the state. The low enrolment numbers may also be due to the limited number of tertiary institutions in the selected local government areas. Additionally, parents should encourage their children to utilize the services offered at their institutions.

It is evident that a large portion of the population remains uncovered by health insurance schemes. To achieve Universal Health Coverage (UHC), significant efforts are required, and all stakeholders must collaborate to realize the UHC targets set for 2023 [21].

Conclusions

The establishment of the Kaduna State Contributory Health Management Authority (KADCHMA) and the effective decentralization of the Basic Healthcare Provision Fund (BHCPF) represent crucial policy reforms. These reforms lay the necessary legal and infrastructural groundwork for achieving Universal Health Coverage (UHC) by 2030 [22].

However, without immediate and decisive policy actions to ensure a timely and consistent flow of funding, which is essential for service stability, the scheme will remain caught in a cycle of instability. If this continues, Kaduna State may face a situation where it has a high-equity, low-coverage healthcare system, ultimately failing to achieve UHC for most of its population [23].

Recommendations

The following recommendations are crucial to stabilizing service quality, restoring beneficiary trust, and accelerating mass enrolment to meet the UHC goal:

1. **Shift to Knowledge-Based Advocacy**: Advocacy campaigns by government stakeholders must move beyond simple awareness to deep education on the value proposition of risk pooling and cross-subsidy, rather than premium payment for unused services. Utilize successful enrolees (champions) to provide compelling testimonials on the financial relief achieved.
2. **Strategic Staging of Mandatory Enrolment**: While mandatory enrolment is advocated for by state agencies, its implementation must be staged to avoid political backlash:

Phase 1: Mandate enrolment for easily regulated and fiscally resilient groups, such as students in tertiary institutions (TISHIP expansion) and the organized private sector.

Phase 2: Only after sustained stability and resolution of service quality failures (zero stock-outs for three consecutive quarters) should the state proceed with linking insurance status to general regulatory documents (e.g., driver's license renewal, business registration) to capture the mass unorganized informal sector.

Ethical Approval

Ethical approval for this study was obtained from the State Ministry of Health, as required before starting any health-related research in the state. This approval ensured strict adherence to ethical procedures and standards, as outlined by the State Health Research Ethical Committee guidelines. Informed consent was obtained from participants, with assurances of privacy and confidentiality. The rights of participants to withdraw from the study and their autonomy were prioritized throughout the research.

Data Availability

The utilization data are openly available in National Health Management Information System (NHMIS) tools available at the health facilities. Data accessible at: https://dhis2nigeria.org.ng/dhis/dhis-web-commons/security/login.action. Knowledge data available on request via URL: https://kc.kobotoolbox.org

Author Contributions

Muazu, Habibu., conceived of the presented idea. Muazu, Habibu., planned and carried out the data collection, analysed the data and generated the manuscript. Ahmad, A. Umar., review the titles and supervise the manuscript development.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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