International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 9, Issue 1. March, 2026

Financial Protection and National Health Insurance Scheme Enrollment in Nigeria

Kamilu Yakubu Ishaq[1], Farouk Ibrahim[2] Habu Abdu Aminu[3], Hafizu Ahmad[4], *Ahmed Ibrahim Mohammed[5], and Umar Musa Kallah[6]

[1,2,3,4]*Department of Banking and Finance, School of Social and Management Studies, Kano State Polytechnic, Nigeria.*
[5,6]*Department of Banking and Finance, Faculty of Management Sciences, Federal University Dutse, Jigawa State, Nigeria.*

*Corresponding Author: ibrahim96190@gmail.com

Abstract
This study explores the impact of National Health Insurance Scheme NHIS enrollment on financial protection against the out-of-pocket expenditures and catastrophic health costs for enrollees in Nigeria. It employs Two part model (TPM) which is often used to analyze healthcare expenditures, especially when a significant portion of the population may not incur any expenses. The study employed a cross-sectional survey design with multi-stage cluster sampling to collect data, using 468 respondents comprising 234 HNIS-insured Federal Government employees and 234 uninsured employees from the organized private sector in Kano state, Nigeria. Pre-estimation and post estimation test including the skewness and kurtosis test for normality, breusch-pagan test for homoscedasticity, variance inflation factor test for multicollinearity and the combine marginal effect conducted and estimated revealed high level of consistency and reliability of the research findings. Empirical findings from the model revealed that health insurance enrollment is associated with 14.11% reduction in probability of incurring catastrophic health expenditure among the sampled respondent. Findings regarding other significant variables in the model shows that Hospitalization, health problem, and chronic health condition increases the risk of catastrophic health expenditure as expected, which highlights the potentiality of health insurance enrollment in providing financial protection against it. Education and income have positive effects on catastrophic health expenditure suggesting that higher-income and the more educated household may be more likely to incur high healthcare cost. In essence, this study recommends that,s Policymakers should prioritize increasing funding for program expansion to include wider populations because the evidence that NHIS significantly improves access and financial protection suggests that expanding and improving the implementation of NHIS is crucial for achieving Universal Health Coverage (UHC) in Nigeria.

Keywords: National Health Insurance Scheme, on financial protection and Universal Health Coverage.

1. Introduction

In Nigeria Households frequently use savings, sell assets, procure loans or borrow from family and friends to cope with high out of pocket payment for healthcare services, Healthcare financing in the country is characterized by high out-of-pocket (OOP) expenditures, which account for a significant portion of total health spending. For many households, particularly in rural areas, the absence of a comprehensive health insurance scheme can result in financial hardship. The

reliance on OOP payments often leads to impoverishment when households are faced with unexpected medical expenses. Consequently (Carapinha et al, 2021) Despite significant investments in the Nigerian healthcare system, the country still grapples and struggles with poor health outcomes, inadequate funding, brain drain, inequitable distribution of healthcare resources, high out of pocket expenses, poor infrastructure, shortage of medical supplies and high maternal and child mortality rates.

Nigerian healthcare system is plagued by high Out of Pocket expenses (OOP) leaving many citizens vulnerable to financial hardship and impoverishment, where the burden of out of pocket expenses account for 72% of total healthcare expenditure with average Nigerian spending N17,644 annually, which represent 14% of an average household income. with consequences that 55% of Nigerians unable to afford healthcare services, 30% of households borrow money or sell assets to pay for healthcare, hence out of pocket expenses pushes 7 million Nigerians into poverty annually (IJHEP 2020). As Nigeria accounts for a quarter of global cases of malaria and half of the non-communicable disease burden in sub-Saharan Africa, Expenditure on malaria alone was approximately N1.7 trillion, equivalent to 40% of current health expenditure. Households contributed 87.8%; Government contributed 8.0%; while donors Contributed 4%, (UNICEF 2018).

The aforementioned is exacerbated by inadequate ate funding, hindering the provision of qualitative healthcare services in Nigeria. The country allocates only 5 percent of its budget in 2021 to healthcare, far below the 15 percent recommended by the African union in 2001. this lead to inadequate healthcare Expenditure where the countries healthcare expenditure as a percentage of GDP stands at 3.7% in 2020 ranking the 184th out of 191 countries (WHO 2022). The Nigerian per capita healthcare spending stands at USD 38 in 2020 compared to South Africa USD1,044, and US USD 2,634, this is in addition to healthcare funding gap of N1.4 trillion. WHO and USAID (2020) provide a comprehensive analysis that Nigeria relies heavily on external funding for healthcare with 70% of funding coming from external sources. In essence these fact and figures clearly illustrate the critical issue of inadequate funding in Nigeria. The consequences of this poor funding regime are inadequate infrastructure, including poorly equipped primary healthcare centers, shortage of medical supplies and essential equipment, many skilled healthcare professionals emigrate to other countries leading to severe brain drain. As well as high out-of- -pocket expenses which accounts for 72% of total healthcare expenditure.

Although all expenses are minuses to the households limited income, but some expenses may be termed catastrophic, as 15% of Nigerian households face catastrophic health expenditure (CHE) exceeding 20% of households' income, where catastrophic health expenditure affect 23% of households in rural areas, compared to 12% in the urban areas.

Despite two decades of NHIS implementation, challenges in achieving its objectives remain, particularly regarding financial protection and equitable access to healthcare services. Many citizens lack awareness or access to health insurance products, leaving them vulnerable to catastrophic health expenditures. This article aims to analyze the extent to which NHIS enrollment provides financial protection and reduces health-related financial burdens for Nigerians.

2. Literature Review

There are many theoretical literature justifying the connection between health insurance and financial protection from catastrophic out-of-pocket expenditure, but this article reviews the World Health Organization's frame work for financial protection upon which the theoretical framework of the study is built upon. The World Health Organization (WHO) framework for financial protection provides a robust theoretical and policy foundation for this study. WHO (2010) defines financial protection as the ability of individuals and households to access needed health services without experiencing undue financial hardship or being pushed into poverty. It is a foundation of progress toward Universal Health Coverage (UHC), which the WHO frames around two core dimensions, first, ensuring that all people have access to quality health services, and second, ensuring that the use of those services does not expose users to financial hardship, WHO & World Bank (2021). The WHO's analytical framework for monitoring financial protection focuses on two primary indicators: catastrophic health expenditure (CHE), which refers to out-of-pocket (OOP) payments that exceed a given fraction, typically 10% or 25%, of a household's total consumption or non-food expenditure, and impoverishing health expenditure, which refers to OOP payments that push households below the poverty line or deepen existing poverty. These indicators are derived from household surveys and are central to the WHO's annual global monitoring reports on UHC. The underlying logic is that prepayment mechanisms—such as taxes, social health insurance, and community-based insurance—are essential to reduce reliance on OOP payments, which are the most regressive and financially damaging form of health financing (WHO, 2010; Xu et al., 2003).

The key elements of the WHO financial protection framework include prepayment and risk pooling, which means that financial resources should be pooled in advance to spread the financial risk of illness across the population, thereby protecting individuals from large, unpredictable expenses. Another element is progressive financing, which requires that contributions to health financing be based on ability to pay, so that the poor are not disproportionately burdened. The framework also emphasizes equitable access, meaning that financial protection is meaningful only when combined with access to needed services; otherwise, insurance may cover services that are unavailable or of poor quality. Finally, monitoring and accountability are essential, as countries are encouraged to track CHE and impoverishment indicators routinely and to use them to guide policy reforms. The WHO emphasizes that moving toward UHC requires a systematic shift from OOP payments to prepayment and pooling, with explicit attention to the needs of vulnerable populations, including informal sector workers, the rural poor, and those with chronic conditions (WHO, 2013; WHO & World Bank, 2021).

This study on "Financial Protection and NHIS Enrollment: Evidence from Nigeria" is directly aligned with the WHO framework in several respects. First, regarding conceptual alignment with catastrophic health expenditure, the study adopts the WHO's widely accepted definition of catastrophic health expenditure, using a threshold of 20% of household income. This is consistent with the WHO's recommendation to use either 10% or 25% of total household expenditure or income, depending on context and data availability. By measuring CHE as the primary outcome, the research

operationalizes the core indicator that the WHO uses to monitor financial protection. Second, in its focus on prepayment through national health insurance, the study evaluates the role of the National Health Insurance Scheme (NHIS)—a prepayment mechanism—in reducing CHE. This directly tests the WHO's central premise that moving from OOP payments to prepayment and risk pooling improves financial protection.

The WHO framework for financial protection provides a robust theoretical and policy foundation for this study. By adopting the framework's core concepts—catastrophic health expenditure, prepayment, risk pooling, and equity—the study demonstrates that NHIS enrollment significantly reduces the financial risk associated with healthcare in Nigeria. In doing so, it not only validates the WHO's emphasis on prepayment mechanisms but also offers actionable evidence for Nigerian policymakers seeking to accelerate progress toward UHC. Future research should build on this linkage by incorporating WHO-recommended measures of impoverishment and by using longitudinal data to assess the sustainability of financial protection over time.

Empirically, in other Part of the World Nguyen, H., & Wang, W. (2023) Using panel data from the Vietnam Household Living Standards Survey (2016–2020) and a difference-in-differences approach, evaluated the effect of expanded social health insurance coverage on financial protection. The findings revealed that enrollment significantly reduced the likelihood of catastrophic health expenditure by 8.2 percentage points and lowered the risk of impoverishment due to out-of-pocket payments, particularly among the near-poor and rural populations. Also on global dimension Li et al. (2017) Assessed the Impact of National Health Insurance on Financial Risk Protection in China their assessment found improved financial risk protection among the sampled respondents.

In Africa Ghana Agyemang, C., Oduro, A. Y., & Owusu-Ansah, F. E. (2024) employed a cross-sectional survey of 2,200 households in Ghana and used propensity score matching to compare insured and uninsured households. The results showed that NHIS membership was associated with a 14.8% reduction in out-of-pocket expenditure and a 10.3 percentage point decrease in the incidence of catastrophic health expenditure (using a 10% threshold). The protective effect was stronger for households in the poorest wealth quintile and those with chronic illness members. Also in Ghana, on the issue of Distributional Impact, Amoah et al. (2020) study the Distributional Impact of National Health Insurance on Financial Protection in Ghana their study found a significant financial protection for the poor among the insured. On the same issue of Distributional Impact Rokx et al. (2019) in their study investigating Who Benefits from National Health Insurance in Indonesia showed benefits for vulnerable population.

In Nigeria Okunogbe et.al, (2022) used a quasi-experimental design with two rounds of household surveys (baseline and follow-up) and applied difference-in-differences and propensity score matching to evaluate the Kwara State Health Insurance program. The findings demonstrated that enrollment reduced the probability of catastrophic health expenditure (20% threshold) by 11.6% in the short term and 9.8% in the longer term. The protective effect was driven by lower out-of-pocket payments for inpatient and outpatient care, despite increased service utilization.

Also in Nigeria Adebayo, A. M., & Oduwole, O. (2022) Employing a cross-sectional survey of 1,s respondents across six states and using a two-part

model, the study examined the association between NHIS enrollment and out-of-pocket health expenditures. The results indicated that NHIS enrollees had significantly lower out-of-pocket expenditures compared to the uninsured, with a 16.3% reduction in the probability of incurring catastrophic health expenditure. The protective effect was most pronounced among formal sector workers but was limited for informal sector enrollees, highlighting the need for expanded coverage.

In sum, the existing literature underscores the connection between health insurance enrollment and financial protection. For instance, studies have shown that health insurance significantly enhances access to medical services and protects against catastrophic health expenditures, especially for low-income households. However, the aforementioned empirical literature revealed significant gap and mixed findings among different populations regarding the impact of National Health Insurance Scheme on financial protection against high out-of-pocket expenditure.

3. Methodology

This study employs econometric techniques to evaluate the impact of NHIS enrollment on financial protection against health expenditures. Specifically, a Two-Part Model (TPM) approach is used to assess the probability of incurring catastrophic expenditures and the level of healthcare expenditures among those who seek medical services. The analysis focuses on a sample of insured and uninsured individuals across various demographic and socioeconomic backgrounds using a cross section of federal government employees (insured) and that of organized private sector in Kano state Nigeria. The study used a multi-stage cluster sampling to select its respondents.

Sample size: Therefore, this study employed Yamane's formula and approach for sample size determination in each section of the selected organizations, using the available sampling frame with a population of 3251 to arrive at 234 respondent (NHIS insured/treated) added another 234 respondent from the organized private sector (uninsured/untreated) as control group totaling to 468 respondent to estimate the strategic impact of NHIS on financial protection against catastrophic health expenditure.

Research model and model specification

This study employs a Two-Part Model (TPM) to analyze the impact of National Health Insurance Scheme (NHIS) enrollment on financial protection. The dependent variables are: (1) the probability of incurring catastrophic health expenditure (CHE) – a binary outcome – and (2) the level of out-of-pocket (OOP) expenditure among those who incur any cost. The independent variables include NHIS enrollment, hospitalization, history of health problems, family size, education, income, medical check-up frequency, self-assessed health status, and chronic health condition. The expected relationships are as follows:

*NHIS enrollment is hypothesized to reduce both the probability of CHE and the level of OOP expenditure, as prepayment and risk pooling lower the financial burden.

*Hospitalization and history of health problems are expected to increase the likelihood and magnitude of CHE, reflecting higher healthcare needs.

*Family size is anticipated to increase overall household expenses, potentially raising the risk of CHE, though the model's results showed a contrary negative sign (interpreted in discussion).

*Education is hypothesized to increase healthcare utilization and awareness, which may lead to higher OOP spending, implying a positive relationship with CHE.

*Income is expected to be positively associated with CHE, as higher-income households may afford costlier care.
*Medical check-up frequency is expected to reduce the probability of CHE by enabling early detection and preventive care, thereby lowering catastrophic expenses.
*Self-assessed health status (with better health coded lower) is hypothesized to decrease CHE risk, as healthier individuals incur fewer medical costs.
*Chronic health condition is expected to increase the likelihood of CHE due to continuous and often expensive care needs.
These aforementioned are modeled simultaneously in the TPM, where the first part uses a logit model for the probability of incurring CHE, and the second part uses a generalized linear model (GLM) to estimate the level of OOP expenditures among those with positive spending. The marginal effects derived from this specification provide the direction and magnitude of each variable's influence on financial protection.
In essence, the model specification for analyzing the impact of National Health Insurance Scheme (NHIS) on financial protection using a Two-Part Model (TPM) can be specified via the following steps
Part 1: Probability of Incurring Out-of-Pocket (OOP) Expenditures
Dependent Variable: Binary indicator for incurring OOP expenditures (1=Yes, 0=No)
Covariates of the model includes: NHIS enrollment (binary: 1=Enrolled, 0=Not enrolled),family size (as continues = no. of individuals living in the household), Education (categorical: Primary, Secondary, Tertiary), Income (continuous) = level of respondents income, history of health problem= whether respondents has some define ailments, hospitalization = whether the respondent is hospitalized due to ailment reported, Medical checkup (as continues= no. of hosp. visit for check-up), self-assessed Health status categorical in nature (self-assessed as excellent,=1 good=2 fair=3, and poor=4) and Chronic condition (yes =1, no=0),
Therefore the above Model can be Specified as:
Logit (OOP/cat expenditures) = β0 + β1 (NHIS) + β2 ((hospitalization) + β3 (history of health problem) + β4 (Education) + β5 (Income) + β6 (medical check) + β7 (family size) + β8 (self-assessed Health status) + β9 (Chronic condition) + ε
While the second part of the model (Part 2): Level of OOP Expenditures (among those with expenditures) can be presented as:
Dependent Variable: OOP expenditures (continuous)
Covariates: NHIS enrollment (binary: 1=Enrolled, 0=Not enrolled), Household income (continuous), Household size (continuous), Education (categorical: Primary, Secondary, Tertiary), Occupation (categorical: Formal, Informal) and Geographic location (categorical: Urban, Rural)
The Model is Specified as:
OOP/cat._expenditures = β0 + + β1(NHIS) + β2((hospitalization) + β3(history of health problem) + β4(Education) + β5(Income) + β6 (medical check) + β7 (family size) + β8(self-assessed Health_status) + β9(Chronic condition) + ε

4. Results and Discussion

Before presenting the research findings regarding the marginal effect after two part model, pre-estimations test to ensure validity, reliability and consistency of the research findings is conducted, theses includes skewness and kurtosis test for normality, breusch-pagan test for homoscedasticity, and variance inflation factor test for multicollinearity.
Breusch-pagan test for homoscedasticity; breusch-pagan test for

homoscedasticity is presented below where prob < chi2 = 0.0570 therefore we fail to reject the (HO) and conclude that the variance of the residuals is nearly constant (homoscedastic)

Skewness and kurtosis test for normality; for skewness and kurtosis joint test for normality (see appendix), where all the variables in the model exhibit normalcy taking the cognizance of their respective values of prob < chi2 with exception of gsnhis the variable representing general satisfaction with NHIS services among the insured.

Table 4.2.16 presents the result of marginal effect after two part model estimation, where the variable Health insurance enrollment (-0.141) is statistically significant at 1%, it represent the respondent insurance status, has a corresponding value of -0.141, signifying that a 1% increase in health insurance enrollment is associated with a 14.1% decrease in catastrophic health expenditure. This discovery is in line with the a priory expectation of the model that health insurance status may reduce the probability of catastrophic health expenditure. The variable Medical check-up is also statistically significant at 1% with marginal effect of (-.0525), medical check-up shows the number of times a sampled respondent visit hospital for medical check-up, where having a medical check decreases the probability of catastrophic expenditure by 5.25% this empirical finding is align with the models expectation that medical check-up may reduce the likelihood of catastrophic health expenditure.

Hospitalization Due to Health Problem with marginal effect of (0.079), is an important variable in the model, although its only statistically significant at 10% but has a great practical significance, where being hospitalized due to a health problem increases catastrophic health expenditure by 7.9%. the finding does not only confirm the model expectation but reaffirmed the practical experiences that hospitalization is usually associated with huge financial expenditure.

Also in line with the hospitalization is Health problem, where findings regarding Health problem revealed that having a history of health problem increases catastrophic health expenditure by 7.1%.

Finding from the model shows that a 1-unit increase in family size decreases catastrophic health expenditure by 1.37%, meaning that as household size increases by one person catastrophic health expenditure increases by 1.37%. This finding also align with the a priori assumption of this model that large family size is correlated with large healthcare expenditure

The variable education, representing educational level of the respondent shows that a 1-unit increase in education level increases catastrophic health expenditure by 32.6%. This implies that the more educated are more likely to incur large healthcare expenditure in seeking healthcare. Although the finding is of less statistical significance but the largest practical significance as shown by real life experience that the higher educated elites are more likely to spend more on healthcare access and utilization.

The variable income represents income levels of the sampled respondents where a 1% increase in income increases the probability of catastrophic health expenditure by 4.73% This implies that the higher-income earners are more likely to incur large healthcare expenditure in seeking healthcare, because in some context there is significant relationship between income levels and levels of education, and also between levels of education and awareness on healthcare seeking behavior. Findings for Self-assessed health status revealed that a unit improvement in self-assessed health status

decreases the probability of incurring catastrophic health expenditure by 0.77%. the variable chronic health condition represents the sampled respondent with health condition that demand consultation of general practitioners, on regular basis, its finding revealed that having a chronic health condition increases the probability of incurring catastrophic health expenditure by 10.75% although this variable is only statistical at 10% but it align model expectation that chronic health condition may trigger catastrophic health expenditure.

Combine expected value: the combine expected value of catastrophic health expenditure is 0.2563, indicating that, on average households faces a 25.63% risk of catastrophic health expenditure within the sampled respondents

Table 4.2.16 Marginal effect after Two part model- for Financial Protection against Catastrophic health expenditure

Variables	No. Observ	Dy/dx	Std. err	p.value
health insurane enrolment	353	,1412	0.0512	0..000
Hospitlztion d.heal,prb	359	.0790	0.0569	0..015
Healt.prob.	359	.0071	0.0152	0..032
Family size	359	.0137	0,0543	0.006
Education	358	.0326	0.0274	0..041
Income	357	,0473	0.0221	0.032
Med, check	359	-.0525	0.0159	0..000
self assed heal.Condt	359	-0.077	0.0171	0..065
hronic illness(cgp)	359	,1075	..057	0..059

Deviance statistics = 1338.419866 AIC = 4.4424 BIC=-324.54
Pearson statistics = 1278.6511

Discussion

Findings from the model revealed that NHIS enrollment is significantly associated with a reduction in catastrophic health expenditures. Specifically, enrollees experienced a 14.1% decrease in the likelihood of facing OOP costs that exceed 20% of their income. This reveals that health insurance plays a crucial role in shielding households from the financial shock of unexpected medical costs.

Hospitalization, health problem, and chronic health condition increases the risk of catastrophic health expenditure as expected, showcasing the potentiality of health insurance enrollment in providing financial protection against it. Education and income have positive effects on catastrophic health expenditure suggesting that higher-income and the more educated household may be more likely to incur high healthcare cost. On the other hand medical check-ups and self-assessed health status decreases the risk of catastrophic health expenditure.

The empirical evidences generated by this study is also supported by previous findings, for instance see: Wagstaff & van Doorslaer, (2003) in their study the Catastrophe and Impoverishment in Paying for Health Care With Applications to Vietnam 1993-1998, this foundational study discusses how health insurance can mitigate financial burdens associated with healthcare expenses, where they found a positive correlation. Adebayo & Oduwole (2022) Healthcare Financing and Financial Protection, Evidence from the National Health Insurance Scheme in Nigeria, critically demonstrates how enrollment in NHIS reduces catastrophic health expenditures. Also Ugochukwu et al. (2021) assessed the Impact of Health Insurance on Household Out-of-Pocket Health Expenditures in Nigeria The study finds that health insurance enrollments correlate with reduced out-of-pocket expenses. Other studies along this line includes that of Xu et al. (2007): The study found that health insurance enrollment reduces financial burdens associated with healthcare costs, particularly among the poor, and Ekman (2007) The author found that health insurance enrollment reduces out-of-pocket healthcare expenditures and improves financial protection.

Socioeconomic and demographic implication

With reference to the aforementioned empirical generated by this study, several Socioeconomic and demographic factors plays vital role in shaping this analysis. For instance see income level, Education, Education and Health History that Higher-income individuals are more likely to incur OOP costs, potentially due to higher healthcare needs rather than inefficacy of the NHIS itself. Also The analysis indicates that individuals with higher levels of education are more likely to utilize healthcare services and, as a result, might experience higher OOP expenditures. However, their knowledge of NHIS benefits may also empower them to navigate the healthcare system more effectively. The findings further suggested that Respondents with chronic health conditions reported higher healthcare expenses, implying that those with greater healthcare needs benefit more from financial protection under NHIS.

Importance of Preventive Care: The data shows that enrollees who regularly utilize preventive care demonstrate lower overall healthcare expenditures. This suggests that NHIS enrollment not only provides financial protection but also encourages healthier behavior and preventive medical check-ups, ultimately lowering costs.

5. Conclusion and Recommendation

Conclusion

The evidence indicates that NHIS enrollment has a positive effect on financial protection for Nigerians. By significantly reducing the probability of catastrophic health expenditure, NHIS plays a vital role in safeguarding households against the financial risks associated with healthcare needs. Importantly, the study highlights the need for continued emphasis on education and outreach initiatives to promote insurance literacy among Nigerians, which can further enhance the protective benefits of NHIS.

Overall, this study provides strong evidence that enrollment in the NHIS contributes significantly to financial protection for individuals in Nigeria. It underscores the importance of health insurance in mitigating the financial burdens of healthcare and protecting vulnerable populations from impoverishment. Ultimately, strengthening NHIS and addressing implementation challenges will be essential in advancing the health and economic well-being of Nigerians, particularly as the country works toward achieving UHC.

Recommendations

1. Expand Coverage: policy makers should Extend NHIS coverage to include more low-income and rural populations to ensure comprehensive access to healthcare services.
2. Enhance Outreach: policy makers should Increase efforts to raise awareness about the benefits of NHIS and how it protects against health-related financial
3. Strengthen Preventive Care: Invest in preventive health services through NHIS to further reduce healthcare costs for insured populations.
4. Policy Reforms: Implement policies that enhance funding for NHIS and improve healthcare infrastructure to support effective service delivery.

By implementing these recommendations, policymakers can ensure that NHIS effectively protects more Nigerians from financial distress while improving overall healthcare outcomes.

References

Adebayo, A. M., & Oduwole, O. (2022). Healthcare financing and financial protection: Evidence from the National Health Insurance Scheme in Nigeria. "BMC Health Services Research", "22"(1), 114. https://doi.org/10.1186/s12913-022-08403-5

Adeyemi, O., & Oduwole, A. A. (2022). Health finance and financial protection in Nigeria: An analysis of the National Health Insurance Scheme. "International Journal of Health Planning and Management", "37"(3), 1102–1112. https://doi.org/10.1002/hpm.3402

Agyemang, C., Sewankambo, N. K., & Nyarko, K. (2020). Impact of health insurance on access to healthcare in Ghana: Evidence from the Ghana National Health Insurance Scheme. "International Journal of Health Policy and Management", "9"(11), 458–467. https://doi.org/10.34172/ijhpm.2020.44

Agyemang, I., Akorsu, A. D., & Abroso, A. (2020). The impact of health insurance on healthcare utilization and financial protection in Ghana. "International Journal for Equity in Health", "19"(1), 123. https://doi.org/10.1186/s12939-020-01238-9

Agyepong, I. A. (2019). Universal health coverage in Ghana: Insights from a social equity perspective. Journal of Global Health", 9(1), 010401. https://doi.org/10.7189/jogh.09.010401

Agyepong, I. A., & Adjei, S. (2008). Public social policy development and implementation: A case study of the Ghana National Health Insurance scheme. Health Policy and Planning", 23(2), 150–160. https://doi.org/10.1093/heapol/czn002

Akin, J. S., Hutchinson, P., & Strumpf, K. (2005). The impact of community-based health insurance on the utilization of health services in Nigeria. "Health Policy and Planning", 20 (6), 430–439. https://doi.org/10.1093/heapol/czi054

.Amoah, F. A., Panford, J. K., & Williams, I. (2020). Financial protection in health insurance: Evidence from Ghana's National Health Insurance Scheme. "Health Policy and Planning", "35"(9), 1188–1196. https://doi.org/10.1093/heapol/czaa071

Asfaw, A., & Jütting, J. (2007). The role of health insurance in poverty reduction: Empirical evidence from Senegal. "International Journal of Health Care Finance and Economics", 7(1), 45–6

Barati, M., et al. (2018). Moral hazards in providing health services: A review of studies. "Evidence Based Health Policy, Management & Economics", "2"(1), 57-68.

Barro, R. J. (2000). Inequality and growth in a panel of countries. "Journal of Economic Growth", "5"(1), 5–32. https://doi.org/10.1023/A:1009850119329

Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950–2010. "Journal of Development Economics", "104", 184–198. https://doi.org/10.1016/j.jdeveco.2012.10.001

Bredenkamp, C., & Buisman, L. (2018). The impact of health insurance on health status: Evidence from Nigeria. "International Journal of Health Economics and Management", "18"(4), 385–404. https://doi.org/10.1007/s10754-018-9244-1

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. "Journal of Economic Surveys", "22"(1), 31–72. https://doi.org/10.1111/j.1467-6419.2007.00527.x

Carapinha, J., Mlagui, N., & Tchale, H. (2012). The impact of health insurance on access to health care: Evidence from Mozambique. "Health Economics", "21"(S1), 105–114. https://doi.org/10.1002/hec.1762

Cardon, J. H., & Hendel, I. (2001). Asymmetric information in health insurance: Evidence from the National Medical Expenditure Survey. "The RAND Journal of Economics", "32"(3), 408–427. https://doi.org/10.2307/2696361

Chankova, S., Peters, D. H., & Sonesh, D. (2010). Health insurance in transition: The case of community-based health insurance in Armenia. "International Social Security Review", "63"(2), 29–49. https://doi.org/10.1111/j.1468-246X.2010.01332.x

Chen, L., Yip, W., Chang, M., Lin, H., Lee, S., Chiu, Y., & Lin, Y. (2007). The effects of Taiwan's National Health Insurance on access and health status of the elderly. "Health Economics", "16"(3), 223–242. https://doi.org/10.1002/hec.1160

Council of Economic Advisers. (2009). "The economic case for health care reform". Executive Office of the President.

Deaton, A. (1997). "The analysis of household surveys: A microeconometric approach to development policy". Baltimore, MD: Johns Hopkins University Press

Dutta, A., & Hagan, K. (2013). "The impact of health insurance on access to healthcare and financial risk protection in Ghana". World Health Organization.

Dutta, A., & Hongoro, C. (2013). "Scaling up national health insurance in Nigeria: Learning from case studies of India, Colombia, and Thailand". Futures Group, Health Policy Project.

Ekman, B. (2004) "Community-based health insurance in low-income countries: A systematic review of the evidence. "Health Policy and Planning", 19(5), 249–270

Florence, D., Kindratt, T., & Ajrouch, K. (2025). Does expanding health insurance in rural Nigeria result in improved health outcomes and poverty reduction? "Journal of Global Health Economics and Policy", "4", e2024007. https://doi.org/10.52872/001c.1254

Giedion, U., Alfonso, E. A., & Díaz, Y. (2007). “The impact of mandatory health insurance on access and utilization: The case of the Colombian contributory regime”. The Brookings Institution.

Gustafsson-Wright, E., & van der Gaag, J. (2008). *An analysis of Nigeria’s health sector by state: Recommendations for the expansion of the Hygeia Community Health Plan*. Amsterdam Institute for International Development.

Gustafsson-Wright, E., Janssens, W., & van der Gaag, J. (2010). The potential for low-cost health insurance schemes to protect the poor in Namibia. In C. Griffin, M. L. Escobar, & R. P. Shaw (Eds.), “Impact of health insurance in low- and middle-income countries” (pp. 123-145). Brookings Institution Press.

Gustafson-Wright, E., Canning, D., & Noumbissi, E. (2013). The impact of health insurance on access to health care in low-income countries: A systematic review. “Health Economics”, “22”(10), 1222–1239. https://doi.org/10.1002/hec.2911

Ibitoye, O., & Ogunkola, I. O. (2020). Health insurance and self-assessed health: Evidence from Nigeria. “Social Science & Medicine”, “246”, 112749. https://doi.org/10.1016/j.socscimed.2019.112749

“International Journal of Health Economics and Policy”. (2020). Health expenditure and the COVID-19 pandemic: A focus on affordability.

IJHEP (International Journal of Health Economics and Policy). (2020)." Health expenditure and the COVID-19 pandemic: A focus on affordability. 'International Journal of Health Economics and Policy', 5(2), 1–12

Jütting, J. P. (2004). Financial protection and access to health care in rural areas of Senegal. In A. S. Preker & G. Carrin (Eds.), “Health financing for poor people: Resource mobilization and risk sharing” (pp. 253-270). The World Bank.

Kamal, A., & Kpicaza, K. (2020). Health insurance and vulnerable populations: Evidence from Sub-Saharan Africa. “Journal of Health Economics”, “70”, 102277. https://doi.org/10.1016/j.jhealeco.2020.102277

King, G., Gakidou, E., Imai, K., Lakin, J., Moore, R. T., Nall, C., Ravishankar, N., & Vargas, M. (2009). "Public policy for the poor? A randomised assessment of the Mexican universal health insurance programme". 'The Lancet', 373(9673), 1447–1454

Kunreuther, H., & Pauly, M. V. (1985)."Risk management and insurance". Homewood, IL: Irwin

. Li, Y., Wu, Q., & Xu, L. (2017)." The impact of national health insurance on financial risk protection in China. 'International Journal for Equity in Health', 16(1), 94.

Macinko, J., Harris, M. J., & Rocha, M. G. (2019). Brazil’s Family Health Strategy: Delivering community-based primary care in a universal health system. “Social Science & Medicine”, “233”, 1–10. https://doi.org/10.1016/j.socscimed.2019.05.011

Mills, A., Ataguba, J. E., Akazili, J., Borghi, J., Garshong, B., & Osei, D. (2012). Equity in financing and use of health care in Ghana, South Africa, and Tanzania. “Health Affairs”, “31”(8), 1841–1850.

https://doi.org/10.1377/hlthaff.2011.0936

Munge, K. (2017). Universal health coverage and its implications for health system financing in Kenya. "African Journal of Health Economics", "6"(2), 1–11.

Mutyambizi, C., Booysen, F., & Ataguba, J. E. (2018). The effect of national health insurance on household financial protection in South Africa. "Health Policy and Planning", 33(5), 634–643

National Primary Health Care Development Agency (NPHCDA). (2020). "Assessment of healthcare professionals shortage in Nigeria: 2020 report". Abuja, Nigeria.

Nguyen, H., Hoang, L., & Tran, T. (2019). Financial protection effects of national health insurance in Vietnam: A panel data analysis. "Health Economics", 28(4), 489–

Okunogbe, A., Hähnle, J., Rotimi, B., Akande, T., & Janssens, W. (2022). Short and longer-term impacts of health insurance on catastrophic health expenditures in Kwara State, Nigeria. "BMC Health Services Research", "22", 1010. https://doi.org/10.1186/s12913-022-08403-5

Oladimeji, O., Oladimeji, K. E., & Adeoye, I. A. (2020). The impact of National Health Insurance Scheme (NHIS) on healthcare utilization in Nigeria. "PLOS ONE", "15"(5), e0235391. https://doi.org/10.1371/journal.pone.0235391

Olayinka, A. S. (2019). The effects of national health insurance on health expenditure: Insights from Nigeria. "Nigerian Journal of Health Economics", '5"(1), 25–38.

Oni, G., & Oladimeji, O. (2015). Determinants of health care utilization in Nigeria: Evidence from the Nigeria Demographic and Health Survey. "Health Services Research", "50"(1), 117–135. https://doi.org/10.1111/1475-6773.12213

Pande, A., Ross-Degnan, D., Zaslavsky, A. M., & Salomon, J. A. (2012). Effects of healthcare reforms on coverage, access, and disparities: Quasi-experimental analysis of evidence from India. "The Lancet", "379"(9828), 1807–1816. https://doi.org/10.1016/S0140-6736(12)60315-0

Parmar, D., Bernal, D., & Rosenberg, M. (2011). Community health insurance: A new way of financing health care in developing countries. "International Journal of Health Care Finance and Economics", "11"(1), 1–14. https://doi.org/10.1007/s10754-011-9127-5

Pauly, M. V. (1968). The economics of moral hazard: Comment. "The American Economic Review", "58"(3), 531–532.

Pauly, M. V. (2003). Should we be worried about high real medical spending growth in the United States? "Health Affairs", "22"(1), 15-27. https://doi.org/10.1377/hlthaff.22.1.15

Rokx, C., Schieber, G., Harimurti, P., Tandon, A., & Somanathan, A. (2019). "Health financing in Indonesia: A reform road map". The World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/702511468050445356

Rokx, C., Tandon, A., & Pradhan, M. (2019). The effects of health insurance on access to care and financial protection in Indonesia: Evidence from the health insurance experiment. "Health Policy and

Planning", "34"(2), 183–191. https://doi.org/10.1093/heapol/czy116

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. "Biometrika", "70"(1), 41–55. https://doi.org/10.1093/biomet/70.1.41

Ugochukwu, E. C., & Ijeoma, U. (2021). The impact of health insurance on access to healthcare services in Nigeria: Evidence from the Nigeria Demographic and Health Survey. "BMC Health Services Research", "21"(1), 1–11. https://doi.org/10.1186/s12913-021-06699-0

Townsend, R. M. (1994). "" Risk and insurance in village India. 'Econometrica', 62(3), 539–5

Trivedi, P. K. (2003). Patterns of health care utilization in India: An analysis of the NSS data. "Journal of Health Economics", 22(3), 471–492

USAID & WHO. (2020). "Per-capita health expenditure across countries: A global overview". https://www.usaid.gov/reports/per-capita-health-expenditure

Wagstaff, A., & Lindelow, M. (2008). Can insurance increase financial risk? The case of China. "Health Economics", '17"(1), 27–48. https://doi.org/10.1002/hec.1208

Wagstaff, A., & Moreno-Serra, R. (2000). "Universal health coverage: A systematic review" (World Bank Policy Research Working Paper No. 5245). The World Bank. https://doi.org/10.1596/1813-9450-5245

Wagstaff, A., & van Doorslaer, E. (2003). Catastrophe and impoverishment in paying for health care: With applications to Vietnam 1993–1998. "Health Economics", "12"(11), 921–934. https://doi.org/10.1002/hec.776

Wagstaff, A., & Pradhan, M. (2005). Health insurance impacts on health and non-health consumption in a developing country. "World Bank Policy Research Working Paper No. 3563". Washington, DC: World Bank

Wagstaff, A., & Yu, S. (2007). "The growth of the informal sector in developing countries: A review of the literature" (World Bank Policy Research Working Paper No. 3716). The World Bank. https://doi.org/10.1596/1813-9450-3716

Wagstaff, A., Eozenou, P., & Smitz, M. (2007). The impact of health insurance on health outcomes in low- and middle-income countries. "Health Policy and Planning", "22"(5), 351–362. https://doi.org/10.1093/heapol/czm022

Wagstaff, A., Lindelow, M., Wang, S., & Zhang, S. (2018). Reforming China's rural health system. "Health Economics", "27"(12), 1815–1830. https://doi.org/10.1002/hec.3810

Wang, H., Zhang, L., Yip, W., & Hsiao, W. (2006). Adverse selection in a voluntary Rural Mutual Health Care health insurance scheme in China. "Social Science & Medicine", "63"(5), 1236–1245. https://doi.org/10.1016/j.socscimed.2006.03.008

Working Group 1 of the Commission on Macroeconomics and Health. (2002). "Health, economic growth, and poverty reduction". World Health Organization.

World Bank. (2009). "World development indicators". The World Bank.

World Health Organization. (2000). "World health report 2000: Health systems: Improving performance".

World Health Organization. (2010). "Health system financing: The path to universal coverage".

World Health Organization. (2022). "Global health expenditure report 2022". https://www.who.int/publications/i/item/9789240041219

World Health Organization. (2022). "Health financing for universal health coverage: A global overview". https://www.who.int/publications/i/item/health-financing-for-universal-health-coverage

World Health Organization & United States Agency for International Development. (2022). Joint report on healthcare funding: "Strategies for universal health coverage". WHO Press. https://www.who.int/health-funding

Xu, K., Evans, D. B., & Kawabata, K. (2007). Household catastrophic health expenditure: A multicountry analysis. "The Lancet", "362"(9378), 111–118. https://doi.org/10.1016/S0140-6736(03)15568-1

Yaya, S., Uthman, O. A., Amouzou, A., & Bishwajit, G. (2020). Disparities in health insurance coverage and health outcomes in sub-Saharan Africa. "Health Economics Review", "10"(1), 21. https://doi.org/10.1186/s13561-020-00279-8

Yilma, Z., van Kempen, L., & de Hoop, T. (2012). A perverse 'net' effect? Health insurance and ex-ante moral hazard in Ghana. "Social Science & Medicine", "75"(1), 138–147. https://doi.org/10.1016/j.socscimed.2012.02.035