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FACILITY READINESS FOR MATERNAL HEALTH SERVICE DELIVERY: PROVIDERS' PERSPECTIVES IN A SEMI-URBAN NIGERIAN COMMUNITY

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Abstract

Maternal mortality remains high in Nigeria (1,047 deaths per 100,000 live births nationally; 674 per 100,000 in Edo State), and facility readiness the workforce knowledge, resources, and perceived service quality that providers themselves bring to and observe within their facilities is a key determinant of whether available services translate into safe maternal outcomes. Provider-side data on readiness for Responsible Maternal Health Service (RMHS) delivery remain scarce for semi-urban Nigerian communities. This study assessed facility readiness for RMHS delivery from the perspective of health workers in Okada, Edo State.

A descriptive cross-sectional, mixed-methods study was conducted among all 43 eligible health workers (doctors, nurses, midwives, and community health extension workers) providing maternal health services in Okada, recruited by a census approach across the Igbinedion University Teaching Hospital (IUTH) and the Okada Primary Health Care Centre. A structured, self-administered questionnaire assessed professional knowledge of RMHS and perception of facility readiness for RMHS delivery. This was supplemented by a Key Informant Interview (KII) with the Medical Officer-in-charge of the Obstetrics and Gynaecology Department, IUTH, analysed thematically. Quantitative data were analysed descriptively using IBM SPSS version 27.0, with significance set at $p < 0.05$.

Nurses formed the largest professional group (24; 55.8%). Good knowledge of RMHS was demonstrated by 40 (93.0%) of health workers, though gaps persisted for the eight-contact ANC recommendation (33; 76.7% correct) and the iron/folic acid supplementation schedule (29; 67.4% correct). Overall perception of RMHS delivery was positive (42; 97.7%; mean 3.55 ± 0.50), but only 13 (30.2%) agreed that their facility had adequate staff and resources, the lowest-rated readiness item alongside community awareness of facility-based delivery (mean 2.44).

Health workers in Okada are individually well-informed and favourably disposed toward RMHS, but report their facilities as inadequately staffed, resourced, and equipped to consistently deliver the care they know is required. Facility readiness, not provider knowledge, is the binding constraint on RMHS delivery quality in this setting.

Keywords: Facility Readiness, Health Workers, Maternal Health, Nigeria, Provider Perspectives, Service Delivery.

Introduction

Maternal mortality in Nigeria stands at 1,047 deaths per 100,000 live births, with Edo State recording a ratio of 674 per 100,000 live births in a ten-year review of its two most-referred tertiary facilities a review that further found that most maternal deaths and emergency referrals involved women who had never booked antenatal care (WHO, 2024; John-Abebe, 2024). Responsible Maternal Health Services (RMHS) can only translate into reduced maternal mortality where the facilities delivering them are actually ready to do so: adequately staffed, equipped, supplied, and staffed by providers with current, accurate clinical knowledge (WHO, 2021). The World Health Organization's standards for improving the quality of maternal and newborn care in health facilities frame readiness as a precondition for quality, not a proxy for it a facility can be formally available yet functionally unready if essential commodities, staffing levels, or provider competencies fall short (WHO, 2016). Nationally, fewer than half of Nigerian births are attended by skilled providers, and sub-Saharan Africa as a whole accounts for the large majority of global maternal deaths, underscoring the scale of the workforce and facility readiness deficit that this burden reflects (National Population Commission et al., 2024; Okonji et al., 2023).

Much of the existing maternal health literature in Nigeria approaches service deliveries from the demand side, cataloguing women's knowledge, perceptions, and utilization patterns, while comparatively less attention is paid to the supply-side perspective of the providers who staff these facilities. Yet health workers occupy a uniquely privileged vantage point from which to assess facility readiness: unlike community members, they observe stock levels, staffing rosters, and referral bottlenecks directly, and unlike facility audits conducted by external assessors, they experience the operational consequences of these gaps in real time. Global evidence identifies workforce training and development as among the most impactful health system strengthening interventions for reducing maternal mortality in low- and middle-income countries, with documented reductions in maternal mortality following midwife certification programmes and improvements in skilled birth attendance following performance-based financing reforms targeted at the health workforce (Miranda et al., 2024). Complementing this, evidence from across sub-Saharan Africa demonstrates that higher densities of physicians and nurses/midwives are independently associated with higher rates of facility-based birth and skilled antenatal care receipt,

underscoring that workforce capacity, not merely workforce knowledge, is a direct structural determinant of RMHS delivery (Rosser et al., 2022).

Qualitative evidence from rural Edo State has previously captured policymaker and provider perspectives on the barriers to skilled pregnancy care, identifying staff shortages, poor infrastructure, and fragmented primary healthcare governance as recurring provider-reported constraints, while comparative facility-level research in Cross River State has shown that maternal, newborn, and child health service capacity differs markedly between tertiary and primary care facilities within the same locality (Udenigwe et al., 2021; Esienumoh et al., 2021). Okada, a semi-urban Edo State community, presents a distinctive facility landscape in which a teaching hospital, a government primary health centre, and a substantial cluster of private hospitals and maternity homes coexist, serving overlapping catchment populations. Whether the health workers across this mixed facility landscape consider themselves and their workplaces genuinely ready to deliver RMHS, and which specific readiness domains knowledge, staffing, commodities, or systems fall short, has not previously been documented. This study therefore assessed facility readiness for RMHS delivery in Okada from the perspective of the health workers who staff its facilities, combining a structured survey of provider knowledge and perception with a key informant account of health system capacity, to identify the specific readiness gaps most in need of policy attention.

Methodology

This provider-focused component drew on the health worker arm of a descriptive cross-sectional, mixed-methods study of Responsible Maternal Health Services conducted in Okada, Ovia North-East Local Government Area, Edo State, Nigeria. Given the small and well-defined size of the eligible health worker population, a census approach was adopted rather than a sampled design: all doctors, nurses, midwives, and community health extension workers providing maternal health services at the Igbinedion University Teaching Hospital (IUTH) and the Okada Primary Health Care Centre, and who met the inclusion criteria and provided informed consent, were recruited. Facility mapping identified 43 eligible health workers across both facilities, all of whom were successfully enrolled. This census approach contrasts with the probability-based sample size determination applied to the female

arm of the parent study, which used the Cochran formula for a single population proportion (Cochran, 1977).

A structured, pre-tested, self-administered questionnaire captured sociodemographic and professional characteristics, professional knowledge of RMHS using ten True/False items (with good knowledge defined as $\geq 70\%$ correct), and perception of facility readiness for RMHS delivery using ten Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree), covering staffing and resource adequacy, respectful and quality care, training needs, and perceived community-level barriers. The questionnaire was adapted from instruments used in comparable Nigerian maternal health assessments, pre-tested among health workers in a neighbouring community not included in the main study, and refined for clarity and face validity before administration. This quantitative component was supplemented by a Key Informant Interview (KII) with the Medical Officer-in-charge of the Obstetrics and Gynaecology Department at IUTH, using a semi-structured interview guide covering health system capacity, referral dynamics, and priority resource gaps.

Quantitative data were entered, cleaned, and analysed using IBM SPSS Statistics version 27.0. Each knowledge item was scored 1 for a correct response and 0 for an incorrect or "don't know" response, and

the ten item scores were summed to generate a composite knowledge score (range 0–10); respondents scoring ≥ 7 ($\geq 70\%$) were classified as having good knowledge. Perception items were scored on their original 1–5 Likert scale, and a mean perception score was computed both per item, across all 43 respondents, and as an overall composite across all ten items per respondent; an overall mean score ≥ 3.0 was classified as positive perception. Sociodemographic and professional characteristics, knowledge scores, and perception scores were summarised using frequencies, percentages, means, and standard deviations. Because the health worker component used a census rather than a probability sample, and because the resulting subgroup sizes for planned comparisons were too small to support stable inferential estimates, no chi-square, Fisher's exact, or regression analyses were performed for this health worker dataset; findings are therefore reported and interpreted descriptively, and this decision, together with the underlying sample size. Statistical significance set at $p < 0.05$.

Ethical approval was obtained from the Deputy Chairman Advisory Committee Ethics and Training Committee of Igbinedion University Teaching Hospital, Okada (Reference: IUTH/R.24/VOL.I/199), and written informed consent was obtained from all participants prior to enrolment.

RESULTS

Table 1: Sociodemographic and Professional Characteristics of Health Worker Respondents (N = 43)

Variable	Frequency	Percentage
Age Group (years)		
≤24 years	1	2.3
25–34 years	18	41.9
35–44 years	17	39.5
≥45 years	7	16.3
Mean ± SD: 36.86 ± 8.9 years		
Gender		
Male	21	48.8
Female	22	51.2
Professional Qualification		
Doctor	8	18.6
Nurse	24	55.8
Midwife	6	14.0
CHEW	5	11.6

Years of Experience

Less than 5 years	8	18.6
5–10 years	22	51.2
11–20 years	10	23.3
More than 20 years	3	7.0

Type of Facility

Government Health Centre/PHC	6	14.0
Private Hospital/Clinic (IUTH)	20	46.5
Maternity Home	17	39.5

Table 2: Knowledge of RMHS among Health Worker Respondents, Ranked by Correct Response Rate (N = 43). Good knowledge defined as ≥ 7 of 10 items ($\geq 70\%$) correct.

Knowledge Item	Correct n	%
PNC covers postpartum complications up to 6 weeks	40	93.0
Infection control prevents maternal sepsis	37	86.0
TBAs lack skills for obstetric emergencies	37	86.0
All deliveries should be facility-based	36	83.7
Family planning is integral to maternal care	36	83.7
Pre-eclampsia requires early detection	35	81.4
Recommended ANC visits = 8	33	76.7
Early ANC booking within first trimester	33	76.7
Respectful care improves women's trust	32	74.4
WHO does not recommend weekly iron/folic acid (correctly identified as False)	29	67.4

Table 3: Perception of Facility Readiness for RMHS Delivery among Health Worker Respondents, Ranked by Mean Score (N = 43)

Perception Item	SD n	D n	N n	A n	SA n	Mean
Health education is effective for RMHS utilization	1	0	10	13	19	4.14
Community leader collaboration is essential	1	3	6	19	14	3.98
Need for more training on RMHS	2	1	7	21	12	3.93
Long waiting times discourage women	1	4	6	19	13	3.91
Lack of funds is a primary barrier to RMHS	1	3	11	17	11	3.79
Cultural beliefs significantly hinder women	1	6	8	20	8	3.65
Colleagues demonstrate adequate RMHS knowledge	1	5	13	16	8	3.58
Facility provides respectful and quality care	1	5	21	11	5	3.33
Facility has adequate staff and resources	4	15	11	12	1	2.79
Most women in Okada are aware of facility-based delivery	8	13	17	5	0	2.44

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree. Positive perception defined as mean score ≥ 3.0 .

Table 4: Facility Readiness Gaps Identified in the Key Informant Interview with the Medical Officer-in-Charge, Obstetrics and Gynaecology Department, IUTH

Readiness Domain	Gap Identified
Essential medicines	Recurrent stock-outs of magnesium sulphate and oxytocin
Staffing	Inadequate 24-hour midwifery coverage
Referral systems	No formalized Traditional Birth Attendant (TBA) referral network
Demand-generation systems	Absence of a formalized male partner engagement programme
Community trust	Perception among Okada residents that a teaching hospital is reserved for complicated cases, driving bypass to external facilities

Discussion

The findings of this study reveal a clear dissociation between provider-level readiness and facility-level readiness for RMHS delivery in Okada. Individually, health workers in this setting are well-prepared: 93.0% demonstrated good overall knowledge of RMHS, and 97.7% held a positive perception of RMHS delivery. Yet when asked specifically about their own facility's capacity to support that knowledge in practice, only 30.2% agreed that adequate staff and resources were available. This gap between what providers know and what their facilities can support them to deliver is the central finding of this study, and it reframes the RMHS delivery problem in Okada as fundamentally a system and resourcing challenge rather than a workforce competency deficit.

The specific knowledge gaps identified nonetheless warrant attention. Fewer than eight in ten health workers correctly identified the WHO-recommended eight-contact ANC schedule and first-trimester booking window, and just over two-thirds correctly identified that weekly iron/folic acid dosing is not the WHO-recommended regimen. Because health workers are the primary counselling channel through which pregnant women in Okada learn what an adequate antenatal schedule looks like, a provider-level knowledge gap of this magnitude carries direct downstream consequences for community-level ANC compliance. This is consistent with global evidence identifying workforce training as among the most impactful health system strengthening interventions for maternal mortality reduction in low- and middle-income countries, with documented gains following structured emergency obstetric and protocol-specific training programmes (Miranda et al., 2024). A structured annual RMHS competency development programme for all health workers at IUTH and the Okada PHC, with particular emphasis on the ANC contact schedule and iron/folic acid supplementation guidelines, is

indicated by these findings and is further supported by the fact that 76.7% of health workers themselves identified a need for more training a self-recognition of capacity gaps that should be treated as a readiness asset rather than a deficiency to be concealed.

The staffing and resource adequacy finding is the most consequential readiness gap identified in this study. Fewer than one-third of health workers agreed that their facility had adequate staff and resources, and this survey finding was directly corroborated by the key informant's account of recurrent stock-outs of magnesium sulphate and oxytocin two of the most clinically essential commodities for managing eclampsia and postpartum haemorrhage, respectively and inadequate 24-hour midwifery coverage. This pattern mirrors qualitative evidence from rural Edo State, where policymakers and providers similarly identified staff shortages, poor infrastructure, and fragmented governance as central barriers to skilled pregnancy care delivery (Udenigwe et al., 2021). It is also consistent with regional evidence linking healthcare worker density directly to facility-based birth and skilled ANC receipt rates across sub-Saharan Africa, reinforcing those findings with facility-level provider testimony from a specific semi-urban Nigerian community rather than aggregated cross-country estimates (Rosser et al., 2022). An urgent facility readiness assessment using the WHO signal functions framework for Basic and Comprehensive Emergency Obstetric Care, with ring-fenced state budget allocation to address identified gaps in essential drug availability and 24-hour midwifery staffing, is the most directly indicated response to this finding (WHO, 2016).

The facility landscape in which these providers work is itself heterogeneous: only 14.0% of health workers surveyed were based at the government PHC, while the remainder worked across private hospitals. This distribution has direct readiness implications, since the WHO quality-of-care standards and emergency

obstetric readiness frameworks that apply formally to designated referral facilities do not automatically extend oversight to the private and informal maternity home sector, where a substantial share of Okada's health workforce, and by extension a substantial share of RMHS delivery capacity, actually resides (WHO, 2016). Comparative facility-level research elsewhere in Nigeria has documented meaningful capacity differences between tertiary and primary care facilities operating within the same locality, and the present findings suggest that a similar, and potentially wider, capacity gradient may exist between IUTH and the maternity homes that collectively employ nearly forty percent of Okada's maternal health workforce. This facility-type heterogeneity echoes national evidence of persistent rural-urban and facility-level disparities in the receipt of individual ANC components even where overall coverage appears adequate (Esienumoh et al., 2021; Adewuyi et al., 2024). Facility-level readiness assessment and quality assurance mechanisms in Okada should therefore extend explicitly to private hospitals and maternity homes, not solely to the government PHC.

The relatively low mean score recorded for "Facility provides respectful and quality care" (3.33) among health workers' own self-assessment is notable, particularly given that community-level assessment of RMHS in this same setting has separately identified provider attitude as among the leading barriers cited by women, and that respectful maternity care audits in Benin City similarly found that only a minority of postpartum women reported consistently respectful treatment (Ogboghodo et al., 2022). This convergence of provider self-report and community-reported experience suggests that interpersonal quality of care the 'received care' component of the well-established Three Delays framework for maternal mortality requires deliberate quality-improvement attention independent of the staffing and commodity gaps identified above (Dahab & Sakellariou, 2020). Facility-level quality improvement teams, incorporating regular patient-experience audits alongside the resource-focused interventions already recommended, would extend facility readiness beyond structural capacity to the interpersonal domain of care delivery (Karp et al., 2024).

Resourcing the facility-level interventions recommended in this study commodity security, staffing expansion, and quality improvement systems ultimately depends on financing mechanisms capable of sustaining them. The near-total absence of health insurance coverage among Nigerian women of reproductive age has been shown to elevate under-five mortality risk independently of maternal healthcare utilization itself, underscoring that facility-side

readiness investment and demand-side financial risk protection are complementary rather than substitutable levers (Imo et al., 2022). This is consistent with community-level determinants research in Edo Central Senatorial District and qualitative evidence from rural Edo, both of which identified facility-side resourcing and financial access as intertwined rather than independent barriers to RMHS engagement (Elusoji et al., 2023; Udenigwe et al., 2022).

Health workers' own perception that most women in Okada are unaware of facility-based delivery (mean 2.44, the lowest-rated item overall) is a striking finding, particularly given that this study's companion assessment of female respondents in the same community found comparatively high self-reported awareness and utilization of facility-based delivery. This divergence suggests that providers may be systematically underestimating community-level awareness, possibly because their clinical encounters are disproportionately weighted toward women who present with complications or who arrive via non-standard pathways such as TBA referral, rather than the broader population of women successfully engaging with facility-based care independently. Alternatively, it may reflect providers' direct exposure to the facility-bypassing pattern described in the key informant interview, in which women from Okada travel to Usen or Benin City for routine antenatal and delivery care rather than presenting at IUTH a pattern that would be highly visible to providers at IUTH specifically, given the informant's own account of a paradoxical cross-flow in which external-community women arrive at IUTH primarily for emergencies while local women bypass it for routine care. Structured provider-facing communication of actual community-level utilization data, alongside the community-facing trust-building communication strategy this bypassing pattern separately warrants, would help align provider perception with the underlying demand-side reality and support more accurate facility planning.

The key informant's recommendation for formal integration of Traditional Birth Attendants into a structured referral network, with defined escalation protocols for cases progressing beyond TBA scope, directly addresses a recognized gap in the maternal health literature on rural and semi-urban Nigerian communities, where TBAs continue to manage a share of deliveries despite lacking the skills required for obstetric emergencies (Ntoimo et al., 2022). Because such integration depends on facility-side capacity, specifically the availability of referral transport coordination and receiving staff capable of managing late-presenting obstetric emergencies, this recommendation is itself contingent on resolution of the staffing and commodity gaps identified elsewhere

in this study, reinforcing facility readiness as the common upstream constraint linking each of the specific gaps identified across knowledge, staffing, and referral systems in this assessment.

The absence of a formalized male partner engagement programme, identified by the key informant as a priority gap, aligns with the broader recognition in the maternal health literature that provider-level interventions alone are insufficient without corresponding demand-side and household-level engagement mechanisms; a facility-based structured male partner engagement programme, co-designed with the Obstetrics and Gynaecology Department, would extend facility readiness beyond clinical capacity to encompass the family-level engagement systems needed to convert available RMHS into utilized RMHS (Souza et al., 2024).

Public Health Implications and Recommendations

The findings highlight critical supply-side vulnerabilities that require immediate policy and management attention.

Mandatory Continuing Medical Education (CME): To eliminate supply-side knowledge deficits, the Edo State Ministry of Health should institute mandatory, quarterly CME sessions for all maternal health workers, focusing specifically on updated RMHS protocols (such as the 8-contact ANC schedule and daily IFA supplementation guidelines) and effective patient communication.

Urgent Facility Readiness Audit: The Edo State Government and IUTH management must conduct an urgent facility readiness assessment using the WHO signal functions framework for emergency obstetric care. Priority must be given to resolving critical supply chain gaps, specifically ensuring uninterrupted availability of oxytocin and magnesium sulphate, and guaranteeing 24-hour midwifery coverage.

Establish a Formal TBA Integration Network: Given the persistent community trust in Traditional Birth Attendants (TBAs), facilities should integrate TBAs into a formal referral network. Providing TBAs with standardized referral cards, emergency transport vouchers, and incentives for timely escalation will help bridge the gap between community preferences and clinical safety.

Limitations

The primary limitation of this study is the small sample size of health workers (N=43). While a census approach was utilized due to the defined population in the study area, this limits the statistical power for complex multivariable analyses. Secondly, the

assessment of facility readiness was based on the providers' subjective perceptions rather than an objective, independent infrastructural audit, which may introduce bias. Finally, the qualitative component relied on a single Key Informant Interview, which, while rich in insight, limits the breadth of provider perspectives captured compared to multiple key informants.

Conclusion

Health workers in Okada are individually knowledgeable and favourably disposed toward RMHS, yet report their own facilities as inadequately staffed, resourced, and equipped to consistently translate that readiness into service delivery. Recurrent stock-outs of essential obstetric medicines, inadequate 24-hour midwifery coverage, and the absence of formalized TBA referral and male partner engagement systems were identified as the priority structural gaps. Facility readiness, rather than provider knowledge, is therefore the binding constraint on RMHS delivery quality in this semi-urban community. Targeted investment in commodity security, staffing, and referral systems spanning the teaching hospital, the government PHC, and the private/maternity home sector alike is recommended as the priority intervention.

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