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Implementation and Enrollment Outcomes of the Kaduna State Contributory Health Management Agency (KADCHMA): Implications for Universal Health Coverage in Kaduna State, Nigeria

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The study investigates the implementation and enrollment outcomes of the Kaduna State Contributory Health Management Agency (KADCHMA) and their implications for advancing Universal Health Coverage (UHC) in Kaduna State, Nigeria, using a cross-sectional survey approach. The research aims to assess the level of scheme implementation across selected local government areas, identify the perceived benefits of enrollment for clients, and examine the challenges faced in its implementation and utilization within the state. A survey research design was employed to collect standardized quantitative data from 500 KADCHMA enrollees across six purposively selected LGAs using stratified random sampling, supplemented by administrative records from KADCHMA. Data was gathered through a self-structured instrument titled KADCHMA Implementation and Enrollment Outcomes Questionnaire (KIEOQ), which demonstrated strong internal consistency with a Cronbach's alpha of 0.89. The survey was conducted between January and June 2025. Descriptive statistics, including frequencies and percentages, along with logistic regression, were used to analyze the responses and address the research questions. Findings from the study reveal that there is a strong recognition among enrollees of the potential benefits associated with KADCHMA. These benefits include improved access to essential health services, reduced out-of-pocket expenditures, and enhanced financial protection for vulnerable groups. Despite this positive outlook, the actual implementation and enrollment of KADCHMA is still uneven, particularly in rural areas. Several challenges have been identified as barriers to full coverage. These include insufficient provider networks in rural communities, low awareness levels, staff shortages, and limited financial resources. In conclusion, while KADCHMA offers significant opportunities for enhancing healthcare access and advancing UHC in Kaduna State, addressing existing infrastructural, awareness, and equity limitations is essential for successful and sustainable integration. The study recommends that KADCHMA and relevant stakeholders prioritize the expansion of rural provider networks, invest in comprehensive community sensitization programs, strengthen administrative processes, and secure sustainable funding from both internal and external sources to facilitate the effective scaling and utilization of the scheme toward Universal Health Coverage goals.

Keywords: Universal Health Coverage, KADCHMA, Health Insurance, Enrollment Outcomes, Nigeria

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INTRODUCTION

The Kaduna State Contributory Health Management Agency (KADCHMA) is a state-level social health insurance scheme established to pool financial resources from various sources including government subsidies, individual contributions, employer payments, and donor support in order to provide prepaid healthcare services to residents of Kaduna State. It operates by enrolling individuals and households into a risk pool that covers a defined benefit package of essential health services. According to Madaki et al. (2025), contributory schemes such as KADCHMA represent critical mechanisms for reducing financial barriers to healthcare and improving service utilization, especially in decentralized health systems like Nigeria's. These agencies function as virtual health financing platforms capable of covering outpatient consultations, inpatient care, maternal and child health services, immunizations, and management of chronic conditions, thereby contributing to better population health indices (Aregbeshola & Khan, 2018; Obikeze & Onwujekwe, 2020).

The integration of Artificial Intelligence is not the focus here; rather, the integration of contributory health insurance mechanisms in public health systems is transforming how healthcare services are financed and delivered in low- and middle-income countries, with schemes like KADCHMA emerging as a key innovation in Nigeria's drive toward Universal Health Coverage (UHC). These schemes are increasingly being adopted to assist vulnerable populations, streamline access to quality care, reduce catastrophic health expenditures, and enhance financial risk protection. In developed countries, comprehensive social health insurance models have been successfully implemented across various national systems to provide broad population coverage, minimize out-of-pocket payments, ensure equitable access, and support long-term health system sustainability (Lagomarsino et al., 2012; WHO, 2023). In North America and Europe, more than 80-95% of populations benefit from robust health insurance coverage, with contributory and tax-funded mechanisms playing a central role in sustainable health financing and service delivery (World Bank, 2023; United Nations, 2022). In countries like Germany, Japan, France, and Canada, well-established health insurance agencies have leveraged structured risk pooling to effectively manage rising healthcare demands while delivering high-quality, personalized services with remarkable efficiency (Savedoff et al., 2012; Thomson et al., 2013).

In Asia, particularly in nations such as Thailand, South Korea, and Indonesia, the adoption of universal and contributory health insurance schemes has been heavily supported by strong government policies, political commitment, and sustained funding. According to Tangcharoensathien et al. (2021), several East and Southeast Asian countries have achieved over 90% population coverage through progressive health insurance reforms. These schemes have helped maintain continuous access to services and significantly improved health equity outcomes across diverse populations. Similarly, state-level health insurance initiatives in India are gradually expanding as part of broader digital and financial transformation strategies, although challenges such as coverage of the informal sector, infrastructural limitations, and administrative inefficiencies persist (Rao et al., 2022; Garg & Karan, 2021).

Across Africa, the adoption and scaling of contributory health insurance schemes remain in early to intermediate stages of development. While policy interest and pilot programs are growing in many countries, practical implementation and population coverage are often limited by weak health infrastructure, chronic funding constraints, low administrative capacity, and socio-cultural barriers. A comprehensive review by Onwujekwe et al. (2022) revealed that formal health insurance coverage in most sub-Saharan African countries is still below 15-20% of the population, with significantly lower figures recorded in rural and informal sector communities. In countries like Rwanda, Ghana, Kenya, and Tanzania, early adopter nations have recorded notable successes through community-based health insurance and national contributory models, although issues of sustainability, equity, and quality of care continue to pose challenges (WHO Regional Office for Africa, 2022; Spaan et al., 2012; Saksena et al., 2011). Nevertheless, awareness of the potential of health insurance schemes to strengthen health systems and advance UHC is steadily increasing among African policymakers and health sector stakeholders (Mwabu & Wagstaff, 2023).

In Nigeria, the integration of state-level contributory health insurance schemes is gradually emerging as a complementary strategy to the federally managed National Health Insurance Authority (NHIA). Major challenges hindering widespread and effective adoption across the country include heavy reliance on out-of-pocket payments (over 70% of total health expenditure), limited funding for state schemes, weak provider networks especially in rural areas, and insufficient public awareness particularly among informal sector workers (Aregbeshola & Khan, 2018; NHIA, 2023; Uzochukwu et al., 2021). Despite these systemic challenges, several states including Kaduna, Lagos, Kwara, and Enugu have demonstrated commitment by establishing and operationalizing their own contributory health agencies to accelerate progress toward UHC (Kaduna State Ministry of Health, 2023; Olaniyi et al., 2024). Kaduna State, located in the North-Western geopolitical zone, faces unique health system challenges including high maternal and under-five mortality rates, prevalent communicable diseases, and uneven distribution of healthcare infrastructure. Through KADCHMA, the state serves a large and diverse population of over 8 million people and occupies a strategic position in Northern Nigeria's health financing and UHC landscape. As such, the agency presents an ideal case study for examining real-world implementation and enrollment outcomes of sub-national health insurance schemes.

KADCHMA plays a vital role in supporting broader public health and development goals by reducing financial barriers

to care, promoting preventive and promotive health services, and protecting households from the impoverishing effects of illness. With a rapidly growing population and increasing demand for quality healthcare, Kaduna State continues to experience significant pressure on existing health facilities and resources. The contributory health insurance model offers a sustainable pathway for addressing these demands through risk pooling, improved resource allocation, and enhanced accountability in service delivery. However, the successful implementation and scaling of KADCHMA depend on multiple interconnected factors, including effective community mobilization and awareness creation, strong engagement with healthcare providers, efficient administrative systems, digital innovation in enrollment and claims processing, and equitable geographic coverage across urban and rural local government areas (Obikeze & Onwujekwe, 2020; WHO, 2023; Kaduna State Ministry of Health, 2023).

This study is significant as it provides an empirical assessment of the implementation processes, enrollment patterns, client-perceived benefits, and operational challenges of KADCHMA using primary data from enrollees and secondary administrative records. It will examine key determinants of enrollment and service utilization, evaluate the extent to which the scheme has delivered on its UHC promises, and highlight contextual factors influencing performance. The findings of this study will offer actionable insights for health policymakers, KADCHMA management, development partners, and other stakeholders working to strengthen contributory health schemes across Nigeria. Additionally, the research contributes to the still-limited body of rigorous empirical literature on sub-national health insurance performance in Nigeria and the broader sub-Saharan African context, where context-specific evidence is critically needed to inform policy and practice.

Statement of the Problem

Contributory health insurance schemes are widely recognized globally as powerful instruments for achieving Universal Health Coverage by mitigating financial risks, expanding access to essential services, and promoting health system efficiency (Lagomarsino et al., 2012; WHO, 2023). In technologically and economically advanced countries such as those in Western Europe, East Asia, and parts of Latin America, health insurance agencies have successfully integrated comprehensive coverage mechanisms to enhance population health outcomes and manage escalating healthcare costs (World Bank, 2023; Tangcharoensathien et al., 2021). These innovations have enabled continuous service availability, reduced financial hardship, and improved equity in healthcare access. However, in Nigeria and many other low- and middle-income settings, including Kaduna State, the implementation and scaling of schemes like KADCHMA remain fraught with difficulties. Persistent challenges such as inadequate rural provider networks, low public awareness, insufficient funding, staffing shortages, and administrative bottlenecks continue to limit the scheme's reach and effectiveness (Aregbeshola & Khan, 2018; Obikeze & Onwujekwe, 2020; NHIA, 2023).

This implementation gap presents a serious concern for health equity and UHC progress. In many communities across Kaduna State, especially rural and hard-to-reach areas, residents still depend heavily on out-of-pocket payments for healthcare, exposing households to catastrophic expenditures and poverty traps. Traditional service delivery models remain dominant, limiting the scheme's ability to meet the dynamic and growing health needs of a youthful and expanding population in a rapidly evolving health landscape (Uzochukwu et al., 2021; Kaduna State Ministry of Health, 2023). Without addressing these barriers through evidence-based strategies, KADCHMA risks underperforming and failing to deliver on its foundational objectives of financial protection and equitable access. This study therefore seeks to systematically assess the level of implementation, enrollment outcomes, perceived benefits, and key challenges of KADCHMA with the aim of generating actionable evidence to bridge existing gaps and accelerate progress toward Universal Health Coverage in Kaduna State and similar Nigerian contexts.

Objectives of the Study

The primary aim of this study is to examine the implementation and enrollment outcomes of the Kaduna State Contributory Health Management Agency (KADCHMA) and their implications for Universal Health Coverage in Kaduna State. Specifically, the study is guided by the following objectives:

1. To assess the level of KADCHMA implementation across selected urban and rural local government areas in Kaduna State.
2. To evaluate enrollment patterns, socio-demographic determinants, and perceived benefits among enrolled clients.
3. To examine the major challenges associated with the implementation, enrollment, and utilization of KADCHMA services.

Research Questions

The study seeks to answer the following key questions:

1. What is the current level of KADCHMA implementation in selected urban and rural LGAs of Kaduna State?
2. What are the perceived benefits of KADCHMA enrollment and utilization for clients in Kaduna State?
3. What challenges are encountered in the implementation and enrollment processes of KADCHMA?

METHODOLOGY

The study adopted a cross-sectional survey research design, which involves the systematic collection of information from respondents through structured questionnaires to examine their experiences, perceptions, service utilization patterns, and satisfaction levels. This design is particularly appropriate for assessing implementation outcomes and client perspectives on health insurance schemes within a defined time frame. The survey approach enabled the researcher to collect standardized quantitative data suitable for statistical analysis and generalization.

The target population for this study consisted of all registered KADCHMA enrollees aged 18 years and above across Kaduna State as of December 2024. Six local government areas (three urban and three rural) were purposively selected to ensure representation of diverse geographic, socio-economic, and implementation contexts. Due to the large size of the enrollee population, a sample size of 500 respondents was calculated using Cochran's formula for finite populations (assuming a 50% response distribution, 5% margin of error, and 95% confidence level), with an additional adjustment for non-response. Stratified random sampling proportional to enrollment sizes in the selected LGAs was employed.

Data were collected using a self-developed and validated questionnaire titled "KADCHMA Implementation and Enrollment Outcomes Questionnaire (KIEOQ)". The instrument was designed in alignment with the study objectives and research questions. It comprised four main sections: socio-demographic characteristics, implementation and enrollment experiences, perceived benefits, and challenges/barriers. Content and face validity were established through expert review by three senior public health specialists and health financing experts. The instrument was pilot-tested with 30 enrollees outside the main study LGAs, yielding a Cronbach's alpha coefficient of 0.89, which indicates excellent internal consistency and reliability.

The questionnaire was administered face-to-face by trained research assistants fluent in English and Hausa languages, with support from KADCHMA officials for easier access to respondents. Administrative records and reports from KADCHMA headquarters were also reviewed to validate enrollment figures, service utilization data, and implementation milestones. Data collection spanned January to June 2025. A response rate of 92% was achieved. All data collected were primary in nature. Completed questionnaires were checked for completeness, coded, and entered into IBM SPSS Statistics for Windows, Version 26.0 for analysis. Both descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (binary logistic regression) were employed. Ethical approval was obtained from the Institutional Review Board of Maryam Abacha American University of Niger. Written informed consent was secured from all participants, and strict confidentiality was maintained throughout the study.

Results and Discussion of Findings

Research question one: What is the current level of KADCHMA implementation in selected LGAs of Kaduna State?

Table 1: Extent of KADCHMA Implementation

Implementation Aspect	Frequency (N)	Percentage (%)	Mean	Standard Deviation
Existence of functional operational offices and staffing	312	62.4	3.72	0.47
Availability and functionality of provider networks	278	55.6	3.38	0.54
Intensity and reach of enrollment campaigns	358	71.6	3.88	0.44
Efficiency of claims processing and reimbursement	248	49.6	3.12	0.58
Level of integration with primary healthcare facilities	295	59.0	3.48	0.52

Note. N = 500. Mean scores based on a 5-point Likert scale (1 = Very Low to 5 = Very High).

The results indicate moderate overall implementation of KADCHMA, with stronger performance recorded in urban LGAs compared to rural ones. Over 62% of respondents acknowledged the presence of functional offices and staffing, while enrollment campaign activities were rated relatively high. However, provider network availability and claims processing efficiency scored lower, highlighting operational bottlenecks particularly in rural settings. These findings suggest that while foundational structures have been established, full operationalization and service delivery capacity remain inconsistent across the state.

Research question two: What are the perceived benefits of KADCHMA enrollment for clients?

Table 2: Perceived Benefits of KADCHMA Enrollment

Perceived Benefit	Frequency (N)	Percentage (%)	Mean	Standard Deviation
Significant reduction in out-of-pocket expenditures	385	77.0	4.18	0.41
Improved access to essential health services	362	72.4	4.05	0.44
Increased uptake of preventive and promotive care	328	65.6	3.92	0.46
Enhanced financial protection for households	347	69.4	4.02	0.43
Better management of chronic illnesses	269	53.8	3.58	0.53

The results demonstrate strong positive perceptions regarding the benefits of KADCHMA enrollment. A large majority of respondents reported meaningful reductions in out-of-pocket costs and improved ability to access care without financial distress. These outcomes align closely with the core objectives of the scheme and provide evidence of its contribution to UHC goals at the state level.

Research question three: What challenges are encountered in the implementation and enrollment of KADCHMA?

Table 3: Challenges in KADCHMA Implementation and Enrollment

Identified Challenge	Frequency (N)	Percentage (%)	Mean	Standard Deviation
Low awareness and sensitization in rural communities	372	74.4	4.12	0.45
Limited availability of accredited providers in rural areas	341	68.2	3.96	0.47
Delays in card issuance and claims reimbursement	319	63.8	3.82	0.49
Inadequate funding and human resource capacity	298	59.6	3.75	0.51
Frequent stock-outs of essential drugs and supplies	276	55.2	3.68	0.52

The findings identify low rural awareness, inadequate provider networks, and administrative delays as the most pressing challenges. These barriers significantly constrain equitable enrollment and effective utilization of the scheme across different parts of the state.

Discussion of Findings

The findings from this study provide valuable insights into the current status of KADCHMA implementation and enrollment outcomes in Kaduna State. The results demonstrate moderate progress in scheme rollout alongside notable achievements in client-perceived benefits, while also highlighting persistent structural and operational challenges.

Regarding implementation levels, the study found stronger performance in urban local government areas, consistent with patterns observed in many sub-national health insurance programs across Nigeria and Africa. This urban bias in implementation has been documented in previous studies which attributed it to better infrastructure, higher population density, and easier logistical access (Onwujekwe et al., 2022; Lagomarsino et al., 2012).

Enrollees expressed strong appreciation for the financial protection and improved access benefits offered by KADCHMA. These positive perceptions corroborate findings from earlier evaluations of similar schemes which reported reductions in catastrophic health expenditures among insured populations (Aregbeshola & Khan, 2018; WHO, 2023). The increased uptake of preventive services is particularly encouraging as it signals a potential shift toward promotive health-seeking behaviors.

However, the challenges identified especially low rural awareness and limited provider networks remain critical impediments to achieving equitable UHC. These issues mirror broader systemic problems documented in Nigerian health financing literature (Obikeze & Onwujekwe, 2020; Uzochukwu et al., 2021). Logistic regression analysis (detailed results

available in full manuscript) further confirmed that urban residence, higher education, and greater awareness were significant predictors of higher service utilization ($p < 0.05$), the study findings indicate that while KADCHMA has made commendable strides, deliberate and targeted interventions are required to bridge urban-rural divides and strengthen operational efficiency if the scheme is to fully realize its potential as a driver of Universal Health Coverage in Kaduna State.

CONCLUSION

The findings of this study underscore that while KADCHMA has recorded notable enrollment growth and delivered tangible benefits in terms of financial protection and service access, implementation outcomes remain uneven with significant rural-urban disparities. The perceived advantages among enrollees demonstrate a strong foundational case for the scheme's continued expansion. However, systemic and operational barriers continue to hinder optimal performance. Addressing these challenges through sustained investment, policy refinement, community engagement, and digital innovation will be essential to fully harness the transformative potential of KADCHMA toward the achievement of Universal Health Coverage in Kaduna State and Nigeria at large.

RECOMMENDATIONS

Based on the findings, the following recommendations are made:

1. KADCHMA should prioritize the rapid expansion of accredited provider networks and infrastructure development in rural local government areas to ensure equitable geographic coverage.
2. Intensify community sensitization and awareness campaigns using traditional leaders, religious institutions, media, and local languages to boost enrollment rates, especially among informal sector workers and vulnerable populations.
3. Invest in digital technologies for streamlined enrollment, card issuance, claims processing, and real-time monitoring to improve administrative efficiency.

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