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Comparative Effectiveness of NHIA versus Out-of-Pocket Payment Models in Promoting Preventive Healthcare Utilization in Nigeria

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ABSTRACT

Preventive healthcare is essential for reducing disease burden and improving population health outcomes, yet in Nigeria, heavy reliance on individual payments continues to limit means of obtaining this vital care. This study compared the impact of the National Health Insurance Authority (NHIA) model versus OOP payment in promoting the utilization of preventive healthcare in Nigeria using a comparative cross-sectional design, involving selected urban and rural health facilities across Rivers and Ekiti States to capture diverse socioeconomic and infrastructural conditions. A sum of 1,700 adults aged 18 years and above who accessed preventive services such as immunizations, screenings, and routine check-ups within the past year were recruited through a sequential sampling in stages technique. Socio-demographic data, health financing mode, preventive service utilization, and financial hardship were obtained via structured administered questionnaires and analyzed with chi-square tests and logistic regression to control for potential confounders. The results demonstrated significantly higher preventive service utilization among NHIA enrollees compared to OOP payers: immunizations (70% vs. 60%), screenings (66% vs. 56%), and routine check-ups (72% vs. 64%). Additionally, NHIA users reported substantially lower financial hardship (14.2%) compared to OOP payers (42.6%). Logistic regression confirmed that NHIA membership doubled the odds of preventive healthcare utilization after adjusting for education level, geographic location, and healthcare facility adequacy. These findings underscore the success of the NHIA in reducing cost barriers and enhancing access to preventive services. However, persistent rural health infrastructure gaps highlight the need for targeted expansion and upgrading of healthcare facilities in underserved areas. Strengthening rural healthcare systems is recommended to promote equity and maximize the benefits of NHIA coverage.

Keywords: Out-of-pocket payments, preventive health, NHIA, immunizations, screenings, and routine check-ups and Nigeria.

INTRODUCTION

Preventive healthcare includes routine screenings, immunizations, targeted health education, and risk-based counseling and has a crucial role in reducing disease burden, enhancing population health impacts, and achieving long-term cost savings in health systems (AbdulRaheem, 2023). In Nigeria, however, the heavy dependence on direct personal payments continues to be a major obstacle (Aregbeshola and Khan, 2018). According to Aregbeshola and Khan (2018), OOP expenditure accounts for over 90% spending on private hospital services

and approximately 60% of total national health expenditure. This financing pattern places a substantial financial strain on households and significantly limits means of obtaining essential preventive services (Onwujekwe *et al.,* 2019).

The enactment of the National Health Insurance Authority (NHIA) Act in 2022 represented a fundamental achievement in the health financing system in Nigeria. Repealing the voluntary framework of the former National Health Insurance Scheme (NHIS), the NHIA establishes a mandate for universal health insurance coverage, consolidating diverse schemes under a unified authority with enhanced regulatory and supervisory powers (Ipinnimo *et al*., 2022). Notable provisions reported by WHO (2022) include compulsory enrolment for all legal residents of Nigeria, the introduction of a standardized minimum benefits package, and effective strategies to protect vulnerable communities reached through the Vulnerable Group Fund (VGF). The VGF is financed through multiple channels, including the Basic Health Care Provision Fund (BHCPF) achieved through federal government of Nigeria grant, donations from international partners and private sectors (NHIA, 2022).

Despite its good design, the NHIA faces some challenges. Persistent structural limitations such as chronic underfunding of the health sector, shortages in skilled healthcare personnel, and administrative complexity pose significant barriers to implementation (Abdulraheem *et al.,* 2025). The health expenditure of Nigeria has repeatedly failed to meet the Abuja Declaration target of allocating 15% of government spending to health, making the realization of universal coverage under resource-constrained conditions a discouraging undertaking (Adebisi *et al.,* 2020). Abubakar *et al*. (2022) showed that providing health coverage for an estimated 83 million vulnerable Nigerians may demand more than double the total 2022 budget of Ministry of Health, underscoring significant concerns regarding the lasting economic sustainability of the program. In this regard, this article compares the effectiveness of the National Health Insurance Authority (NHIA) versus out-of-pocket (OOP) payment models in promoting preventive healthcare utilization in Nigeria, focusing on Rivers and Ekiti States.

METHODOLOGY

Study Design

The study utilized a cross-sectional approach to assess the performance of National Health Insurance Authority (NHIA) model relative to person healthcare costs in promoting preventive healthcare utilization. This design is suitable for examining differences in preventive service uptake between groups at a single point in time while controlling for relevant socio-demographic variables.

Study Area

The study was conducted in selected healthcare facilities across Rivers State, predominantly urban, and Ekiti State, predominantly rural—to capture variations in insurance coverage, health infrastructure, and socioeconomic conditions. Facilities were chosen from both public and private sectors to ensure representation of diverse service delivery.

Study Population

The population of interest comprises adults aged 18 years and above who have accessed healthcare services within the previous 12 months. Participants were categorized into two groups: NHIA beneficiaries and self-funded healthcare users.

Sample Size and Sampling Technique

The sample size for adults (≥18years) in Nigeria who had accessed preventive healthcare services in the preceding year was determined using Cochran's formula: $n = \frac{Z^2.p.q}{e^2}$

- n = needed sample size
- Z = standard normal deviation at 95% confidence level (1.96)
- p = estimated rate of 50% (0.50) preventive healthcare utilization from Akinyemi *et al.* (2021) was used to maximize sample size in the absence of a precise prevalence value.

$$q = 1 - p \Rightarrow 1 - 0.5 = 0.5$$

- e = margin of error (0.025)

Substituting into $n = \frac{Z^2.p.q}{e^2}$

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.025}$$

$$n = 1{,}536.64$$

$$n \sim 1{,}537$$

The calculated minimum sample size was 1,537 respondents. To accommodate a possible 10% (0.01) non-response rate, the adjusted sample size was computed as:

$$n_a = \frac{n}{1 - \text{non-response rate}}$$

$$n_a = \frac{1537}{(1-0.10)}$$

$$n_a = \frac{1537}{0.90}$$

$$n_a = 1707.7$$

$$n_a \sim 1700 \text{ (to 2 significant figures)}$$

The adjusted sample size was therefore 1700 respondents. A sampling method involving multiple stages was employed. In the first stage, healthcare facilities were deliberately selected from both public and private sectors in urban and rural settings to ensure variability in NHIA coverage and preventive healthcare services. In the second stage, proportionate allocation was used to distribute the total sample size across the selected facilities based on patient volume. Finally, systematic random sampling was applied to recruit eligible participants within each facility until the allocated quota was achieved.

Inclusion and Exclusion Criteria

- Inclusion: Adults (≥18 years) who had accessed preventive care programs such as immunizations, screenings, or health education in the preceding year.

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- Exclusion: Individuals who were unable to provide informed consent, those who were covered by employer-based private health insurance unrelated to NHIA, and those who visited facilities solely for curative or emergency care.

Data Collection Instruments and Procedure

Standardized questionnaires conducted by interviewers was developed based on validated tools from previous preventive healthcare utilization studies. The instrument captured:

1. Socio-demographic data such as education, sex, and age.
2. Health financing mode (NHIA, OOP).
3. Preventive healthcare utilization (types of services accessed, frequency, and timing).
4. Financial barriers such as cost burden, catastrophic expenditure and forgone care.
5. Awareness and perception of preventive healthcare.

The questionnaire was pre-tested in a similar but non-study population to refine wording, flow, and comprehension. Data collection was conducted by trained research assistants under strict ethical guidelines.

Data Analysis

Data were entered and analyzed using SPSS (version 26). Descriptive statistics were summarized socio-demographic characteristics and preventive service utilization rates. Chi-square tests were used to compare categorical variables between NHIA and OOP groups. Logistic regression models were used to determine the association between payment model and preventive healthcare utilization, adjusting for potential confounders such as age, sex, and residence. Statistical significance was at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from an accredited Institutional Review Board (IRB) prior to commencement. Informed consent was secured from all participants, and confidentiality was maintained through anonymized data handling.

RESULTS AND DISCUSSION

Table 1: Utilization of Preventive Healthcare Services by Payment Model (NHIA vs. OOP), Adults ≥18 Years

Preventive Service	NHIA Users (n=750)	OOP Users (n=750)	Total (n=1,500)	χ^2 (df)	p-value
Immunizations	525 (70.0%)	450 (60.0%)	975 (65.0%)	12.00 (1)	0.001
Screenings	495 (66.0%)	420 (56.0%)	915 (61.0%)	10.50 (1)	0.001
Routine Check-ups	540 (72.0%)	480 (64.0%)	1,020 (68.0%)	8.64 (1)	0.003
Overall Utilization	570 (76.0%)	480 (64.0%)	1,050 (70.0%)	16.32(1)	<0.001

Interpretation:

Across all service categories, NHIA-enrolled adults showed higher utilization rates than OOP payers. Chi-square tests revealed statistically significant differences ($p < 0.05$) in immunization, screening, and routine check-up utilization between the groups. The largest absolute difference was observed in immunization uptake (70% vs. 60%), while the smallest was in routine check-ups (72% vs. 64%). These findings suggest that health insurance coverage through NHIA is

positively associated with greater engagement in preventive healthcare services, consistent with previous studies indicating insurance facilitates access to care.

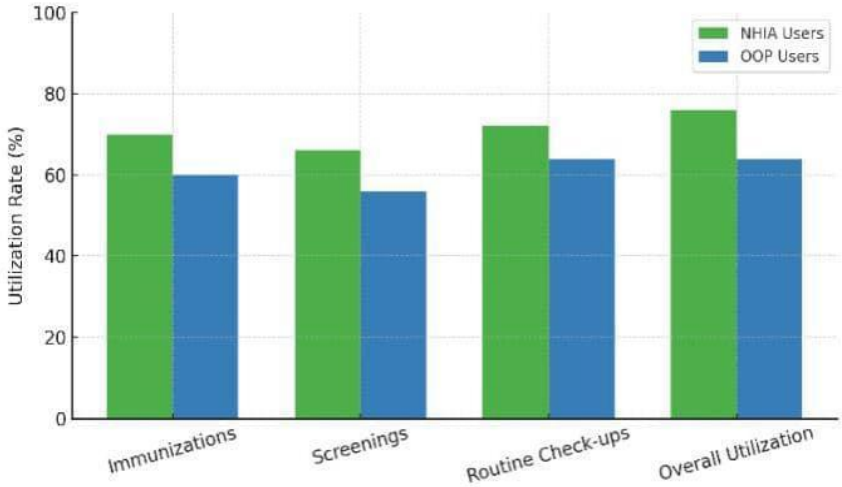

Figure 1: Utilization of Preventive Healthcare Services by Payment Model

Table 2: Financial Hardship Associated with Accessing Preventive Healthcare Services (Adults ≥18 Years)

Financial Hardship Status	NHIA Users (n=750)	OOP Users (n=750)	χ^2	p-value
Experienced financial hardship (%)	14.2	42.6	178.5	<0.001
No financial hardship (%)	85.8	57.4	—	—

The prevalence of financial hardship was significantly lower among NHIA members (14.2%) than OOP payers (42.6%). Conversely, 85.8% of NHIA members experienced no hardship compared to only 57.4% of OOP respondents. The Chi-square test showed a highly significant difference ($\chi^2 = 178.5$, $p < 0.001$), indicating NHIA substantially reduces financial strain.

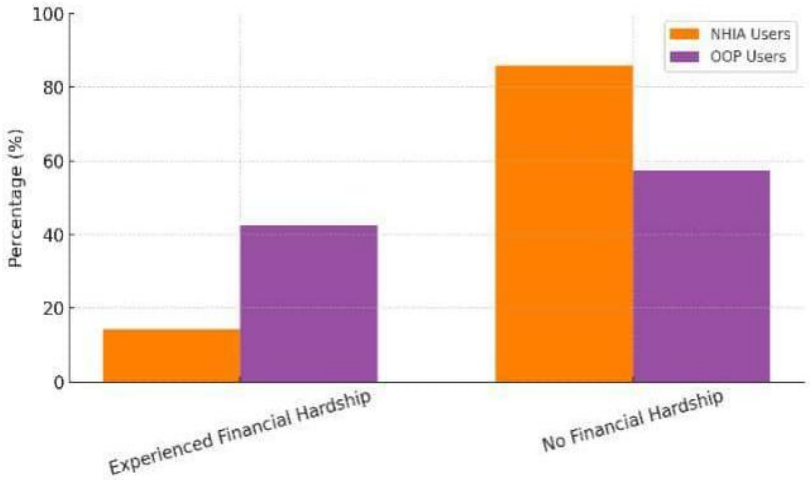

Figure 2: Financial Hardship Associated with Accessing Preventive Healthcare

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Table 3: Logistic Regression Analysis of Socio-Demographic and Systemic Factors Influencing Preventive Healthcare Utilization (Adults ≥18 Years)

Predictor Variable	AOR	95% CI (lower)	95% CI (upper)	p-value
Payment Model (NHIA vs OOP)	2.14	1.72	2.66	<0.001
Education Level (Tertiary vs ≤ Secondary)	1.45	1.18	1.78	<0.001
Geographic Location (Urban vs Rural)	1.82	1.50	2.21	<0.001
Healthcare facility (Adequate vs Inadequate)	1.59	1.28	1.98	<0.001
Age Group (≥ 45 years vs 18–44 years)	0.94	0.77	1.14	0.52
Gender (Female vs Male)	1.08	0.90	1.28	0.42

AOR > 1 indicates higher odds of utilization; AOR < 1 indicates lower odds. All predictors entered simultaneously in the model.

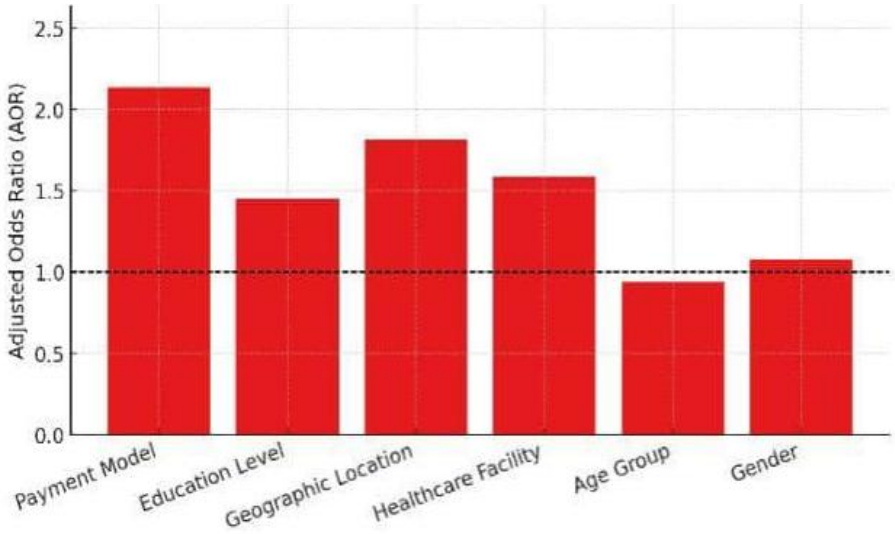

Figure 3: Socio-demographic and Systemic Factors Influencing Utilization (AOR)

DISCUSSION

Across all service categories—immunizations, screenings, and routine check-ups—NHIA beneficiaries demonstrated consistently higher uptake rates. This finding aligns with evidence from community-based and national health insurance interventions, where insured individuals were significantly more likely to utilize outpatient and preventive services compared to the uninsured (Eze *et al.,* 2023). This pattern also aligns with earlier evidence that subsidized low-cost private insurance combined with health facility upgrades in Nigeria increased healthcare utilization by 25.2% overall and by 17.7% among insured participants over four years (Gustafsson-Wright *et al*., 2018).

The improved utilization among NHIA users is likely attributable to reduced direct cost barriers, increased service accessibility, and the perceived value of prepaid health care coverage. In contrast, the lower utilization among OOP payers shows how financial barriers remain a deterrent to preventive service uptake in Nigeria, a trend similarly reported in low- and middle-income country (LMIC) (Ofoli *et al,* 2020).

Only 14.2% of NHIA enrollees reported financial hardship compared to 42.6% of OOP payers, with the chi-square test confirming a statistically significant difference. This supports previous findings from systematic reviews of CBHI schemes, which report reductions in excessive healthcare spending and lower odds of incurring high OOP costs among insured households

(Eze *et al,* 2023). These results also mirror the short-term financial protection observed in Nigeria's subsidized insurance schemes, where healthcare spending was reduced by over 50% within two years of program implementation (Akinyemi *et al,* 2021).

NHIA membership remained a strong predictor (AOR = 2.14), even after adjusting for education, geographic location, and healthcare infrastructure. Tertiary education, urban residence, and adequate healthcare infrastructure were also independently associated with increased utilization. These findings are consistent with Maitanmi *et al* (2023) showing that socio-economic status, education, and proximity to health facilities strongly influence healthcare use. Age and gender were not significant predictors in this model, suggesting that in preventive healthcare, economic and infrastructural factors may outweigh demographic characteristics. This is consistent with findings from other LMICs, where affordability and the availability of services emerge as the primary determinants of healthcare utilization, irrespective of demographic characteristics (Baten *et al,* 2025).

CONCLUSION AND RECOMMENDATIONS

This study demonstrates that the NHIA model significantly improves preventive healthcare utilization and reduces financial hardship compared to private spending. Higher uptake among NHIA enrollees shows the impact of reduced cost barriers, improved access, and structured benefit packages. Education, urban residence, and adequate healthcare infrastructure further enhance utilization, underscoring the role of socioeconomic and systemic factors. Addressing implementation challenges through expanded rural access, infrastructure investment, and targeted education can strengthen the performance of NHIA, advance equity, and accelerate progress toward universal health coverage in Nigeria. Thus, it is recommended that government should expand and equip healthcare facilities in rural and underserved areas to reduce access barriers. Again, it is imperative to deploy mobile health units and outreach programs to deliver preventive services to remote populations.

References

AbdulRaheem, Y. (2023). Unveiling the significance and challenges of integrating prevention levels in healthcare practice. Journal of Primary Care & Community Health, 14, 21501319231186500. https://doi.org/10.1177/21501319231186500

Abdulraheem, K. S., Maduafokwa, B. A., & Omotayo, M. T. (2025). The promises and perils of mandatory health insurance in Nigeria under the National Health Insurance Authority. World Journal of Public Health, 10(3), 223–230. https://doi.org/10.11648/j.wjph.20251003.13

Abubakar, I., Dalglish, S. L., Angell, B., Sanuade, O., Abimbola, S., Adamu, A. L., Adetifa, I. M. O., Colbourn, T., Ogunlesi, A. O., Onwujekwe, O., Owoaje, E. T., Okeke, I. N., Adeyemo, A., Aliyu, G., Aliyu, M. H., Aliyu, S. H., Ameh, E. A., Archibong, B., … Zanna, F. H. (2022). The Lancet Nigeria Commission: Investing in health and the future of the nation. The Lancet, 399(10330), 1155–1200. https://doi.org/10.1016/S0140-6736(21)02488-0

Adebisi, Y. A., Umah, J. O., Olaoye, O. C., Alaran, A. J., Sina-Odunsi, A. B., & Lucero-Prisno, D. E., III. (2020). Assessment of health budgetary allocation and expenditure toward achieving universal health coverage in Nigeria. Journal of Health Reports and Technology, 6(2), e102552. https://doi.org/10.5812/ijhls.102552

Akinyemi, O. O., Owopetu, O. F., & Agbejule, I. O. (2021). National Health Insurance Scheme: Perception and participation of federal civil servants in Ibadan. Annals of Ibadan Postgraduate Medicine, 19(1), 49–55.

Aregbeshola, B. S., & Khan, S. M. (2018). Out-of-pocket payments, catastrophic health expenditure and poverty among households in Nigeria 2010. International Journal of Health Policy and Management, 7(9), 798–806. https://doi.org/10.15171/ijhpm.2018.19

Baten, A., Biswas, R. K., Kendal, E., & Bhowmik, J. (2025). Utilization of maternal healthcare services in low- and middle-income countries: A systematic review and meta-analysis. Systematic Reviews, 14, 88. https://doi.org/10.1186/s13643-025-02832-0

Eze, P., Ilechukwu, S., & Lawani, L. O. (2023). Impact of community-based health insurance in low- and middle-income countries: A systematic review and meta-analysis. PLOS ONE, 18(6), e0287600. https://doi.org/10.1371/journal.pone.0287600

Gustafsson-Wright, E., Popławska, G., Tanović, Z., & van der Gaag, J. (2018). The impact of subsidized private health insurance and health facility upgrades on healthcare utilization and spending in rural Nigeria. International Journal of Health Economics and Management, 18(3), 221–276. https://doi.org/10.1007/s10754-017-9231-y

Ipinnimo, T. M., Durowade, K. A., Afolayan, C. A., Ajayi, P. O., & Akande, T. M. (2022). The Nigeria National Health Insurance Authority Act and its implications towards achieving universal health coverage. Nigerian Postgraduate Medical Journal, 29(4), 273–278. https://doi.org/10.4103/npmj.npmj_216_22

Maitanmi, B. T., Adelaja, A. A., Okunola, D. R., Maitanmi, J. O., Tola, Y. O., & Akingbade, O. (2023). Association between socioeconomic status and the utilization of maternal health services in Nigeria. Iranian Journal of Nursing and Midwifery Research, 28(5), 514–519. https://doi.org/10.4103/ijnmr.ijnmr_61_22

National Health Insurance Authority (NHIA) [Nigeria]. (2022.). The Basic Health Care Provision Fund (BHCPF). Retrieved August 9, 2025, from https://www.nhia.gov.ng/basic-health-care-provision-fund/

Ofoli, J. N. T., Ashau-Oladipo, T., Hati, S. S., Ati, L., & Ede, V. (2020). Preventive healthcare uptake in private hospitals in Nigeria: A cross-sectional survey (Nisa Premier Hospital). BMC Health Services Research, 20, 273. https://doi.org/10.1186/s12913-020-05117-5

Onwujekwe, O., Ezumah, N., Mbachu, C., Obi, F., Ichoku, H., Uzochukwu, B., & Wang, H. (2019). Exploring effectiveness of different health financing mechanisms in Nigeria: What needs to change and how can it happen? BMC Health Services Research, 19, 661. https://doi.org/10.1186/s12913-019-4512-4

World Health Organization (WHO). (2022). WHO supports Nigeria in operationalizing the National Health Insurance Authority Act 2022. WHO Regional Office for Africa. Retrieved from https://www.afro.who.int/countries/nigeria/news/who-supports-nigeria-operationalizing-national-health-insurance-authority-act-2022