Health systems' capacity to provide post-abortion care (PAC): Assessment of Health Facilities in Kenya, Nigeria and Burkina Faso using signal functions

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Background

Currently, about 90% of women of childbearing age in Africa live in contexts with restrictive abortion laws [1-3]. In Burkina Faso, Kenya and Nigeria, abortion is legally restricted, permitted only to save the life of a woman and/or preserve the physical health of a pregnant woman [4-6]] and in cases of rape, fetal abnormality and incest in Burkina Faso [5]. The bulk of women in need of abortion in these contexts resort to unsafe methods and procedures resulting in mortalities, severe disabilities or complications [4], which require treatment, long hospital stays, intensive care, and attendance by highly skilled, yet scarce, healthcare personnel [7].

Whereas abortion services are highly restricted in the SSA context, countries such as Burkina Faso, Kenya and Nigeria have made long-standing political commitments to address abortion-related morbidity and mortality through the provision of quality health services for the management of complications resulting from abortion [8]. Thus national policies have been established to guide the provision of appropriate care for women presenting in health facilities with complications associated with improperly performed pregnancy terminations or miscarriages. Post abortion care (PAC) remains a critical life-saving intervention for reducing maternal morbidity and mortality related to abortion [9]. Key elements of PAC include: treating complications, providing counseling and response to emotional and physical concerns, providing contraceptive counselling and services, referring to other SRH services, and partnering with the community for prevention.

However, despite existing interventions, very few women are able to access PAC services within health-care facilities [10]. Several barriers impede timely access to PAC services including legal restrictions on abortion, abortion-related stigma, behavior and negative attitudes of health-care providers'[11], low levels of awareness and knowledge among women, and low capacity of health-care systems to provide quality PAC services [12]. In Burkina Faso, for instance, almost four in ten women who experience abortion-related complications failed to receive the medical care they needed[13], while in another survey, only 27 percent of women with induced abortions received treatment for resulting complications[14, 15]. In Kenya, there is evidence of elevated rates of hospitalization among abortion patients, and that of repeat abortion raising questions on the quality of care provided in these facilities including post-abortion counseling and contraception [14-16].

Over the past two decades, quality of health care has been a core pillar of health systems reforms [17], with significant commitment towards strengthening health systems to address users' expectations. Generally framed as quality of health care, this endeavor is characterized as the extent to which health-care services advance the patient's desired health outcomes [18]]. Drawing on the seminal work of Donabedian[19], which provides three core-connected ingredients for assessing health care quality, namely (i) structure (facility infrastructure, management and staffing), (ii) process (technical/technical quality and patient experience) and (iii) outcomes (patient satisfaction, return visits and health outcomes), we examine the state of preparedness of public health facilities to deliver basic and comprehensive PAC in three resource constrained countries using signal function indicators for health service deliver, such as staffing (including training and capacity building activities), medical supplies and equipment, as well as reproductive health and abortion services provided [10].

Methods

Study design and population

This was a multi-country study on quality of post-abortion care in public health facilities in Burkina Faso, Kenya and Nigeria, utilizing a mixed methods approach. As part of this approach, a cross-sectional service provision assessment surveys were conducted across a nationally representative sample of primary, secondary and tertiary health facilities in Kenya, Burkina Faso, and Nigeria. Data was collected in these facilities between November 2018 and February 2019, with each facility observed over 30 days.

Sampling & recruitment

In each country, sampling was stratified by the different counties, states and regions, as well as by levels of facilities. A master list of all regions in Burkina Faso, states in Nigeria, and counties in Kenya, was obtained from government records, and an updated list of health facilities was obtained from the ministries of health for each of the countries, and allocated to each region/state or county.

A two stage sampling was adopted, where in each country, a random sample of six regions, states or counties was drawn from all existing regions, states and counties, with an exception of the country's capital region, i.e. Centre in Burkina, Nairobi in Kenya, and Abuja FCT in Nigeria. Thereafter, the capital regions were added to the regions purposively, making seven regions, states and counties in each country.

The selected region/counties/states were:

- Seven regions from 13 in Burkina Faso namely: Boucle du Mouhoun, Cascades, Centre, Centre-Ouest, Centre-sud, Haut-Bassins, and Nord
- Seven counties from 47 in Kenya: Garissa, Kajiado, Kiambu, Laikipia, Mandera, Migori, and Nairobi.
- Seven states from 36 in Nigeria: Anambra, Bauchi, Cross River, Edo, Kogi, Kano and Federal Capital Territory (Abuja).

At the second stage, a requisite sample of facilities in each country was determined using the sample size determination formulae for known populations using known estimates as shown below;

$$n = \left(\frac{z}{\Delta}\right)^2 p(1-p)$$

In this case, the known estimate p which was used as a sampling proportion was the proportion of facilities that could offer counselling and information on how to avoid contraceptive method failure, and which was the lowest measure of quality of care from a recent survey

Once an appropriate sample was determined, the sample was allocated to each of the seven regions depending on the population of eligible facilities in a specific region. For a facility to be eligible for this study, it was required to be in a facility within a functional care level and with characteristics of facilities that can conduct deliveries. In this case, some specialized facilities such as mental and spinal hospitals were excluded as well as military and prison hospitals that were known not to offer services to the general public. The facilities were also expected to be publicly owned and run, as well as operational during the study period. On the ground during survey implementation, certain facilities were dropped from the study and replaced with similar facilities within the same locality, due to insecurity and complete inaccessibility.

After accounting for a response rate of about 93%, requisite samples of facilities were determined as 414 in Burkina Faso, 259 in Kenya, and 227 in Nigeria.

Data collection

Trained field workers collected data on post-abortion care signal function indicators in sampled facilities which included availability of key equipment and supplies, staffing, training, operation hours, and the ability to perform services in primary-level, secondary and tertiary-level facilities at county/region in each country. The signal function survey tool was drawn from Healy and colleagues model (2006), which was updated to countries specificities (level, denomination of staff……). The data collection combined both interviews with relevant staff in the targeted and observation to confirm availability/functionality of identified items. The tool was programmed in SurveyCTO and data was collected using tablets.

We also conducted in-depth interviews with PAC service providers and policy-makers in the countries to explore national-level efforts to improve PAC services and theirs perceptions of facilities preparedness to offer PAC. Analysis reported proportions of facilities providing key elements of basic and comprehensive PAC services, as well as existing or in-progress PAC-related policies and strategies.

Ethical Considerations

Relevant ethical and administrative approvals were obtained within the respective countries (from the ethical review committees, ministries state or county levels, as well as the required facility-level approvals) to conduct the study. All participants signed informed consents before being interviewed by the data collectors, and girls below age 18 were considered emancipated minors. Confidentiality, anonymity and privacy of all participants were guaranteed at all levels of this study by excluding all unique identifiers for the patients and access to study data was limited to only members of the research team.

Data analysis

Statistical analysis was performed using Stata Statistical Software, version 15. Exploratory analysis was done to summarize response rates of health facilities by levels and regions. To describe the capacity of

health facilities to deliver PAC services, proportions and percentages were generated for variables corresponding to basic and post abortion care.

The qualitative data were analyzed using an inductive content analysis approach. We first identified the key themes and ideas present in the transcript and then developed a preliminary codebook based on the key themes and the interview guides. This codebook was applied to a set of transcripts to assess consistency in code application and to identify codes that were lacking.

Preliminary Results

A total of 253, 414 and 227 health facilities were included in the survey from Kenya, Burkina Faso and Nigeria respectively. Health facilities included both primary, secondary and tertiary-level hospitals, as illustrated in the **Table 1** below.

Table 1: Health facilities by Countries

	Primary-level facilities	Secondary-level facilities	Tertiary-level facilities	Total
Kenya	211	39	3	253
Burkina Faso	354	56	4	414
Nigeria	92	124	11	227

Capacity of health facilities to deliver post-abortion care services

In the study, "capacity" was used to refer to the measure of ability of health facilities to deliver specific services. Generally across the three countries, referral-level facilities had greater capacity than primary-level facilities to provide basic post-abortion care signal functions.

With regards to basic PAC services, more than 94% of primary health facilities in Kenya and Nigeria were capable of offering all basic PAC services, while in Burkina Faso, only 12% of these facilities could offer of basic PAC services. Other factors other than staffing levels and capacity as well as operational times of delivering family planning methods were identified as responsible for low capacity to deliver basic PAC services as shown in Table 2.

Table 2: Primary-level facilities capable of providing basic PAC

	Kenya; N=211	Burkina F; N=354	Nigeria; N=92
	n (%)	n (%)	n (%)
Basic post-abortion care (all indicators)	9 (4.3)	43 (12.2)	6 (6.5)
Basic post-abortion care (excluding staff with delivery ability for 24 h per day, 7 days per week)	13 (6.2)	49 (13.8)	6 (6.5)
Basic post-abortion care (excluding staff with delivery ability for 24 h per day, 7 days per week) per week, and referral capacity; including availability of short-acting, long-acting, or permanent family planning methods)	13 (6.2)	64 (18.1)	7 (7.6)

In all the countries, more than 70% of referral-level facilities had capacity to deliver comprehensive PAC services, with 33% of referral facilities surveyed in Kenya, and about 30% in Burkina Faso and Nigeria – showing strong capabilities. Except for Nigeria, the capacity to deliver comprehensive PAC services were not significantly basic PAC services, staffing and operation timings for family planning did not appear to change the state of health facility abilities to deliver.

Table 3: Referral-level facilities capable of providing comprehensive PAC services

	Kenya; N=42	Burkina F; N=60	Nigeria; N=135
	n (%)	n (%)	n (%)
Comprehensive post-abortion care (all indicators)	14 (33.3)	18 (30.0)	40 (29.6)
Comprehensive post-abortion care (excluding staff with caesarean ability for 24 h per day, 7 days per week)	14 (33.3)	18 (30.0)	45 (33.3)
Comprehensive post-abortion care (excluding staff with caesarean ability for 24 h per day, 7 days per week, including availability of short-acting, long-acting, or permanent family planning methods)	14 (33.3)	20 (33.3)	47 (34.8)

Country specific capacities

Surprisingly, none of the countries had all primary health facilities capable of providing all basic post-abortion care services, even though majority offered most of the services as seen in **Table 4**.

In the three countries, most facilities (≥90%) were capable of administering parenteral antibiotics (except for Nigeria, 88%), and intravenous fluids. Least capacities were observed in ability to transport patients in need of referral, as less than 10% of primary facilities Kenya and Nigeria have vehicles/ambulance.

Table 4: Capability to provide basic post-abortion care signal functions among primary-level facilities

	Kenya; N=211 (%)	Burkina F; N=135 (%)	Nigeria; N=92 (%)
Remove retained products of conception*	78.7	96.9	83.7
Administer parenteral antibiotics*	96.2	99.4	88.0
Administer parenteral uterotonics*	76.3	98.6	83.7
Administer intravenous fluids†	96.2	98.9	91.3
Has vehicle with fuel to transport patients needing referral†	8.5	19.2	8.7
Has staff capable of undertaking normal deliveries on duty or who are on call for 24h everyday	33.7	93.8	73.9
Provide at least one modern, short-acting family planning method at time of survey†	91.5	72.9	69.6

*Assessed on the basis of facility reporting if they had ever provided the service. †Assessed on the basis of the availability and validity or functionality of a given item (drug or equipment) at the time of survey. ‡We assumed that staff who were capable of doing caesarean sections were also capable of doing normal deliveries, and therefore did not include this factor in comprehensive capability

While all tertiary level facilities across the three countries could deliver all the services needed for comprehensive PAC, an assessment of the signal functions for comprehensive post-abortion care within the secondary facilities revealed greater difference between the countries **(see Table 5**). For instance, not more than half of secondary level facilities in all the countries has capacity to undertake a major abdominal surgery, such as laparotomy or hysterectomy. Notably, just about half (56%) of secondary facilities in Kenya administer blood transfusion, and 48% and 84% Burkina Faso and Nigeria respectively. About 75% of secondary facilities Kenya and Burkina Faso have vehicles for referral purposes, compared to just 46% in Nigeria.

Table 5: Capability to provide comprehensive PAC signal functions among referral-level facilities

	Kenya (%)		Burkina F (%)		Nigeria (%)	
	Secondary	**Tertiary**	**Secondary**	**Tertiary**	**Secondary**	**Tertiary**
Remove retained products of conception*	100.0	100.0	100.0	100.0	91.9	100.0
Administer parenteral antibiotics*	100.0	100.0	100.0	100.0	95.2	100.0
Administer parenteral uterotonics*	97.4	100.0	100.0	100.0	90.3	100.0
Administer intravenous fluids†	100.0	100.0	100.0	100.0	97.6	100.0
Has vehicle with fuel to transport patients needing referral†	74.4	100.0	75.0	75.0	46.0	72.7
Provide at least one modern, short-acting, long acting family planning method at time of survey†	97.4	100.0	83.9	100.0	81.5	100.0
Administer a blood transfusion*	56.4	100.0	48.2	100.0	84.7	100.0
Undertake major abdominal surgery i.e., laparotomy and hysterectomy *	35.9	100.0	37.5	75.0	50.0	100.0
Has staff capable of doing caesarean sections on duty or who are on call 24 h per day, 7 days per week	97.4	100.0	96.4	100.0	79.8	90.9

Capacity for TOP

Overall, the number of facilities capable of delivering legal termination of pregnancy using either medical or surgical procedures was very low, for pregnancies of gestational ages below or above 12 weeks. Nigeria nevertheless had higher figures compared to Kenya and Burkina Faso.

Table 6: TOP services

	Kenya (%)	Burkina F (%)	Nigeria (%)
Medical legal termination of pregnancy (TOP) for pregnancy <12 weeks old	11.1%	3.9%	36.6%
Surgical legal termination of pregnancy (TOP) for pregnancy <12 weeks old	18.2%	3.1%	18.1%
Provision of legal TOP (pregnancy aged >12 weeks) by medications	9.5%	4.6%	21.2%
Provision of legal TOP (pregnancy aged >12 weeks) surgically	11.1%	4.8%	15.4%

Reason for lack of capacity to deliver PAC services

Various reasons were cited by the respondents for the inability to provide both basic and comprehensive PAC services. One such reason was the lack of required skill to perform some procedures. For instance, the lack of trained health care providers was the main reason for not providing medical post abortion care in Burkina Faso and Nigeria, with only 40% and 58.2% of facilities capable respectively. According to one of the providers interviewed as part of the qualitative survey, providers' training is the major concern, pushing them to self-train in order to help patients:

> *''Honestly, the major problem we have here is the training. Look, in an entire maternity ward of a CMA [Centre Medical avec Antenne chirurgicale][1], there is no one here officially trained in PAC, except the basic training we got at school. For instance, the use of misoprostol, I was never trained. As a result, we are forced to train ourselves by getting information from the Internet or from other colleagues, just to be able to help the patients. Because you can't see a patient and pretend that because you haven't been trained you're not going to offer her the services. So we manage this way knowing that it puts us in danger too''* (midwife, secondary level facility, Burkina Faso)

Another justification is the lack of equipment or supplies as stated by one of the providers interviewed in Kenya:

> *"On a scale of zero to ten [capacity to offer PAC] I will give it a three maybe. If we get clients we just refer and most of them come as emergencies so you refer urgently before you are even able to interact with the patient like long enough, reason being what I talked about earlier, we are lacking equipment too, like for incomplete abortions we don't have MVA kits so those ones we just refer'' (Nurse, secondary level facility, Kenya).*

Facility operation hours

Most facilities in Burkina Faso (98.3%) and in Nigeria (82.8%), are operated every day for 24 hours a day, while less than 40% of health facilities in Kenya are operated every day for 24 hours a day. There were stalk contrasts on the days in which facilities deliver contraceptives, for instance, only 5.9% of facilities in Kenya offer contraceptives 7 days for 24hrs/per day, while over 94% in Burkina Faso do so, and 54% in Nigeria. Majority of facilities in Kenya (84.2%) nevertheless operate for 5 days for less than 24 hours as seen in **Table 7**.

Table 7: Facility Operation

Operational days and time	Kenya (%)	Nigeria (%)	Burkina Faso (%)
7 days for 24hrs/per day	35.6	82.8	98.3
5days & less than 24hrs/per day	51.8	7.5	0

[1] CMA is a secondary level facility (District-level hospital)

Others	12.7	9.7	1.7
Days and time when Contraceptive services are provided			
7 days for 24hrs/per day	5.9	54.2	94.9
5days & less than 24hrs/per day	84.2	12.8	0
Others	9.9	33	5.1

Conclusions and Recommendations

This is a first multi-country analysis using standardized, nationally representative data, and a signal functions approach to assess the capacity of national health systems to provide post-abortion care. Although post-abortion care is an essential emergency service, study findings reveal severe gaps and weaknesses in delivery of PAC in the sampled SSA countries. Findings demonstrate need for increased investments by governments to strengthen capacity of primary and referral-level health facilities to deliver quality post-abortion care services.

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