

IMSHIA records zero maternal deaths in 2025: a mixed-methods case study on the role of health insurance in improving maternal health

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Abstract

Background

Achieving zero maternal deaths remains a major challenge in Sub-Saharan Africa, largely due to financial barriers and limited access to skilled care. In 2025, the Imo State Health Insurance Agency (IMSHIA) reported zero maternal deaths, presenting a unique opportunity to examine the role of health insurance in improving maternal health outcomes.

Methods

A descriptive cross-sectional mixed-methods study was conducted among 344 women of reproductive age in Imo State, Nigeria. Quantitative data on awareness, enrollment, and maternal health service utilization were collected using structured questionnaires. Qualitative data were obtained through key informant interviews with IMSHIA officials alongside media content analysis. Logistic regression identified predictors of utilization, while thematic analysis was applied to qualitative data.

Results

Awareness of IMSHIA was high (96.5%), with 90.7% of women enrolled, largely through government subsidies. Antenatal care was the most utilized service (79.1%). Higher education and prior awareness were significant predictors of utilization. Qualitative findings highlighted IMSHIA's integrated approach, including financial risk protection, free maternal services, and a functional referral nexus across four zones enabling emergency obstetric interventions within 45 minutes. Over 3,000 successful surgeries were recorded, alongside expanded enrollment of pregnant women and strengthened provider capacity. These combined strategies were associated with improved service uptake and the reported zero maternal deaths in 2025.

Conclusion

IMSHIA demonstrates how health insurance can contribute to achieving zero maternal deaths through financial protection, improved access, and strengthened health system capacity. Sustaining and scaling such models could accelerate progress toward reducing maternal mortality in Sub-Saharan Africa.

Clinical trial number: Not applicable

1. Background

Maternal mortality remains a major public health challenge globally, with Sub-Saharan Africa bearing the greatest burden. Nigeria contributes disproportionately to global maternal deaths, with a maternal mortality ratio of 993 per 100,000 live births in 2023, far exceeding the global average of 223 per 100,000 live births [1]. This high burden is driven by multiple interrelated factors, including financial barriers, limited access to skilled birth attendants, inadequate emergency obstetric care, and weak referral

systems [2]. The “three delays model”—delays in deciding to seek care, reaching care, and receiving adequate treatment—remains central to understanding maternal deaths in Nigeria, with out-of-pocket payments continuing to restrict timely access to essential maternal health services [3].

Health insurance has been increasingly promoted as a key strategy for reducing financial barriers and improving access to maternal healthcare. In Nigeria, reforms to the National Health Insurance Authority and the establishment of state-level schemes, such as the Imo State Health Insurance Agency (IMSHIA), reflect ongoing efforts to expand coverage and protect vulnerable populations [4]. IMSHIA, established by Law No. 4 of 2018 and operational since April 2023, integrates community-based enrollment with referral systems to enhance access to maternal services across primary and secondary healthcare facilities. However, systematic evidence on the extent to which such schemes contribute to improved maternal health outcomes remains limited, with most available data derived from administrative reports and anecdotal accounts. Addressing this gap is essential for understanding the role of health insurance in reducing maternal mortality and for generating evidence to inform scalable strategies across Sub-Saharan Africa. Therefore, this study examines the role of health insurance in improving maternal health in Imo State, Nigeria, within the context of a setting reporting zero maternal deaths in 2025.

2. Methods

2.1 Study area

This study was conducted in Imo State, Nigeria, located in the southeastern region of the country. Imo State lies within latitudes 4°45'N and 7°15'N, and longitude 6°50'E and 7°25'E with an area of around 5,100 sq km. The state is bounded by Abia State to the east, Anambra State to the north, Rivers State to the south, and Delta State to the west. Imo State has an estimated population of 5,459,300 [5]. The maternal mortality ratio in Imo State has been reported to range from 1,656 to 2,706 per 100,000 live births, markedly exceeding the national average [6].

2.2 Study design

The study adopted a descriptive cross-sectional design using a mixed-methods approach. The quantitative component assessed socio-demographic characteristics, awareness, enrollment, and utilization of maternal health services among women of reproductive age, while the qualitative component explored perceptions, implementation experiences, barriers, and facilitators from key informants. Additionally, media content analysis was incorporated to triangulate findings and provide contextual insights on IMSHIA's maternal health programs.

2.3 Study population

The study population comprised women of reproductive age (15–49 years) residing in Imo State for at least 12 months who had accessed maternal health services, including antenatal care, skilled delivery, or emergency obstetric care, regardless of IMSHIA enrollment status. Critically ill women and temporary residents were excluded. Healthcare providers and IMSHIA officials directly involved in maternal health

services or insurance management were also included in the qualitative component to provide insights on program implementation, barriers, and facilitators.

2.4 Sample size and sampling

The minimum sample size for the quantitative component was calculated using the Fisher formula for cross-sectional studies, based on a 43% prevalence of health insurance utilization among women in the region [7], a 95% confidence level, and a 5% margin of error, yielding 377 respondents. To account for non-response, 10% was added, giving a final sample size of 415 women of reproductive age.

A multistage sampling approach was employed to recruit participants for the study. Imo State was first stratified into its three senatorial zones (Orlu, Owerri, and Okigwe), from which 11 Local Government Areas (LGAs) were selected. Subsequently, 33 wards were drawn from the selected LGAs, and one health facility was selected from each ward, yielding a total of 33 facilities that served as recruitment points for respondents. For the qualitative component, 12 key informants, including IMSHIA officials and maternal health service providers, were purposively recruited.

2.5 Data collection instruments and procedure

Quantitative data were collected using a structured questionnaire capturing socio-demographics, awareness and utilization of IMSHIA services, maternal health service use (antenatal care, skilled delivery, emergency obstetric care), and barriers and facilitators to utilization. Qualitative data were collected through key informant interviews (KIIs) with IMSHIA officials and healthcare providers to explore program implementation, challenges, and recommendations. Instruments were validated through expert review. Face-to-face interviews accommodated respondents with low literacy, and KIIs were audio-recorded with consent and supplemented by field notes.

To supplement primary data, content from local media platforms and official website of IMSHIA was systematically collected and analyzed. Reports and posts were transcribed and coded to identify information on IMSHIA's maternal health programs, referral nexus, capacity-building initiatives, enrollment drives, and reported maternal health outcomes. This approach allowed triangulation of findings with survey and key informant data, providing additional context on program implementation, public awareness, and health system impact.

2.6 Data Management and analysis

Quantitative data were coded and entered into IBM SPSS Statistics v.20. Descriptive statistics summarized socio-demographic characteristics, awareness, enrollment, and service utilization. Bivariate associations between IMSHIA enrollment and categorical predictors were examined using chi-square tests. Variables that were significant at $p < 0.05$ in bivariate analysis were included in a binary logistic regression model to identify independent predictors of enrollment. Adjusted odds ratios (AORs) with 95% confidence intervals were reported, and statistical significance was set at $p < 0.05$. Qualitative data were transcribed verbatim and analyzed thematically.

3. Results

3.1 Quantitative analysis

Of the 415 questionnaires distributed, 344 were completed and returned, yielding a response rate of 82.9% for analysis.

3.1.1 Socio-demographic characteristics of respondents

Results in Table 1 reveals that the majority of respondents were aged 25–34 years (57.6%), married (82.6%), and had completed at least secondary education (63.4%). Most participants were Christian (92.7%) and resided in rural areas (81.7%). Regarding occupation, majority (30.2%) were traders.

Table 1
Socio-demographic characteristics of respondents (n = 344)

Variable	Categories	Frequency (n)	Percent (%)
Age group (Years)	15–24	63	18.3
	25–34	198	57.6
	35–44	78	22.7
	≥ 45	5	1.4
Marital status	Married	284	82.6
	Single	35	10.2
	Divorced/Separated	21	6.1
	Widowed	4	1.2
Highest educational level	No formal education	2	0.6
	Primary	10	2.9
	Secondary	218	63.4
	Tertiary	114	33.1
Religion	Christianity	319	92.7
	Islam	23	6.7
	Traditional/Others	2	0.6
Place of residence	Rural	281	81.7
	Urban	63	18.3
Occupation	Traders	104	30.2
	Business owners/Self-employed	52	15.1
	Housewife	33	9.6
	Farmers/Agricultural workers	35	10.2
	Teachers/Education sector	31	9
	Civil/Public/Private service & Health workers	25	7.3
	Students	13	3.8
Results are presented as frequencies and percentages			

Variable	Categories	Frequency (n)	Percent (%)
	Skilled artisans (tailors, hairstylists, caterers, designers, etc.)	33	9.6
	Unemployed/No occupation	7	2
	Others	11	3.2
Results are presented as frequencies and percentages			

3.1.2 Awareness and utilization of IMSHIA services

Awareness of IMSHIA was very high (Table 2), with 96.5% of respondents having heard of the agency, primarily through health facilities (65.7%). A majority (90.7%) were currently enrolled, predominantly through government subsidies (88.1%). Most respondents (93.6%) were aware of the maternal health services covered by IMSHIA, with antenatal care being the most utilized service (79.1%).

Table 2
Awareness and utilization of IMSHIA services (n = 344)

Variable	Categories	Frequency (n)	Percent (%)
Heard of IMSHIA	Yes	332	96.5
	No	12	3.5
Source of information	Health facility	226	65.7
	Friends/family	51	14.8
	Community leader	36	10.5
	Radio/TV	29	8.4
	Others	2	0.6
Currently enrolled in IMSHIA	Yes	312	90.7
	No	32	9.3
Enrollment paid by	Government subsidy	303	88.1
	Self	20	5.8
	Spouse/family	11	3.2
	Employer	10	2.9
Awareness of maternal health services covered	Yes	322	93.6
	No	22	6.4
Specific maternal health services utilized*	Antenatal care	272	79.1
	Skilled delivery	240	69.8
	Emergency obstetric care	197	57.3
	Postnatal care	175	50.9
	Others	52	15.1
*Multiple options allowed. Results are presented as frequencies and percentages			

3.1.3 Barriers and facilitators to utilization of IMSHIA maternal health services

Results from Table 3 reveals that major barriers to utilizing IMSHIA maternal health services included transport costs (36.0%) and distance to health facilities (32.6%). Major facilitators suggested by

respondents included awareness creation and health education (60.5%), followed by increasing skilled health workers (6.7%).

Table 3
Barriers and facilitators affecting IMSHIA maternal health service utilization (n = 344)

Factor Type	Category*	Frequency (n)	Percent (%)
Barrier	Transport cost	124	36
	Distance to facility	112	32.6
	Lack of awareness	45	13.1
	Others	62	18
	Negative attitude of health workers	10	2.9
	Cultural preference for home delivery	7	2
	Stock out of medicine	5	1.5
Facilitator**	Awareness creation / Health education / Sensitization	208	60.5
	Increase / Employ more health workers / Skilled attendants	23	6.7
	Provision of funds / Subsidies / Resources	12	3.5
	Improve facilities / Build health centers / Bring doctors	8	2.3
	Transport / Ambulance provision	4	1.2
	Others (maintain program, cover all services, general improvement)	3	0.9
*Multiple options allowed. Results are presented as frequencies and percentages			
**Open ended question. Responses grouped into categories			

3.1.4 Perceptions about IMSHIA

Respondents reported high satisfaction with IMSHIA maternal services (Table 4), with 68.3% very satisfied. Nearly all participants (99.1%) indicated that IMSHIA reduced the financial burden of maternal care, and 98.8% would recommend the program to other women.

Table 4
Respondents' perceptions about IMSHIA maternal services (n = 344)

Perception / Satisfaction Indicator	Frequency (n)	Percent (%)
Overall satisfaction		
Very satisfied	235	68.3
Satisfied	90	26.2
Neutral	16	4.7
Very dissatisfied	3	0.9
Belief that IMSHIA reduced financial hardship		
Yes	341	99.1
No	3	0.9
Would recommend IMSHIA to other women		
Yes	340	98.8
No	4	1.2
Results presented as frequencies and percentages		

3.1.5 Association between socio-demographic factors and IMSHIA enrollment

Chi-square analysis showed that education level and prior awareness of IMSHIA were significantly associated with enrollment ($p < 0.001$), while age group, marital status, and place of residence were not ($p > 0.05$). Further analysis using logistic regression identified education and awareness as independent predictors of maternal health service utilization. Women with higher levels of education were significantly more likely to utilize services compared to those with no formal education (AOR = 8.75, 95% CI: 3.17–24.10, $p < 0.001$). Similarly, awareness of IMSHIA was a strong predictor, with women who were not aware of the scheme having significantly lower odds of utilizing maternal health services (AOR = 0.02, 95% CI: 0.004–0.084, $p < 0.001$).

3.2 Qualitative findings: the role of health insurance in improving maternal health

The qualitative findings provide in-depth insights into how health insurance, through IMSHIA, influences maternal health in Imo State. The analysis is organized around four key themes: awareness and enrollment as entry points to care; financial protection and access to services; health system strengthening and service delivery; and persistent barriers and gaps affecting utilization.

3.2.1 Awareness and enrollment as entry points to care

Awareness of IMSHIA emerged as a critical driver of enrollment and initial engagement with maternal health services. Key informants reported that widespread sensitization efforts—including community outreach, facility-based education, and grassroots mobilization through churches and markets—significantly increased women’s knowledge of the scheme. These strategies fostered trust and encouraged women to actively seek enrollment, thereby facilitating early contact with formal healthcare services. As one participant noted, *“Most pregnant women and expectant mothers are already very much aware, and they come on their own to enquire and register so that they can give birth under this program.”* (Head, CMU, IMSHIA, 2025).

3.2.2 Financial protection and access to services

The qualitative analysis revealed that financial protection through IMSHIA was a key driver of maternal health service utilization. Enrollment eliminated out-of-pocket costs, enabling women to register early for antenatal care (ANC) and attend facilities regularly without financial strain. As one respondent noted, *“Those of them on IMSHIA tend to register as early as possible when they’re pregnant and they come to the health facilities at will because they know that they are not going to pay a farthing”* (OIC, Eziana, 2025). Another participant emphasized the confidence this financial coverage provided: *“The antenatal care has so much improved, especially for the enrollees. They come into it with confidence and boldness as there is no strain on their finances”* (Implementer, IMSHIA, 2025).

IMSHIA enrollees demonstrated higher compliance with recommended maternal health services compared to non-enrollees. Non-enrolled women often delayed care due to cost, whereas enrollees accessed scans, skilled delivery, and emergency obstetric care promptly: *“Non-IMSHIA enrollees pay out of pocket... IMSHIA enrollees walk in and they already know what’s obtainable, they receive their services at no cost”* (Implementer, IMSHIA, 2025). Early registration and financial security contributed to improved maternal health indicators, reducing reliance on traditional birth attendants and lowering risk of complications or maternal death.

Key facilitators included proximity of services to rural communities, quality of care provided by skilled health workers, and active community awareness campaigns. Respondents reported that bringing services closer to beneficiaries and ensuring no payment was required encouraged utilization: *“The factor is that it is brought to them at their doorstep... and when it is beyond the health care providers in the rural areas, they are referred and because they don’t pay”* (Head, S&D, IMSHIA, 2025). These financial and operational strategies highlight how IMSHIA effectively removes cost barriers, promotes early engagement with maternal care, and improves overall maternal health outcomes.

3.2.3 Health system strengthening and service delivery

The implementation of IMSHIA has strengthened the maternal health system through robust referral networks, skilled care, emergency preparedness, and continuous provider training. Key informants

highlighted that the agency accredits and monitors healthcare providers, ensuring quality service delivery across primary and secondary facilities:

“We accredit health care providers coming into the scheme to provide quality healthcare services, we monitor them on the implementation of the service provisions and other IMSHIA administrative protocols. It has been a wonderful and robust experience for me, the department and the agency.” (Head, SQA, IMSHIA, 2025)

IMSHIA enrollees were observed to utilize skilled birth attendants more frequently and benefit from rapid emergency interventions:

“We always prepare for emergency... Most times, we give referrals for cesarean sections, for other interventions and the emergency obstetric needs that we attend to even without wasting time... within five to ten minutes, intervention is carried out.” (Implementer, IMSHIA, 2025)

Media reports confirmed the agency’s extensive referral nexus across four zones (Orlu 1, Orlu 2, Okigwe, Owerri), achieving “knife on skin” interventions within 45 minutes for emergency obstetric cases. Over 3,000 successful surgeries and emergency interventions have been recorded, demonstrating the system’s efficiency and reach. Nurse training programs further strengthened capacity, with staff equipped to manage postpartum hemorrhage and other obstetric emergencies.

IMSHIA’s comprehensive maternal program has enrolled over 12,000 pregnant women, ensuring free access to antenatal, delivery, and postnatal care. The integration of referral networks, skilled providers, and financial protection contributed to a remarkable reduction in maternal and infant mortality, with zero maternal deaths reported in 2025.

“The level of enrollment, deliveries, assisted deliveries, including cesarean sections has shown significantly that IMSHIA is doing a fantastic job in ensuring that there is a reduction of maternal and infant deaths, specifically in rural areas, local communities and the hard-to-reach areas.” (ES, IMSHIA, 2025)

The evidence illustrates that IMSHIA’s system-strengthening interventions—including workforce capacity-building, coordinated referrals, and emergency readiness—have enhanced access, timeliness, and quality of maternal healthcare services in Imo State.

“As a result of this maternal mortality reduction program, IMSHIA did not record a single maternal death in 2025, a record the agency is determined to sustain through 2026 and beyond.” (CEO, IMSHIA)

3.2.4 Persistent barriers and gaps

Despite the program’s success, challenges remain, including long distances to health facilities, poor transport infrastructure, cultural preferences for traditional birth attendants, financial constraints, and awareness gaps. Recommendations emphasized expanded enrollment, increased facility coverage, community sensitization, and sustained political and technical commitment to maintain gains.

“Some people still do not believe in going to the hospital to give birth... They’ll prefer to go to traditional birth attendants whom they believe and trust more than the health centers.” (Head, CMU, IMSHIA, 2025)

“The more people we enroll into the program, the more people we can help...” (Head, CMU, IMSHIA, 2025)

4. Discussion

The findings demonstrate that awareness and enrollment function as critical entry points into maternal healthcare utilization under IMSHIA. The high levels of awareness and enrollment observed in this study suggest that access to health insurance is not merely a function of availability but is strongly influenced by deliberate programmatic efforts to inform and engage communities. Qualitative insights indicate that awareness was actively generated through community sensitization, facility-based communication, and social diffusion mechanisms, whereby beneficiaries influenced others within their networks. This suggests that awareness in this context is not passive but strategically driven, resulting in increased trust, acceptance, and uptake of services. Enrollment, in turn, serves as a gateway to the health system, linking women—particularly those previously excluded—to formal maternal healthcare services. From a policy perspective, these findings highlight that health insurance schemes must go beyond financial coverage to incorporate sustained demand-generation strategies. Without targeted awareness and community engagement, even well-designed insurance programs may fail to achieve meaningful utilization and impact.

These findings align with international and regional evidence on health insurance schemes. For instance, Jones and Sonfield [8] demonstrated that Medicaid expansion under the Affordable Care Act significantly reduced the proportion of uninsured women in the United States, particularly among low-income populations, highlighting the potential of state-level insurance schemes to improve access to maternal care. Similarly, Kanmiki et al. [9] found that while enrollment in Ghana’s NHIS was relatively high, lapses in card validity and gaps in awareness of renewal requirements limited sustained participation, suggesting that continuous engagement and education are necessary to ensure effective coverage. In the Nigerian context, Aregbeshola and Khan [10] reported extremely low national coverage, with socio-economic disparities influencing enrollment, emphasizing that equity-focused strategies are essential to reach vulnerable women. Obeagu [7] further highlighted that awareness alone is insufficient when socio-cultural and structural barriers persist, as these factors can constrain service utilization even among insured women. These studies reinforce the importance of IMSHIA’s active, programmatically driven approach to awareness and enrollment, demonstrating that health insurance schemes must pair financial protection with sustained community engagement, targeted sensitization, and follow-up mechanisms to translate coverage into meaningful access and ultimately reduce maternal mortality.

This study further demonstrates the pivotal role of financial protection in shaping maternal health behaviors and outcomes under IMSHIA. Quantitative findings indicate high utilization of antenatal care, with education and prior awareness emerging as strong predictors of service use, while beneficiaries consistently reported satisfaction and relief from financial strain. Qualitative data elucidate the

mechanisms behind these outcomes, highlighting the removal of out-of-pocket payments, early ANC registration, improved adherence to recommended care, and stark contrasts between enrollees and non-enrollees. These findings suggest that financial protection does more than facilitate access; it drives behavioral change, encouraging timely, consistent, and proactive engagement with maternal health services. By mitigating financial barriers, IMSHIA reduces the uncertainty and costs associated with seeking care, enabling women to comply with antenatal schedules and access facility-based deliveries. These results reinforce that health insurance operates through risk pooling, elimination of direct costs, and predictability of care. In practical terms, this directly addresses the first delay in the “three delays” model—women’s decision to seek care—by ensuring that financial concerns do not impede timely health-seeking behavior. The study therefore demonstrates that well-structured insurance schemes can transform maternal health outcomes by linking financial protection with sustained, informed utilization of essential services.

These findings align closely with global and regional evidence demonstrating that health insurance can substantially improve maternal health service utilization. Studies from Ethiopia [11], Ghana [12], and multi-country analyses [13] show that insured women are significantly more likely to attend antenatal care, deliver in health facilities, and receive skilled birth attendance compared to their uninsured counterparts. In Nigeria, evidence from Lawani et al. [14] and Esan et al. [15] confirms that enrollment in health insurance schemes reduces maternal and neonatal adverse outcomes, improves early ANC attendance, and enhances facility-based deliveries, particularly when combined with risk-pooling mechanisms and predictable cost coverage. Similarly, Brals et al. [16] demonstrate that insurance programs, when paired with strengthened service delivery, yield measurable improvements in hospital-based deliveries, highlighting the synergistic effect of financial protection and health system capacity. However, studies in India [17] and Ghana [12] emphasize that insurance alone is insufficient: socio-economic factors, educational attainment, and women’s empowerment critically shape utilization. These studies support the current evidence from IMSHIA, suggesting that the removal of out-of-pocket payments, coupled with active enrollment and awareness programs, not only facilitates access but also fosters timely and continuous utilization of maternal health services, ultimately contributing to reductions in maternal mortality.

The present study highlights that IMSHIA’s impact extends beyond financial protection, functioning as a critical driver of health system strengthening and service delivery. Quantitative findings revealed high utilization of skilled delivery services, indicating that insurance coverage alone is insufficient to improve maternal outcomes unless paired with functional service provision. Qualitative insights and media reports illuminate the mechanisms behind this success: the agency’s referral nexus, spanning four zones, ensures that emergency obstetric interventions are performed within 45 minutes, facilitating timely care for high-risk pregnancies. To date, over 3,000 successful surgeries and emergency interventions—including cesarean sections, hernia and fibroid surgeries, and management of complicated hypertension—have been conducted, demonstrating the operational effectiveness and reach of the system. Additionally, capacity-building initiatives for providers, including training in life-saving skills such as postpartum hemorrhage management, have strengthened the workforce’s ability to

respond to emergencies efficiently. These findings underscore that health insurance in this context functions not merely as a financing mechanism but as a structured health system intervention. By integrating financial coverage with accredited facilities, trained personnel, and a robust referral network, IMSHIA directly addresses the second and third delays in maternal care: reaching appropriate facilities and receiving timely, competent treatment. This approach ensures that women are not only able to access services but also receive high-quality care when they do. The success of IMSHIA reinforces that effective maternal health insurance programs require deliberate investment in facility accreditation, workforce training, and functional referral systems, positioning insurance as a tool for both financial protection and systemic improvement in maternal healthcare delivery.

Previous studies demonstrate that health insurance schemes that combine coverage with functional referral systems, accredited facilities, and provider capacity-building yield measurable improvements in maternal health outcomes. Gebremedhin et al. [17] and Seid and Ahmed [11] highlight that insurance alone is insufficient; complementary factors such as women's education, empowerment, and household wealth are critical for translating coverage into service utilization. Evidence from Ghana's NHIS [12] and multi-country analyses by Wang et al. [13] show that robust service delivery and geographic access are vital for achieving high facility-based deliveries and antenatal attendance. Similarly, Lawani et al. [14] Esan et al. [15], and Brals et al. [16], reinforce that combining financial protection with facility strengthening, referral mechanisms, and workforce development substantially reduces maternal and perinatal adverse outcomes. These findings support the present study's conclusion that IMSHIA functions as a health system intervention: its referral nexus, emergency response capability, provider training, and facility accreditation underpin high utilization and skilled delivery, effectively addressing the "second" and "third" delays in maternal care. This positions IMSHIA not merely as a financing scheme but as a structural enabler of timely, safe, and equitable maternal health service delivery.

Despite the successes of IMSHIA in improving enrollment, financial protection, and service utilization, the study reveals that significant barriers to maternal healthcare persist. Quantitative data highlighted transport challenges, long distances to health facilities, and residual gaps in awareness as notable constraints, while qualitative insights pointed to deep-seated cultural practices, including reliance on traditional birth attendants (TBAs), difficult terrain, and lingering out-of-pocket expenses. These findings indicate that health insurance, while critical, cannot fully overcome structural and sociocultural obstacles that continue to limit access to maternal services. This implies that although IMSHIA addresses financial barriers effectively, it cannot single-handedly resolve the multi-dimensional challenges influencing maternal health outcomes. Persistent inequities related to geography, culture, and socio-economic status mean that some women remain underserved, even when formally enrolled in the scheme. From a policy perspective, this underscores the necessity of complementary interventions: developing transport and referral systems for hard-to-reach areas, engaging communities to shift cultural norms and promote skilled care, and integrating traditional care practices into formal health service strategies. Addressing these barriers is essential to ensure that financial coverage translates into equitable, timely, and safe access to maternal health services for all women in Imo State.

The persistent barriers and gaps identified in this study align closely with evidence from other LMIC contexts. Yoseph et al. [18] in southern Ethiopia similarly found that despite positive perceptions of antenatal and facility-based delivery services, structural and socio-cultural barriers—such as distance to facilities, transport difficulties during labor, limited awareness of service schedules, and cultural practices—continued to hinder full utilization of maternal health services. Likewise, Gitobu et al. [19] in Kenya observed that while the removal of delivery fees increased facility-based deliveries, maternal and neonatal mortality did not proportionally decline, highlighting the critical role of non-financial constraints such as service quality, availability of skilled personnel, and emergency response capacity. These studies reinforce the present findings from Imo State, emphasizing that although IMSHIA effectively reduces financial barriers, complementary interventions—improved transport logistics, culturally sensitive community engagement, and strengthened postnatal and emergency services—are essential to ensure that insurance coverage translates into meaningful reductions in maternal mortality.

5. Conclusions

This study demonstrates that the Imo State Health Insurance Agency (IMSHIA) plays a significant role in improving maternal health outcomes by enhancing access, financial protection, and health system performance. High awareness and enrollment among women of reproductive age serve as effective entry points into maternal care, showing that programmatically driven demand generation is critical for initial uptake. Financial protection provided through IMSHIA directly influences health-seeking behavior, promoting early and continuous utilization of antenatal care and skilled delivery services, while reducing reliance on out-of-pocket payments. Beyond financing, IMSHIA acts as a health system intervention by strengthening referral networks, facility accreditation, and workforce training, thereby addressing delays in reaching and receiving care.

However, persistent structural and socio-cultural barriers—including transport challenges, geographical terrain, reliance on traditional birth attendants, and residual financial constraints—limit the full potential of health insurance coverage. These findings indicate that while IMSHIA substantially contributes to reducing maternal mortality, its effectiveness depends on integrating financial coverage with broader interventions targeting system efficiency, equity, and cultural acceptability. The study underscores that state-level health insurance schemes can serve as a catalyst for improving maternal health outcomes, provided they are complemented by strategies addressing social, economic, and health system determinants.

6. Recommendation: IMSHIA maternal health model

Based on the findings, a model for improving maternal health is proposed.

The model integrates four interlinked pillars that collectively improve maternal health outcomes. Financial protection ensures enrollment and timely premium payment, which increases access to ANC, delivery, and postnatal services, reinforcing demand-driven service utilization. Health system

strengthening—through facility accreditation, provider training, functional referrals, and emergency readiness—enhances the quality and timeliness of care, which in turn encourages enrollment and community trust. Community engagement and awareness campaigns drive early ANC registration and skilled delivery, amplifying the impact of both financial protection and system capacity. Structural and cultural support, including transport solutions and TBA integration, reduces barriers to access, enabling full utilization of strengthened services. These pillars create a synergistic effect that increases timely, continuous, and equitable maternal healthcare, with applicability to other Sub-Saharan African contexts.

Abbreviations

IMSHIA

Imo State Health Insurance Agency

WHO

World Health Organization

LGAs

Local Government Areas

KIIs

Key Informant Interviews

AORs

Adjusted Odds Ratios

CMU

Community Mobilization Unit

ANC

Antenatal Care

OIC

Officer-in-Charge

ES

Emergency Services

CEO

Chief Executive Officer

Declarations

Consent statement Participant consent was obtained from parents/legal guardians for minors (<18 years) involved in the study, as outlined in the informed consent form.

Ethical consideration

The study adhered strictly to international ethical guidelines as enshrined in the Declaration of Helsinki. Ethical approval was obtained from the Health Research Ethics Committee of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State (NHREC/05/01/2008B-FWA00002458-1RB00002323).

Permission was also obtained from the Imo State Ministry of Health. Informed consent was obtained from all participants, and participation was voluntary. Privacy and confidentiality were ensured through de-identification of data and secure storage of audio files and transcripts.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

Georgina Ngozi Ukwuije and Luke Oche Peter were involved in the conceptualization of the study, study design, ethical approval, and revision of the manuscript. Georgina Ngozi Ukwuije additionally supervised data collection and mobilized resources for the study. Luke Oche Peter conducted the data analysis and drafted the initial manuscript. Victor Ositadinma Nvene supervised the work and provided critical revisions to improve the manuscript. Uchenna Ewelike contributed to the conceptualization, study design, ethical approval, and assisted with data collection. All authors read and approved the final manuscript.

Data Availability

The datasets supporting the conclusions of this article are included within the article (and its additional files).

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Figures

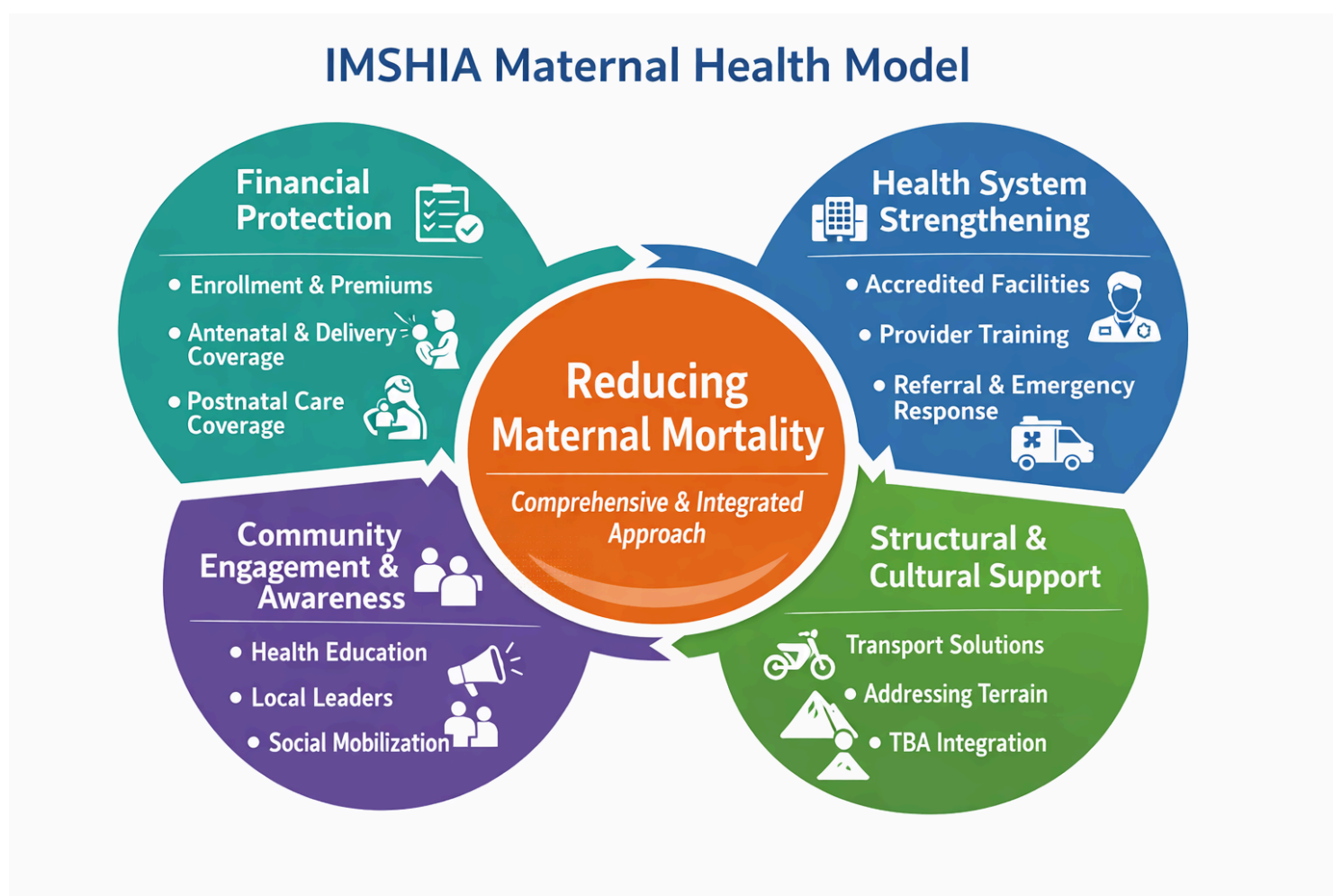


Figure 1

IMSHIA maternal health model

Supplementary Files

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