



## National Health Insurance and the quality of maternal and reproductive health services: Evidence from Zambia

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### Abstract

**Background:** A crucial requirement for the advancement of women's development is the enhancement of maternal and reproductive health. Since 1991, the Zambian government has made tackling healthcare issues a priority. Among the measures implemented, the National Health Insurance Scheme (NHIS) has been a significant emphasis. Created by the National Health Insurance Act No. 2 of 2018, the scheme is overseen by the National Health Insurance Management Authority (NHIMA). This study intends to assess the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia.

**Methods:** The study employed a quantitative research approach, using a descriptive cross-sectional design to assess the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia. A simple random sampling method was applied to select participants, and Cochran's formula was used to calculate a sample size of 320 NHIS policyholders. Data were collected using a well-structured self-administered questionnaire. Data were then cleaned, coded, and analyzed using Stata 14.0. Ethical approval was obtained, and informed consent ensured confidentiality and voluntary participation.

**Results:** The study indicates that NHIS policyholders' satisfaction with the nurse-to-doctor ratio is moderately positive, with 47% satisfied and 39% neutral. However, 14% expressed dissatisfaction, which suggests room for improvement in interpersonal interactions. Alarming, 46% of respondents were dissatisfied with the doctor-patient ratio. This raises concerns about the quality of care and doctors' ability to provide adequate attention to each patient. While satisfaction ratings indicate a mixed response, the relatively high percentage of neutral responses — 47% for imaging services and 36% for general patient care — highlights potential uncertainty or variability in services. Continuous training and quality assurance programs could help improve perceptions in these areas. On the other hand, the high dissatisfaction rate (50%) concerning patient waiting time indicates a significant area for improvement. The quality of care directly impacts maternal and reproductive health outcomes, highlighting the need for ongoing investments in healthcare infrastructure and workforce training.

**Conclusions:** As Zambia continues to work toward its health objectives, findings suggest that implementing the NHIS has positively contributed to the quality of maternal and reproductive services. However, several challenges remain that require urgent attention, including limited coverage, especially in rural areas, inadequate medical facilities, and a shortage of healthcare personnel, which hinder the overall effectiveness of the scheme. Additionally, concerns about the quality of care underscore the need for systemic reforms to ensure that all women can access reliable and comprehensive healthcare services. Addressing these challenges, the NHIS can enhance its impact and improve health outcomes for mothers and their children in Zambia.

**Keywords:** Scheme, maternal and reproductive health, access, utilization, perceptions, experiences, policyholder

### Introduction

The quality, accessibility, and use of maternal health services can be significantly affected by financial constraints. However, health insurance can potentially enhance maternal health outcomes by improving the quality and utilization of these services. To move closer to universal health coverage, several countries, especially low- and middle-income countries (LMICs), are currently planning or implementing health funding reforms to expand or establish health insurance. (Alison B. Comfort *et al.*, 2013) Compared to countries whose financing strategy is based on taxes, the quality, accessibility, and utilization of maternal health services have significantly improved in countries that have chosen health insurance systems, especially National Health Insurance (NHI). But even with all of the many plans and successful programs implemented, more than 500,000 women still die during pregnancy, childbirth, or the weeks after giving birth; most of these women live in developing countries. (Lorel E. Hatt *Et al.*, 2013)

The primary objective of Zambia's Ministry of Health is to ensure equitable access to cost-effective, high-quality health services as close as possible to families. (MoH, 2021). This ambitious goal has faced numerous obstacles in recent years. Significant service disparities between rural and urban areas, including inadequate physical infrastructure, staffing shortages, and limited budgets, make providing high-quality, equitable healthcare complex. This is a serious challenge for legislators and planners.

Since 1991, the Zambian government has made tackling the nation's healthcare issues a top priority. Among the initiatives they have implemented, the National Health Insurance Scheme (NHIS) has been at the top of the list (NHIMA 2021). The scheme is being implemented in accordance with the United Nations Sustainable Development Goals (SDGs). One objective, focused on "good health and well-being," is SDG 3, which seeks to ensure healthy lifestyles and advance well-being for people of all ages. SDG 3's Target 3.8 focuses on expanding

universal health coverage to the unorganized sector of the economy, including the underprivileged. (NHIMA Strategic Plan, 2023).

Health insurance benefit packages usually include coverage for maternal and child health services. This benefit covers the costs of obstetric and gynecological procedures and newborn and pediatric care as specified in the package, including cesarean and normal deliveries. However, few studies, if any, have rigorously evaluated the effect of health insurance on maternal and reproductive health services. (Minister of Health, July 2024)

All formal-sector companies and employees pay a 1% NHI statutory premium on payroll, and 1% of self-employed people disclosed revenues also contribute to funding the scheme. No one under 18 or over 65 may donate to the scheme. (Minister of Health, July 2024).

The main objective of the NHIS is to guarantee that all Zambians have access to affordable, high-quality healthcare services. Out-of-pocket expenses largely prohibit people from marginalized groups from getting high-quality medical care. To shield families from the financial burden of excessive medical bills and to halt the rise in the cost of healthcare services (NHIMA 2021).

In line with the above, NHIMA set out to close this gap, expand the use of healthcare services, preserve high standards of healthcare delivery within the scheme, and distribute healthcare expenses fairly across all socioeconomic groups. By guaranteeing equitable access to high-quality, reasonably priced healthcare as close to home as possible, the Zambian government hoped to improve the delivery of healthcare services.

The researcher observed that since the NHIS was introduced, most studies assessing its contribution to the quality of maternal and reproductive health have been conducted in developed nations, with Zambia receiving relatively little attention in this field. Therefore, the purpose of this study is to close this gap by assessing the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia.

### Research Objective

To assess the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia.

### Research Question

- What contribution has the NHIS made to the quality of maternal and reproductive health services in Zambia?

### Research Methodology

#### Study Design

The study employed a quantitative research approach, using a descriptive cross-sectional design to assess the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia.

#### Study Population and Sampling

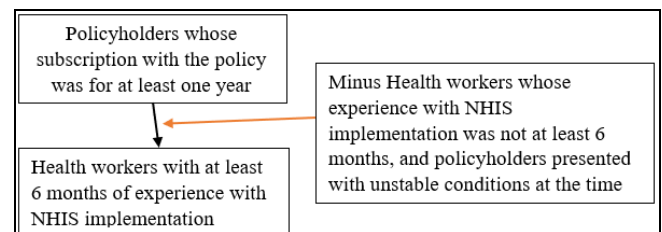
##### 1. Study Population and Setting

The target population for this study was individuals who have subscribed to the National Health Insurance Scheme (NHIS) for at least 1 year. Data were collected directly from health workers with at least 6 months of experience in NHIS

implementation, from women/couples who came seeking maternal and reproductive health services, and from service providers at the University Teaching Hospital (UTH), Ndola Teaching Hospital (NTH), and Chongwe District Hospital.

## 2. Sample size and Sampling

A total of 320 policy subscribers were enrolled in the study through a simple random sampling method. A Cochran's formula was used to calculate a sample size. Inclusion criteria included policyholders whose subscription with the policy was for at least one year, and NHIS policyholders who came through to access maternal and reproductive health services at the University Teaching Hospital (UTH), Levy Mwanawasa Hospital (LMH), and Chongwe District Hospital (CDH).



A schematic presentation of the sample determination

### Exclusion Criteria

Policyholders with unstable health status were excluded from this study, using vital signs such as blood pressure, pulse, and respiration as parameters. This is in line with the principle of non-maleficence. Service providers and policyholders who were not present during the time of the study and those who declined to give consent to participate were also excluded.

### Data Collection and Analysis

Data were collected using a well-structured self-administered questionnaire and an interview guide from participants who came through to access maternal and reproductive health services at the highlighted medical institutions.

Bowling and Ebrahim (2006), in their handbook of research methods, state that statistical analysis permits making inferences that are numerical in nature about the larger population from which the sample came. Quantitative data requires statistical analysis (Beck, 2008). Data was analyzed using statistical software STATA 14.0. Descriptive statistics were used to summarize demographic characteristics of the study population and determine key outcome variables.

### Ethical Considerations

The study was conducted in accordance with ethical guidelines and received the necessary approvals from the National Health Research Authority (NHRA), the University of Lusaka Ethical Committee, and the institutions of interest, namely the University Teaching Hospital (UTH), Ndola Teaching Hospital (NTH), and Chongwe District Hospital (CDH). A confidentiality guarantee was provided to the respondents after the study's goal was explained in detail. Participants were informed that taking part in the survey was entirely voluntary, and they were given time to read the consent form before signing it to attest to their willingness to participate in the study.

Refusing to sign resulted in the immediate replacement of the individual in the sample.

**Results**

**1. Data Analysis and Tabulation**

**Demographic and Socioeconomic Information**

This section presents the demographic and socioeconomic characteristics of the 318 policyholders who participated in the study.

**Table 1: Demographic Characteristics of Policyholder**

Variable	Frequency	Percentage
<b>Gender</b>		
Female	259	81.45
Male	59	18.55
	318	100
<b>Age</b>		
20 to 29	37	11.64
30 to 39	190	60.81
40 to 49	54	16.98
Above 49 Years	31	10.57
	318	100
<b>Status</b>		
Married	283	88.99
Single	35	11.01
	318	100
<b>Residence</b>		
Rural Area	70	22.01
Urban	248	77.99
	318	100
<b>Children</b>		
1 Child	35	11.0
2 Children	43	13.52
3 Children	73	23.23
More than three	136	43.44
None	28	8.81
	318	100
<b>Education</b>		
None	5	1.57
Primary	45	14.10
Secondary	73	23.21
Tertiary	193	61.28
	318	100
<b>Occupation</b>		
informal employment	10	18.14
Formal employment	308	96.86
	318	100

A significant proportion, 81% of all participants, were female, while 19% were male; this is in line with the fact that women are directly affected by maternal and reproductive services, while men only render support. Regarding the age range, 12% of respondents were between the ages of 20 and 39, while over half (60%) fell within the 30 to 39 age range, which represents the demographic most likely to seek maternal and reproductive services. Additionally, (17%) of respondents were aged 40 to 49, and (10%) were over 49 years old, signifying somewhat low utilization of the service among the elderly women.

It's noteworthy that a significant majority of respondents, specifically (89%), identified as married. This dominant figure suggests that maternal and reproductive health services under NHIS were utilized mainly by married couples. Meanwhile, only 11% of respondents were identified as single.

22% of respondents came from rural areas, while 78% came from urban areas. This difference suggests that the scheme is more widely used in urban areas than in rural areas. 11% of respondents had 1 child, while 13% had 2. 23% had 3 children, 43% had more than 3, and 9% had none. Suggesting that respondents with more than 3 children used the maternal and reproductive health services under the scheme more.

61% of respondents had attained a tertiary education. This indicates a very strong correlation between higher education and participation in the scheme. 14% had attained primary education, while 23% had attained secondary education. This shows a very low percentage of people with lower levels of education using the scheme. 2% had no education at all. The small number highlights the extreme disparity.

**2. NHIS Policyholders' Satisfaction Levels**

To evaluate the quality of service using quality service indicators, data were collected to assess NHIS policyholders' satisfaction levels with the maternal and reproductive health services under the National Health Insurance Scheme (NHIS). Below is a discussion of the findings.

Satisfaction Area of focus	Dissatisfied	Neutral	Satisfied
Nurse doctor attitude	45 (14%)	122(39%)	146(47%)
records handling system	44(14%)	107(34%)	162(51%)
Support staff availability	44(14%)	128(40%)	146(46%)
Reception at the hospital	54(17%)	119(37%)	121(46%)
Doctor-patient ratio	152(48%)	107(37%)	59(19%)
Patient waiting time	160(50%)	59(19%)	99(31%)
Number of wards	152(48%)	75(24%)	91(29%)
Medicine Availability	156(20%)	110(35%)	52(16%)
Imaging Services	82(25%)	151(47%)	85(27%)
General Patient care	59(19%)	149(47%)	100(34%)
Laboratory Services	84(26%)	114(36%)	120(38%)

The study indicates that NHIS policyholders' satisfaction with the nurse-to-doctor ratio is moderately positive, with 47% of respondents feeling satisfied and 39% neutral. However, 14% expressed dissatisfaction, which suggests room for improvement in interpersonal interactions.

A significant percentage of patients (51%) reported satisfaction with the records-handling system, while only 14% were dissatisfied. This implies that current procedures are effective, but continuous evaluation and updates to the system will ensure it remains user-friendly and efficient. While 42% of participants felt satisfied with support staff availability, 40% were neutral. This indicates that while many may agree with the availability of adequate support, a notable portion of the patient population does not. Further assessment of staffing levels or training may enhance perceived availability.

Satisfaction levels at the reception area mirror those of the doctors and nurses, with 37% satisfied and another 37% neutral. The notable 16% expressing dissatisfaction could signify longer wait times or inadequate assistance. Implementing a feedback mechanism could help improve service delivery in this area. Alarming, 46% of respondents were dissatisfied with the doctor-patient ratio. This raises concerns about the quality of care and doctors' ability to provide adequate attention to each patient. Exploring options to increase staff or modify scheduling practices is essential to addressing this issue.

The high dissatisfaction rate (50%) concerning patient waiting time indicates a significant area for improvement. Streamlining patient flow and optimizing appointment scheduling can help mitigate perceived waiting times, directly impacting overall satisfaction with the scheme. The study points to notable dissatisfaction with the number of wards (48% dissatisfied) and the availability of medicine (20% dissatisfied). These results show the need for policymakers to address the challenge of hospital space and ensure that treatments are accessible. Addressing these could lead to better resource management and improved patient outcomes.

While satisfaction ratings indicate a mixed response, the relatively high percentage of neutral responses —47% for imaging services and 36% for general patient care — highlights potential uncertainty or variability in services. Continuous training and quality assurance programs could help improve perceptions in these areas. The study highlights several key areas that need improvement to enhance patient satisfaction with the NHIS. By implementing targeted interventions based on feedback and ensuring clear communication with both staff and patients, significant progress can be made in the delivery of maternal and reproductive healthcare services.

### 3. Accessibility to NHIS Maternal and Reproductive Services

Question	Response	Freq.	Percent
Duration NHIS (NHIMA) subscriber?	Less than two years	27	8%
	More than two years	291	92%
Hospital Visits in the last 12 months	Less than 2	78	25%
	More than 2 visits	175	55%
	None	65	20%
Distance from the nearest NHIMA-accredited facility	Beyond the radius of 5km	131	41%
	Within a radius of 5km	187	59%
Have you benefited from the NHIS services since enrollment	No	38	12%
	Yes	280	88%
Do you think you can get better services from the private hospital?	No	28	9%
	Yes	286	91%
Can you recommend NHIS to family members?	No	33	10%
	Yes	285	90%
Would you recommend continuing NHIS?	No	272	87%
	Yes	42	13%

The study showed that 92% of subscribers have been part of the scheme for more than two years, suggesting a significant level of trust and reliance on the services provided. On the other hand, 8% of subscribers have been with the policy for less than two years. This group may include new enrollees who have recently recognized the scheme's potential benefits.

Notably, 55% of respondents reported visiting the hospital more than twice in the past 12 months. This significant percentage may suggest a high level of reliance on the scheme's healthcare services. However, 25% of respondents visited the hospital only once during the specified period, and 20% did not visit the hospital at all under the scheme during the same period. This could stem from a lack of perceived need for medical services, dissatisfaction with previous experiences, or issues with the scheme itself, such as complexity in navigating the system or financial concerns about other healthcare costs.

The study findings indicate that a significant majority of respondents (59%) were able to access National Health

Insurance Scheme (NHIS) services within a convenient distance of less than 5 kilometers. This suggests that for a substantial portion of the population, healthcare services under the scheme are relatively accessible, which is essential for timely medical attention and adherence to health regimens. However, the fact that 41% of respondents reported having to access NHIS services beyond a 5-kilometer radius raises critical concerns about healthcare accessibility.

In analyzing the impact of the National Health Insurance Scheme (NHIS), the data suggests a significant level of satisfaction and utility among its beneficiaries. With 88% of respondents indicating they have benefited from the services post-enrollment. In comparison, 12% did not find the scheme beneficial; this may be due to various factors, such as unaffordable co-payments, limited provider networks, or dissatisfaction with the quality of care.

The finding that 91% of respondents prefer to receive services under the scheme from private hospitals, as opposed to the 9% who prefer government hospitals, raises significant implications for healthcare policy and service delivery. This could indicate a perceived higher quality of care or better patient experiences in the private sector. Patients associate private hospitals with shorter wait times, more personalized care, and greater comfort. These factors may contribute to the significant majority opting for private healthcare options.

The data indicate strong support for the NHIS policy among respondents, with 90% expressing a willingness to recommend its continuation. This overwhelming majority suggests that the policy is perceived favorably, which could be attributed to several factors, including its benefits, accessibility, and overall effectiveness in meeting the population's healthcare needs. However, the 10% of respondents who would not recommend the NHIS policy raise essential questions, as it could be due to various factors.

### Discussion

The research findings on the contribution of the National Health Insurance Scheme (NHIS) to the quality of maternal and reproductive health services in Zambia reveal a mixed impact, highlighting both advancements and persistent challenges.

A significant number of NHIS policyholders and healthcare providers reported increased access to maternal and reproductive health services since the implementation of the NHIS. This is in line with a study in Nigeria, which revealed the critical role that health insurance coverage plays in increasing the uptake of reproductive health services and improving women's access to skilled birth attendants working in health facilities. (Esan OT, Adeomi *et al*, 2023) [25]

This suggests that the scheme has helped mitigate financial constraints that often deter women from seeking necessary healthcare, leading to a greater willingness to seek medical care during pregnancy and childbirth. This is consistent with previous studies showing the effectiveness of health insurance schemes in mitigating financial barriers to healthcare access (Ayanore MA *et al.*, 2019) [28]. The latest OOP expenditure in Zambia averages 12.4% of total current health spending, due to insufficient allocations of health facility resources to meet healthcare demand (Masiye, F. *et al.*, 2020) [29]. This resonates with the broader goal of the

Zambian government to enhance women's health outcomes. In some regions, there have been observable improvements in health outcomes for mothers and newborns, correlating with increased utilization of maternal and reproductive health services.

Upon analyzing various indicators of service quality, the study found that although patients expressed satisfaction with the reception and care provided at the facility, there was considerable dissatisfaction with several critical factors, including waiting times, the ratio of healthcare providers to patients, and the availability of imaging services. This finding aligns with a study conducted in South-South Nigeria, where subscribers to insurance policies reported dissatisfaction with the services due to the lack of essential medical equipment and extended waiting periods (Olamuyiwa, T. E *et al.*, 2021)<sup>[26]</sup>.

The study also highlighted challenges, including limited NHIS coverage, particularly affecting rural populations. This illustrates the need to expand the scheme's coverage and inclusivity to ensure that all women, regardless of location, have access to quality healthcare. A study by Mwambazi *et al.* (2024)<sup>[27]</sup> also outlines the need to expand NHIS coverage to less privileged communities to enhance access to the scheme.

Problems such as inadequate infrastructure and a lack of essential medical supplies, such as drugs, were cited as significant barriers to receiving optimal care and ultimately compromising the quality of service. These challenges are indicative of systemic inefficiencies in the provision of care under the scheme, which align with findings from other studies (Ameh C *et al.*, 2021)<sup>[30]</sup> that have reported similar barriers across different contexts.

The study also noted a critical shortage of trained healthcare professionals, which directly affects service delivery. This shortage leads to long wait times and diminished quality of care, as fewer staff members are available to meet patients' needs. Although access has improved, concerns about the quality of care remain prevalent and demand reforms.

### Limitations of the Study

Service quality was based on respondents' perceived expectations, which may not have accurately reflected the services provided at the facilities. The information was also collected as a snapshot at a time when respondents were seeking medical help, which could have affected their assessments.

### Recommendations

To improve the quality of service under the National Health Insurance scheme, strategic interventions must be implemented. To address the limited coverage, especially in rural areas, it is essential to enhance outreach programs and ensure that the NHIS is accessible to all women. This could involve mobile health clinics and NHIS partnerships with local organizations to reach underserved communities.

Improving drug supply chains by introducing a real-time monitoring system can guarantee the steady availability of crucial medications, with collaborations formed with dependable suppliers to avoid stock shortages. Additionally, increasing service efficiency through digital solutions such as online registration and appointment booking can significantly reduce patient waiting times and queues.

Ultimately, it is essential to invest in a robust information system infrastructure, including reliable IT support and

backup solutions, to monitor the impact of the NHIS on maternal and reproductive health outcomes. This will ensure smooth service delivery and prevent disruptions caused by system outages. When combined, these measures can enhance the accessibility, efficiency, and fairness of NHIS services.

Engage with policymakers to advocate for necessary reforms that support an inclusive and effective NHIS. This includes policies that prioritize maternal health and address systemic barriers present in the healthcare system. By implementing these suggestions, the NHIS can improve efficiency and achieve notable improvements in the quality of maternal and reproductive health services in Zambia.

### Conclusion

The National Health Insurance Scheme (NHIS) has made notable contributions to improving maternal and reproductive health services in Zambia, particularly by increasing access and reducing financial barriers for women seeking care. Beneficiaries report improved experiences and some positive health outcomes, indicating progress towards better maternal health.

However, several challenges remain that need urgent attention. Limited coverage, especially in rural areas, inadequate medical facilities, and a shortage of healthcare personnel hinder the scheme's overall effectiveness. Additionally, concerns about the quality of care underscore the need for systemic reforms to ensure that all women can access reliable and comprehensive healthcare services. Addressing these issues is crucial for the NHIS to fulfill its promise of improving maternal health outcomes across Zambia.

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