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Health facility readiness to provide quality emergency obstetric and newborn care in rural Uganda: a cross-sectional study

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ABSTRACT

Introduction Despite efforts to improve maternal and newborn care services, maternal and newborn mortality in Uganda remains high. Over half of births occur in lower-level health facilities, where limited readiness and suboptimal quality of care may hinder the provision of emergency obstetric and newborn care (EmONC). This study aimed to assess health facility readiness to provide quality EmONC in Kasese and Bundibugyo districts, midwestern Uganda.

Methods A cross-sectional survey was conducted in all 42 district-level public health facilities (health centre (HC) IIIs, HC IVs and general hospitals) offering childbirth services in Kasese and Bundibugyo districts. We used a facility assessment questionnaire based on the WHO's Service Availability and Readiness Assessment and the Averting Maternal Death and Disability tool. Composite readiness scores were calculated across five domains (human resources, physical resources, referral, equipment and drugs and supplies) and signal functions by health facility level. HCIII facilities were considered Basic EmONC (BEmONC), while HC IVs and general hospitals were considered comprehensive EmONC (CEmONC) facilities.

Results The overall mean availability of expected signal functions was 42.3%, and overall readiness was 53.3%. These were lowest in HCIIIs. The least provided CEmONC signal function was blood transfusion, available in 83.3% (n=5) of the CEmONC-designated facilities, and assisted vaginal delivery was the most frequently missing BEmONC signal function, with no facilities reporting its provision. Staffing and training were most available at 70.6%, while physical resources (44%) and functional referral system (44.7%) were least available.

Conclusions EmONC signal function availability and overall readiness were suboptimal, particularly at HC IIIs. Strengthening the capacity and readiness of HC IIIs, improving essential resources and enhancing referral systems should be prioritised to improve access to quality EmONC.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Uganda has made significant progress in increasing facility-based births.
⇒ However, improving maternal and newborn survival requires not only promoting facility births but also ensuring that facilities can provide quality care.

WHAT THIS STUDY ADDS

⇒ This study shows that facility readiness and availability of key emergency obstetric and newborn care (EmONC) signal functions are low in district-level facilities in midwestern Uganda, especially in HCIIs
⇒ Referral systems at district-level facilities are largely non-functional.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The findings highlight that despite improvements in facility-based births, major readiness gaps and low availability of EmONC signal functions remain. Addressing these gaps, especially by strengthening lower-level facilities and referral systems, could guide policy and programme priorities to reduce preventable maternal and newborn deaths.

BACKGROUND

Maternal and newborn mortality remain a significant global public health challenge, with an estimated global maternal mortality ratio (MMR) of 197 deaths per 100 000 live births, 14.3 stillbirths per 1000 total births and a neonatal mortality ratio (NMR) of 17 deaths per 1000 live births.[1–3] This is even worse for sub-Saharan Africa, which accounts for 70% of these maternal deaths.[3] Most of these deaths are caused by complications that are preventable and treatable. Haemorrhage and sepsis during the post-partum period, especially in low-income countries, remain the leading causes of death, and their timing emphasises the need to improve equitable access to high-quality emergency care.[3 4] Uganda's MMR in 2023 was estimated at 170 deaths per 100 000 live births, and the newborn mortality rate at 22 deaths per 1000

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live births.[5] These estimates remain well above the target MMR of 70 deaths per 100 000 live births and NMR of 12 deaths per 1000 live births to be achieved by 2030.[3]

Several strategies and interventions have been developed to avert maternal and newborn deaths over the years, but many of these efforts have been focused on improving access and utilisation of maternal and newborn services. The WHO and UNICEF, for example, launched the Every Newborn Action Plan as a guide to help countries accelerate their progress to achieving the Sustainable Development Goals (SDGs) by 2030 through improved access to quality care.[6] This has improved access to maternal and newborn care services globally. There has, for example, been a significant increase in skilled birth attendance from 64% in 2007 to 84% in 2021 globally.[7] In Uganda, to accelerate progress in reducing maternal and newborn deaths, the Ministry of Health (MOH), with support from the World Bank and the United States Agency for International Development, implemented the Reproductive, Maternal, Newborn, Child and Adolescent Health Sharpened Plan in 2015 and revised it in 2022. The plan has facilitated expansion of access to high-impact maternal and newborn interventions, strengthening health-worker capacity and rolling out the national Village Health Team strategy.[8] These initiatives have led to significant improvements, including an increase in births occurring in health facilities from 60% in 2011 to 86% in 2022, according to the recent nationwide demographic health survey (DHS).[9]

Evidence shows that increasing utilisation of maternal and newborn care services and promoting facility-based births alone are insufficient to substantially reduce maternal and newborn mortality.[10] Studies have shown weak or no evidence of the impact of scaling up maternal and newborn services in reducing maternal and newborn mortality when the quality of care is not assured.[11–13] Therefore, there is an urgent need to improve the quality of care by creating an enabling environment for both uncomplicated and complicated births at health facilities to end the stagnated reduction of maternal and newborn mortality rates.[14] Signal functions—a set of life-saving basic emergency obstetric and newborn care (BEmONC) and comprehensive EmONC (CEmONC) interventions—have been widely used as proxy indicators to assess the functionality and readiness of health facilities to handle maternal and newborn emergencies.[15] Healthcare in Uganda is delivered through a decentralised system organised as a pyramid, starting with health centre (HC) II at the base, followed by HC III, HC IV, general hospital, regional referral hospital and national referral hospital. BEmONC services are provided at HC III, while CEmONC services are available from HC IV and above.[16 17] These signal functions primarily focus on the availability and provision of key lifesaving interventions and do not assess the health facility's readiness to deliver these services. While efforts are ongoing to develop better metrics for evaluating the quality of Maternal and Newborn Care (MNC), the Service Availability and Readiness Assessment (SARA) and the Averting Maternal Death and Disability (AMDD) tools have been widely used to provide an additional layer of measurement that more comprehensively assesses facility readiness and the quality of care.[15]

Studies done in Uganda have highlighted significant gaps in health facility readiness to provide care, particularly in parenteral administration of anticonvulsants, assisted vaginal delivery and newborn resuscitation, as well as persistent shortages of trained staff, essential equipment and uninterrupted drug supply.[18 19] Most existing studies have primarily focused on national-level estimates, with limited attention to subnational variation. Given that healthcare in Uganda is delivered through a decentralised system, these national averages often obscure important regional and contextual differences in health system capacity and performance, particularly within district local government facilities.[20] Consequently, there remains limited research examining the specific needs of subregional health systems, such as those in mid-western Uganda, which continue to experience poor maternal and newborn outcomes. For example, the 2022 DHS reported neonatal mortality rates of 25 or more deaths per 1000 live births in the Bunyoro and Tooro subregions, both of which constitute the midwestern region, which is above the national average of 22 deaths per 1000 live births.[9] Additionally, previous studies have not simultaneously examined the availability of signal functions and functional readiness to provide obstetric and newborn care.

This study aimed to assess the availability of signal functions and the readiness of public health facilities to provide obstetric and newborn care in midwestern Uganda.

METHODS

Study design

A cross-sectional facility assessment was conducted between January and March 2025.

Study setting and population

This was a census of all 42 district-level public health facilities offering MNC in Kasese and Bundibugyo districts. These are neighbouring rural districts located in midwestern Uganda along the border with the Democratic Republic of the Congo. They are predominantly rural, mountainous and characterised by difficult terrain and dispersed settlements, which pose challenges for access to MNC services. Kasese district had an estimated population of 853 831, while Bundibugyo had 264 778 residents in the 2024 national census (figure 1; table 1).

Health facilities

A provisional list of facilities offering MNH care services was collected from the MOH facility master list.[21] The list was updated by cross-checking with the health facility lists at the district health offices of the respective districts. Private not-for-profit and private for-profit facilities were

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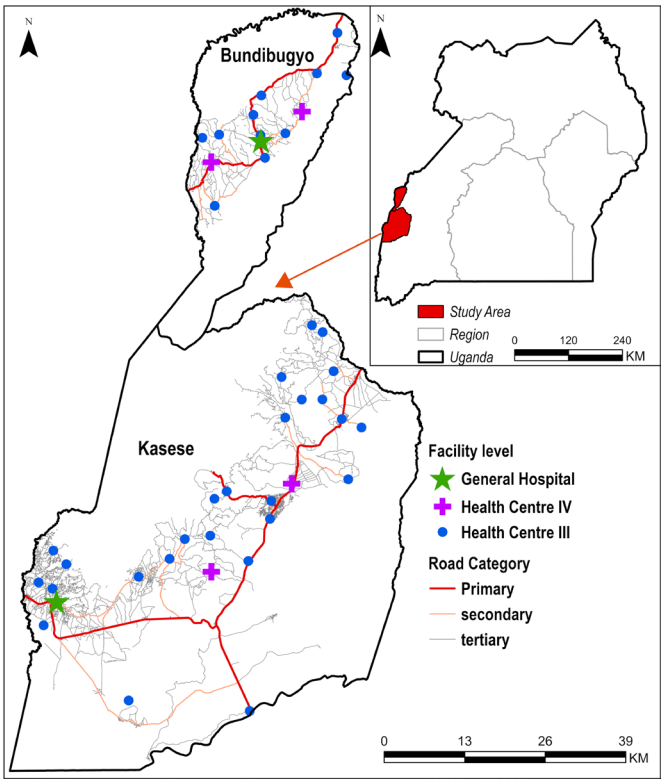


Figure 1 Map showing the study area (Kasese and Bundibugyo districts) and facilities providing childbirth care included in the study, disaggregated by level. The map was created by the authors using ArcGIS Pro (V.3.6.1; Esri). The road network data were obtained from OpenStreetMap (https://download.geofabrik.de/). The national boundary and district boundaries of Uganda were sourced from the Humanitarian Data Exchange (https://data.humdata.org/dataset/cod-ab-uga) and are licensed under CC BY 4.0. The facility data were collected during this study.

categorised according to the equivalent Uganda public health system level designations by the respective district health offices.

All 42 public health facilities from HC III level and above in the two districts were included in this study. HC IIIs are expected to provide BEmONC services and serve as the first level of childbirth care, while HC IVs and general hospitals are expected to provide CEmONC services, including surgery and blood transfusion services. We excluded private not-for-profit (n=18) and for-profit (n=08) facilities due to lack of administrative clearances.

Data collection

Data were collected using a questionnaire modelled on the WHO's SARA[22] and the AMDD tools.[23 24] The questionnaire was administered by two trained research assistants (RAs): one medical officer and a midwife. The RAs together administered the questionnaire to the maternity in charge, the health facility in charge or any other most senior health worker in the field of maternal and newborn care in the facility at the time of data collection (between January and March 2025). While administering the questionnaire, the RAs also assessed and verified the provision of signal functions and observed the availability and functionality of the tracer drugs, equipment and supplies. The team was supervised by the lead investigator (BT), who is a medical doctor with public health training.

On average, data collection lasted 3–4 hours at each facility, with two facilities surveyed per day. Data were collected on tablets using a Research Electronic Data Capture (REDCap) software V.12.2.11, reviewed by BT, and uploaded to the REDCap cloud server daily.

Variable measurement

Readiness to provide EmONC was measured based on the guidelines of WHO on improving the quality of maternal and newborn care.[25] Based on this framework, we divided these into five domains within the area of care provision. A total of 76 indicator/tracer items were assessed across these domains as follows: human resources (15), physical resources (13), referral (10), equipment (12) and drugs and supplies (26). The availability of all items was categorised as binary: '*Yes*' if the item was available and '*No*' if it was not available. However, equipment was originally assessed based on both availability and functionality, with responses on the availability categorised into observed, reported but not seen and not available, while

Table 1 Study population and facility coverage for Kasese and Bundibugyo districts

	Kasese	Bundibugyo
Population (2024 national census)	853 831[53]	264 778[53]
Area (km^2) 2024, national census	2911[54]	850[55]
Number and designation of health facilities offering MNC	50 ► 42 HC III ► 5 HC IV ► 3 general hospitals	18 ► 14 HC III ► 3 HC IV ► 1 general hospital
Number and designation of public health facilities offering MNC *	29 ► 26 HC III ► 2 HC IV ► 1 general hospital	13 ► 10 HC III ► 2 HC IV ► 1 general hospital

HC, health centre; MNC, Maternal and Newborn Care.

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functionality at the time of assessment was reported as functioning, not functioning and don't know. These were later categorised into 'Yes' for available, observed and functional, and 'No' for the others. Drugs and supplies were also originally assessed on both availability and validity (not expired), and only those available and valid were categorised as 'yes' and the others as 'no'. Indicators on information management were included within these four domains. The catchment population was obtained from the health facilities' annual plans for 2025. For drugs and supplies, equipment, physical resources and referral, we considered items expected to be available at all facility levels (HC III, HC IV, and hospitals). However, for human resources, we adjusted staff availability based on the expected staffing levels outlined in the current Uganda-approved staff structures.[26]

We categorised all HC IV and district hospitals as CEmONC, while HC IIIs were categorised as BEmONC in accordance with the national standards.[27] A signal function was considered available if the facility had provided that service at least once within the 3 months preceding the assessment, in accordance with its designated level of care. Provider responses were verified using records and registers. Based on the responses, we classified signal-function availability by determining whether each of the seven BEmONC and nine CEmONC functions had been performed at the respective facility within the 3 months preceding the assessment ('yes', coded as 1) or had not been performed ('no', coded as 0).

Readiness of care

We constructed an overall measure of readiness of care and assigned facilities into three categories using the percentage mean availability scores from the composite indices based on review of literature, previous studies in similar settings, that is, ≥75% as good quality, 50-<75% as moderate quality and <50% as poor quality.[15 28 29]

Data analysis

The data were exported from REDCap into STATA V.18.5 for cleaning and analysis.

Descriptive statistics were used to analyse data, and results were presented as frequencies, percentages and graphs. For each item, a score value of either '1' for yes or '0' for no was assigned. Items with *missing values* or any response other than 'yes' to any of the questions measuring the availability of a readiness parameter were considered as 'no'.

The percentage of facilities with a 'yes' for each of the 76 items within the five domains was calculated, and the readiness scores for each of the domains were then calculated as the percentage mean availability score of the items in each domain. We used the simple mathematical aggregation approach to calculate the composite index scores and aggregated mean percentage scores for each domain by health facility level to equate weights, given that each domain had a different number of indicators.[28] For staffing, we adjusted the mean scores based on the current staff requirements/establishment for health facilities for each level, given that some levels of health facilities don't require some of the staff assessed.[30]

$$\textit{Mean avaiablity scrore} = \frac{\textit{Total number of "yes" in a domain}}{\textit{Total number of parameters in the domain}} \; x\,100$$

The overall readiness index was calculated as the average of the scores for the five domains. A comparison of item scores within each domain was done using Fisher's exact test to check for any difference across different health facility levels. A p value of <0.05 was used as the level of statistical significance.

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

RESULTS

General characteristics

All 42 public health facilities were surveyed, 29 from Kasese and 13 from Bundibugyo districts. These were 36 HC IIIs, four HC IVs and two hospitals. All 42 facilities provided outpatient antenatal care, 40 provided childbirth care 24/7 (95.2%), 38 offered post-abortion care (90.4%) and six conducted caesarean sections. (Table 2).

Availability of signal functions

The mean availability of all functions was low, 45.2% (table 3). This varied across facility levels, with the lowest in HC IIIs (40.5%). AVD was the least provided BEmONC signal function, with none of the 42 facilities having performed it in the 3 months preceding the survey, followed by parenteral anticonvulsant in (19.0%, n=8/42). The most provided signal functions were parenteral administration of oxytocics (97.6%, n=41), manual removal of placenta (71.4%, n=30), newborn resuscitation with bag and mask (71.4%, n=30) and parenteral administration of antibiotics (66.7%, n=28). The least provided CEmONC signal function was blood transfusion in 83.3% (n=5) of the CEmONC-designated facilities. All six CEmONC-designated facilities provided caesarean section services. Both hospitals had all signal functions except AVD. However, none of the 42 facilities had all the signal functions required as per their BEmONC or CEmONC designation.

Readiness to provide obstetric and newborn care

The overall availability mean percentage readiness for all five domains was 53.3%. The lowest readiness was in HCIIIs (52.2%), and the highest in hospitals (62.4%). Human resources were the most available domain (70.6%), followed by equipment (55.8%) and drugs and supplies (51.4%). Physical resources

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Table 2 Characteristics of health facilities

Variable	Health facility level			
	HC III	HC IV	Hospital	Total
	n=36 column %	n=4 column %	n=2 column %	n=42 column %
District				
Bundibugyo	10 (27.8%)	2 (50.0%)	1 (50.0%)	13 (31.0%)
Kasese	26 (72.2%)	2 (50.0%)	1 (50.0%)	29 (69.0%)
Respondent profession				
Maternity unit head	32 (88.9%)	3 (75.0%)	2 (100.0%)	37 (88.1%)
Health facility in-charge	4 (11.1%)	1 (25.0%)	0 (0.0%)	5 (11.9%)
Catchment population; median (IQR)	10 800 (9000–16869)	17 551 (9607–40500)	55 408 (42392–68423)	11 288 (9000–18862)
Type of population mostly served				
Rural	25 (69.4%)	2 (50.0%)	0 (0.0%)	27 (64.3%)
Both urban and rural	11 (30.6%)	2 (50.0%)	2 (100.0%)	15 (35.7%)
Maternal services provided (multiple options)				
Antenatal care	36 (100.0%)	4 (100.0%)	2 (100.0%)	42 (100.0%)
Childbirth 24/7	34 (94.4%)	4 (100.0%)	2 (100.0%)	40 (95.2%)
Caesarean section	n/a	4 (100.0%)	2 (100.0%)	6 (14.23%)
Post-abortion care	32 (88.9%)	4 (100.0%)	2 (100.0%)	38 (90.5%)
Family planning	34 (94.4%)	4 (100.0%)	1 (50.0%)	39 (92.9%)
Facility supported by any NGO	31 (86.1%)	4 (100.0%)	2 (100.0%)	37 (88.1%)
Number of deliveries in the past 12 months: median (IQR)	348 (125–510)	1454 (797–2842)	3522 (2143–4902)	394 (143–641)
In-patient maternity beds: median (IQR)	6 (4–9)	16 (8–29)	31 (26–36)	8 (5–10)

HC, health centre; NGO, non-governmental organisation.

(44.0%) and functional referral systems (44.7%) were the least available (figure 2).

The mean percentage availability of human resources was 70.6%, with the highest value at HC IV at 80.7%. There was no significant difference in the mean availability of human resources across the three health facility levels (p=0.471). Slightly more than a quarter (31.0%) of the maternity units had last received support supervision from the facility more than 3 months before the time of the survey, while 59.5% had last received support supervision from the district health management team (DHMT) within a month. Only 47.6% of the facilities reported having received training on essential childbirth for their staff within the 3 years preceding the survey. Enrolled nurses were the most available staff in (97.6%, n=41) of the health facilities, while pharmacy technicians in 9.5%(n=3), anaesthetic assistants in 11.9% (n=5) and anaesthetic officers (14.3%, n=6) were the least available (online supplemental table S1). The majority of the facilities (69.0%, n=29) had an enrolled midwife on duty, but only 9.5% (n=4) had a medical officer, and 9.5% (n=4) had an anaesthetic officer on the day of the survey. None of the facilities had an obstetrician or paediatrician on duty on the day of the survey (online supplemental table S2)

On average, 44% of the facilities had the required physical resources. All 42 facilities had electricity, but only seven (17.7%) reported that it was reliable, and 68.3% (n=28) had a backup source. The least available physical resource was a toilet for labouring women (9.5%, n=4). There was no significant difference in mean availability of physical resources across the health facility levels (p=0.503) (online supplemental table S3).

The mean availability of the required referral indicators was 44.7%. The majority of the facilities (83.3%, n=35) had a standardised referral form. Only 16.7% (n=7) of the facilities had a functional ambulance, 38.1% (n=16) communicated with the referral unit before referral, 16.7% (n=7) assigned professionals to accompany referred cases and 11.9%

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Table 3 Signal functions

	Health facility level			
	HC III n=36	HC IV n=4	Hospital n=2	Total n=42
Parenteral administration of antibiotics in the past 3 months	22 (61.1%)	4 (100.0%)	2 (100.0%)	28 (66.7%)
Parenteral oxytocics in the past 3 months	35 (97.2%)	4 (100.0%)	2 (100.0%)	41 (97.6%)
Parenteral anticonvulsants in the past 3 months?	4 (11.1%)	2 (50.0%)	2 (100.0%)	8 (19.0%)
Manual removal of placenta in the past 3 months?	8 (22.9%)	1 (25.0%)	2 (100.0%)	11 (26.8%)
Removal of retained products of conception in the past 3 months	9 (25.0%)	4 (100.0%)	2 (100.0%)	15 (35.7%)
Assisted vaginal delivery (vacuum or forceps) in the past 3 months	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Newborn resuscitation with bag and mask in the past 3 months	24 (66.7%)	4 (100.0%)	2 (100.0%)	30 (71.4%)
Caesarean delivery	n/a	4 (100.0%)	2 (100.0%)	6 (100%) *
Blood transfusion	n/a	3 (75.0%)	2 (100.0%)	5 (83.3%) *
Availability mean percentage score†	40.5%	67.9%	85.7%	45.2%
Number and percentage of facilities with all required signal functions	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Two CEmONC signal functions are not expected at the HC III level.
*The total availability for caesarean delivery and blood transfusion was calculated out of six CEmONC facilities expected to provide them.
†For HC III facilities, we considered only the seven BEmONC signal functions to calculate availability mean percentage score.
BEmONC, basic emergency obstetric and newborn care; CEmONC, comprehensive emergency obstetric and newborn care; HC, health centre.

(n=5) regularly tracked and received feedback on referred cases. There was no significant difference in the mean availability of referral indicators across the health facility levels (p=0.122) (online supplemental table S4).

The mean availability of functional equipment was 55.8%. No equipment was available in all facilities. The delivery bed was the most available equipment in 97.6% (n=41), followed by the infant weighing scale in 95.2% (n=40) of the facilities. Only 4.8% (n=2) of the facilities had an incubator, and no HC IV had one. Only 7.1% (n=3) had a functional resuscitation table with a heat source, and none of the hospitals or HC IVs had one. There was no significant difference in the mean availability of functional equipment across the health facility levels (p=0.802) (online supplemental table S5).

The mean availability of tracer drugs and supplies was 51.4%, and there was a variation in the availability of drug items across the different facility levels (p=0.031). No drug was available in all the health facilities. The most available drugs and supplies were

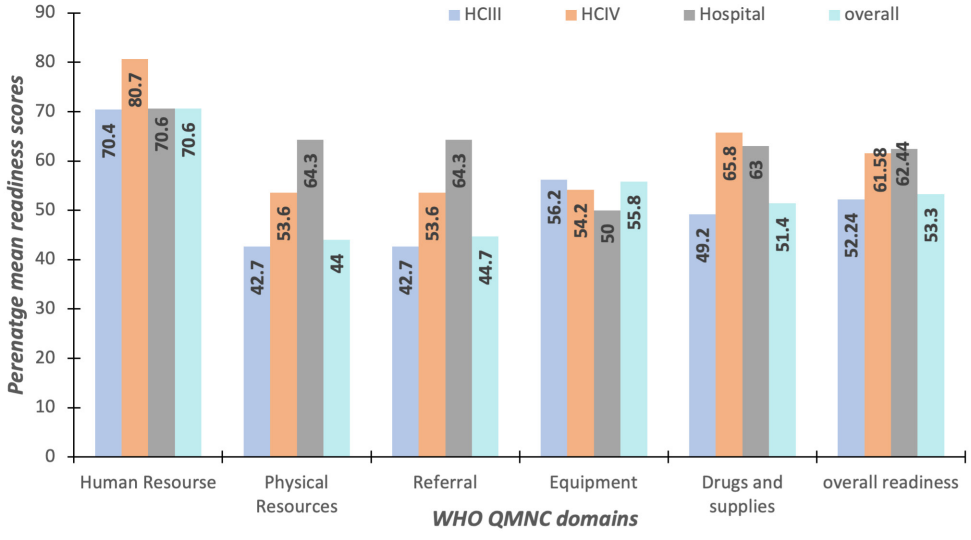


Figure 2 Bar graph showing the domain percentage, mean availability and overall readiness by health facility level. HC, health centre.

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intravenous fluids, that is, intravenous dextrose in 97.6% (n=41), intravenous normal saline in 97.6% (n=41) and oxytocin in 95.2% (n=40) of the facilities. Very few facilities had antibiotics, that is, intravenous metronidazole (14.3%, n=6), azithromycin tablets (4.8%, n=2), cefixime capsules/tablets (2.4%, n=1), cefotaxime injection (for newborns) (9.5%, n=4) and chloramphenicol injection (2.4%, n=1). Also, a few facilities had intravenous antihypertensives: hydralazine injection (9.5%, n=4) and labetalol (4.8%, n=2) (online supplemental table S6).

DISCSUSSION

In this study, we assessed the availability of signal functions as tracer interventions for obstetric and newborn care services, as well as the readiness of health facilities to provide these services. We identified six CEmONC and 36 BEmONC facilities across the two districts of Kasese and Bundibugyo. When interpreted in relation to the 2024 census population estimates for the two districts (approximately 1 111 000 people) and the WHO-recommended facility coverage of a minimum of one CEmONC and five BEmONC facilities per 500 000 population, this distribution suggests that the number of public EmONC facilities exceeds recommended thresholds.[31–33] However, the overall availability of signal functions was <50%, and no facility provided all the required signal functions. This indicates that despite increased emphasis on promoting health facility deliveries and substantial investments in upgrading health facilities in rural Uganda and particularly in Kasese and Bundibugyo districts, the availability of key lifesaving interventions necessary to combat maternal and newborn deaths remains insufficient. Similar gaps between facility coverage and service readiness have been reported elsewhere in Uganda and other sub-Saharan Africa. Previous studies from Uganda, Tanzania and Ethiopia have shown that although many areas meet recommended targets for the number of EmONC facilities, the actual functionality of these facilities and the provision of lifesaving signal functions remain inadequate.[18 34 35] Consequently, numerical coverage of EmONC facilities may overestimate the true availability of quality EmONC services.[10 15] AVD was the least provided signal function and was unavailable in all surveyed health facilities. This finding aligns with the recent 2023 National Harmonised Health Facility Assessment Survey, which reported that AVD was the most commonly missing signal function, present in only 27% of health facilities surveyed in Uganda. In an era marked by increasing caesarean section rates, AVD has been demonstrated as an effective alternative intervention that could significantly reduce unnecessary caesarean deliveries and maternal mortality. Despite this, AVD remains largely unavailable. This limited availability has been partly attributed to a lack of skilled personnel to perform the procedure and the fear of potential perinatal complications. The healthcare workers lack training, simulation, continuous professional education and mentorship in AVD. These findings are consistent with similar studies elsewhere that have questioned the inclusion of AVD among the signal functions.[36]

The mean availability of services varied across different levels of health facilities, with the lowest readiness observed in HCIII facilities. These findings are consistent with evidence from four African countries, where lower-level health facilities demonstrated lower capacity and readiness to provide essential newborn care services than hospitals.[37] This underscores the need to strengthen lower-level facilities, given that the majority of maternal health services in Uganda are delivered at these levels, especially in rural settings.[38–40]

The staffing and training domain had the highest mean availability score; however, it did not meet the minimum required quality threshold of 75%, as established by comparable studies.[29] Although all surveyed facilities were expected to provide BEmONC services at all times, one facility had no employed midwife, and only about a quarter of the facilities had a midwife on duty on the day of the survey. This low staffing level hinders the readiness to deliver quality maternity care, especially considering that most maternal and newborn care in district and lower-level HCs in Uganda is provided by midwives.[41] Despite nearly a quarter of the facilities having a doctor capable of performing surgery or caesarean sections, only six facilities offered CEmONC services (surgery and blood transfusion). This is likely because Uganda's new staffing structure mandates a medical doctor at level III HCs, even though these centres lack the infrastructure to perform caesarean sections and blood transfusions.[30] Only four facilities had a medical officer on duty, and none had a specialist obstetrician or paediatrician present on the day of the survey. These findings align with previous studies in Uganda that have identified staff absenteeism, especially among doctors in public health facilities, as a major factor contributing to substandard maternal and newborn care and maternal deaths.[42 43] One key cause of staff absenteeism is the lack of support supervision from both within the facility and from higher levels, such as the DHMT.[43 44] This is reflected in our findings, where less than a quarter of the maternity units received support supervision from facility management and less than half received supervision from the DHMT within that month. Another possible explanation is inadequate staffing, for example, having only one midwife who cannot cover all maternal clinics day and night, as reported in previous studies of similar settings in Uganda.[45 46]

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The physical resources and a functional referral system were the least available domains and fell within a category of poor quality care of <50% based on previous studies.[29 47 48] Less than a quarter of the facilities had an ambulance or fuel for either an ambulance or any other emergency vehicle. This further causes delays in accessing quality care, given that only 46.56% of Ugandans are located within 1 hour of the nearest referral unit after an HCIII, with rural areas like Kasese and Bundibugyo facing longer travel times.[16] Despite the already existing potential delays in reaching the referral centre, facilities reported not assigning a health professional to accompany the referred case, possibly due to staff shortages, which was a similar finding in other studies done in Uganda.[49 50]

The availability of equipment and drugs was observed in about half of the facilities; yet their availability is crucial for providing quality care to mothers and newborns. Evidence suggests that without an adequate supply of drugs and equipment, it is difficult to achieve optimal care and reduce maternal and newborn mortality, especially in lower-income countries where this remains a significant challenge.[51 52]

Policy implications

These findings have several policy, research and programmatic implications. From a policy perspective, the referral system needs to be functionalised and ensure the availability of physical infrastructure, equipment, drugs and supplies necessary to deliver quality care. There is a critical need to build the capacity of lower-level public health facilities; we recommend functionalising and equipping lower-level BEmONC facilities to provide CEmONC services at that level to reduce unnecessary referrals. Although staffing and training were better than other components, they still did not meet standards, with inadequate staff numbers, insufficient supervision and issues of absenteeism. Stronger supervision and motivation mechanisms within the healthcare systems are needed to ensure staff availability at health facilities.

Strengths and limitations

We visited and observed all public facilities offering maternity services, rather than a sample or relying solely on self-assessments. However, we did not include non-public facilities, which limits the generalisability of our findings. Additionally, we verified only the availability of items, not their actual use. Further, this was a cross-sectional study assessing facility readiness at a single point in time, without accounting for temporal variations. For example, equipment, drugs and supplies in Uganda are delivered quarterly, so availability may be overestimated or underestimated depending on the timing of data collection. We employed a quantitative approach using a standard checklist to determine the presence or absence of specific items, which makes it challenging to comprehensively capture the broader contextual, structural and systemic factors.

CONCLUSIONS

Despite adequate health facility coverage relative to the population in Midwestern Uganda, the availability and readiness of these facilities to provide both BEmONC and CEmONC signal functions were generally poor, particularly in lower-level facilities. To reduce maternal and newborn mortality and achieve both global and local targets, maternal-newborn health programming and planning should move beyond just increasing and upgrading health facilities; they must ensure functionality and readiness to provide quality care. For research, while this study focused on the provision of care, further studies on the experience of care are needed to gain a more comprehensive understanding of the quality of care.

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