Eze OI, Chukwuma IF. Does expanding health insurance in rural Nigeria result in improved health outcomes and poverty reduction? *Journal of Global Health Economics and Policy*. 2024;4:e2024007. doi:10.52872/001c.125491

Viewpoints

Does expanding health insurance in rural Nigeria result in improved health outcomes and poverty reduction?

Okechukwu Ignatius Eze[1], Ifeoma Felicia Chukwuma[2]

[1] International Business School, Teesside University, Middlesbrough, UK, [2] Department of Biochemistry, University of Nigeria, Nsukka, Nigeria

Keywords: Poverty Reduction, Nigeria, Health Outcome, Health Insurance, Rural Settings

https://doi.org/10.52872/001c.125491

Journal of Global Health Economics and Policy

Vol. 4, 2024

The recent surge in enrolment in Nigeria's National Health Insurance Scheme (NHIS) of 11% in Q4 of 2023 presents a critical opportunity to assess its potential for improving healthcare outcomes and reducing poverty, particularly in rural areas. Given the significant healthcare infrastructure and personnel disparities across Nigeria's rural regions, this paper investigates whether health insurance can effectively achieve these goals. We stress the importance of workforce development in this context. Despite the theoretical advantages of health insurance in enhancing access to care and alleviating financial burdens, its impact in rural areas is severely constrained by a lack of healthcare professionals and facilities. These systemic deficits limit access to quality care, undermining the potential benefits of expanded insurance coverage. We argue that while expanding health insurance is essential, it is insufficient to generate substantial improvements in health outcomes or meaningful poverty reduction without concurrent investments in healthcare infrastructure and workforce development. Furthermore, we propose a phased strategy that prioritizes strengthening healthcare facilities and increasing the availability of healthcare professionals in rural areas, followed by broader insurance coverage expansion. This approach ensures that the gains from health insurance translate into real improvements in healthcare access, outcomes, and long-term poverty reduction, thereby enhancing services for underserved populations.

INTRODUCTION

National health insurance (NHI) is a type of health insurance system that protects a country's population from paying the total health care costs. Healthcare is a critical sector that significantly impacts the quality of life and is increasingly recognized as a priority in developed and developing countries.[1-4] In Sub-Saharan Africa (S.S.A.), efforts toward achieving Universal Health Coverage (UHC) have spurred significant health-financing reforms, with governments focusing on reducing poverty and improving healthcare access (affordability, availability, and accessibility).[5-7] This agenda has led to expanding the National Health Insurance Scheme (NHIS) in Nigeria, which is now central to the country's broader UHC initiative. Despite this effort, widespread challenges remain, particularly in rural areas where health infrastructure and workforce shortages significantly impede access to quality healthcare services.[8]

Recent investigations into Nigeria's Contributory Health Insurance Scheme (NCHIS) revealed an 11% increase in enrolment since Q4 of 2023, followed by widespread dissatisfaction among enrollees, particularly in rural areas.[9] Complaints include poor services, limited access to designated facilities, and the exclusion of key medical treatments. Service providers in rural areas often exploit the ignorance of beneficiaries, widening existing communication gaps. These issues persist despite the growing number of enrollees in the scheme. This disparity highlights the challenge of providing equitable healthcare access to all citizens, particularly those in underserved rural regions. This challenge must be addressed in line with the United Nations Sustainable Development Goals (S.G.S.s).[10] In 2022, Nigeria introduced the National Health Insurance Authority Act (NHIA) to ensure universal health insurance coverage.[11] A key feature of the Act is the Vulnerable Group Fund, designed to support underserved populations.[12] While the NHIA is a step toward UHC, critical questions remain about whether expanding health insurance alone can improve healthcare outcomes in rural areas, where the infrastructure and workforce are critically lacking.

Currently, less than 5% of rural Nigerians are enrolled in the NHIS, and the majority continue to rely on out-of-pocket payments for healthcare.[13] The patient-to-doctor ratio in rural areas ranges from 1 doctor per 10,000 to 30,000 people, while a severe shortage of hospital beds further restricts access to care. These deficits in resources raise concerns about whether health insurance can truly improve outcomes in regions where the healthcare system is already overstretched.[14] This combination of a high patient-to-doctor ratio and a shortage of hospital beds highlights the significant challenges in accessing healthcare

services in Nigeria and illustrates the negative impact these factors have on the quality of care in rural areas.

This study explores whether NHIS improves healthcare outcome and poverty reduction in rural Nigeria by considering the shortages in healthcare professionals and infrastructure. It provides valuable insights for both government policy and public health sector in developing countries. Specifically, the article sheds light on the critical issue of health infrastructure in rural Nigeria and how these shortages limit healthcare access, even for the insured. More so, it examines the link between insufficient healthcare services and the ineffectiveness of insurance coverage in rural areas; and finally, this paper x-rayed the impacts of strategically allocating resources to areas with the highest marginal benefit, such as workforce and infrastructure, can maximize societal welfare and ultimately the health output.

RELATED WORK

This section outlines related research on National Health Insurance Schemes and Universal Health Coverage (UHC) globally. Health insurance plays an important role in enhancing access to healthcare and improving health outcomes globally, both in developed and developing countries. Numerous studies have explored its impact on healthcare utilization and affordability, offering insights into how insurance coverage contributes to better healthcare access.[2,15-17] In developed countries, research consistently demonstrates that health insurance significantly increases healthcare utilization. For instance, studies in the United States under the Affordable Care Act (A.C.A.) have shown that individuals with insurance are more likely to seek preventive care, regular check-ups, and early intervention for chronic diseases.[18] Insured individuals tend to have better health outcomes because they can access services without the prohibitive cost burden. Furthermore, in countries with universal healthcare systems like the U.K. and Canada, health insurance ensures that healthcare is accessible to all citizens, reducing health disparities across income levels.[19,20]

Similarly, in developing countries, health insurance has shown a profound impact on improving healthcare access, particularly in rural and underserved areas. Studies across several African and Asian countries indicate that insurance schemes tailored to low-income populations significantly increase access to medical services and reduce out-of-pocket (OOP) spending.[21-25] A notable example is Ghana's National Health Insurance Scheme (NHIS), which has contributed to increased healthcare utilization and better health outcomes, especially in rural communities.[26] As explained by,[27] health insurance in these settings is aimed not only to reduce out-of-pocket expenses but also to prevent households from falling into poverty due to catastrophic health expenditures.

Health insurance also plays a critical role in reducing financial barriers to healthcare, thereby enabling more equitable access to essential services.[8] In rural and low-income areas, where healthcare access is traditionally limited, insurance programs help reduce the economic burden on households and encourage the use of necessary health services. For example, research in India's[28] program has shown that insured individuals are more likely to seek hospital care and preventive services compared to those without insurance. This trend is also evident in countries like Rwanda, where Community-Based Health Insurance (CBHI) has improved healthcare utilization among low-income households, particularly women and children, who previously faced high financial barriers to accessing care.[29]

LIMITATIONS OF HEALTH INSURANCE IN ENHANCING HEALTHCARE ACCESS

The existing literature provides strong evidence that health insurance enhances healthcare access in both developed and developing countries. In developed countries, it leads to higher healthcare utilization and better health outcomes, while in developing nations, it plays a dual role in promoting healthcare access and reducing poverty. It is important to understand that not all studies reported uniformly positive results. In fact, there are conflicting findings that suggest that health insurance, although beneficial in increasing healthcare access, does not always significantly reduce the financial burden on households or improve health outcomes in low-income countries.[30] These limitations have been attributed to several factors, including poor service quality, insufficient coverage, and an inadequate healthcare workforce.[31] A low patient-to-doctor ratio, particularly in rural areas, means that even with insurance, patients may face long wait times and inadequate medical attention. Moreover, in some cases, the insurance coverage may be too limited, offering only partial benefits and leaving patients to pay out-of-pocket for many essential services.[32] These findings highlight the need to address structural issues within health systems in developing countries, such as the availability of healthcare professionals and the scope of services covered under health insurance plans, to achieve more meaningful improvements in healthcare access and financial protection.

In the context of Nigeria, research on National Health Insurance Schemes NHIS has produced mixed results. Some studies have highlighted positive impacts, especially in urban settings where healthcare facilities are more available.[33,34] For example, in urban areas, insured individuals are more likely to seek healthcare services than their uninsured counterparts, and there is evidence that insurance has reduced the reliance on OOP spending for certain services.[35] However, these benefits are not consistently experienced across the country. Other studies indicate that insured patients continue to incur significant OOP expenses, driven by hidden costs and gaps in coverage.[36] This has been attributed to inadequate coverage for specific treatments, medications, or diagnostic tests. This means that many insured patients must still pay out of pocket, which limits the financial protection that health insurance is intended to provide. This reality highlights the limitations of focusing solely on insurance expansion or Universal Health Coverage (UHC) without addressing the underlying infra-

structural weaknesses that inhibit the delivery of healthcare services.

ECONOMIC THEORIES SUPPORTING INFRASTRUCTURE PRIORITIZATION

Economic principles suggest that healthcare outcomes would improve dramatically if governments reallocated resources to address foundational challenges.[37] Several key economic theories support prioritizing investments in healthcare infrastructure and workforce development over merely expanding insurance coverage, particularly cost-effectiveness and resource allocation.[38] Cost-Effectiveness Analysis (C.E.A.) is a fundamental tool in health economics that focuses on maximizing health outcomes with available resources.[39] C.E.A. argues that resources should be directed towards interventions that produce the greatest health improvements relative to cost.[40] In healthcare, this means prioritizing investments in areas that provide the highest returns, such as infrastructure development and workforce training, before expanding insurance coverage.

For instance, improving healthcare access by building facilities and ensuring a trained workforce is often more cost-effective in rural and underserved regions than expanding insurance coverage. Insurance alone has a limited impact in areas with insufficient healthcare services because there are no adequate facilities or personnel to deliver care. C.E.A. suggests that in resource-limited settings, directing funds towards building clinics, purchasing essential medical equipment, and training healthcare professionals yields better health outcomes than focusing solely on subsidizing insurance. Investing in infrastructure and workforce strengthens the healthcare system, allowing it to deliver effective care, whereas insurance without adequate services and staff has a much smaller effect on improving health.

HEALTHCARE INFRASTRUCTURE IN RURAL NIGERIA

The healthcare infrastructure in rural Nigeria is severely underdeveloped, leading to significant challenges in delivering quality healthcare to both insured and uninsured individuals.[41] Inadequate facilities and a shortage of trained medical personnel contribute to significant health disparities between rural and urban areas.[42] Government investment in medical education and rural placement incentives is crucial to address these challenges and improve health outcomes. These investments and upgrading healthcare infrastructure can enhance service delivery for all individuals, regardless of their insurance status, by ensuring a stronger healthcare system across rural Nigeria.

OPPORTUNITY COSTS AND ALLOCATIVE EFFICIENCY

From an economic perspective, focusing solely on insurance expansion without addressing infrastructure and workforce gaps involves significant opportunity costs. Opportunity cost refers to the potential benefits forfeited when resources are allocated to less efficient interventions instead of more effective ones.[43] In this case, the government risks misallocating limited resources by prioritizing insurance expansion over investments in healthcare infrastructure and personnel.

Allocative efficiency is a key concept in economics that is achieved when resources are distributed to maximize overall benefits and outcomes. In healthcare, this means prioritizing interventions that provide the greatest health improvements per unit of cost. Insurance expansion alone, particularly in regions with scarce healthcare facilities and personnel, does not achieve this because insured individuals may still need access to medical services. By investing first in infrastructure and workforce development, the government can ensure that the healthcare system can deliver services to insured and uninsured populations, maximizing the overall effectiveness of health interventions.

UNDERMINING EFFECTIVENESS OF INSURANCE EXPANSION

Without sufficient infrastructure and a well-trained workforce, expanding health insurance coverage has limited practical value. For instance, in rural or underserved areas, even if more people are covered by health insurance, they may still lack access to health care due to a shortage of medical facilities and professionals. It is important to note that the availability of insurance alone only guarantees access to care if clinics and hospitals are too far away, under-equipped, or understaffed. This mismatch between insurance availability and service delivery may result in inefficiencies, where the intended benefits of insurance expansion are not fully realized.

This issue is particularly acute in Nigeria, where rural areas are often poorly served by healthcare infrastructure, as highlighted by.[44] This means that insured individuals in a rural region may not be able to access primary healthcare services because there are no functioning clinics nearby or no healthcare workers available. In such cases, insurance becomes less relevant because the fundamental barriers to care, such as a lack of physical facilities and medical professionals, remain unaddressed. Therefore, expanding insurance without building the necessary healthcare foundation can lead to minimal improvements in health outcomes while consuming resources that could be better spent on more impactful areas.

PRIORITIZING WORKFORCE AND INFRASTRUCTURE

Prioritizing investment in the healthcare workforce and infrastructure aligns with the economic principle of focusing on the most effective use of limited resources to achieve the best possible outcomes. In this paper, we suggest that investing in healthcare infrastructure, such as building clinics, providing medical equipment, and ensuring access to

Table 1. Estimate of healthcare indicator of rural Nigeria

Healthcare Indicators	National Average	Rural Nigeria Estimate
Physicians per 1,000 people	0.4	0.02 – 0.05
Nurses and Midwives per 1,000 people	1.5 – 1.6	0.4 – 0.8
Community Health Workers per 1,000 people	0.2 – 0.3	0.1 – 0.2
Hospital Beds per 1,000 people	0.5	0.2 – 0.3
Specialist Surgical Workforce per 100,000 people	0.4 – 0.8	0.1 – 0.2

Source: The Global Health Observatory

clean water and electricity, along with training and appropriate incentives to healthcare workers, could address the root causes of healthcare access issues. This approach could ensure that healthcare services are available and accessible to all, making insurance expansion more meaningful and effective.

Healthcare systems rely on qualified personnel to deliver care, and without enough trained doctors, nurses, and other healthcare workers, even the best infrastructure remains underutilized.[45] Investing in medical education and offering incentives for healthcare workers to serve in rural areas, the government can ensure that healthcare facilities are properly staffed, allowing insured and uninsured individuals alike to receive timely and effective care.

ANALYTICAL FRAMEWORK

This study applied an analytical framework to explore whether the provision of health insurance in rural Nigeria leads to improved healthcare outcomes and reduces poverty in the context of significant disparities in healthcare personnel and infrastructure. Rural areas in Nigeria have much lower densities of healthcare providers, including physicians (0.02 to 0.05 per 1,000 people), nurses and midwives (0.4 to 0.8 per 1,000 people), and community health workers (0.1 to 0.2 per 1,000 people), compared to the national averages. Additionally, rural regions have fewer hospital beds (0.2 to 0.3 per 1,000 people) and a limited specialist surgical workforce (0.1 to 0.2 per 100,000 people), which is far below international recommendations[46] as detailed in table 1.

The analytical framework utilized in this study draws on secondary data extracted from the World Health Organization (WHO) and World Bank websites, with data reported in 2021. Through these datasets, key healthcare resource indicators were compared between rural Nigeria and national averages, focusing on disparities in healthcare infrastructure and workforce. Specifically, the analysis examined the availability of physicians, nurse and midwife ratios, hospital bed density, and the distribution of specialist surgical workforce. These comparisons offer insight into the challenges of healthcare access in rural areas, even when health insurance is available.

It is important to highlight that no statistical analysis was conducted in this study. The data presented descriptively illustrate the differences between rural healthcare resources and national averages. The study assesses whether health insurance alone can enhance healthcare outcomes and reduce poverty in rural Nigeria, or if further investments in healthcare infrastructure and personnel are required to meaningfully address these resource gaps and improve health outcomes.

PROPOSED APPROACH AND RECOMMENDATIONS

This proposed approach outlines a phased strategy for developing healthcare infrastructure and workforce in rural Nigeria, with the goal of expanding health insurance coverage in a sustainable manner to improve health outcomes and reduce poverty.

In the initial phase, priority should be given to strengthening healthcare infrastructure and workforce capacity. This requires targeted investments in rural health facilities, ensuring they are equipped with essential medical supplies and modern technology. Additionally, expanding training programs for healthcare professionals, including physicians, nurses, and midwives, will be crucial to addressing personnel shortages. To incentivize healthcare workers to serve in underserved areas, financial benefits, housing allowances, and other support measures should be offered. In the short term, enhancing community health programs through the deployment of community health workers can help provide basic care and referral services to bridge gaps in the availability of healthcare services.

Once the foundational infrastructure and workforce capacity are in place, the second phase involves gradually expanding health insurance coverage in areas where sufficient healthcare resources exist. This incremental introduction of health insurance should prioritize vulnerable populations, such as pregnant women, children, and low-income families. Continuous monitoring of both workforce and infrastructure is essential during this phase to ensure that the system can handle the increasing demand without becoming overstressed. Public education campaigns will also play a vital role in raising awareness and promoting understanding of the benefits of health insurance among rural populations.

The final phase involves scaling up health insurance coverage to all rural areas, ensuring that infrastructure and workforce development continue to keep pace with the growing demand. At this stage, it is critical to integrate primary, secondary, and tertiary care levels into a cohesive system with a well-functioning referral network. By align-

ing the expansion of insurance coverage with the growth of healthcare infrastructure and workforce, this phased approach ensures that the healthcare system can effectively meet the needs of rural populations, leading to significant improvements in health outcomes and long-term poverty reduction.

CONCLUSIONS

Health insurance in rural areas has the potential to improve healthcare outcomes and reduce poverty, but the unavailability of healthcare infrastructure and workforce significantly limits its effectiveness. While health insurance can reduce out-of-pocket healthcare costs and increase access to services, rural Nigeria faces severe shortages in physicians, nurses, hospital beds, and specialist care. These gaps mean that even insured individuals in rural areas may struggle to access quality healthcare, undermining the benefits of insurance. Therefore, the impact of health insurance on healthcare outcomes and poverty reduction is closely tied to the healthcare system's capacity to deliver services. Without parallel investments in infrastructure and workforce development, the full potential of health insurance cannot be realized. A phased, integrated approach is needed, where infrastructure and workforce are strengthened first, ensuring that health insurance expansion leads to tangible, sustainable improvements in health and financial protection for rural populations.

FUNDING

None.

AUTHORSHIPS

OIE developed concept and wrote the first draft. IFC contributed to the final draft.

DISCLOSURE OF INTEREST

The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and disclose no conflicts of interest.

CORRESPONDENCE TO:

Okechukwu I Eze
Teesside University International School of Business, Middlesbrough, U.K.
Email: o.eze@tees.ac.uk

Submitted: October 11, 2024 CET, Accepted: November 04, 2024 CET

REFERENCES

1. Ferlie EB, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: a framework for change. *The Milbank Quarterly*. 2001;79(2):281-315. doi:10.1111/1468-0009.00206

2. Fukawa T. *Public Health Insurance in Japan*. World Bank; 2002.

3. Yin HP, Ma XC, He YL, Liang RJ, Wang YX, Zhang M, et al. Effect of an outpatient copayment scheme on health outcomes of hypertensive adults in a community-managed population in Xinjiang, China. *Plos One*. 2020;15(9). doi:10.1371/journal.pone.0238980

4. Fenny AP, Yates R, Thompson R. Strategies for financing social health insurance schemes for providing universal health care: a comparative analysis of five countries. *Global Health Action*. 2021;14(1):1868054. doi:10.1080/16549716.2020.1868054

5. Degroote S, Ridde V, De Allegri M. Health Insurance in Sub-Saharan Africa: A Scoping Review of the Methods Used to Evaluate its Impact. *Applied Health Economics and Health Policy*. 2020;18(6):825-840. doi:10.1007/s40258-019-00499-y

6. Alawode GO, Adewole DA. Assessment of the design and implementation challenges of the National Health Insurance Scheme in Nigeria: a qualitative study among sub-national level actors, healthcare and insurance providers. *Bmc Public Health*. 2021;21(1). doi:10.1186/s12889-020-10133-5

7. Ifeagwu SC, Yang JC, Parkes-Ratanshi R, Brayne C. Health financing for universal health coverage in Sub-Saharan Africa: a systematic review. *Global Health Research and Policy*. 2021;6(1). doi:10.1186/s41256-021-00190-7

8. Eze OI, Iseolorunkanmi A, Adeloye D. The National Health Insurance Scheme (NHIS) in Nigeria: current issues and implementation challenges. *Journal of Global Health Economics and Policy*. 2024;4:e2024002. doi:10.52872/001c.120197

9. Leadership. Contributory Health Insurance Scheme: Poor Services Persist As Subscribers Hit 18.7m. 2024. https://leadership.ng/contributory-health-insurance-scheme-poor-services-persist-as-subscribers-hit-18-7m/

10. Ogoko G. Development in Nigeria: From the M.D.G.s to the S.D.G.s. Published online 2017.

11. Ipinnimo TM, Durowade KA, Afolayan CA, Ajayi PO, Akande TM. The Nigeria national health insurance authority act and its implications towards achieving universal health coverage. *Nigerian Postgraduate Medical Journal*. 2022;29(4):281-287. doi:10.4103/npmj.npmj_216_22

12. Ipinnimo T. Comparing the Nigeria National Health Insurance Scheme Act, 2004 and the National Health Insurance Authority Act, 2022-What is New and its Implications for the Health System. *West Afr J Med*. 2023;40(5):525-532. doi:10.1200/JCO.21.02939

13. Ajobiewe J, Kefas AW, Ajobiewe H, Oyetunde A, Pillah P, Pillah V, et al. National Health Insurance Scheme: Effect of Out-of-Pocket Payment and Access to Health Services. A Case Study of Federal Medical Center, F.M.C., Jabi, Abuja. *Acta Scientific Microbiology*. 2024;7(2).

14. W.H.O. Global Health Expenditure Database 2024. https://apps.who.int/nha/database

15. Colombo F, Tapay N. Private health insurance in Australia: a case study. Published online 2003.

16. Hoffman C, Paradise J. Health insurance and access to health care in the United States. *Annals of the New York Academy of Sciences*. 2008;1136(1):149-160. doi:10.1196/annals.1425.007

17. Sisira Kumara A, Samaratunge R. Health insurance ownership and its impact on healthcare utilization: Evidence from an emerging market economy with a free healthcare policy. *International Journal of Social Economics*. 2020;47(2):244-267. doi:10.1108/IJSE-05-2019-0333

18. Wu TY, Raghunathan V. The patient protection and Affordable Care Act and utilization of preventive health care services among Asian Americans in Michigan during pre-and post-Affordable Care Act implementation. *Journal of Community Health*. 2019;44:712-720. doi:10.1007/s10900-019-00628-7

19. Asaria M, Ali S, Doran T, Ferguson B, Fleetcroft R, Goddard M, et al. How a universal health system reduces inequalities: lessons from England. *J Epidemiol Community Health*. 2016;70(7):637-643. doi:10.1136/jech-2015-206742

20. Martin D, Miller AP, Quesnel-Vallée A, Caron NR, Vissandjée B, Marchildon GP. Canada's universal healthcare system: achieving its potential. *The Lancet*. 2018;391(10131):1718-1735. doi:10.1016/S0140-6736(18)30181-8

21. Adebiyi O, Adeniji FO. Factors Affecting Utilization of the National Health Insurance Scheme by Federal Civil Servants in Rivers State, Nigeria. *Inquiry-the Journal of Health Care Organization Provision and Financing*. 2021;58. doi:10.1177/00469580211017626

22. Adewole DA, Adebayo AM, Udeh EI, Shaahu VN, Dairo MD. Payment for Health Care and Perception of the National Health Insurance Scheme in a Rural Area in Southwest Nigeria. *American Journal of Tropical Medicine and Hygiene*. 2015;93(3):648-654. doi:10.4269/ajtmh.14-0245

23. Ajibola SS, Timothy FO. The Influence of National Health Insurance on Medication Adherence Among Outpatient Type 2 Diabetics in Southwest Nigeria. *Journal of Patient Experience*. 2018;5(2):114-119. doi:10.1177/2374373517732384

24. Bayked EM, Assfaw AK, Toleha HN, et al. Willingness to pay for National Health Insurance Services and Associated Factors in Africa and Asia: a systematic review and meta-analysis. *Frontiers in Public Health*. 2024;12. doi:10.3389/fpubh.2024.1390937

25. Carapinha JL, Ross-Degnan D, Desta AT, Wagner AK. Health insurance systems in five Sub-Saharan African countries: Medicine benefits and data for decision making. *Health Policy*. 2011;99(3):193-202. doi:10.1016/j.healthpol.2010.11.009

26. Nguyen HT, Rajkotia Y, Wang H. The financial protection effect of Ghana National Health Insurance Scheme: evidence from a study in two rural districts. *International journal for equity in health*. 2011;10:1-12. doi:10.1186/1475-9276-10-4

27. Giedion U, Alfonso EA, Díaz Y. *The Impact of Universal Coverage Schemes in the Developing World: A Review of the Existing Evidence*. World Bank; 2013.

28. Rajasekhar D, Berg E, Ghatak M, Manjula R, Roy S. Implementing health insurance: the rollout of Rashtriya Swasthya Bima Yojana in Karnataka. *Economic and Political Weekly*. Published online 2011:56-63.

29. Schneider P, Diop F. Community-based health insurance in Rwanda. In: *Health Financing for Poor People—Resource Mobilization and Risk Sharing*. World Bank; 2004:251-274.

30. Shrestha R. Health Insurance for the poor, healthcare use and health outcomes in Indonesia. *Bulletin of Indonesian Economic Studies*. 2021;57(1):85-110. doi:10.1080/00074918.2020.1753655

31. Mosadeghrad AM. Factors influencing healthcare service quality. *International journal of health policy and management*. 2014;3(2):77. doi:10.15171/ijhpm.2014.65

32. Sriram S, Khan MM. Effect of health insurance program for the poor on out-of-pocket inpatient care cost in India: evidence from a nationally representative cross-sectional survey. *BMC Health Services Research*. 2020;20:1-21.

33. Mkperedem AA, Ogunlade P, Igbolekwu C, Arisukwu O, Afolabi AO, Adedayo RA. Healthcare service delivery perception among NHIS-HMO enrollees in Lagos hospitals. *Humanities & Social Sciences Communications*. 2023;10(1). doi:10.1057/s41599-023-02159-y

34. Mkperedem AA, Ogunlade P, Igbolekwu C, et al. Perception among NHIS-HMO Enrolees of the Attitudes of Medical Personnel during Outpatient Care in Lagos Hospitals. *International Journal of Environmental Research and Public Health*. 2023;20(2). doi:10.3390/ijerph20021218

35. Aregbeshola BS, Khan SM. Out-of-pocket healthcare spending and its determinants among households in Nigeria: a national study. *Journal of Public Health*. 2021;29:931-942. doi:10.1007/s10389-020-01199-x

36. Okah P, Onalu C, Okoye U. National Health Insurance Scheme in Nigeria: Exploring limitations to utilisation by adult enrollees. *Journal of Social Service Research*. 2023;49(6):715-730. doi:10.1080/01488376.2023.2265417

37. Hauck K, Smith PC, Goddard M. The economics of priority setting for health care. A Literature Review. Published online 2003.

38. Drummond MF, Sculpher MJ, Claxton K, Stoddart GL, Torrance GW. *Methods for the Economic Evaluation of Health Care Programmes*. Oxford university press; 2015.

39. Murray CJ, Kreuser J, Whang W. Cost-effectiveness analysis and policy choices: investing in health systems. *Bulletin of the World Health Organization*. 1994;72(4):663.

40. Gold MR. *Cost-Effectiveness in Health and Medicine*. Oxford University Press; 1996. doi:10.1093/oso/9780195108248.001.0001

41. Oyekale AS. Assessment of primary health care facilities' service readiness in Nigeria. *BMC health services research*. 2017;17:1-12. doi:10.1186/s12913-017-2112-8

42. Douthit N, Kiv S, Dwolatzky T, Biswas S. Exposing some important barriers to health care access in the rural U.S.A. *Public health*. 2015;129(6):611-620. doi:10.1016/j.puhe.2015.04.001

43. Miller BL, Buckman A. Cost allocation and opportunity costs. *Management Science*. 1987;33(5):626-639. doi:10.1287/mnsc.33.5.626

44. Adewole DA, Reid S, Oni T, Adebowale AS. Geospatial distribution and bypassing health facilities among National Health Insurance Scheme enrollees: implications for universal health coverage in Nigeria. *International Health*. 2022;14(3):260-270. doi:10.1093/inthealth/ihab039

45. Dubois CA, Singh D. From staff-mix to skill-mix and beyond: towards a systemic approach to health workforce management. *Human resources for health*. 2009;7:1-19.

46. W.B.G. *World Health Organisation Data.*; 2021.