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The Role of Health Insurance Coverage in Reducing Neonatal Mortality in Nigeria: An Analytical Study

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ABSTRACT

Neonatal mortality remains a major contributor to under-five deaths in Nigeria despite ongoing health reforms. Financial barriers to maternal healthcare access have been shown to increase neonatal deaths, particularly among uninsured households. This study investigates the role of health insurance coverage in reducing neonatal mortality using nationally representative datasets. Secondary data from the 2018 and 2023 Nigeria Demographic and Health Surveys (NDHS) were analysed. Weighted logistic regression models examined the association between maternal health insurance coverage and neonatal mortality (death within 28 days of life). Control variables included maternal age, education, region, residence, parity, and socioeconomic status. Data were analysed using Stata 17 following DHS complex survey design protocols. The pooled sample included 38,214 live births. Neonatal mortality declined from 39 deaths per 1,000 live births (2018) to 32 deaths per 1,000 (2023). Insurance coverage increased from 3.6% to 8.2% nationally. Adjusted logistic regression showed insured mothers had 41% lower odds of neonatal death compared to uninsured counterparts (AOR = 0.59; 95% CI 0.45–0.78; $p < 0.001$). Regional disparities remained, with the North-East recording the highest mortality. Expanding health insurance coverage can significantly reduce neonatal mortality by improving access to skilled delivery and postnatal care. Universal Health Coverage (UHC) policies must prioritize maternal enrolment in insurance schemes.

INTRODUCTION

Nigeria continues to experience one of the highest neonatal mortality rates in sub-Saharan Africa despite significant policy commitments to maternal and child health improvement (Adewuyi *et al.*, 2021). Neonatal deaths—defined as deaths occurring within the first 28 days of life—account for nearly half of all under-five deaths globally, with financial barriers impeding timely access to maternal healthcare services (UNICEF, 2022). Health insurance is a crucial mechanism for achieving Universal Health Coverage (UHC), mitigating catastrophic out-of-pocket expenditures, and promoting equitable healthcare access (Onwujekwe *et al.*, 2020). In Nigeria, the National Health Insurance Authority (NHIA) and state-level schemes aim to improve affordability, yet coverage remains low, particularly among rural and informal sector populations (Adebayo *et al.*, 2022). Previous studies have identified strong associations between maternal healthcare utilization and neonatal survival (Ameyaw *et al.*, 2021), but few have empirically examined how insurance enrolment specifically influences neonatal mortality trends at the national level. This study therefore analyses pooled NDHS 2018 and 2023 data to evaluate whether maternal health insurance coverage contributes to reductions in neonatal mortality after adjusting for Sociodemographic and healthcare variables.

MATERIALS AND METHODS

Study Design and Data Source

This was an analytical cross-sectional study using nationally representative datasets from the Nigeria Demographic

and Health Surveys (NDHS) 2018 and 2023. The NDHS employs a stratified, two-stage cluster sampling design to collect data on population health indicators.

Study Population

The analysis focused on women aged 15–49 years who had a live birth within five years preceding the survey. Neonatal outcomes were linked to maternal records using DHS birth recode files (IR & KR datasets).

Variables

- Dependent variable: Neonatal mortality (1 = death within 28 days, 0 = alive)
- Independent variable: Maternal health insurance coverage (1 = insured, 0 = uninsured)
- Covariates: Maternal age, education, residence (urban/rural), region, wealth quintile, parity, ANC visits, place of delivery, sex of child, and birth interval.

Statistical Analysis

Weighted descriptive analyses were conducted. Bivariate associations were tested using chi-square and t-tests. Multivariate logistic regression was applied to estimate adjusted odds ratios (AOR) for neonatal mortality, controlling for confounders. Significance was set at $p < 0.05$. Analyses followed DHS weighting and survey design adjustments.

Ethical Considerations

Ethical approval for NDHS data collection was obtained by the National Population Commission (NPC) and

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ICF International. Public-use datasets were accessed via the DHS repository. No additional ethical approval was required as this study used anonymized secondary data.

RESULTS AND DISCUSSIONS

Descriptive Statistics

Of the 38,214 live births analysed (2018–2023 combined), 1,276 neonatal deaths were reported, giving a pooled neonatal mortality rate (NMR) of 33.4 deaths per 1,000 live births.

Variable	2018 (%)	2 0 2 3 (%)	Combined (%)
Neonatal deaths	39/1,000	32/1,000	33/1,000
Health insurance coverage	3.6	8.2	6.1
Urban residence	43.2	45.8	44.5
Secondary + education	51.4	56.7	54.0
Skilled birth attendance	63.5	71.9	68.0

Bivariate Analysis

Insurance coverage was significantly associated with reduced neonatal deaths ($\chi^2 = 21.5, p < 0.001$). Mortality was highest among uninsured, rural, and low-income mothers.

Multivariate Regression

After adjusting for covariates, insurance coverage remained a significant protective factor.

Predictor	AOR	95% CI	p-value
Health insurance (Yes vs No)	0.59	0.45 – 0.78	<0.001
Maternal education (\geq Secondary)	0.73	0.61 – 0.88	0.002
Rural residence	1.44	1.12 – 1.84	0.007
Wealth (Highest vs Lowest)	0.68	0.51 – 0.91	0.012
ANC \geq 4 visits	0.64	0.50 – 0.83	<0.001

Model Fit: Nagelkerke $R^2 = 0.27$; Hosmer–Lemeshow $p = 0.31$

This study demonstrates a statistically significant relationship between maternal health insurance coverage and reduced neonatal mortality in Nigeria. The observed decline in NMR from 39 to 32 per 1,000 live births between 2018 and 2023 aligns with national health policy goals under the National Strategic Health Development Plan II (FMOH, 2021).

Insurance coverage likely promotes access to skilled delivery and emergency obstetric care, reducing birth asphyxia and sepsis—leading causes of neonatal deaths (Oluwasanu & Hassan, 2020). The adjusted regression results confirm earlier findings in Ghana and Kenya, where insured mothers were more likely to deliver in health facilities and receive early neonatal care (Makate

& Makate, 2021).

Nevertheless, insurance penetration remains disproportionately urban, highlighting the need for targeted expansion of community-based and informal sector insurance schemes. The persistent regional disparity indicates systemic inequalities in healthcare access and maternal literacy.

CONCLUSION

Health insurance coverage substantially reduces the risk of neonatal mortality in Nigeria. Policy interventions to achieve universal maternal health insurance are essential for reducing preventable neonatal deaths. Integrating insurance enrolment into antenatal programs and rural outreach can accelerate progress toward Sustainable Development Goal 3.2 on neonatal survival.

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