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Measuring health facility readiness for obstetric fistula surgery and care in Busoga sub-region, eastern Uganda: Development of scoring criteria/framework for facility readiness and application to six hospitals in the region

Peter Kivunike Mukasa

mukasapk@gmail.com

University of the Western Cape

Mary Kinney

University of Cape Town

Steven Katende

Economic Policy Research Centre

Wilberforce Mugwanya

United Nations Population Fund (UNFPA), Uganda Country office, Uganda

Abdmagidu Menya

Medical Research Council/ Uganda Virus Research Institute and London School of Hygiene and Tropical Medicine Uganda Research Unit

Smule Kizza Sajjabi

Uganda Martyrs University

Alison El Ayadi

University of California, San Francisco

Debra Jackson

London School of Hygiene and Tropical Medicine

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Abstract

Background:

Obstetric fistula (OF) remains a devastating injury in Uganda, with an estimated 90% of needs unmet. Service delivery through temporary repair camps, rather than integrated routine surgical programs, limits the health system's capacity to address backlogs and ensure quality. A critical initial step for transitioning to integrated routine OF care is assessing facility readiness; however, no standardized framework exists in Uganda for this purpose.

Objective:

To develop a consensus-based facility readiness scoring criteria and framework for obstetric fistula surgery and care and apply that criteria to assess the readiness of six hospitals in eastern Uganda.

Materials and Methods:

This study utilized a two-phase approach. Phase I involved developing a consensus-based scoring framework adapted from WHO and UNFPA guidelines. Phase II conducted a cross-sectional readiness assessment of six hospitals between May and July 2024. Readiness was evaluated across seven weighted domains: human resources, infrastructure, equipment and supplies, supportive services, clinical protocols, monitoring systems, and management accountability.

Results:

A 23-expert panel validated the seven-domain framework in April 2024. Readiness scores across the six facilities ranged from 38% to 84%. Only one facility met the predefined readiness threshold (≥ 80%). Two hospitals demonstrated partial readiness (65–69%), while three were classified as not ready. Human resources were the principal constraint, with only one hospital employing a resident fistula surgeon. While basic infrastructure including water, electricity, and operating theatres was largely adequate, fistula-specific capacity was consistently limited. Most facilities lacked complete surgical instrument sets, specialized equipment, monitoring systems, and standardized clinical protocols.

Conclusion:

The developed consensus-based readiness criteria offer a practical tool for identifying capacity gaps and supporting the decentralization of OF services in low-resource settings. Most hospitals in this region currently lack the structural readiness required for routine fistula surgery, primarily due to significant deficits in specialized human resources, fistula-specific equipment, and clinical governance.

1 Background

Obstetric fistula is a severe birth injury affecting many women especially in low- and middle-income countries (LMICs). It is mainly caused by prolonged, obstructed labor without timely access to medical

intervention or surgical injury. This creates an abnormal opening between the birth canal and bladder and/or rectum, causing uncontrolled leakage of urine and/or faeces[1–3]

Globally, an estimated 500,000 women and girls, mostly in LMICs, are affected by obstetric fistula with approximately 30,000 to 130,000 new cases arising every year[4]. In Uganda alone, over 75,000 women and girls are currently living with the condition and about 1,900 new cases are reported annually[5]. The impact of obstetric fistula goes beyond the immediate physical damage; women with obstetric fistula experience deep psychological distress, chronic health problems, social isolation, stigma, and loss of economic independence[6].

Uganda has made notable progress in eradicating obstetric fistula through comprehensive prevention, treatment and reintegration programmes. The Government priority now is to determine the availability and readiness of health facilities to offer high quality obstetric fistula services to inform evidence based decision planning and system strengthening at the different service delivery points[7].

Although surgical repair can treat obstetric fistula with high success rates (65–95%), access to safe, optimal surgical services is poor[1, 8, 9]. In Uganda, supply-side barriers such as the inadequate availability of facilities with repair capacity, limited numbers of skilled health workers, and long waiting times by the obstetric fistula clients contribute to an estimated unmet need for repair as high as 90%[10–12]. Furthermore, obstetric fistula services in Uganda are commonly delivered through periodic repair camps rather than as integrated, routine surgical services, limiting the health system's ability to clear the large surgical backlog[7].

To improve service delivery, accurate information on health facility capacity and readiness to provide obstetric fistula services is essential for quality improvement, policy decision making, and resource allocation[13, 14] .

WHO conceptualizes readiness as a measure of a facility's structural capacity including trained staff, equipment, commodities, safety systems to create an enabling environment for quality obstetric fistula treatment and care[13, 14]. Assessing this readiness is crucial, as structural limitations, particularly shortages of surgeons, equipment, and supplies, are major drivers of under provision of services[11]. Despite this, no study in Uganda has comprehensively defined a "ready" facility for obstetric fistula surgery or specifically assessed facility capacity. A multi-country assessment that was done two decades ago highlighted persistent issues like reliance on visiting surgeons and insufficient equipment, but current readiness remains unknown[15]. Furthermore, there is no published data on the structural readiness of hospitals in the Busoga region. This study addresses this knowledge gap by defining consensus based readiness criteria and assessing the structural quality of six hospitals in the region using a tool adapted from three globally recognized assessment instruments[16–19].

The objective of this study was to develop and apply a scoring framework to measure facility readiness for fistula surgery and care. These findings will inform targeted interventions to improve infrastructure,

workforce availability, and data systems, supporting a transition from sporadic, campaign-mode efforts toward integrated, routine obstetric fistula treatment services.

2 Materials and Methods

This study was conducted in two sequential phases. Phase I involved the development of a consensus based scoring criteria/framework to define health facility readiness for obstetric fistula surgery and care. Phase II was to conduct a cross sectional facility readiness assessment of six hospitals based on the developed criteria/scoring system. We assessed facility readiness across seven weighted domains: human resources, infrastructure, equipment and supplies, supportive services, clinical protocols, monitoring systems, and management accountability.

2.1 Phase I: Development of the consensus based readiness scoring criteria/framework

2.1.1 Definition of a ready facility and scoring criteria

The study adapted criteria based on WHO and UNFPA guidelines for obstetric fistula prevention and treatment[3, 20]. To be considered ready, a facility must maintain essential equipment, drugs, and supplies; possess the administrative capacity to coordinate surgical care and follow-up; and employ at least one trained fistula surgeon alongside skilled nursing and ancillary support staff. In April 2024, a consultative meeting with 23 experts including fistula surgeons, urologists, obstetricians, policy makers, and academia defined the scoring framework. The experts based this on WHO/UNFPA guidelines[3, 20], conceptualizing readiness as a systematic measure of structural capacity, including skilled health workers, medicines, and an enabling environment for quality care[14, 21]. The panel debated domain importance, specifically discussing the necessity of a resident surgeon versus visiting surgeons. Consequently, Human Resources was identified as the most highly weighted domain. The framework was defined by seven weighted domains of structural quality: Human Resources (35%): Focused on the presence of a resident fistula surgeon and support team; Infrastructure & Facility Requirements (20%); Availability of drugs, supplies, and equipment (20%); Supportive Services (10%); Standardized Obstetric Fistula Management Protocols and Guidelines (5%); Quality, supervision, monitoring, and evaluation (5%); Management and administrative accountability (5%) (Table 2**& Supplementary Material 2)**. This framework ensures that quality of care is prioritized during assessment.

2.2 Phase II: Facility readiness assessment using the developed readiness criteria/scoring system

The WHO defines quality of care as services that are safe, effective, timely, efficient, equitable, and are people-centered to improve health outcomes[22–24]. The standard framework for assessing this is Donabedian's structure-process-outcome model (Fig. 1)[25–27]. This study focuses on structural quality, the organizational resources such as infrastructure, medicines, equipment, and skilled staff that underpin

care provision[25, 26, 28–31]. Poor clinical quality is largely driven by structural gaps, including inadequate infrastructure or a lack of skilled health providers[16, 25–27]. Donabedian's framework posits that these components are sequential, a robust structure facilitates effective processes, which in turn increase the likelihood of improved health outcomes[28]. Consequently, measuring health facility readiness is foundational to ensuring quality care.

Source: Adapted from Donabedian A, 1966.

2.3 Study design and setting

This cross-sectional study was conducted between May and July 2024 in six purposively selected hospitals in Uganda's Busoga sub-region, an area with high obstetric fistula prevalence[5, 7, 19, 32–35]. To ensure anonymity, facilities are labeled as Hospital A, B, C, D, E and F. Selection was guided by the 2024 Ministry of Health Facility Master List, targeting public and private not-for-profit hospitals with potential fistula treatment capacity. The sample includes one regional referral hospital, serving over 2,000,000 people, and five general hospitals, each serving approximately 500,000 people. Uganda's healthcare system addresses obstetric fistula through a tiered structure at national, regional, district, and sub-district with integrated care interventions at each level, as shown in Table 1.

Table 1
Task Distribution of obstetric Fistula Care by Level of HealthCare Delivery System

Level	Tasks
HCII and III	Primary prevention, case detection, awareness creation, community mobilization, follow-up and referral for treatment
HC IV	Primary and secondary prevention, case detection, awareness creation and community mobilization, follow-up and referral for treatment
General Hospitals	Primary and secondary prevention, case detection, awareness creation and community mobilization, follow up, simple fistula repairs and referral of complex cases for treatment, carry out monitoring and evaluation
Regional Referral Hospitals	Primary and secondary prevention, case detection, awareness creation and community mobilization, follow-up and referral for treatment, repair complex fistula repairs, implement out-reach fistula care programmes, training and technical supervision for fistula care programmes in the region.
National Referral Hospitals	Primary and secondary prevention, case detection, awareness creation and community mobilization, follow up and referral for treatment, repair complex fistula repairs, implement out-reach fistula care programmes, training and technical supervision for fistula care programmes in the country.
CHEWs	Case detection, awareness creation, community follow up, mobilization and referral for treatment
Source. National Obstetric fistula strategy 2021–2026	

2.4 Data collection and measures

The data semi-structured questionnaire, (**Supplementary material 1)** was adapted from three (3) globally recognized assessment instruments[16–19]. The adapted tool was pilot-tested at one facility to ensure clarity and refined accordingly. Data were collected through face-to-face interviews with purposively selected key informants across six hospitals, including surgeons, anesthetists, midwives, nurses, counselors, and administrators. Following management clearance, research assistants with medical background and trained specifically for this study conducted the interviews using a semi-structured questionnaire that lasted for 30–45 minutes. The assessment prioritized structural measures critical to obstetric fistula treatment, specifically infrastructure, human resources, equipment, and essential supplies like power, water, and drugs. Readiness scores (ranging from 0 to 100) were calculated to quantify the availability of these necessary items, with a score of 100 representing full availability across all facilities.

2.5 Outcome variables.

The outcome variable for this study was the readiness of health facilities to provide obstetric fistula treatment and care. The readiness was defined based on the availability of essential parameters that are required for provision of Obstetric fistula treatment and care (Table 2**& Supplementary Material 2)**. These parameters were organized into seven (7) key domains **(**Table 2**& Supplementary Material 2)** based on WHO/UNFPA guidelines for prevention and treatment of fistula[3, 20].

2.6 Other variables.

Several characteristics were considered as possible explanatory factors that potentially influence Obstetric fistula service readiness. Facility location was categorized as urban or rural and managing authority distinguished between public Government or private not for profit (PNFP). External sources of revenue categorized whether facilities received additional financial assistance from donor agencies or government.

2.7 Calculating readiness

Facility readiness to provide obstetric fistula treatment and care was determined by the availability of infrastructure, equipment, drugs, supplies, skilled providers, supportive services, presence of protocols and guidelines, quality, supervision, monitoring and evaluation and administrative accountability (Table 2**& Supplementary Material 2)**. A weighted score was constructed based on the availability of the items included in each of the domains. It reflects the per cent of all readiness aspects or variables satisfied by the health facilities in a specific domain. For example, if a facility had an instrument, a value of 1.0 was assigned for the facility for that equipment. The availability score was constructed to show the per cent of listed equipment and items available in each of the facility categories.

2.8 Data management and analysis

Data analysis was conducted using STATA version 17. Facility readiness was quantified using mean scores derived from the availability and functionality of the items across the seven key domains. The readiness score for each variable was calculated as the proportion of the six facilities meeting the

requirement. The overall component score was the average score for all its constituent variables, with no differential weights applied to the individual items in the calculation. Overall facility readiness was categorized into four levels based on the total percentage compliance score with the key criteria: Fully Ready (100%), Ready (80–99%), Somewhat Ready (50–79%), and Not Ready (0–49%).

3 Results

3.1 Graded scoring system for the key criteria for facility readiness

The panel of excerpts agreed on 7 critical domains and associated scoring based on importance in the provision of fistula surgery and care; 1) Human Resources. The presence of a resident fistula surgeon and support surgical team was the key element in the scoring, and it was weighted a score of (35%). 2) Infrastructure & Facility Requirements (20%), 3) Availability of drugs, supplies, and equipment (20%), 4) Supportive Services (10%), 5) Standardized Fistula Management Protocols and Guidelines (5%), 6) Quality, supervision, monitoring and evaluation (5%), Management and administrative accountability (5%) and (Table 2) shows the graded scoring system for the key criteria for facility readiness.

Table 2
Graded scoring system for the key criteria for facility readiness

Key Domain	score	Key Domain	score
1. Human Resources for Health	**35%**	**3. Essential Equipment & Supplies**	**20%**
1.1. At least one trained fistula surgeon on site (urogynecologist/urologist with fistula repair expertise).	15%	3.1. Complete Fistula repair set surgical instruments (e.g., vaginal retractors, speculums, needle holders, catheters, sutures).	8%
1.2 Visiting surgeon - Local national or International.	5%	3.2. Catheters (Foley/urethral) and urine collection systems, Ureteric stents – 10%	4%
1.3 Anesthetist (physician or nurse anesthetist).	5%	3.3 Laparotomy complete set	2%
1.4. Surgical nurses/midwives and assistants for preoperative and postoperative care.	5%	3.4 Spinal/epidural/general anesthesia provisions. Vital signs monitors (BP, pulse oximeter, etc.).	2%
1.5. Nurses and theater assistants trained in fistula surgery.	3%	3.5. Medications and other supplies: methodine blue dye, Antibiotics, analgesics, antispasmodics, and emergency drugs, sterile gloves, sutures (absorbable), antiseptics, and drapes, IV fluids, antibiotics, analgesics, and emergency drugs	4%
1.6. Physiotherapist (for bladder rehabilitation and pelvic floor exercises).	1%	**4. Supportive Services**	**10%**
1.7. Counselor/social worker (for psychological support and reintegration planning).	1%	4.1. Comprehensive counseling and psychological support'.	3%
2. Infrastructure & Facility Requirements	**20%**	4.2. Community reintegration support (economic/social)	3%
2.1. Designated/ shared Operating Theater Fully equipped for gynecological and urological surgeries	2%	4.3. Clinical follow-up for outcomes	2%
2.2. Adequate lighting (e.g., surgical headlamps or overhead lights).	2%	4.4. Health education and awareness	2%
2.3. Functional operating lights (both overhead and headlights)	2%	**5 Standardized Fistula Management Protocols and Guidelines**	**5%**
2.4. Functional fistula specific operating theater table with functional stirrups.	2%	5.1. Preoperative assessment and patient selection criteria (including imaging/lab tests).	1%
2.5. Fistula ward with Bed capacity, of up to 30 beds at a minimum	2%	5.2. Postoperative care and management (catheter management, infection control).	1%

Key Domain	score	Key Domain	score
1. Human Resources for Health	**35%**	**3. Essential Equipment & Supplies**	**20%**
2.6. Blood transfusion services	1%	5.3. Availability of protocols either physically printed and pinned up and should be visible or accessible to health workers	1%
2.7. Essential laboratory	1%	5.4. Infection Prevention, adherence to aseptic techniques and waste disposal protocols.	1%
2.8. Radiological services (ultrasound, IVP)	1%	5.5. Antibiotic prophylaxis/treatment guidelines.	1
2.9. Reliable safe running Water	1%	**6. Monitoring, evaluation and Data tracking**	**5%**
2.10. Electricity and backup power (generator/solar) -5%	1%	6.1. System for recording surgical outcomes, complications, and patient follow-up.	3%
2.11. Clean toilets, handwashing stations	1%	6.2. Regular audits/quality improvement meeting	1%
2.12. Waste disposal systems in place – 4%	1%	6.3. Continuous training and skills updates for staff.	1%
2.13. Sterile environment with infection prevention protocols – 3%	1%	**7. Management and administrative accountability**	**5%**
2.14. Rehabilitative infrastructure, such as private rooms for counselors and physiotherapists to conduct pelvic floor exercises	1%	7.1. Finance management and mobilization	3%
2.15. IT/technology infrastructure, specifically mentioning medical records systems.	1%	7.2. Supervision and monitoring	2%%
		Total grading score	**100%**

Each item is scored 0 (unavailable/non-functional) or 1 (available/functional). Facilities were then graded into four readiness levels: 100% (Very Ready): Fully meets essential criteria; ideal for care. 80–99% (Ready): Meets essential criteria with optimal capacity; safe but requires minor upgrades. 50–79% (Somewhat Ready): Partially ready; facility necessitates major improvements and investment. 0–49% (Not Ready): facility has major deficiencies and unsafe for fistula surgery and care and hence referrals are recommended.

3.2 Socio-demographic characteristics of respondents

The study included 24 respondents from six hospitals (Table 3), with a gender distribution of 54.2% female and 45.8% male. Most participants (75%) were aged 40 or older and held diplomas (41.7%) or master's degrees (33.3%). While respondents possessed extensive general clinical experience averaging 19.5 years specialized expertise in obstetric fistula care was notably lower, averaging 7.1 years.

Experience in fistula care was skewed toward the lower end, with 52.2% of participants having fewer than five years of related experience and only 8.7% reporting over 15 years, highlighting a significant gap in specialized proficiency among the clinical staff.

Table 3
Socio-demographic characteristics of respondents

Panel A: Socio-demographic characteristics of respondents			
Variable	Category	Frequency	Proportion (%)
Gender	Female	13	54.2
	Male	11	45.8
Age group	25–39	6	25
	40–49	9	37.5
	≥ 50	9	37.5
Education level	Certificate	1	4.2
	Diploma	10	41.7
	Bachelor's	5	20.8
	Master's	8	33.3
Gender differences			
Male Mean (SD)	Mean Diff	p-value	
14.3	9.65	0.035	
5	3.69	0.267	
Categorical associations			
Variables	χ^2	p-value	
Gender × Age	3.64	0.162	
Education × Age	10.97	0.089	
Education × Gender	12.02	0.007	
Analysis of Variance -Experience Vs Facility			
Variable	F-statistic	p-value	
Years in service × Age group	36.25	< 0.001	
Years in service × Health Facility	0.37	0.861	
Years in fistula care × Health Facility	1.77	0.173	

3.3 Health Facility Profiling.

Table 4 shows the facility level characteristics, with 67% of the facilities owned by the Government and 33% by private not-for-profit (PNFP). While all facilities provide general care, financing for obstetric fistula services remains inconsistent. Government hospitals (A, B, and D) lack dedicated budgets, relying instead on general public funding, while PNFP facilities and the regional referral hospital depend on external partners like UNFPA. Although all sites provide counseling, screening, and diagnosis, surgical capacity is sparse. Only hospitals A, E, and F perform fistula repairs, with Hospital E being the only facility with a resident surgeon for standard repairs; no facility offers advanced level surgery. Infrastructure is similarly restricted, with dedicated fistula operating tables and wards found in only two facilities. Furthermore, while basic utilities are generally adequate, waste management remains concerning, with some facilities utilizing open-pit burning. These gaps underscore an urgent need to standardize infection prevention, environmental safety, and dedicated budgetary support across the region to ensure sustainable, quality fistula treatment and care.

Table 4
Health facility profiling

Characteristic	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Hospital F
Locality	Urban	Urban	Peri-Urban	Urban	Rural	Urban
Ownership Type	Gov't	Gov't	Private Not-for-Profit (PNFP)	Gov't	Private Not-for-Profit (PNFP)	Gov't
Facility Level	General Hospital	General Hospital	General Hospital	General Hospital	General Hospital	Regional Referral Hospital
Service Level	Outpatient & Inpatient	Outpatient & Inpatient	Outpatient & Inpatient	Outpatient & Inpatient	Outpatient & Inpatient	Outpatient & Inpatient
Main Source of Funding	Gov't	Gov't	Gov't	Gov't	Development Partners	Gov't
Fistula-Specific Funding	None	None	Partners	None	Partners	Government & Partners
Key funding Partners	–	–	Uganda Village Project	–	Uganda Childbirth Injury Fund; Uganda Village Project	UNFPA
Fistula care and management related services are offered at the facility						
Client counselling for fistula prevention	▯	▯	▯	▯	▯	▯
Fistula client screening	▯	▯	▯	▯	▯	▯
Service providers who are able to screen	▯	▯	▯	▯	▯	▯
Fistula client diagnosis	▯	▯	▯	▯	▯	▯
Service providers able to diagnose	▯	▯	▯	▯	▯	▯

Characteristic	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Hospital F
Fistula client referral	□	□	□	□	□	□
Routine nursing care available 24 hours, seven days a week for inpatient services	□	□	□	□	□	□
Fistula repair	X	X	□	X	□	□
STI/HIV/AIDS counselling and management	□	□	□	□	□	□
Sexual dysfunction services	□	□	□	□	□	□
Other (specify)	□	X	X	X	X	X
Active Fistula Surgeons	0	0	0	0	1	0
Competent for standard repairs	X	X	X	X	□	X
Competent for advanced complexity repairs	X	X	X	X	X	X
Competent for expert surgery	X	X	X	X	X	X
Wards dedicated to Fistula	0	0	1	0	1	0
Hospital beds dedicated to Fistula	0	0	30	0	27	0
Power Supply						
Has electricity grid, generator, solar	□	□	□	□	□	□

Characteristic	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Hospital F
Water Supply						
Piped water into the facility & Other sources	✓	✓	✓	✓	✓	✓
Waste Management						
Collected and disposed externally	✓	X	✓	✓	X	✓
Burned in incinerator	X	✓	✓	X	✓	X
Burned in open pit	✓	X	X	X	X	✓

3.4 Availability of the fistula surgical set/kit and supplies

Table 5 outlines the availability and adequacy of essential fistula surgical supplies, ranging from basic operative linens and sterile protective gear to specialized repair kits. The data reveals critical disparities in operational readiness across facilities. While most hospitals report moderate to high equipment availability, the functional adequacy of these supplies is significantly lower, particularly within Government owned settings. A notable paradox is observed at Hospital F; despite reporting 87% supply availability, the facility recorded zero adequacy, suggesting that existing stock is insufficient in quality or volume to sustain effective care. Conversely, private not-for-profit facilities, specifically hospital C and E demonstrate high readiness, with both availability and adequacy metrics exceeding 80%. In contrast, Government general hospitals, including hospital A, B and D, exhibit the lowest readiness scores due to both limited stock and poor adequacy.

Table 5
Availability and Adequacy of Fistula Surgical Equipment by Facility

Facility	Items Available (n = 23)	Adequate Items (n = 23)	Availability (%)	Adequacy (%)	Overall Readiness (%)
Hospital A	10	5	43.5	21.7	32.6
Hospital B	17	9	73.9	39.1	56.5
Hospital C	21	20	91.3	87	89.1
Hospital D	12	6	52.2	26.1	39.1
Hospital E	21	19	91.3	82.6	87
Hospital F	20	0	87	0	43.5

3.5 Health facility readiness for obstetric fistula surgery and care

Table 6 shows the summary composite readiness scores at domain level and reveals substantial variation in facility capacity to provide obstetric fistula care across the six hospitals, with overall readiness scores ranging from 38% to 84%. The comprehensive table with all the parameters in each domain and corresponding score is in (**Supplementary Material 2)**.

Hospital E exhibited the highest readiness (84%), followed by Hospital C (69%) and Hospital F (65%). Conversely, Hospitals A, B, and D recorded low readiness scores (38%), highlighting critical service delivery gaps. Human resources presence was the primary key factor in the criteria. While all facilities had core staff (anesthetists, nurses, physiotherapists, counselors), only Hospital E had a resident fistula surgeon. Hospitals C and F relied on visiting surgeons. Infrastructure was generally adequate regarding basic utilities (theatres, electricity, water, lab, radiology, infection prevention), but fistula-specific infrastructure was lacking. Only Hospitals C and E had dedicated fistula wards and specialized operating tables. Rehabilitative spaces for counseling and physiotherapy were largely absent elsewhere. Essential equipment and supplies represented the weakest domain. No facility had a complete, fistula-specific surgical instrument set or essential consumables like specialized catheters. While all had general surgical tools, the absence of fistula-specific supplies severely constrained capacity. Only Hospitals C, E, and F reported partial availability of essential fistula-related medications and supplies. Supportive services varied significantly. While health education was universal, critical elements such as counseling, community reintegration, and structured clinical follow-up were limited to Hospitals C, E, and F. Higher-scoring facilities integrated psychosocial and post-treatment support more effectively. Clinical protocols followed a similar pattern; only Hospitals C, E, and F utilized standardized protocols for preoperative

assessment and clinical management, though infection prevention guidelines were universally present. Monitoring and evaluation (M&E) systems, including surgical outcome tracking and staff training audits, were also restricted to these three facilities. Management and administrative accountability recorded the lowest scores universally. No hospital demonstrated robust financial management or resource mobilization, and only Hospitals C and E reported functional supervision mechanisms. Weak administrative structures likely impede the ability to recruit specialized staff or sustain fistula programs.

Overall, the findings indicate that while basic health system functions such as general staffing, infrastructure, and utilities, are largely in place, critical components required for comprehensive obstetric fistula care are missing or unevenly distributed. Hospital E, distinguish themselves through the availability of specialized human resources, surgical services, supportive care systems, and monitoring frameworks.

Table 6: Health facility readiness to provide fistula surgery and care

Key Domain	Total Domain Weight	Hosp A	Hosp B	Hosp C	Hosp D	Hosp E	Hosp F
Human Resources for Health	**35%**	15%	15%	19%	15%	35%	20%
Infrastructure & Facility Requirements	**20%**	15%	15%	20%	15%	19%	17%
Essential Equipment & Supplies	**20%**	4%	4%	8%	4%	8%	8%
Supportive Services	**10%**	2%	2%	10%	2%	10%	10%
Clinical Protocols & Guidelines, Standardized Fistula Management Protocols	**5%**	2%	2%	5%	2%	5%	5%
Monitoring, evaluation and Data tracking	**5%**	0%	0%	5%	0%	5%	**5%**
Management and administrative accountability	**5%**	0%	0%	2%	0%	2%	**0%**
Overall Readiness	**100%**	**38%**	**38%**	**69%**	**38%**	**84%**	**65%**

4 Discussion

This study aimed to develop a consensus based facility readiness scoring criteria/framework for obstetric fistula surgery and care and apply that criteria/framework to assess the readiness of six hospitals in eastern Uganda. To our knowledge, this is the first study to develop a consensus based facility readiness scoring criteria/framework for obstetric fistula surgery and care. The presence of a resident fistula surgeon and fistula team emerged as the key critical criteria for facility readiness for

provision of fistula surgery and care, followed by presence of essential equipment, supplies and appropriate infrastructure, this is in line with the WHO/UNFPA guidelines for prevention and treatment of OF[3, 20]. The observed low levels of readiness among health facilities were not surprising, considering the minimal investments and systemic underfunding given to Obstetric treatment in the country coupled with the less than 15% expenditure on health leading to facilities struggling with critical gaps including essential medicines stock outs, equipment shortages, and understaffing[7]. While the Government continues to expand infrastructure including commissioning of Health Centre IIIs to improve access, translating these structural improvements into actual "readiness" requires targeted policy shifts. This under funding of lower-level health centers means that physical coverage does not match the effective coverage needed to deliver high-quality, continuous care. These findings are similar to other studies conducted in Uganda though not related to obstetric fistula[36, 37].

The findings reveal that despite the basic capacity for the facilities to diagnose fistula, the readiness to provide definitive fistula surgery and care is low. Only one facility scored above 80%, and hence as per the grading/scoring framework, it was categorized as ready and meets essential criteria with optimal capacity, it is safe but needs minor improvements. Of all the facilities assessed, no facility scored 100% or was graded as very ready/fully Ready) or meets all essential criteria. This underscores a critical gap between the identified need and backlog of about 75,000 cases in the country, and the actual operational and programme capacity of the health system to clear this backlog[34]. This has been highlighted before by the UNFPA & Global Campaign to End Fistula which reports a huge backlog of fistula cases in Sub-Saharan Africa countries and the critical lack of specialized surgical facilities and trained repair surgeons and teams[15].

The presence of trained resident fistula surgeons emerged as the most critical determinant of readiness. The study found that the absence of skilled human resources including fistula surgeons is the primary bottleneck, confirming that even when infrastructure is adequate, the absence of surgical expertise renders a facility ineffective for fistula treatment and care. This aligns with findings from the Lancet Commission on Global Surgery[38], which identify the shortage of skilled surgical professionals as a primary driver of the unmet need for surgical services in low- and middle-income countries (LMICs). The results illustrate that while general surgical support (anesthetists, nurses) is available, specialized fistula competency is concentrated in only two facilities, mirroring patterns of care fragmentation documented in recent systematic reviews[39, 40]. A significant insight from our study is the disparity between general facility readiness and fistula surgery specific readiness. All assessed facilities reported adequate access to basic utilities such as electricity and water, fulfilling general health system requirements. However, this general capacity is undermined by the absence of fistula specific infrastructure, such as dedicated wards and specialized surgical tables. This distinction is vital as relying solely on general health service assessments like using standard WHO-SARA tools often misses the specific deficiencies required for gynecological issues like obstetric fistula[13, 41]. The use of a weighted score across the seven specific domains allowed us to pinpoint that while the structural shells exist in these facilities, the functional capacity e.g. availability of critical staff and supplies e.g., catheters and repair kits, is largely missing, a

finding consistent with the work of UNFPA multi country assessment regarding the limitations of standardized health facilities in providing comprehensive fistula care[15].

The findings highlight a skewed model of service provision, with private not-for-profit (PNFP) facilities and the regional referral hospital bearing the bulk of the surgical burden, often supported by external funding (e.g., UNFPA, Uganda Childbirth Injury Fund). This suggests that sustainability remains a significant challenge, as all of the Government-owned general hospitals lack dedicated financial allocations for fistula treatment and care. The reliance on visiting surgeons and irregular campaigns rather than routine, integrated services indicates that fistula care in the region has yet to transition from a camp model to a system integrated approach. This is consistent with evidence from other sub-Saharan African contexts where camp-based care often fails to address the backlog due to lack of sustainable facility readiness[10, 11].

The domains related to clinical protocols, monitoring, and administrative accountability recorded the lowest readiness scores. The absence of audit systems and standardized fistula management protocols in most hospitals limits the ability to track surgical outcomes or implement continuous quality improvement. Donabedian's framework highlights that structural quality is a prerequisite for good processes and outcomes. The results in this study suggest that while some structural elements are present, the management and monitoring systems are weak. The success rate of fistula repairs is high when performed by skilled surgeons in optimized settings, but without standardized monitoring, these outcomes remain difficult to verify and improve. The findings support the need for standardized guidelines and training programs for healthcare providers, as recommended by the International Federation of Gynecology and Obstetrics (FIGO) and the World Health Organization (WHO)[20, 42].

4.1 Study strengths and limitations

This study's strength lies in its consensus based, weighted readiness criteria tailored to obstetric fistula surgery, adapted from WHO/UNFPA guidelines. By synthesizing three globally validated assessment frameworks, we ensured international alignment, facilitating meaningful comparisons and broad applicability to other settings. The study provides a comprehensive assessment across diverse hospital settings. However, findings are limited by the small sample size of six hospitals, which may restrict generalizability of the findings. Furthermore, the reliance on self-reported data for certain domains may introduce a social desirability bias. Respondents may have provided more positive perspectives of their facilities, potentially underestimating the existing gaps although we mitigated this through direct facility inspection and verification of items such as surgical kits and infrastructure. There is a lack of universal structural quality of care measures for fistula surgery, and to our understanding, this was the first study to define a ready facility to provide fistula surgery and care. The selection of items/domains for the readiness measures was based on global standards for fistula care although some important items/domains may have been left out.

4.2 Implications for practice

The study findings are important in informing policy and programming for improved service delivery aimed at transforming care for improved obstetric fistula care.

Hospitals should establish standardized protocols for obstetric fistula surgery and care, aligned with international guidelines and best practices. The Government should ensure adequate infrastructure and equipment, including operating theaters, anesthesia machines, and post-operative care facilities that are more specific for fistula surgery. Hospitals should establish multidisciplinary teams, including obstetricians, gynecologists, surgeons, and nurses, to provide comprehensive care for women with obstetric fistula.

5 Conclusions

These results underscore that the health system should transition toward a decentralized, integrated model where fistula care is embedded into the routine surgical services of the public health system. Policymakers and administrators must prioritize training and retaining resident fistula surgeons in general hospitals to reduce reliance on external teams. Strategic improvements include procuring complete, fistula specific surgical kits, standardizing clinical protocols, and establishing audit systems for continuous quality improvement. By applying the study's readiness criteria, the Ministry of Health and partners can move from sporadic interventions toward a resilient, integrated system for fistula treatment and care. Addressing these systemic gaps is essential for providing sustainable, quality care and achieving the global goal of eliminating obstetric fistula as a public health concern.

Abbreviations

BMREC
Biomedical and research Ethics Committee
LMICS
Low- and Middle-Income Countries
EESC
WHO framework for Emergency and Essential Surgical Care
MOH
Ministry of Health
FIGO
Federation of Gynecology and Obstetrics
OF
Obstetric Fistula
PNFP
Private Not for Profit
RVF
Recto Vaginal Fistula
UDHS

Uganda Demographic Health survey
UNCST
Uganda National Council for Science and Technology
UNFPA
United Nations Population Fund
VVF
Vesical Vaginal Fistula
WHO
World Health Organization
Gov't
Government

Declarations

The ethical endorsement for the research was received from the University of Western Cape Biomedical and Research Ethics Committee (BMREC), (BMREC Reference Number: BM22/10/27) and the Uganda National Council for Science and Technology(UNCST), statutory body that approves scientific research conducted in the country, providing ethical, legal, and regulatory compliance(REFNo: HS2732ES). Before the research was submitted to the UNCST for approval, it was reviewed and cleared again by a local Institutional Ethics Review Committee i.e. Uganda Christian University Research Ethics Committee(REF NO: UCUREC-2023-458). Administrative clearance was also obtained from both participating hospitals. Written informed consent was obtained from all study participants before participation.The research was conducted in full compliance with the principles of the Declaration of Helsinki.

Author Contribution

PKM: Study conceptualization, planning, methodology, data collection, curation, analysis, writing of original draft, review, editing and finalized manuscript.MK: Study conceptualization, planning, methodology, supervision, writing of original draft review, editing and finalized manuscript.WM: Study coordination, administration, data collection, draft review, editing and finalized manuscript.AM: Study data collection, organization and analysis, data curation, methodology, visualization, draft review, editing and finalized manuscript.SKS: Study coordination, data collection, draft review, editing and finalized manuscript.SK: Study data collection, data analysis, draft review, editing and finalized manuscript.AEA: Study conceptualization, planning, methodology, writing of original draft review, editing and finalized manuscript. DJ: Study conceptualization, planning, methodology, supervision, funding acquisition, writing of original draft review, editing and finalized manuscript. All authors reviewed and contributed to finalization of the manuscript. All authors approved the final version of the manuscript.

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Data Availability

The datasets used and/or analyzed in this study are available from the corresponding author on reasonable request. This study is part of the doctoral studies of the corresponding Author

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Figures

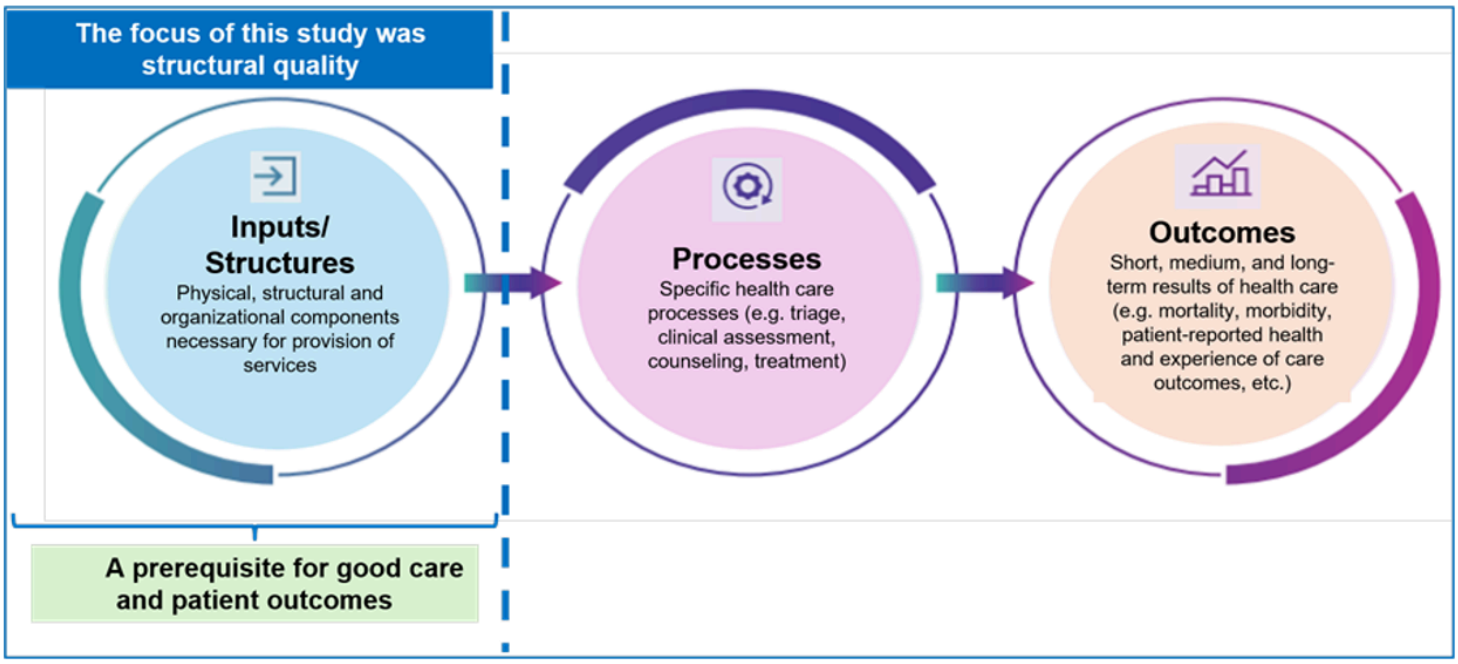

Figure 1

Donabedian's quality of care framework

Source: Adapted from Donabedian A, 1966.

Supplementary Files

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