

Lessons Learned from Sudan's Health Sector Response Addressing Female Genital Mutilation between
2016 - 2018

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Abstract

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2016 - 2018

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About 87% of Sudanese women (15 – 49 years) have undergone female genital mutilation (FGM) mostly performed by midwives (64%). Since 2016, Sudan's federal ministry of health (FMOH) initiated the largest health program focused on FGM in the country, with an aim of changing midwives' involvement from being the ones performing FGM to instead being agents of change promoting FGM abandonment to their clients and communities as well as providing appropriate care to those with health related complications.

There is a limited body of evidence for this programmatic approach in FGM prevalent and low resource settings as it is a nascent area of work. We used mixed methods, primary and secondary data, as well as implementation science and evaluation frameworks, to study Sudan's first three years of this program (2016 – 2018). The specific objectives of the study were to 1) determine its scope and scale using program data; 2) identify facilitators and barriers that influenced planning and implementation as perceived by program managers through in-depth interviews; and 3) examine associations between past trainings and current midwives' knowledge, attitudes and practices in Khartoum state using an exposure based comparative cross-sectional study.

The program data analysis showed that Sudan addressed the World Health Organization's (WHO) four recommended strategic pillars of action for 1) governance and finance, 2) knowledge and skills of health workers, 3) monitoring and evaluation and accountability, and 4) creating an enabling environment with significant achievements. There was governmental buy-in with national funds that matched donors' funds for training activities (pillar 1). A third of all midwives ($N=16,183$) were trained (pillar 2) and there were several foundational activities on monitoring and evaluation as well as an accountability mechanism for midwives who perform FGM (pillar 3). Various professional and health students' association members (10 – 59%) made calls to end practice or for its criminalization (pillar 4).

Program managers felt that Sudan's context and FMOH characteristics strongly influenced the health program design and implementation. Reported facilitators included both international and national funding availability, integrating FGM related activities within existent priority health intervention packages, and presence of an evaluation and feedback culture within international organizations. The barriers included power asymmetries in decision making and engagement of all players for national and international funds during planning and implementation, low health system functionality and non-willingness to provide FGM prevention services among health workers in health centers.

The exposure based cross-sectional study found that trained midwives were more likely to have higher knowledge on FGM types, to be aware that performing FGM was a violation of professional code of conduct and to have greater knowledge on de-infibulation procedure compared to non-trained midwives.

In conclusion, Sudan's experience generated several lessons for its existing program moving forward as well as other countries with a similar profile intending to implement or adopt WHO's strategic pillars at a large scale. Though the existent programmatic data were rich and of good quality it was not centralized into a database for use by the FMOH. A centralized database which includes costs and interventions' outcomes will enable program managers to test different scale up modalities to optimize costs and effectiveness. There is a need to identify approaches to strengthen joint accountability, decision-making and engagement of relevant stakeholders as equals and the impact on intervention outcomes, scale and sustainability studied. Training programs targeting midwives would need to address their values and self-efficacy in changing their FGM practices, as well as

provide essential clinical skills for managing FGM related health complications. Health system and societal factors that deter midwives from abandoning FGM practice would need to be addressed in tandem through health system strengthening in coordination with other multi-sectoral interventions. Finally, frequent evaluations using dissemination and implementation science frameworks would enable health stakeholders assess implementation effectiveness in timely manner so that the health sector has a meaningful contribution into FGM abandonment efforts as well as improving the quality of life for girls and women affected by FGM.

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“Stand for the teacher and honor his rank ...for a teacher is almost as a prophet...do you know someone nobler than ...he who nurtures minds and hearts”

Ahmed Shawqi (Egyptian Poet)

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Dedication

This work would not have been accomplished without The Grace of Allah

I dedicate this degree in honor of those who paved the way to come this far - my paternal grandfather “Hassan” who believed in girl education and built the first girls’ school in his village, my father “Mustafa” who believed in no gender barriers in dream pursuit and invested everything he had to make this happen, my mother “Nour” who instilled steadfastness and hard work as life principles and to my brother “Wadie” for his determination to complete our university studies in Kenya – May Allah bless your souls.

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in all aspects of their lives.

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“homework” instead of playing.

To my dear Mohammed for being my rock in every step and cheering all the way.

Chapter 1: Introduction

BACKGROUND

Female genital mutilation (FGM) is a harmful traditional practice with negative health and socio-economic impact¹⁻³. It is reported to occur in all parts of the world but most prevalent in western, eastern and north-eastern parts of Africa and some countries in Asia and Middle East⁴. Global estimates from 31 countries with representative data on prevalence, indicated at least 200 million girls and women have undergone FGM with over 20 million performed by health workers,⁵ a practice known as FGM medicalization. The treatment of health complications arising from FGM by the health sector is estimated at 1.4 billion US dollars (USD) per year.

Sudan contributes into this global burden with about 14 million girls and women affected by FGM and health costs estimated at 277 million USD per year⁶. Most of the affected women in Sudan (77%) have the worst form, FGM type 3, which involves cutting of the inner and outer vulvar folds with or without removal of the clitoral glans and closing the outer vulvar folds leaving a small opening for urine and menstrual blood flow⁷. Furthermore, Sudan has one of the highest FGM medicalization rates, as FGM is reportedly performed by midwives (64%). Finally, FGM is not a one time life experience, 24% of women (15 – 49 years) who give birth undergo a repeat FGM⁸ and anecdotally later in life as a purification rite before death. _

The increasing involvement of health workers prompted national governments, health-care professional bodies, United Nations agencies and non-governmental organizations (NGOs) in 2010 to develop a global strategy to stop FGM medicalization⁹. This strategy provides guidance of action centered around four pillars namely, 1) “mobilization of political will and funding”, 2) “strengthening the understanding and knowledge of health-care providers”, 3) “strengthening

monitoring, evaluation and accountability”, and 4) “creating supportive legislative and regulatory frameworks”¹⁰.

Sudan was among the first countries to implement WHO’s four strategic pillars and the largest scale to date¹¹, making it a suitable case study for a programmatic evaluation to generate lessons to policy makers and program decision makers in high prevalence and low-income settings planning to or implementing these pillars.

Most of the existent research focuses on effectiveness of singular interventions in mostly study settings^{12,13,22,14–21}. For training effectiveness in particular, study outcomes focus on health care providers’ knowledge, attitudes, self-efficacy, skills and patient satisfaction²³. Few studies examined changes in intentions, or actual change in practices from either a study setting or real world interventions^{14,24} and we found no study assessing training effects beyond six months of training. Moreover, there is limited literature examining complex health interventions implemented at national scale²⁵ especially in high FGM prevalence and low income countries²⁶. To our knowledge, we found no published literature on the application of WHO’s four pillars to stop FGM medicalization at national level or influencing factors that affected national planning and implementation nor the use of program data to study health programmatic interventions on FGM.

To fill this evidence gap our study overall goal is to examine the scope, scale, influential factors in the first three years of Sudan’s expanded health sector response to FGM and the effects of trainings (pillar 2) on midwives who are the main health providers and expected to provide FGM prevention services and appropriate care for FGM complications.

Mixed methods will be used for study design as well as underused data sources such as programmatic data and opinions of donors, program managers from both national and international stakeholders who constitute the backbone of decision making.

SPECIFIC AIMS

We examine the first three years of Sudan's experience in implementing this expanded health sector approach through the following three specific aims:

AIM 1: To describe the scope and scale of Sudan's response within each of WHO's recommended four strategic pillars¹. This descriptive study used both qualitative and quantitative programmatic data. We conducted thematic and descriptive analysis respectively to investigate the type of activities implemented, including their costs and achievements accomplished under each of WHO's four pillars.

AIM 2: To identify factors and mechanisms that influenced planning and implementation of Sudan's response as perceived by program managers from donor, international and national stakeholders. The consolidated framework for implementation research²⁷ was adapted for this qualitative study to guide in-depth interviews as well as thematic analysis.

AIM 3: To examine the association between previous program trainings and 2022 FGM related knowledge, attitude and practices among midwives in Khartoum state. We used three levels of Kirkpatrick's four-level training evaluation model²⁸ as a framework for an exposure based cross-sectional study utilizing quantitative data collected over phone interviews from midwives. We hypothesized that trained midwives would be satisfied in knowledge and skills (level 1) and have higher knowledge (level 2), supportive attitudinal stance against FGM and FGM medicalization and providing improved clinical care (level 3) compared to midwives who did not receive training.

¹ Governance, policy and financing (pillar 1), Knowledge and skills of health workers (pillar 2), Accountability and monitoring and evaluation (pillar 3) and Creating supportive environment (pillar 4)

Chapter 2: Turning the Tide on Female Genital Mutilation in a High Prevalence Country: A Programmatic Data Analysis for Sudan's Comprehensive Health Sector Response, 2016 – 18

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ABSTRACT

Introduction

Sudan has about 87% of females aged 15-49 years living with female genital mutilation (FGM), mostly performed by midwives (64%). In 2016, Sudan's Federal Ministry of Health (FMoH) adopted the World Health Organization's (WHO) global strategy to stop health care providers from performing FGM and implemented it to scale. There is limited country level experience applying this approach especially in high FGM prevalence and low income countries. Programmatic data is rich resource that is often underused to generate evidence for global use.

Method

We reviewed FGM related proposals, activity, financial reports, and monitoring databases for the period 2016 through 2018. We conducted thematic analysis for qualitative data and for quantitative data descriptive analysis, t-test or ANOVA analysis where applicable.

Results

We found 95 activities in the form of meetings (58%) and trainings (31%) having median cost of USD \$10,645 and \$14,964 respectively. The FMoH (57%) and student/professional associations (25%) implemented activities at national (36%) and state (62%) level. The costs of activities was highest for FMoH compared to student/professional associations and academia respectively.

Sudan addressed WHO's four strategic pillars through diverse activities that resulted into FGM related policies and plans and governmental finance of FGM related activities (pillar one), trainings (pillar two) and strengthening monitoring, evaluation, and accountability systems (pillar 3) targeting mainly community midwives (N=16,183) as well as creating supportive legislative and regulatory environment (pillar 4). The governmental funding on training was comparable to donor's resulting into 31% of community midwives trained on FGM complications management.

Further, 31% community midwives signed declarations or petitions to end FGM practice while 19% were sensitized on punitive administrative measures for conducting FGM.

Conclusion

Although Sudan implemented a laudable health sector response to address FGM, there is a need evaluate the quality and effectiveness of past and ongoing interventions. Particular attention maybe needed to strengthen monitoring and evaluation systems especially at service delivery level as well as recording and analyzing cost data to identify cost efficient implementation approaches to reach the remaining sizeable number of health professionals to stop their involvement in FGM.

INTRODUCTION

Female genital mutilation (FGM) is a harmful practice that includes all procedures involving partial or total removal of or other injury to the female external genitalia for non-medical reasons²⁹. Globally, over 200 million girls and women alive today have undergone FGM and over three million girls are estimated to be at risk annually⁵. FGM violates rights to health and physical integrity, causing immediate, short and long term genitourinary, sexual and psychological health complications⁷ with an estimated annual health-care economic cost of USD 1.4 billion⁶. Traditional practitioners have been mainly performing FGM, however there is an increasing trend of involvement of health workers³⁰, also known as “FGM medicalization”²⁹. This trend is alarming because it violates the medical code of conduct of “do no harm”, endorses the practice and creates a false perception of safety undermining FGM abandonment efforts.

Sudan has a high FGM prevalence, 87% of females (15 – 49 years) and 66% of females (0 – 14 years) have undergone FGM³¹. The FGM type practiced (77%)³¹ is classified as type 3, also known as infibulation. It involves cutting of the inner and outer vulvar folds with or without removal of the clitoral glans and closing the outer vulvar folds leaving a small opening for urine and menstrual blood flow⁷. Repeat FGM type 3 also known as re-infibulation, is also performed with or without vaginal tightening which is conducted usually after delivery and at times among elderly as a “purification” rite before death. FGM practitioners are mainly midwives (64%) and traditional practitioners (29%). Midwives’ involvement as reported by mothers of girls <15 years with FGM increased from 55% in 1966 to 76%³¹ in 2014. Whilst, the prevalence of re-infibulation after delivery decreased from 61%³² in 2004 to 27%³¹ in 2014 among women in reproductive age. The social values that promote FGM include perceived aesthetic improvements, cleanliness by reducing visible vaginal secretions, maintaining family honor by inhibiting sexual debut before

marriage or as a religious rite^{33,34}. Midwives perform FGM partly to uphold the promotive social norms as well as the financial incentive³⁵ given low employment (34%) and monthly governmental salary between \$75 and \$128³⁶. Midwives make up almost a quarter of Sudanese health workforce (23%)³⁷ providing primary care to women who have undergone FGM. Midwives in Sudan are broadly categorized into community midwives (83%)³⁸ who complete a one year training while facility-based midwives (17%)³⁸ complete theirs in two to four years. Because of health workforce shortages³⁷, community midwives are also facility based.

In response to the high FGM prevalence, Sudan developed a ten-year national multi-sectoral FGM abandonment strategy (2008 – 2018). Initially, the social and legal sectors' received most funding implementing this strategy. This changed in 2015 when the health sector received substantial funding from the United Kingdom government funded Sudan Free from Female Genital Cutting (SFFGC) Program³⁹ through Sudan's World Health Organization country office. Subsequently, the Federal Ministry of Health (FMoH) developed a national costed health sector plan aligned to the World Health Organization's (WHO) global strategy's four action pillars with annual targets. Briefly, these pillars comprise of activities that aim to strengthen, 1) "mobilization of political will and funding", 2) "strengthening the understanding and knowledge of health-care providers", 3) "strengthening monitoring, evaluation and accountability", and 4) "creating supportive legislative and regulatory frameworks". To our knowledge, Sudan is the first low income country with high FGM prevalence and FGM medicalization to implement this global strategy at a large scale.

There is a growing body of evidence on health sector interventions determining their effectiveness^{12,13,22,14-21} in changing health-care providers' knowledge, attitudes and skills to provide FGM prevention or care of its complications. However, there is limited literature

examining country level health sector interventions²⁵ especially in high FGM prevalence, low income countries²⁶ with no granular data detailing type of activities implemented, their costs or results. Moreover, there is limited use of programmatic health sector data on FGM interventions.

In this study, we review the first three years of Sudan's health sector approach using available program data to generate learning points on program data use and country level implementation to other countries or regions with similar contexts. Specifically, we aim to describe the activities that were implemented within each of the four pillars of action for WHO's global strategy to stop FGM medicalization. We use qualitative and quantitative data to describe the activities' objectives, the format of implementation, implementation level, implementers, costs and results. Finally, we conduct exploratory and bivariate analysis on cost data to understand the cost implications of various programming options. The findings could potentially inform cost effectiveness analyses to guide investment in the future.

METHOD

Setting

The health sector response involved the FMoH with its affiliated training institutions, health professional regulatory bodies and associations for health professionals and students in obstetrics and gynecology, pediatrics, midwifery and nursing fields. Each implementer submitted costed proposals for funding in standardized templates to Sudan WHO country office which also provided technical support during implementation. Upon completion, implementers submitted standardized report format for activities' outputs with budget breakdown including any relevant products. Sudan's WHO country office compiled, verified and analyzed these reports into a standard quarterly and annual SFFGC technical and financial templates. Alongside the SFFGC funded health sector response, the Government of Sudan (GoS) financed two maternal mortality reduction

projects which targetted midwives and also supported FGM related interventions. Responsible governmental officers prepared activity and financial reports for these project including periodic data summaries.

Procedures

For the data compilation, we requested FGM related proposals, activity and financial reports or monitoring databases for the period 2016 through 2018 in person, and/or through phone or email. We also conducted online searches in official websites. We excluded the private sector and NGOs working in humanitarian settings, conflict or remote areas because they were not part of the national FGM health sector plan and do not provide activity reports directly to the FMoH.

We used a Microsoft Excel (2018) template to enter several variables for each reported activity namely; objective (text), format used (training, meeting, research, field work, facility support), completion year, implementer (FMoH, State MoH, student/professional health associations, other), implementation level (international, national, state[number]), costs (Sudanese Ginaih [SDG] or American dollars [USD]) and the results (individuals reached [type and number] or products [policies, strategies, guidelines, training material, abstracts, M&E templates]). Activities were not necessarily completed in one calendar year, so we reported the calendar year when the activity was completed. In cases where the data conflicted between two reporting sources, we used Sudan's WHO country office's reported data because it was where final validation was done before submission to donor. Two research team members with support from Sudan's WHO country office's FGM program officer performed data cleaning and validation to ensure that there were no transcription errors or duplicates.

Prior to analysis, we created two additional variables; 1) "Action pillar" designating the pillar each activity contributed into as defined by the Global Strategy to stop health care providers from

performing FGM⁹ and 2) “Coverage” calculated as the proportion of health-care providers or health service users reached from their respective total populations from FMoH annual statistical reports⁴⁰. In addition, we converted the activity costs in SDG into USD using the corresponding official annual conversion rates. Thereafter, standardized the USD currency for the three years to the value of USD in 2018 to control for inflation rate differences.

We imported the Microsoft Excel (2018) data sheet into STATA version 17. We conducted univariate summaries of the activity variables by year and explored whether activity format use, implementation level, implementer or people reached were associated with activity costs using t-test or ANOVA analysis where applicable. The rationale was that these variables may affect activity costs.

We obtained ethical approval from the University of Washington and The FMoH’s National Health Research ethics committees who both deemed this program data review as non-research.

RESULTS

We found 172 documents comprising of activity proposals, activity reports, monthly, quarterly, and annual summary reports, and databases from Sudan WHO’s country office, FMoH, health professions regulatory bodies and none from health professional or student associations. Sudan WHO’s country office had database for SFFGC funded activities and there were no FGM indicators collected through routine health information systems.

A total of 95 activities were reported between 2016 through 2018 with Table 1 providing details on the data quality (missingness), activity type, implementation level, implementer, and results in each year. There was missing data in the number of individuals reached (25%), activity costs (13%) and state where the activity was conducted (8%). Activities were in the form of meetings (58%) or trainings (31%) and mostly (43%) completed by the second year. This could be explained by

the late startup of activities in the first year of implementation and increased implementation rate in the second year. Furthermore, the high inflation rates and civil unrest that led to a civil revolution in 2018 affected the overall management and implementation for 2018. The FMoH (57%) and student/professional associations (25%) implemented activities at national (36%) and state (62%) level.

Table 1– Features of reported health sector activities that addressed Female Genital Mutilation during 2016 through 2018 in Sudan

Activities Profile	Total		2016		2017		2018	
	N	%	N	%	N	%	N	%
Activities*² reported	95	100	31	32.6	42	44.2	22	23.2
Missing data								
Individuals reached	24	25.3	6	19.4	12	28.6	6	27.3
Activity Cost (USD)	12	12.6	6	19.4	3	7.1	3	13.6
Activity location (state)	8	8.4	3	9.7	3	7.1	2	9.1
Activity Format								
Trainings	29	30.5	10	34.5	12	41.4	7	24.1
Meetings	55	57.9	14	25.5	27	49.1	14	25.5
Research	5	5.3	3	60.0	2	40.0	0	0.0
Field work	5	5.3	3	60.0	1	20.0	1	20.0
Facility support	1	1.1	1	100.0	0	0.0	0	0.0
Activity Implementation level								
National	34	35.8	6	19.4	19	45.2	9	40.9
State	59	62.1	24	77.4	22	52.4	13	59.1
International	2	2.1	1	3.2	1	2.4	0	0.0
Implementer								
Federal Ministry of Health	54	56.8	15	48.4	28	66.7	11	50.0
State Ministry of Health	8	8.4	5	16.1	2	4.8	1	4.6
Student/Professional Associations	24	25.3	8	25.8	9	21.4	7	31.8
Other	9	9.5	3	9.7	3	7.1	3	13.6
Activity results								
Health-care providers trained	7,293	14.9	2,248	8.0	3,218	11.5	1,827	11.3
Policies/strategies	5	3.9	1	0.9	4	40.0	0	0.0
Plans (national, state, locality)	104	81.9	102	91.9	0	0.0	2	33.3
Monitoring, evaluation, accountability, and research	7	5.5	4	3.6	3	30.0	0	0.0
Guidelines/ standard operating procedures	4	3.1	1	0.9	2	20.0	1	16.7
Training materials	7	5.5	3	2.7	1	10.0	3	50.0

*² Activities are categorized into the calendar year they were completed in

The following sections detail the reported activities aligned to WHO's four pillars of action for the global strategy to stop FGM medicalization and where possible, compare the proportions of health-care providers reached (Figures 1 – 3).

Pillar 1: “Mobilization of political will and funding”

Federal level activities included high level advocacy meetings, integration of FGM within various health strategies and policies and developing a behavioral change communication draft plan. While state level activities included advocacy meetings, developing plans as well as re-activation and establishment of health committees. A total of two policies, three strategies, two national and 102 locality health plans were developed. The governmental financial contribution in the roll out of in-service FGM training was equal to donor's contribution both resulting into 5,017 (31%) community midwives trained.

Pillar 2: “Strengthening of health care providers knowledge and skills”

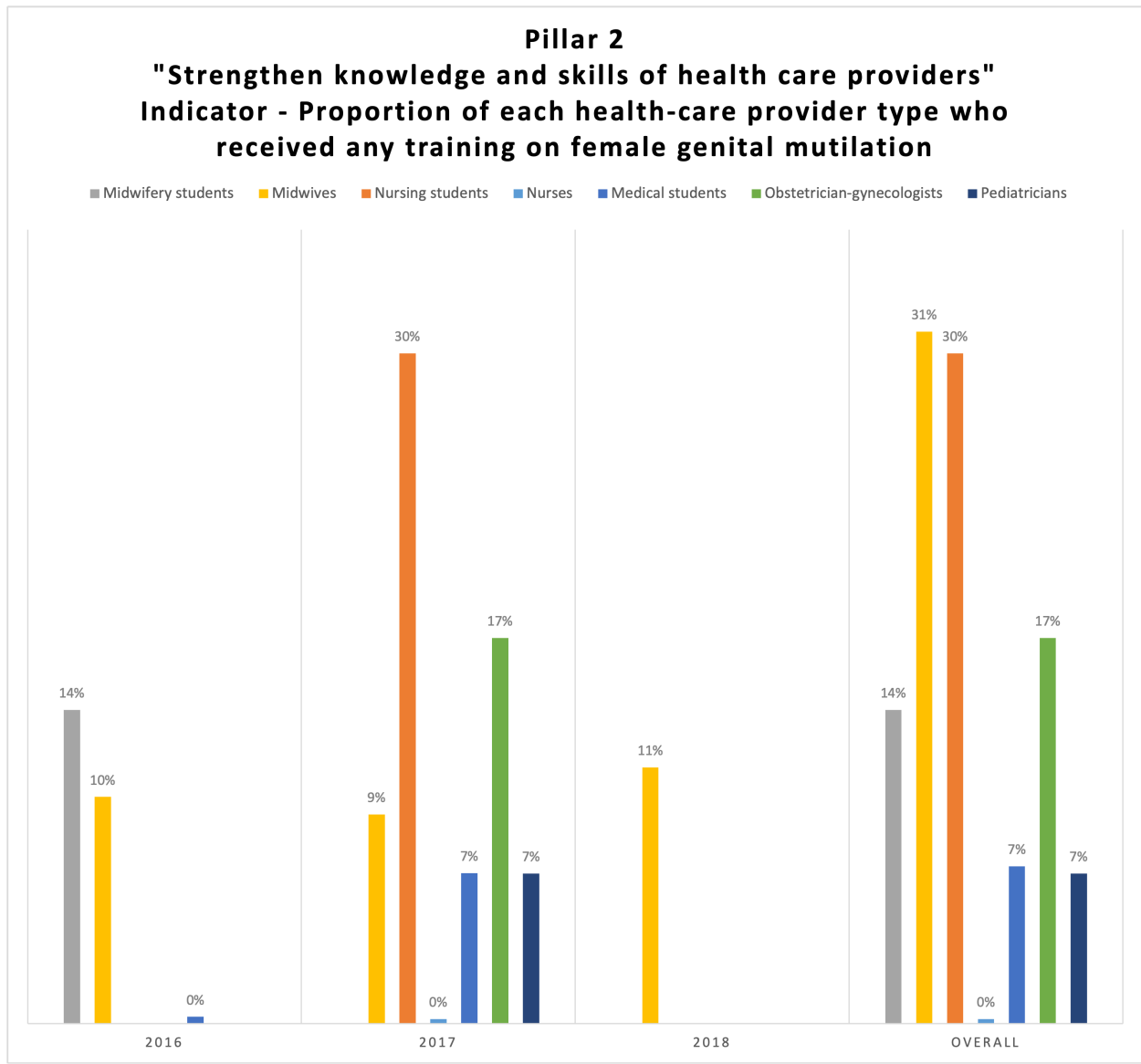
The national level interventions included development of national guidelines, training materials on FGM complications management and social norm change in pre-service training curricula of four types of health-care providers (medical doctors, midwives, medical assistants, and community health workers). Preparatory work to develop FGM training content for eight specialists' curriculum was also conducted. At health facility level, policies, and standard operating procedures for FGM counseling were implemented in 21 facilities in two states.

Midwives, as well as some obstetricians and gynecologists (Obs/Gyn), pediatricians, and medical students, were trained as change agents to stop FGM medicalization and to encourage their peers to address FGM routinely during clinical consultations. Short training or sensitization sessions on FGM were also provided during annual professional and student association conferences for

midwives, nurses, Obs/Gyn, and pediatricians and during pre-license refresher training for paramedical health workers.

By the end of 2018, a total of seven training materials, mostly pre- and in-service modules on FGM, and four guidelines were completed. The training coverage for each profession type (Figure 1) was highest among practicing community midwives (31%) and nursing students (30%) compared to Obs/Gyn (17%), midwifery students (14%) and medical students and pediatricians (7% each). One year (2016) report had data indicating that 16,655 women in antenatal and maternity services, equivalent to 0.2% of estimated women who access these services, received FGM prevention counseling service.

Figure 1: Proportion of each health-care provider type who received any training on Female Genital Mutilation in Sudan during 2016 through 2018



Pillar 3: “Strengthening monitoring, evaluation (M&E) and accountability”

At the national level, baseline data for M&E was generated from knowledge, attitude, and practice (KAP) surveys among various health professionals (midwives, nurses, Obs/Gyn, and pediatricians) and traditional birth attendants. An FGM surveillance model in antenatal settings was developed and tested twice in efforts to generate FGM related data to inform programming. Health facility FGM medicalization reporting formats were also developed for M&E and accountability. Finally, bi-annual information sharing, research dissemination and review meetings were held mostly involving MoH officials to support planning and implementation.

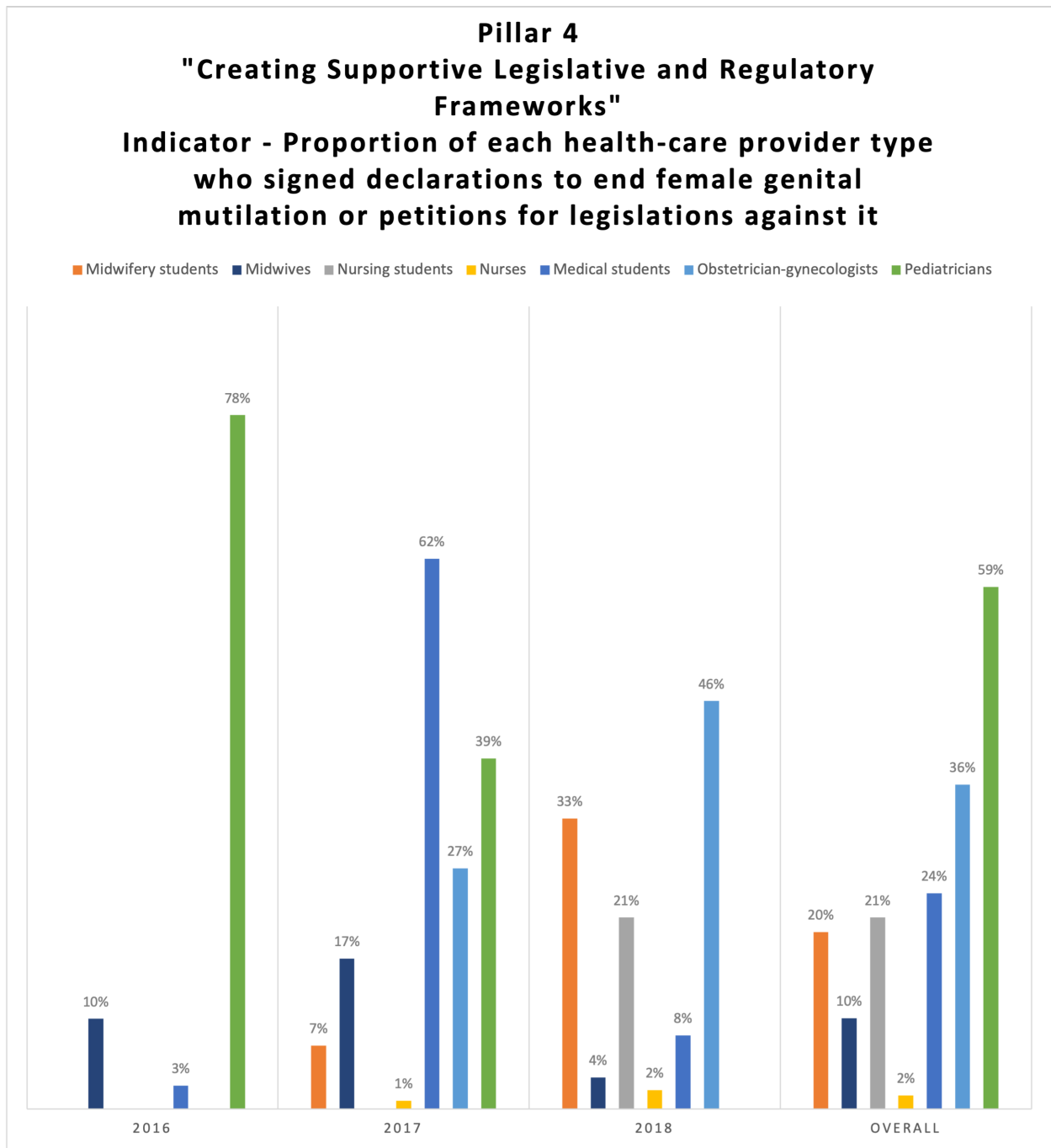
At state level, a computerized state level data base for reporting FGM medicalization was made available in all the 18 states. Supervisory visits and trainings on M&E for state and locality RH focal persons were also conducted. Almost a fifth of community midwives (18.2%) were sensitized on accountability for FGM medicalization. The lower proportion of community midwives reached in this pillar was because the accountability materials took longer to develop compared to the adaptation of existing WHO training guidance for FGM complications management.

Pillar 4: “Creating supportive legislative and regulatory frameworks”

At national level, clauses on FGM medicalization within code of conducts for midwives and doctors were developed. High level health officials’ advocacy meetings were held during conferences or health professional and student associations’ annual meetings. An accountability framework for midwives was developed, piloted, and finalized. Inter-sectoral interventions included the development of an FGM module within primary school health curriculum was pilot-tested and rolled out in one state. This intervention aimed to create a young generation aware of FGM and its health risks to support FGM abandonment.

By the end of three years, a quarter of all health-care providers signed voluntarily declarations to end FGM practice or petitions for FGM legislative measures during trainings, meetings, or advocacy events. The proportions of signatures out of total number of health professionals varied by professional category type and year (Figure 2) and was highest among pediatricians (59%) in comparison to Obs/Gyn (36%), medical students (24%), nursing students (22%), midwifery students (20%) and practicing community midwives (10%). However, the actual numbers of signatures were highest among medical students (3,668) and community midwives (1,618). There were no records of health professionals who refused to sign declarations or petitions during these activities. Even for events that had a finite number of attendees, it would be difficult to determine if missing signatures were actual refusals or signature collection failures. Further, those who signed may have felt pressure to do so based on the expectations of event organizers or peers, so the number signing may not represent the number who were “fully committed”. Finally, the GoS initiative to enhance accountability and regulation of midwifery practice by MoH resulted in 40% of midwives on payroll and 70% with health insurance coverage.

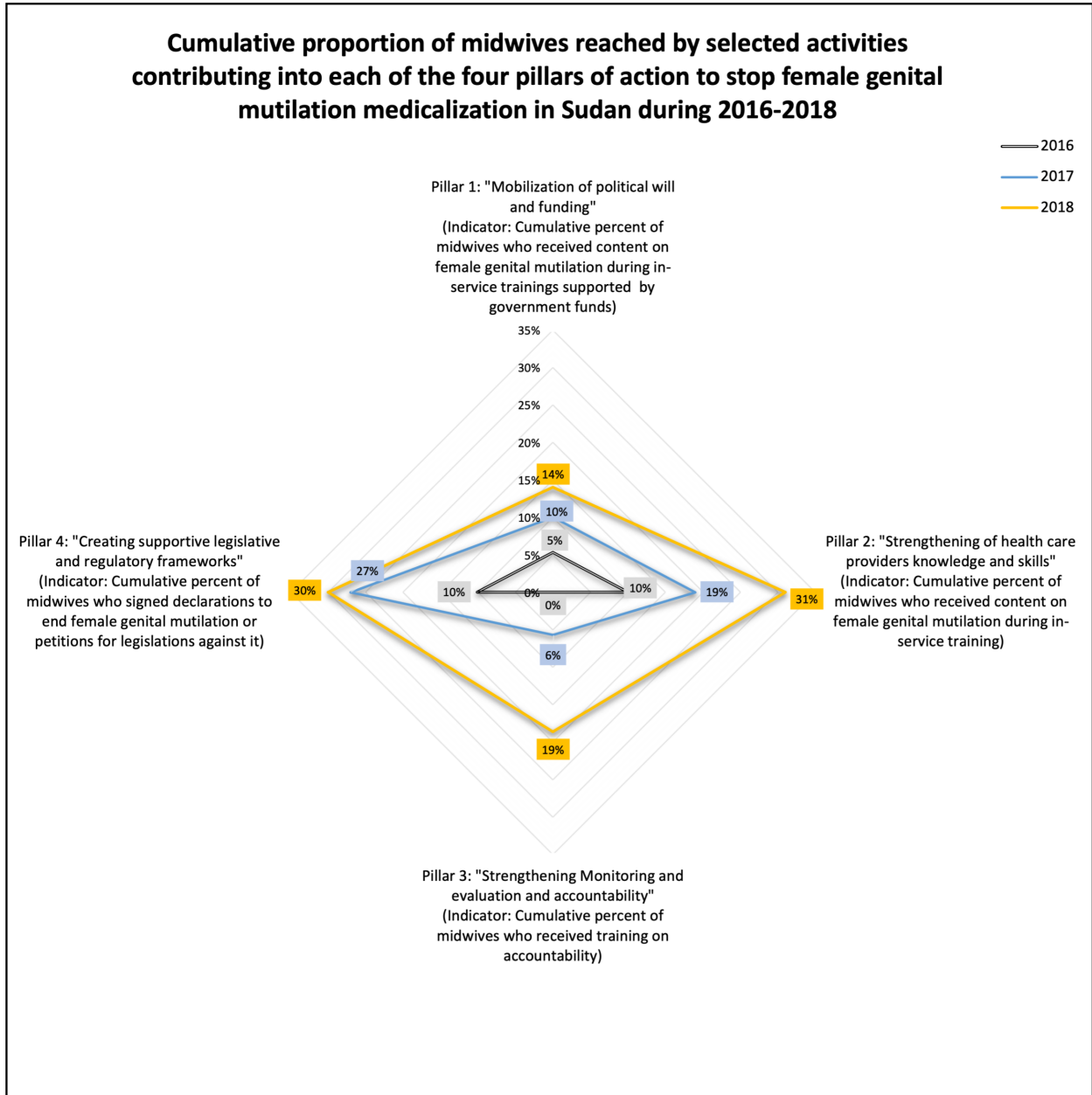
Figure 2: Proportion of each health-care provider type who signed declarations to end Female Genital Mutilation (FGM) or petitions for legislations against FGM



When we examined the cumulative number of midwives who benefitted from each pillar’s focus from 2016 through 2018, we found an incremental trend (Figure 3). The proportion of midwives

trained through governmental funded trainings (pillar 1) grew from 5%, 10% and 14% which contributed to a cumulative total of 10%, 19% and 31% respectively of all midwives trained (pillar 2). The highest proportional increments occurred in 2017 for midwives who signed declarations or petitions on FGM (pillar 4) and in 2018 for midwives trained on accountability for FGM medicalization (pillar 3) and trained on FGM during in-service training (pillar 2).

Figure 3. Radar chart comparing cumulative proportion of midwives reached by selected activities in the four pillars of action of the World Health Organization’s global strategy to stop health care providers from performing FGM during 2016 through 2018 in Sudan



Activity costs

The activities' costs were variable because of their diverse aims and implementation modalities. For instance, the mean (median) activity cost per person was \$296 (\$157) for training a health professional on FGM, \$335 (\$376) for a high-level official participating in an advocacy meeting, \$261 (\$171) and \$393 (\$201) for a ministry of health official involved in a planning meeting or an experience sharing meeting respectively and \$23.5 (\$3) for a health professional or student attending an FGM abandonment declaration meeting. However, field work and research related activities had higher median costs (\$19,756 – \$25,749) compared to meetings and trainings (\$10,645 – \$14,964) probably because of travel and operation complexity. There was also significant linear incremental trend for activity costs over the three years ($p < 0.05$).

The median cost of activities within each action pillar ranged from \$8,953 in pillar 4 to \$20,000 in pillar 3 (Table 2). The lower range of pillar 4 activity costs could be explained by modality of implementation as activities such as signatures for petitions or commitment to abandon FGM within health professional conferences which were funded by other sources.

The median cost of activities within each pillar for health professional and student associations or other implementers (health professional regulatory and academic institutions) was four to five times less compared to FMoH and state MoH. There was no significant association between activity costs with activity format use, implementation level, or people reached. ANOVA test indicated differences between implementers for activity cost ($p = 0.05$). The implementer differences could be a result of activity types implemented, activity complexity or modality of implementation.

Table 2: Median costs of activities that addressed female genital mutilation in Sudan during 2016 through 2018 by implementer in the four pillars of action of the World Health Organization’s global strategy to stop health care providers from performing FGM

Activity Cost (Median (IQR)) of Implementer in each Pillar of Action	Pillar 1 <i>Political will and funding</i>	Pillar 2 <i>Knowledge of health-care providers</i>	Pillar 3 <i>Monitoring and evaluation, accountability</i>	Pillar 4 <i>Legislative & regulatory frameworks</i>
Federal Ministry of Health 19,253.8 (9,409.1 – 28227.2) N=54	18,205.7 (33,10.4 – 29773.1) N=12 1 training, 9 meetings, 1 research, 1 field work	24,702.8 (14,305.3 – 42,774.3) N=22 14 trainings, 8 meetings	23,873.0 (19,253.8 – 25,801.5) N=9 1 training, 3 meetings, 2 research, 3 field work	12,379.9 (6,114.9 – 14,079.7) N=11 4 trainings, 7 meetings
State Ministry of Health 13,405 (13,124.4 – 13,405.0) N=8	13,405.0 (13,405.0 – 13,405.0) N=4 4 meetings	13,124.5 (12,843.9 – 13405.1) N=2 1 training, 1 facility support	13,405.0 (13,405.0 – 13,405.0) N=2 1 meeting, 1 field work	
Student/Professional Associations 4,125.5 1,527.3 – 8,497.3 N=24	7,528.0 N=1 1 meeting	3,576.9 (1,527.3 – 4,233.3) N=8 6 trainings, 2 meetings	6,257.5 (4,017.7 – 8,497.3) N=3 1 training, 2 research	5,775.2 (0.0 – 25,266) N=12 12 meetings
Other 5,478.7 (838.3 – 23,914.1) N=9		3,556.7 (1,088.9–6024.6) N=2 2 meetings	20,000.0 (4,932.7– 27,828.2) N=5 1 training, 4 meetings	0.0 N=2 2 meetings
Total 13,405 (4,932.7 – 25,801.5) N=95	14,522.4 (6,620.8 – 28,227.2) N=17	14,749.4 (4,233.3 – 32,130.1) N=34	20,000.0 (8,497.3 – 25,801.5) N=29	8,953.2 (2,500.0 – 14,079.7) N=25

DISCUSSION

Remarkable achievements were made in the first three years of implementation, there was substantial investment from the donor including governmental buy-in. A third of midwives were trained, and many members of professional and student associations committed to end practice or called for its criminalization. The federal ministry of health completed the blueprint and building blocks to initiate FGM medicalization accountability system, generate FGM indicators for the health sector and scale up sensitization of girls on FGM through use of school health manual in schools.

We found that most of the activities were implemented by FMOH with seemingly overall higher costs which requires further investigation. Indeed, most of the activities in the beginning did require FMOH's involvement such as developing policy, strategies and national training curricula. However, state level activities could have been decentralized or implemented by other entities. The limited capacity of state level MoH and NGOs would need to be strengthened for cost efficiency in the long run. The program data review process, data quality and findings highlight the importance of having a centralized recording system, complete activity records detailing implementation modality including costs and regular monitoring and evaluation. These measures will enable identification of cost efficient and effective implementation modalities which can be put to scale with the appropriate quality assurance mechanisms in place. It is important to maximize resource use as there is still a significant number of health professionals (about 20,000) to be reached by Sudan's health sector to meaningfully contribute into stopping FGM medicalization and provide quality FGM related prevention, care and protection services'.

There were several strengths in using program data to examine the type, costs and results of the health sector activities in WHO's pillars of action. The programmatic data was comprehensive and

rich, we found diverse activities within and between each of the four pillars over the years. This diversity however made it difficult to profile specific details of implementation, or make direct comparisons between activities. The program data was relatively well recorded with strong institutional memory within Sudan WHO country office. We were able to use granular qualitative and quantitative data with some rigor as data was verified from multiple reporting sources. We compared our findings to the only available study which mapped country level health sector interventions on FGM²⁶ in 30 countries that included Sudan and eight other high FGM prevalent low income countries. All the nine low-income countries implemented some activities for pillars 1 and 2 while 2 – 4 countries implemented some activities for pillars 3 and 4. Sudan was reported to have M&E systems in place with de-infibulation (surgical procedure to re-open the vaginal introitus for women with FGM type 3) services at facility level in 2018. In contrast, our review found that M&E systems were still under development and there were no FGM indicators routinely collected and compiled within the FMOH. Furthermore, the likelihood of available quality de-infibulation services was low given that 3 – 11% of different health-care providers had correct knowledge of FGM complications management per WHO guidance in 2016 and 2017 program KAP surveys. Furthermore, a low proportion of women reported de-infibulated status (6%) while 36% reported re-infibulation practiced by midwives during FGM surveillance test phase in 10 sites in two states in 2017⁴¹.

Some of limitations for programmatic data use was that data access and verification took time because data was not centralized. The program data did not capture the universe of activities implemented as the private sector and other NGOs working in humanitarian settings, conflict or remote areas were excluded and may have reduced representativeness. There were several limitations in activity costs data and its analysis. We treated all activities as independent events

however in reality some activities built onto each other for a particular product for instance. Furthermore, different combinations of activity products are used in a single activity. The missing details in implementation made it difficult to assign costs into activity bundles. Finally, staff time use prior, during and after completion of activity was not documented and the value of staff time (based on salaries) was not included in the analysis, and cannot be assumed to be equal for all activities.

In conclusion, the programmatic review of the first three years of implementation and use of programmatic data highlighted the need to invest more in the coming years into monitoring and evaluation systems within the health sector, and between other sectors such as the ministry of education. The regular monitoring and evaluation of health sector interventions not only ensures fidelity and quality of activities but also evaluates whether the intended cascade of results had occurred. It would be important to assess the availability and quality FGM prevention and care services to health service users in states or facilities that received most of these interventions to determine if the current scale up approach remains on track or requires some modifications.

The use of qualitative and quantitative programmatic data provided an opportunity to study activities with more granularity and generate several learning points for other countries with similar contexts to develop and implement health sector interventions to address FGM.

Chapter 3: A National and International Programmatic Perspective on Facilitators and Barriers for Sudan’s Health Sector Response on Female Genital Mutilation (2016 – 2018)

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ABSTRACT

Introduction

About 14 million girls and women in Sudan are affected by female genital mutilation (FGM) mostly (64%) performed by midwives. The estimated treatment costs are substantial (277 million dollars/year). Since 2016, Sudan's federal ministry of health (FMoH) initiated the largest health sector program to date. We explore the facilitators, barriers, and their influence mechanism in this program's first three years.

Method

We interviewed 10 purposefully sampled program managers representing national and international governmental and non-governmental organizations. We used the Consolidated Framework for Implementation Research for data collection and analysis. We collected audio recordings through voice over internet protocol and used thematic analysis in Atlas ti.

Results

Eight Sudanese nationals and two international program managers reported involvement in activities to strengthen governance, health workers' knowledge and skills, accountability, monitoring and evaluation, and create a supportive environment. Most of the reported factors were related to Sudan's context and FMoH characteristics. Facilitators included funding availability, implementing FGM activities within multi-health topic intervention packages, and presence of an evaluation and feedback culture. Barriers included low health system functionality, competing health priorities, coordination, non-supportive attitudes among program managers, health workers and society, and power asymmetries between donor and international agencies and the FMoH for international funds as well as between the FMoH with national non-governmental organizations and other governmental sectors for national funds in planning and implementing interventions

Conclusion

The early phase of Sudan's health sector response on FGM was comprehensive and well funded but the low health system functionality, non-supportive attitudes among program managers and health workers and coordination were barriers. Interventions to address inter and multi-sectoral coordination and power asymmetry are needed and their impact on scale and sustainability merits further study.

Keywords

female genital mutilation, health sector response, Consolidated Framework for Implementation Research, facilitators, barriers, Sudan

INTRODUCTION

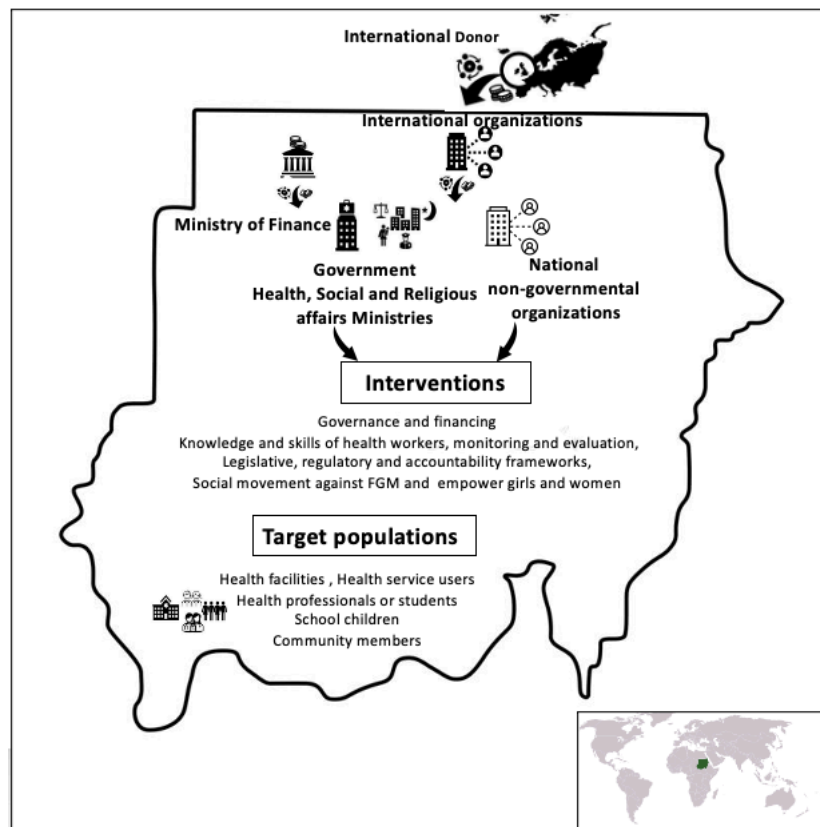
Female genital mutilation (FGM) is defined by the World Health Organization (WHO) as the “partial or total removal of external female genitalia or other injury for non-medical reasons”.⁷

About 14 million girls and women in Sudan are affected by female genital mutilation with health costs estimated at 277 million dollars per year.⁶ Furthermore, FGM medicalization is high; 64% of women (15 – 49 years) with FGM have had it performed by midwives.³¹

The national FGM abandonment strategy in Sudan is multi-sectoral coordinated by a national taskforce led by the Ministry of Welfare and Social Security (MoWSS). The health sector played a minimal role in the past until 2016, when it was included in “The Sudan Free From Female Genital Cutting (SFFGC) program” funded by the United Kingdom government’s Foreign, Commonwealth and Development Office (FCDO)³⁹ in partnership with three UN agencies as the main funds recipients. The United Nations Children’s Fund (UNICEF), United Nations Population Fund (UNFPA) and World Health Organization (WHO) in turn worked closely with multiple governmental and non-governmental organizations to implement several multi-sectoral interventions. For the health sector specifically, the implementers included the Federal Ministry of Health, Sudan midwives’ association, National Medical Council for Health Professionals, Sudan Health Professional association for Nurses, Sudan Medical Specialization board, Sudan’s association for pediatricians, Sudan’s Obstetric and Gynecological Society and Medical Student International Network – Sudan. The target population of interventions were health professionals and students, health facilities, health service users and community members, as well as school children. In parallel to SFFGC program, the government of Sudan financed FGM health interventions through two large midwifery related initiatives which were managed by MoWSS and FMOH

(Figure 1).

Figure 1. Main financial sources, stakeholders involved and target populations for Sudan’s female genital mutilation abandonment health interventions during 2016 through 2018



The health response was guided by WHO’s four pillars of action which aim to strengthen governance and funding (pillar 1), increase health workers’ knowledge and skills (pillar 2), improve monitoring, evaluation (M&E) and accountability (pillar 3) and create a supportive environment (pillar 4).¹⁰ Between 2016 through 2018, Sudan had significant health sector achievements⁴², lending itself for further in-depth study to understand how and why this occurred. This data will expand on a much-needed programmatic evidence base gap for low income FGM prevalent settings as the current body of evidence addresses the scope, effectiveness or factors affecting singular health interventions and one study examining factors affecting FGM services in a high income setting.^{12,14,21,23,26,43–46}

We conducted in-depth interviews with program managers to identify the factors and mechanisms of influence on Sudan's response during its first three years (2016 – 2018). We used the Consolidated Framework for Implementation Research (CFIR)²⁷ for data collection and analysis.

METHODS

Study setting

Sudan located in northeast Africa covers an expansive area (1.9 million km²), one quarter the size of the United States. Sudan's GDP per capita is USD 764 placing it as low income country⁴⁷, a result of structural adjustment programs⁴⁸, unfavorable extraction of its natural resources and political instability. The public health sector is structured around its political administrative divisions which include a federal level and 18 states with 189 localities.

Materials

We used WHO's four pillars of action as the framework to categorize the reported scope of the health plan and activities because it guided Sudan's response. In addition, we used CFIR²⁷ for data collection and analysis because of its conceptual strength, empirical evidence and its qualitative codebook template.⁴⁹ In brief, CFIR has five domains with a total of 39 constructs: 1) intervention characteristics (8 constructs), 2) outer setting (4 constructs), 3) inner setting (12 constructs), 4) characteristics of the individuals (5 constructs), and 5) process (8 constructs). We adapted the five domains and 12 of its constructs (Table 1) to align with Sudan's context as depicted in Figure 1.

Our interview guide had four main questions in English and Arabic. The first two questions were on the type and scale of health sector activities the participant's organization was engaged in. While the remaining questions explored factors that they perceived influenced planning and implementation. CFIR's five domains were used to probe if respondent did not address them in

the response. To protect respondents' identities, the interviews collected no participant demographic details.

Table 1. Adapted consolidated framework for implementation research domains and constructs for identifying and analyzing factors that affected Sudan’s health sector plan and activities addressing female genital mutilation from 2016 through 2018

CFIR Domain (n=5)	Adapted Domain Names (n=5)	Adapted Constructs are in bold font (N=12/39)
Intervention Characteristic	Features of health plans and activities	<ul style="list-style-type: none"> • Development source • Evidence strength on its effectiveness • Relative advantage to other health plans or activities • Degree of adaptation of health plan/activity to local needs • Amenable to testing and revisions • Degree of complexity • Quality of how health plan or specific activity components are bundled together and presented • Costs and cost opportunities
Outer setting	Environment characteristics	<ul style="list-style-type: none"> • <i>(Removed from this domain, adapted, and moved to target population domain)</i> • Degree of interorganizational networking • Presence of organization competition to implement health sector plan/activities • International, national, and subnational geo-political, social, economic and development context
Inner setting	Organization characteristics	<ul style="list-style-type: none"> • Social architecture, age, maturity, and size of organization • Intra and inter-organizational teamwork in networking and communication • Organizational norms and values • Implementation climate within organization • Readiness for implementation
Characteristics of individuals	Organization’s program staff (technical or administrative) / target population of health activities (<i>health professions/student, school children, community members</i>)	<ul style="list-style-type: none"> • Knowledge of health sector plan/activities/FGM/target population, belief, and attitudes about plan/activities/FGM • Individuals’ beliefs in their own capabilities to execute courses of action • Stage of change to implement health plan/activities or abandon FGM • Relationship and commitment to organization or assigned tasks (health plan/activities or abandon FGM) • Other traits such as intelligence, motivation, values.
Process	Organization process	<ul style="list-style-type: none"> • Planning quality

CFIR Domain (n=5)	Adapted Domain Names (n=5)	Adapted Constructs are in bold font (N=12/39)
		<ul style="list-style-type: none"> • Level of engagement of program staff (<i>technical/administrative</i>), organizations and target populations (<i>health professions/student, school children, community members</i>) • Execution quality • Reflection and evaluation

Study Participants

We identified program managers at FMOH, Sudan country offices for WHO, UNFPA, UNICEF and FCDO, Khartoum state midwives association, National Medical Council for Health Professionals, Sudan's association for pediatricians, Sudan's Obstetric and Gynecological Society and Medical Student International Network – Sudan.

We purposively selected individuals who had the longest work experience in the response and within their own organizations to generate high information power⁵⁰. We reached out through email and phone to fourteen individuals, four did not respond and ten agreed to participate.

Procedures

We shared a brief version of interview guide with study participants in advance to allow time for reflection or reference because of the events time lapse. The co-investigator (AA) conducted interviews in respondents' language of preference (Arabic or English) between August 2021 and January 2022 using in person or through voice over internet protocol, with the principal investigator (WA) as notetaker. Interviews lasted from 27 – 66 minutes, and MA transcribed and translated whilst WA proofread and audited the transcripts.

We modified CFIR's code book to our adapted CFIR domains and constructs. The two coders (WA and AA) read the transcripts several times prior to coding. They then independently coded different sections of three transcripts using hybrid deductive and inductive coding⁵¹. Both coders then compared, discussed, and agreed on definitions, codes and finalized the codebook with both pre-determined and emergent codes. Coding and analysis were then conducted in Atlas ti version 9. Coders compared their coding and had >80% interrater agreement.

We classified respondents as “government” (GOV), “international non-governmental and governmental agencies” (INGGA) or “national nongovernmental organizations”(NNGO) to

minimize personal identification when reporting results. We used thematic analysis for the reported activities and factors using WHO and CFIR frameworks respectively. The scale of activity was defined by resources (time, money, people) invested, geographical or targeted populations coverage or language strength. The degree of influence of each factor reported to affect implementation was coded as “strong” based on the strength of language used or when two or more respondents reported same factor.

The principal investigator’s (WA) background in implementation research and focus of work in health sector responses on FGM in low-income settings for the last seven years influenced the study methodology and interpretation of the data.

The ethical review committee from the University of Washington and Sudan’s FMoH National Health Research Ethics Review Committee deemed this study as programmatic research not subject to human research protections. We however conducted the research following research ethics guidelines throughout.

RESULTS

Respondents included eight Sudanese nationals and two internationals, who were involved in the planning, coordination, technical oversight, financial management and conducted a wide range of activities that targeted mainly midwives. Respondents described the type and scale of the health plans and activities, as well as the facilitators and barriers categorized within CFIR domains.

Scope and scale of health response

Reported activities for strengthening governance and finance (pillar 1), included health sector plan development and establishing various technical and multisectoral coordination committees at national and state level. In addition, multi-sectoral national or state level advocacy and championing integration of FGM was reported.

National guidelines on FGM management and social norm change training modules development and roll out in pre- and in-service trainings were reported to strengthen knowledge and skills of health workers (pillar 2). Reported activities for strengthening M&E and accountability (pillar 3) included the development of an accountability framework and FGM medicalization content within midwifery code of practice and sensitization of medical, paramedical professionals and health students on FGM, as well as punitive administrative measures for performing FGM. Respondents reported assessing FGM related knowledge, attitude, and practices among diverse health professionals, traditional birth attendants and NNGO's preparedness. Moreover, respondents reported development of research agenda and designing and pretesting of FGM surveillance models. Finally, cited activities that contributed into creating a supportive environment (pillar 4) mainly targeted health professions and students through awareness raising, social norm change trainings, change agents' activities with public declarations against FGM and calls for a law. Finally, school children were targeted by development of an FGM content within primary school health manual.

Respondents estimated the funding allocation was between 18% to 30% of SFFGC's budget (20 million USD) and high governmental investment on midwives. They reported SFFGC supported states reduced from ten to four over these three years. Furthermore, the scale of coordination and intersectoral partnership was perceived as low. In contrast, the number of activities implemented by the FMoH was generally thought to be high as opposed to a low or absent among NNGOs. Finally, the scale of FGM related prevention services at primary level services was perceived as low.

Facilitators in planning and implementation

Features of health plan and activities

Most respondents felt that the health plan was well designed, evidence informed and comprehensive addressing WHO's four pillars.

"The plan had a broad scope, [...] prevention [...], surveillance, primary and secondary levels of care [...] midwifery trainings [...] awareness raising and accountability framework for midwives"

(GOV 2)

Activities where FGM was mainstreamed within existing interventions such as in-service midwifery training packages were thought to facilitate scale through complementary governmental midwifery initiatives.

Environment Characteristics

Sudan's high FGM medicalization prevalence was thought to facilitate health sector inclusion. This unique global opportunity for Sudan was thought to motivate exemplar performance. The availability of substantial long-term funding was thought to facilitate NNGO's involvement, uptake with health agenda but also created tension in FMoH's autonomy in setting health priorities.

“The INGGA interest in FGM was a “double edged weapon” [...] it helped to push FGM and prioritize it [...] (FGM) was not a priority issue compared to maternal mortality [...] there was sensitivity that it was donor driven [...] Will the FMoH follow whatever INGGA want [...] because of their funding or follow its own vision on health priorities?” (GOV 2)

The social sector’s monthly incentives through FMoH to unemployed midwives was thought to indirectly reinforce the midwives’ accountability framework. Furthermore, the social marketing of “Saleema”, an Arabic word for “healthy in body and mind” or “unharmed”, for girls who have not undergone FGM was thought to create an enabling environment.

Organization characteristics

Respondents from INGGA expressed that evaluation and feedback mechanisms were strong, since performance was tied to funding continuity.

“There was always auditors and evaluators coming from abroad [...] if performance score is very low, the program can be stopped [...] in 2016 there was a program improvement plan (because of low performance) then later [...] an A+ score which secured a second five-year phase” (INGGA 1)

Further, FMoH’s high commitment to address midwifery competencies and apply an integrated approach to siloed programs was thought to create an opportunity to develop and integrate FGM.

Characteristics of organization’s program staff

Respondents thought that senior program managers at FMoH and INGGA based in the capital city had high self-efficacy, knowledge, and commitment in planning and implementation.

“A lot of the individuals working directly on the program from INGGA were really brilliant [...] based in Khartoum [...] a program manager (named) at the ministry was very impressive and very supportive” (INGGA 5)

Characteristics of target populations

Respondents reported that engaged leadership among medical students and health specialists in obstetrics and gynecology and pediatrics associations facilitated implementation. In particular, medical students used innovative approaches to engage their peers using public speaking presentations “SCORAtalk” similar to “TED talks” where FGM related messages were expressed in different art forms such as music, plays, and poetry.

“Medical students [...] sent messages to their peers and conducted a lot of forums with good attendance for example the “SCORAtalk” in 2017, they acted as change agents in universities in other states [...] they had amazing results!” (INGGA 5)

Organization Processes

The implementation process for INGGA was described as engaging several health stakeholders.

“The work [...] with professional associations and the medical, nursing and midwifery students, facilitated [...] expansion of the implementation platform” (INGGA 5)

Further, INGGA reported continuous championing and advocacy with FMoH for FGM integration. Finally, the donor agency processing timeline was thought to be clear and predictable for planning and implementation.

Table 2 summarizes all the reported facilitators for Sudan’s health sector response on FGM.

Table 2. Facilitators for Sudan’s health sector response addressing female genital mutilation (2016 – 2018) as perceived by program managers and health professionals working for national and international governmental and non-governmental organizations and the donor agency

Features of health plan and activities	Environment characteristics	Organization characteristics	Characteristics of organization’s program staff and health program target population	Organization processes
👍👍👍 Integrated approach for implementing FGM activities	👍👍👍 Substantial donor funding and well-funded governmental health and social sector initiatives	👍👍👍 Strong evaluation and feedback and learning culture among donor agency and international non-governmental organizations	👍👍👍 High self-efficacy and expertise of senior program staff in ministry of health and international organizations in capital city	👍👍👍 Participatory planning among international non-governmental organizations and formative phase
👍👍👍 Health plan was comprehensive and informed by evidence	👍 Ongoing effective social norm change interventions at community level	👍👍👍 High commitment of donor agency and international and national non-governmental organizations to address FGM	👍👍👍 Committed leadership among specialists and members among health students	👍👍👍 Continuous championing and advocacy for FGM as priority health topic
	👍 International positionality as only country with highest donor investment into health sector	👍👍👍 High commitment within federal ministry of health to strengthen midwifery competencies and implement integration of siloed programs	👍 Communities increasingly receptive to FGM messages and less taboo to discuss in urban settings	👍 Donor funding processing timeline was clear
	👍 High FGM medicalization in Sudan			👍 Engagement of diverse health stakeholders in implementation

KEY

👍 Facilitator as reported by respondent

👍👍👍 Strong facilitator as reported by respondents or when two or more respondents report the same factor

Barriers in planning and implementation

Features of health plan and activities

The external design of some research and communication activities was perceived as insensitive to context resulting in non-usability or a negative effect.

“The international consultants recommended musicians and artists as ambassadors for change [...] they were far from the reality of Sudan [...] and created additional sensitivity” (GOV 2)

They reported complexities of interventions as they were dependent on health systems and social sector functionality to license competent midwives as well as protect or care for children in case legal action is taken against their parents. In addition, the existent supportive attitudes among midwives and communities on FGM practice continuation will not lead to reporting of midwives' involvement for administrative action.

“The accountability framework [...] had an administrative and competency part for the ministry of health and a licensing part for the health professional council but midwives lacked competencies [...] and 24,000 were unlicensed and mostly unemployed” (INGGA 4)

“Who will notify an agreed issue (to perform FGM) between the midwife and the family? Who (which governmental entity?) will take care of children of imprisoned parents?” (GOV 2)

Interestingly, the accountability framework intervention of raising awareness on punitive administrative measures negatively affected its function in case detection.

“After sensitization [...] FGM medicalization was not publicly done, but it continued [...] either the mothers took their daughters to another state or in some cases midwives travelled to other states” (GOV 3)

Environment Characteristics

There was pressure on donor agency to demonstrate results from ministers and their constituents in the United Kingdom for funding approval. This resulted in reducing geographical coverage and focusing on gains referred by an INGGA respondent as “*low hanging fruits*”.

At national level, the low political leadership commitment to end FGM was thought to slow down national law ratification. The rapid inflation rate was reported to reduce spending and complicate administrative processes to implementers for INGGA.

Though there was consensus on national law ratification as a facilitator, however the law enforcement was observed to render accountability framework’s function redundant.

“For legally reported FGM medicalization cases [...] the midwifery council will either not know [...] or be able to intervene [...] till prison release [...] also their licenses were revoked through judiciary system” (GOV 1)

Further, one respondent predicted a paradoxical increase in FGM cases before the law enforcement citing a similar situation in 1946 when the severest form of FGM was banned and anecdotally many girls underwent FGM as families wanted to bypass law penalties.

Organization characteristics

The non-clarity in roles, multiple and diverse organizational siloed cultures, and inexperience was thought to negatively affect coordination and performance in the beginning of the SFFGC program.

“It was very difficult [...] each INGAA and its ministry had its own identity, culture and organizational objectives so [...] the partnership evolved more slowly” (INGGA 5)

The competing roles and limited coordination between health and social sectors at state level especially was reported to cause constant conflicts halting activities at times.

“The state council for child welfare officials thought all the activities in the national FGM strategy were theirs [...] they worked independently with midwives which made the FMoH intervene”

(GOV 3)

The low commitment of state ministries of health to address FGM was thought to be exemplified by assigning junior staff to be responsible for this portfolio. Further, FMoH’s non-recognition of community midwives as skilled health workers, non-employment and low pay was thought to drive FGM medicalization. Finally, FMoH’s stringency as the sole implementer for midwives’ in-service training was thought to limit resource allocation to NNGOs and reduce rapid scale up.

The lower number and higher turnover of human resources in states outside Khartoum among all implementing organizations affected the scope, quality, and scale of activities.

“The presence of the health cadres affected planning [...] in remote areas you can find a big well-constructed hospital but with no personnel [...] no services. It is not possible for INGGA to recruit and pay government staff” (INGGA 1)

Program Staff

The higher knowledge of FGM health consequences and lived experiences of FMoH staff did not factor into decision making when it came to prioritization of FGM as a public health topic. There was a sense that “societal” topics were also not prioritized in general.

“(FMoH) leaders are doctors and even female managers who experienced FGM questioned whether FGM should be taken up with other (important) priorities like maternal mortality”

(GOV 2)

“There is limited support for social [...] issues in general among (FMoH) decision makers” (GOV 3)

Target population

Paramedical professions such as medical assistants, nurses, midwives were reported to have limited knowledge, supportive attitudes towards FGM, and were reluctant to provide FGM prevention. This was explained by non-exposure during training and being members of practicing communities.

“The nurses and midwives [...] see this practice as part of culture [...]no one explained it or showed them what not to do or its complications [...] during awareness raising sessions, they tell me “We didn’t know”” (GOV 4)

Although specialists recognized their role as prevention agents, they faced challenges in making time in their busy practices to engage as pro bono change agents.

Organization Processes

The late engagement of FMOH in SFFGC program was thought to weaken the ownership and buy in. Similarly, NNGOs were not engaged in FMOH planning explaining their unawareness of their roles.

The funding of multi-health topic in-service training package to midwives was reported to take a while.

“There was a lot of discussion, I remember the meetings between INGGA, and the ministry were a lot!” (GOV 3)

Table 3 summarizes all the reported barriers for Sudan’s health sector response on FGM.

Table 3. Barriers for Sudan’s health sector response addressing female genital mutilation (2016 – 2018) as perceived by program managers and health professionals working for national and international governmental and non-governmental organizations and international aid agency

Features of health plan and activities	Environment characteristics	Organization characteristics	Characteristics of organization’s program staff and health program target population	Organization processes
<p>☞☞☞ External design of some communication activities and research</p>	<p>☞☞☞ Donor funds require quick results for funding continuity limiting scale</p>	<p>☞☞☞ Low senior leadership commitment in federal and state ministries of health</p>	<p>☞☞☞ Low medical and paramedical staff knowledge/skills and service provision willingness</p>	<p>☞ Slow approval process for donor funded plans and mainstreaming into other health interventions</p>
<p>☞☞☞ Complex interventions</p>	<p>☞☞☞ Law procedures overrode and duplicated health workers accountability processes</p>	<p>☞☞☞ Low health workforce, remuneration, accountability, and health information system</p>	<p>☞ Knowledge of FGM complications and lived experience of program managers does not factor into decision making</p>	<p>☞ Late engagement of ministry of health in donor funded program</p>
	<p>☞ Low national political commitment to ratify law</p>	<p>☞☞☞ Low experience in health programming to address female genital mutilation</p>	<p>☞ Low technical capacity of program staff outside capital and limited contextual understanding among international consultants</p>	<p>☞ Limited engagement of other stakeholders in ministry of health planning processes</p>
	<p>☞ Donor funds create tension in ministry of health autonomy in priority setting</p>	<p>☞☞☞ Competing mandates and roles in the beginning and especially between health and social sectors at state level</p>	<p>☞ Pediatricians’ brain-drain and limited investment as change agents</p>	
	<p>☞ High inflation rate complicated administrative processes and reduced spending</p>	<p>☞ Stringency of ministry of health as sole trainer for midwives limited engagement of others</p>	<p>☞ Low stage of change and agency among women in remote rural setting</p>	

KEY

- ☞ Barrier as reported by respondent
- ☞☞☞ Strong barrier as reported by respondents or when two or more respondents report the same factor

DISCUSSION

Our study found most of the factors that facilitated or inhibited SFFGC's health program implementation were mainly related to Sudan's context and FMOH characteristics. Reported facilitators were fund availability, using multi-health topic intervention packages, evaluation, and feedback while barriers included power asymmetry in decision making and engagement of all health stakeholders in planning and implementation for both nationally or internationally funded interventions, competing health priorities, low coordination between social and health sector and non-supportive health system functionality and attitudes among health workers and society at large.

The accountability for international funds was mostly external but we found in a separate analysis, governmental funding investment in trainings was equal, representing a substantial national contribution to SFFGC's FGM abandonment efforts.⁴⁶ The pressure to demonstrate results shifted SFFGC interventions focus away from remote populations whom may need these interventions the most. Further, FMOH's power asymmetry in planning and implementation reduced other players involvement such as the public sector or other resources that could have potentially contributed into implementation scale up. Institutional reforms that allow decentralizing and localizing decision making in funding as well accountability frameworks^{11,53-55} have been proposed to address these power asymmetries. Furthermore, a systematic review for governance arrangements in health systems in low income settings found strong evidence that stakeholder participation inclusive of beneficiaries in policy and organizational decisions improved outcomes.⁵⁶ For the case of Sudan, we found low engagement of health professionals in planning and implementation. It would be important to engage health professionals as well as their clients or FGM survivors as well as study the impact of their involvement in stopping FGM medicalization or quality of services, contributing into existent limited body of evidence.^{57,58}

We also found that the knowledge of FGM health complications and lived experience of FMOH decision makers was not sufficient to prioritize FGM. Instead, low knowledge and supportive attitudes on FGM practice were thought to drive FGM medicalization and reluctance to provide FGM prevention services, a theme similar to findings in Guinea and systematic review that included 8 African countries.^{44,59} Our study brings in new evidence that funding availability and continued championing and advocacy are likely to yield more buy-in and inclusion of FGM within the FMOH agenda.

Finally, awareness of punitive administrative measures complicated case detection, similar to findings of a literature review,²³ while law enforcement processes were duplicative to FMOH's administrative punitive measures. A sense of duty to refuse performing FGM or report on FGM incident cases may need to be in place prior to law enforcement. Further, the FMOH's administrative punitive processes may need review and alignment between FMOH and the Ministry of Justice.

The study had several strengths, including triangulation of perspectives of program managers who held varied roles in different organizations. The use of CFIR domains strengthened the comprehensiveness of probes during data collection and helped unpack the data during analysis. Finally, the principal investigator's insider perspective brought a deeper contextual understanding but may have introduced personal bias. The co-investigator's outsider perspective and primary roles in data collection and data interpretation with input of international co-investigators (NP, CF, SG) may have mitigated bias effect.

The study sampled only senior program managers at the national level in an urban setting, and did not include perspectives from low levels of management at the state level and in rural settings. Interestingly, our findings on factors influencing FGM service provision in primary health care

settings was similar to other qualitative studies⁴³⁻⁴⁵ which showed limited knowledge and skills, supportive FGM attitudes together with the absence of clinic protocols, record-keeping, and referral systems as factors that negatively affected services. Our sampling approach was justified based on our interest in the first years of programmatic implementation, which focused on establishing foundational activities at federal level. However, it will be important to capture additional insights when states and localities implement these activities to scale to beneficiaries of interventions. Finally, there may have been recall bias because of the time lapse, since only a third of respondents were able to refer to reports prior to joining their interviews. Nevertheless, their recollection of activities matched those found in previous programmatic review.⁴⁶

In conclusion, Sudan's case study highlights the need to apply "systems thinking"⁶⁰ which recognizes interactions between interventions with the health sector systems and other contextual factors. This together with the use of CFIR framework during evaluations would be useful to uncover barriers and design strategies and interventions to address them. Furthermore, approaches for joint accountability, decision making and participatory engagement to strengthen inter and multi-sectoral coordination and implementation would need to be identified and impact studied.

Chapter 4: Are Large Scale Trainings on Female Genital Mutilation Associated with Knowledge, Attitudes, and Practice? An Exposure-based Cross-sectional Study among Sudanese Midwives in Khartoum State

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ABSTRACT

Introduction

Khartoum state in Sudan has a high prevalence of female genital mutilation (FGM) performed mainly by midwives. In 2016, a large-scale training targeting midwives was initiated as part of a comprehensive program to stop their involvement and improve FGM prevention and care services. There has been no follow up of trained midwives or studies on long-term effectiveness of trainings.

Methods

We performed an exposure based cross-sectional study of trained and non-trained midwives randomly selected from ministry of health records. Data was collected in 2022 through phone interviews using both closed and open-ended questions, and descriptive, univariable, and multivariable analyses were conducted.

Results

All midwives ($N=148$) interviewed were female and had trained as village midwives (93%), with mean age of 51 years ($SD=10$) and mean work experience of 22 years ($SD=11$). Most midwives felt health workers can change FGM practice (73%) and were against health workers performing FGM (71%). Their knowledge of FGM types (42%) was higher than of health complications (18%). All midwives reported they always provided FGM prevention counseling, and 10% correctly identified procedural steps for managing the commonest FGM type during labor. Trained midwives were less satisfied with skills attained compared to knowledge gained. They were significantly more likely to know more than two FGM types (adjusted odds ratio (*aOR*): 7.8, 95% confidence interval (*CI*): 2.7 – 29.3, $P= 0.002$), be aware that performing FGM violates professional code of conduct (*aOR*: 18.2, 95% *CI*: 4.8 – 69.2, $P<0.001$) and identify partially correct procedural steps (*aOR*: 19.3, 95% *CI*: 2.5 – 152.0, $P=0.005$) compared to non-trained midwives.

Conclusion

Large scale trainings appeared to influence FGM knowledge and practice. Future training content may need to focus more on midwives' values, self-efficacy, health complications and relevant clinical skills to support knowledge translation into practice.

Key words: Female genital mutilation, Sudan, midwives, training program, knowledge, attitudes, practices

INTRODUCTION

Female genital mutilation (FGM) is a harmful practice that affects 14 million women and girls in Sudan.⁶¹ This practice involves partial or total removal of tissue or other injuries to the external female genitalia²⁹. In Sudan specifically, the commonest type (72%) is classified by the World Health Organization (WHO) as Type 3 or “infibulation”. This type involves the cutting of the inner and outer vulvar folds with or without removal of the clitoral glans and closing the outer vulvar folds leaving a small opening for urine and menstrual blood flow⁷. Furthermore, 24% of women who give birth undergo a repeat FGM⁸, “re-infibulation” for type 3. Among girls under 15 years, FGM is mainly reported to be performed by midwives (64%) followed by traditional practitioners (29%)⁸. The involvement of health workers known as “FGM medicalization”²⁹, violates the professional code of conduct of “do no harm”, endorses the practice and potentially rolls back the gains in FGM abandonment efforts.

Since 2016, Sudan implemented a large-scale health sector FGM program with a goal to stop midwives’ involvement and strengthen FGM-related care and prevention services. The program was built around WHO’s four strategic pillars namely to strengthen governance, policy and finance (pillar 1), knowledge and skills of health workers (pillar 2), accountability and monitoring and evaluation (pillar 3), as well as to create an enabling environment (pillar 4)⁴². The primary target of these four pillars were midwives.

Midwives constitute about a quarter of the Sudanese health workforce (23%)³⁷. New graduates receive a one-day induction training to obtain their midwifery practice license and thereafter every three-years for license renewal in the National Medical Council for Health Professionals (NMCHP). Midwives also receive a ten-to-twelve-day in-service refresher course on midwifery competencies mostly provided by the Federal Ministry of Health (FMoH). Since 2016, FGM-

related content within in-service trainings was updated using WHO's 2016 guidelines on management of health complications⁶². Similarly, during this year, an FGM session was developed using the same resource and integrated within midwifery practice license trainings. The FGM content in midwifery practice license and in-service trainings covered FGM epidemiology, typology, health complications, non-linkage of practice with religion, midwives' role as change agents and FGM medicalization as a violation of professional code of conduct that carries administrative punitive measures. In 2018, a separate in-service training was rolled out with focus on social norm change skills in communication, community dialogue and advocacy adapted from United Nation's Population Fund (UNFPA) and United Nation's Children Fund (UNICEF) manual on social norm change^{63,64}. The recommended duration of FGM training content for the in-service and midwifery practice license trainings was two-days and one hour long, respectively.

During 2016 through 2018, program data indicate that 18% and 31% of midwives in Sudan ($N=16,183$) received FGM content during midwifery practice license issuance and in-service trainings respectively⁴². While the in-service training on social norm change coverage during 2018 through 2019 was 9%. The mean (median) cost for training a midwife during an in-service training was estimated at \$296 USD (\$157)⁴².

The effectiveness of in-service trainings, captured in pre- and post-tests, primarily focused on knowledge attainment. There was no follow up data on trained midwives' knowledge, attitudes, or practices. The existent evidence on FGM training effectiveness have shown varied levels of success in changing health care providers' knowledge, attitudes, self-efficacy, skills and patient satisfaction in mostly controlled study settings²³. Few studies have examined changes in intentions, or actual change in practices from either a study setting or real world interventions^{14,24} and we found no study assessing training effects beyond six months of training.

From a programmatic perspective, we felt it important to assess whether Sudan's large-scale trainings that mainly targeted midwives had any lasting impact on knowledge, attitude, and clinical practices. We conducted an exposure based cross-sectional study to identify associations between current FGM related knowledge, attitudes, and practices and trained status of midwives working in Khartoum state, Sudan. We hypothesize that midwives who received FGM related trainings would have a significantly higher knowledge, supportive attitudes and improved clinical practice compared to non-trained midwives.

METHODS

Setting

Khartoum state houses 11% of all midwives in Sudan ($N=16,183$)⁴⁰. The FMoH and the NMCHP training records for Khartoum indicate that 75% and 76% of midwives received in-service and midwifery practice license trainings respectively during 2016 – 2018. While 28% received social norm change training during 2018 – 2019.

Most of the women and girls (88%) in Khartoum state have experienced FGM mostly type 3 (72%) while 22% of women who gave births in the last year underwent a repeat FGM. Further, Khartoum state has the highest FGM medicalization prevalence (89%) in Sudan, mostly ascribed to midwives⁸.

Study design and study population

This exposure based, cross-sectional study, conducted in 2022, primarily compared FGM related knowledge, attitudes and practices among midwives who ever received FGM trainings and those who did not. For the study sample estimation, we used a prevalence of 5% for knowledge on FGM types, 90% for attitudes against FGM practice and 7% for FGM complications management as a proxy for practice among untrained midwives from previous assessments^{65,66}. We anticipated a difference of 20% for knowledge and practice and 10% for attitude between trained and non-

trained midwives using 80% for power and 5% alpha error. The sample size for each study group ranged between 46 – 71 midwives.

We then retrieved lists of all registered midwives in Khartoum, as well as records of trained midwives to identify and generate lists of potential trained and non-trained midwives in Microsoft Excel (2018). We used IBM SPSS Statistics for Windows, version 20.0 random number generator for sampling. Because of the uncertainty of records completeness and up to date training status, we oversampled by 30% ($N= 186$). We then obtained the phone contact details of the selected midwives from FMOH and Khartoum state ministry of health to confirm the training status for inclusion into exposure groups for data collection.

Materials and Methods

We used Kirkpatrick's four level training evaluation model as a framework to assess training effectiveness. The first level "Reaction" focuses on trainees' perceptions. The second level "Learning" evaluates whether training learning objectives were met. The third level "behavior" assesses behavioral change while the fourth "results" evaluates the training impact on the organization, quality, or user of service. For this study, we utilized Kirkpatrick's first three levels. The primary exposure of interest was any FGM training received. The training outcome variables were as follows: "level 1" was satisfaction levels, "level 2" number of correct FGM types, number of correct FGM complications, categories of FGM types and categories of FGM complications, "level 3" belief in FGM practice continuation, FGM medicalization as a violation of professional code of conduct, belief in health workers having influence to change practice, belief that health workers should follow traditions and norms, belief that health workers have time to provide FGM related services, FGM prevention counseling frequency scale and selecting a set of correct steps for de-infibulation procedure during birth as a proxy for practice.

The study tool had 21 questions which included closed and open-ended questions. The first section had six questions on current demographic data (age, sex, midwifery qualification, midwifery work experience, health facility level) which was used for descriptive data and as potential covariates to be controlled for in the multivariable model.

The second section assessed characteristics of training and satisfaction scale (Kirkpatrick level 1), for midwives who received FGM training. This section had 8 questions on training type (in-service, midwifery practice license, other), FGM training module versions (<2016 for older versions, 2016 – 2018 version adapted WHO's 2016 guidelines and >2018 version adapted UNFPA-UNICEF social norm change manual), training duration (days), training institution (FMoH, non-governmental, other) and satisfaction levels (Likert scale) with respect to knowledge and skills gained for FGM prevention and complications management.

The third section had 7 questions on current knowledge, attitudes, and practices. Open ended questions were used to describe the FGM types they knew and to list four FGM complications, while attitudinal questions comprised of agreement to the statement closest to their stances on FGM, FGM medicalization, efficacy to change practice and provision of FGM related services. The practice questions comprised of reported frequency (Likert scale) of FGM prevention counseling and selecting the correct de-infibulation procedure, as per WHO's clinical handbook for care of girls and women living with FGM⁶⁷, during labor out of 6 choices.

The co-Principal Investigator (Co-PI), MM, translated the study tool into Arabic that was cross-checked by PI (WA). The co-PI used the Arabic version to develop an online survey administration software (google form survey) with constraints and skip patterns to minimize errors and trained four data collectors with experience in health survey data collection on research ethics and the

electronic questionnaire. The data was collected over the phone and was completed during October 2022.

Data analysis

The PI (WA) and co-PI (MM) reviewed, cleaned, and coded the autogenerated data set from google survey in Microsoft Excel (2018). The open-ended responses on FGM types and complications were coded according to WHO definitions and categories⁷. The data set was then imported into StataCorp. 2021. Stata: Release 17. The scale of missing data was less than 5%. We conducted descriptive analysis of study population and the trainings. Student t and Chi square tests were conducted for continuous and categorical variables respectively.

We conducted univariable and multivariable logistic models to examine the association between ever trained (independent variable) to the training outcomes on knowledge, attitude, and practices (dependent variables) as primary analysis. For the multivariable models we controlled for age, a characteristic that was significantly different between the two groups and related to training exposure and midwifery expertise with training outcomes. Because we conducted multiple testing we used Holm-Sidak corrections for *P*-values.

The study was approved by the University of Washington Institutional Review Board (STUDY00012584) and Sudan's FMoH National Health Research Ethics Review Committee (P2-3-21). The study was considered as programmatic research not subject to human research protections; nevertheless, we conducted the research following research ethics guidelines.

RESULTS

We reached 80% of the sampled 186 midwives; 30 (16%) were not traceable because of non-valid phone numbers, 5 were not eligible because they were not midwives, 2 were dead and 2 had left

Sudan. All the 148 midwives reached agreed to participate and completed the phone interviews which lasted 10 – 15 minutes.

Most midwives (85%) recruited from both the trained and non-trained record lists reported receiving FGM training by time of data collection (Table 1). All the midwives interviewed were female, mostly trained as village midwives (93%) and working in health centers (95%) (Table 1). The mean age was 51 years ($SD=10$), and mean years of midwifery experience was 22 years ($SD=11$). Both study populations had similar demographic and professional characteristics except for the mean (M) age. Midwives who were not trained were significantly older ($M=59$ years, standard deviation (SD) = 7) than those who were trained ($M=49$ years, $SD = 9$ $p= <0.001$).

Most trained midwives received in-service training and one or two FGM trainings. All but one midwife received midwifery practice license training and an in-service training. The mean duration of in-service training was 3 days ($SD=1$) during 2016 – 2018, 3 days ($SD=1$) after 2018 and 2 days ($SD=1$) for trainings prior to 2016. Most of in-service training was conducted by the ministry of health (94%) followed by non-governmental organizations (6%).

Table 1: Characteristics of midwives who received and did not receive trainings on female genital mutilation in Khartoum state, Sudan

	Total N=148	Not Trained N=23	Trained N=125
		<i>M (SD)† or n (%) §</i>	
Age (years)	50.7 (9.6)	58.6 (6.8)	49.3 (9.4)
Job Title			
Village midwife	138 (93.2%)	78 (92.9%)	60 (93.8%)
Health visitor	5 (3.4%)	2 (2.4%)	3 (4.7%)
Assistant health visitor	5 (3.4)	4 (4.8%)	1 (1.6%)
Midwifery work experience (years)	22.0 (11.4)	21.0 (9.7)	22.4 (11.7)
Health facility level			
Hospital	1 (0.7%)	0	1 (0.8%)
Health center	140 (94.6%)	22 (95.7%)	118 (94.4%)
Other	7 (4.7%)	1 (4.4%)	6 (4.8%)
Training type (in-service, pre-license)			
Module version (<2016, 2016 – 2018, >2018) *			
In-service <2016			70 (56.0%)
In-service 2016 – 2018			64 (51.2%)
Pre-license 2016 – 2018			26 (20.8%)
In-service >2018			79 (53.4%)
Number of Trainings			
One training			53 (42.4%)
Two trainings			55 (44.0%)
Three trainings			17 (11.5%)

†Mean (standard deviation) § Number (percentage)

(<2016 for older versions, 2016 – 2018 version updated using World Health Organization’s 2016 guidelines on the management of health complications and >2018 version adapted using United Nations Population Fund and United Nations Child Fund’s manual on social norm change)

FGM training content satisfaction levels

Generally, the satisfaction levels on the knowledge and skills gained on FGM prevention and care management were high for in-service or midwifery practice license trainings. Overall, most of the trained midwives' responses (89 – 100%) were either “very satisfied” or “satisfied” on FGM prevention and health complications management knowledge and skills. A higher proportion (12%) of midwives ($N=26$) who received midwifery practice license trainings reported less satisfaction on skills on FGM complications management compared to midwives (5%) who received in-service training ($N=64$). This finding was affirmed by all midwives ($N=24$) who received both trainings.

Knowledge

Overall, less than a quarter of all midwives knew four FGM types³ or four health complications (Table 2). However, 42% were able to name 2 or more FGM types. Of the FGM types reported, type 3 and type 1 were the most common. While obstetric and chronic complications were the most reported FGM health complications. FGM related acute, psychological, and sexual complications were the least reported.

Trained midwives had higher knowledge on FGM types and health related complications than non-trained midwives. Trained midwives significantly knew more than 2 types of FGM (47%) than those not trained (13%).

Table 2. Female genital mutilation (FGM) knowledge among trained and non-trained midwives in Khartoum state, Sudan

³ WHO definitions for FGM types: Type 1: “Partial or total removal of the clitoral glans and/or prepuce”, Type 2: “Partial or total removal of the clitoral glans and the labia minora, with or without excision of the labia majora”, Type 3: “Narrowing of the vaginal opening with the creation of a covering seal by cutting and appositioning the labia minora or labia majora with or without excision of the clitoral prepuce and glans (infibulation)”, Type 4 “All other harmful procedures for example pricking, piercing, incising, scraping and cauterization”

FGM Knowledge	Total N=148	Not Trained N=23	Trained N=125
Midwives who named:		<i>N (%)</i>	
4 FGM types	26 (17.6%)	0	26 (20.8%)
>2 FGM types	62 (41.9%)	3 (13.0%)	59 (47.2%)
4 health complications	36 (24.8%)	1 (4.4%)	35 (28.7%)

Attitudes and Practices

Most of the trained and non-trained midwives' attitudes were supportive of the abandonment of FGM and its medicalization (Table 3). A high proportion of midwives thought that FGM is a harmful practice that needs to stop (99%) and not a religious requirement (95%). They also believed that FGM medicalization does not make it safer (97%) and that performing it is a violation of professional code of conduct (71%).

With regards to practice, 100% of the trained and non-trained midwives reported that they always provided FGM counseling. In contrast, 18% reported not knowing the correct de-infibulation procedure during labor management, 70% thought reclosure back to original FGM type 3 (re-infibulation) was correct, 43% selected partially correct de-infibulation procedure steps and 10% selected all the correct steps.

We found several significant differences FGM related attitudes and practice related knowledge between the two groups. More trained midwives (82%) thought FGM medicalization violates code of conduct than non-trained midwives (13%).

Moreover, more non-trained midwives did not know the de-infibulation procedure (57%) compared to trained midwives (11%). Finally, more trained midwives selected partially correct de-infibulation steps (50%) compared to non-trained (4%).

Table 3: Female genital mutilation related attitudes and practice among trained and non-trained midwives in Khartoum state, Sudan

Behavior	Total N=148	Not Trained N=23	Trained N=125
Attitude – agree that:			
FGM is a harmful practice that should stop	145 (99.3%)	23 (100.0%)	122 (99.2%)
Health workers who conduct FGM make it safer	5 (3.4%)	0	5 (4.0%)
Health workers who perform FGM violate professional code of conduct	104 (70.8%)	3 (13.0%)	101 (81.5%)
Health workers do not have any influence to change this practice	40 (27.2%)	2 (9.1%)	38 (30.4%)
Health workers have no time to provide prevention and care services	20 (13.7%)	0	20 (16.3%)
Practice			
Provide counseling against FGM practice – Likert scale: “always”	148 (100%)	23 (100.0%)	125 (100.0%)
De-infibulation⁴ procedures in labor management:			
Correct “ <i>Incise along scar and leave an opening</i> ”	15 (10.1%)	4 (17.4%)	11 (8.8%)
Partially correct “ <i>Incise along scar and close back again</i> ”	63 (42.6%)	1 (4.4%)	62 (49.6%)
Incorrect for all steps	43 (29.1%)	5 (21.7%)	38 (30.4%)
Do not know	27 (18.2%)	13 (56.5%)	14 (11.2%)

⁴ De-infibulation as defined by WHO refers to the practice of cutting open the sealed vaginal opening of a woman who has been infibulated to allow intercourse or to facilitate childbirth. Infibulation is a type of FGM where vulval folds are opposed leaving a small opening for urine or menstrual flow.

Comparison of trained versus non-trained midwives' knowledge, attitudes, and practices

The univariable logistic model analysis (Table 4) showed that trained midwives were significantly more likely to know more than two FGM types (odds ratio (*OR*): 6.0, 95% Confidence Interval (*CI*): 1.7 – 21.1, *P*= 0.006) compared to non-trained midwives. In addition, trained midwives were significantly more likely to be aware of FGM medicalization being a violation of professional code of conduct (*OR*: 29.3, 95% *CI*: 8.1 – 106.7, *P*<0.001) and more likely to identify partially correct de-infibulation steps (*OR*: 21.7, 95% *CI*: 2.8 – 165.6, *P*=0.003) compared to non-trained midwives. After adjustment for age, the associations between midwives who received training with knowledge of more than two FGM types (adjusted odds ratio (*aOR*): 7.8, 95% *CI*: 2.7 – 29.3, *P*= 0.002), aware that FGM medicalization being a violation of professional code of conduct (*aOR*: 18.2, 95% *CI*: 4.8 – 69.2, *P*<0.001) and identifying partially correct de-infibulation procedure steps (*aOR*: 19.3, 95% *CI*: 2.5 – 152.0, *P*=0.005) all remained statistically significant.

Table 4. Association between female genital mutilation related knowledge, attitudes, and practices among trained and non-trained midwives in Khartoum state, Sudan

Kirkpatrick's evaluation model Levels	Crude Estimates ⁺			Adjusted Estimates [‡]		
	OR [¶]	95% CI [°]	P value	aOR [†]	95% CI [°]	P value
Knowledge (Level 2)						
Four FGM complications	8.9	1.1 – 68.2	0.04	8.4	1.0 – 67.1	0.05
> 2 FGM types	6.0	1.7 – 21.1	0.006*	7.8	2.7– 29.3	0.002*
Attitude/Practice (Level 3)						
Health workers who perform FGM violate professional code of conduct	29.3	8.1 – 106.7	<0.001*	18.2	4.8 – 69.2	<0.001*
Health workers do not have any influence to change this practice	4.4	1.0 – 19.6	0.05	4.7	1.0 – 22.1	0.05
Correct de-infibulation ⁵ procedure	0.5	0.1– 1.6	0.2	0.6	0.2 – 2.3	0.4
Partially correct de-infibulation procedure	21.7	2.8 – 165.6	0.003*	19.3	2.5 – 152.0	0.005*

⁺Logistic regression model [¶]Odds Ratio [‡] Logistic regression model adjusted for age [†]Adjusted Odds Ratio* [°]95% Confidence Interval

*P value = statistically significant using Holm-Sidak Correction

⁵ De-infibulation as defined by WHO refers to the practice of cutting open the sealed vaginal opening of a woman who has been infibulated to allow intercourse or to facilitate childbirth. Infibulation is a type of FGM where vulval folds are opposed leaving a small opening for urine or menstrual flow.

DISCUSSION

This exposure based cross-sectional study found over 70% of all the study midwives from Khartoum state to report supportive attitudes towards FGM abandonment and against FGM medicalization and to always provide FGM prevention counseling. In contrast, less than a third of all midwives had knowledge of four FGM health complications and correct de-infibulation procedures. Nearly all trained midwives were satisfied with training knowledge and slightly less satisfied with skills to manage FGM health complications. The multivariable analysis showed trained midwives were significantly more likely to have higher knowledge on FGM typology, awareness that FGM medicalization is a violation of professional code of conduct and to identify partially correct de-infibulation steps.

Though the knowledge on FGM health complications among trained midwives was low, it was 20% higher than non-trained midwives whose knowledge levels are comparable to other baseline studies conducted earlier among midwives and nurses^{65,66,68}. Furthermore, this higher current knowledge among trained midwives who received trainings several years prior is also suggestive of a slow knowledge decay in contrast to an only comparable study we found which showed no knowledge difference between trained and non-trained health educators 4 years after a domestic violence training⁶⁹.

However, the low correct knowledge of WHO's recommended de-infibulation procedure during labor management for the most prevalent FGM type is concerning. Though correct knowledge does not necessarily translate to actual practice, we believe that incorrect knowledge is likely to lead to incorrect practice. Since the response options used terminologies familiar to their routine midwifery practice, we believe there was a low possibility that the midwives misunderstood the question. Trained midwives were more likely to identify partially correct de-infibulation steps

which included the incorrect practice of re-infibulation or resealing the vaginal opening to FGM type 3. This incorrect step is incongruent with their higher knowledge of FGM health complications and FGM medicalization being a violation of professional code of conduct. This finding on re-infibulation among trained midwives could be explained by their values on FGM³⁵, societal and financial influences as well as training related factors.

The mean age of trained midwives in our study was 49 years and their ingrained values may be different from younger generations despite having higher knowledge, as shown by the low knowledge and high attitudinal stance against FGM practice among midwifery students from Khartoum and Kassala states⁶⁸. We did not have information on whether values or practices related to FGM post-delivery depended on whether the women previously experienced FGM, and this would need to be explored further in future research. Future trainings may need to focus on value clarification exercises⁷⁰ on de- and re-infibulation. The societal demand or its non-readiness to change may have also influenced trained midwives' perception of "correct" procedure. One study found trained Somali midwives were not able to provide interventions because it challenged culture and religion⁷¹. Finally, the financial incentive to perform re-infibulation²¹ may supersede professional code of conduct and their moral compass with the current high unemployment rates and low pay when employed^{42,72}.

Most of the trainings received by midwives were in-service trainings which have been shown in a systematic review to improve health workers practice in low income settings⁷³. There may have been gaps on the training content reflected in the lower satisfaction on skills on health complications management as well as the absence of de-infibulation procedure content in existent training modules^{63,74}. It remains unclear whether the practical skills of this procedure are formally taught in midwifery school and would need to be investigated further and addressed. Monitoring

and evaluation (M&E) is an effective strategy in improving health care providers' practice in low income setting^{57,75}. Our previous research found no routinely-available facility-level data on delivery FGM related services,⁴² suggesting limited M&E to accompany FGM training efforts and overall low accountability related to translation of training into practice.

Our study brings in new evidence on the long-term training outcomes of trained health workers working in an FGM and FGM medicalization prevalent setting. Though our study design was cross-sectional and we were unable to attribute causality, the use of comparative arms and multivariable analyses strengthened rigor which was noted to be absent from previous FGM related training studies²³. However, the estimates generated need to be interpreted with caution because of the wide confidence interval as the sample size of comparator arm was small. Another study strength was the use of a retrospective, exposure-based design which was more practical and efficient than carrying out a costly prospective study⁷⁶. In addition, using objective questions which assess actual knowledge instead of midwives' perceptions, as was done previously²⁴ was a strength to generate non-biased data to decision makers involved in training programs and quality of care.

One of our study limitations was the usage of quantitative data mainly and absence of data from midwives' clients (Kirkpatrick Level 4). The use of qualitative data and patients as a data source could have strengthened data triangulation and provided contextual depth in the understanding of how and why these results were achieved. Outcome-level evaluation for in-service trainings using an ecological framework which recognizes the complex interplay between individuals with the community and society may need to be used in future⁷⁷. Some of the study questions would need further improvements, testing and validation. For instance, all midwives reported to always provide FGM prevention counseling practices, but this did not align with their belief that health

workers do not have the time to provide FGM prevention and care service or perceived low efficacy of health workers to change the practice. Their response may have been affected by a social desirability bias to meet the ministry of health expectation. Finally, our study findings are difficult to generalize nationally or outside of Sudan. Khartoum state has one of the highest FGM medicalization prevalences and being mostly urbanized societal preference or influence maybe different. Additionally, the use of the midwives' registration and training records as a sampling framework may have generated a selection bias and reduced representativeness because of records' non-completeness.

In conclusion, our study findings highlight the need to review and focus on addressing midwives' values, practical skills, and self-efficacy in changing practice in potentially both midwifery schools and during in-service trainings. Appropriate evaluation tools will need to be developed and used during M&E. Finally, the health system and societal factors that influence midwives' practices need to be addressed to create an enabling environment for midwives to translate their knowledge and skills into practice.

Chapter 5: Conclusions

The implementation of WHO's four pillars of action to stop FGM medicalization and improve the quality of prevention and care services is a nascent area of work. There is a steep learning curve on how to effectively implement these four pillars. Our evaluation of Sudan's first three years of programming generated several new areas of learnings that could be used going onwards as well as guide other countries that have a similar profile intending to implement or initiate applying WHO's four pillars.

A centralized database of activities that includes costs and outcomes such as knowledge, attitude and practices of health care providers or the quality of services will enable program managers to identify gaps to strengthen or modify intervention implementation. The existent trainings targeting midwives solely provided through the FMoH may not be tenable in the long run nor meet the program goal timeline. There is a need to identify and test other modalities through training institutions or decentralization of trainings to other state ministries of health. Further, the current knowledge, attitudes, and practices among trained midwives, may require reviewing and revising existent content to address their values and self-efficacy in changing re-infibulation practices, as well as provide essential clinical skills to perform de-infibulation. Appropriate evaluation tools will need to be developed and used during M&E. Finally, the health system and societal factors that influence midwives' practice would need to be addressed to create an enabling environment for midwives to translate their knowledge and skills into practice.

Whilst we were able to study the effectiveness of past trainings (pillar 2) on midwives' knowledge, attitudes, and practices there is still many learning gaps on the effectiveness of the remaining pillars or effective activity bundles within and between pillars.

Finally, FGM related health interventions operate in a complex environment that is not static and require constant comprehensive evaluations that use dissemination and implementation science frameworks to be able to develop appropriate remedial action or mitigate barriers. There is a need to continue generating lessons to identify cost effective approaches to stop FGM medicalization and provide quality of prevention and care services to women and girls at risk or have undergone FGM. By doing so, the health sector would meaningfully contribute into national FGM abandonment efforts and improve the quality of life of women and girls affected by it.

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