



# When political solutions for acute conflict in Yemen seem distant, demand for reproductive health services is immediate: a programme model for resilient family planning and post-abortion care services

Catherine N Morris <sup>a</sup>, Kate Lopes,<sup>b</sup> Meghan C Gallagher <sup>c</sup>, Sarah Ashraf,<sup>d</sup> Shihab Ibrahim<sup>e</sup>

a Senior Specialist, Monitoring & Evaluation, Save the Children US, Washington, DC, USA. *Correspondence:* kmorris@savechildren.org; katiemorris828@gmail.com

b Fellow, Reproductive Health in Emergencies, Save the Children US, Washington, DC, USA

c Advisor, Monitoring & Evaluation, Save the Children US, Washington, DC, USA

d Advisor, Sexual and Reproductive Health, Save the Children US, Washington, DC, USA

e Humanitarian Health Advisor, Save the Children UK, London, UK

**Abstract:** *The political situation in Yemen has been precarious since 2011 when popular protest broke out amid the Arab Spring, calling for President Saleh to step down. In March 2015, a Houthi insurgency took control of the capital, Sana'a and ignited a civil conflict that is now characterised by foreign political and military involvement. Since 2015, health facilities have been a primary target for airstrikes and bombing. Seaports have been blockaded barring the delivery of essential medicines and supplies, contributing to the near collapse of an already fragile health system. Since 2012, Save the Children (SC) has been implementing a Family Planning (FP) and Post-abortion Care (PAC) programme in two governorates heavily affected by the conflict. Despite the risks associated with the conflict, there remains a strong demand for SC's FP and PAC services. Ongoing programmatic support and capacity strengthening have allowed quality FP and PAC services to continue for Yemenis even when humanitarian access is impeded. Since the onset of conflict in March 2015, 16 facilities provided services to 43,218 new FP clients (with 23% accepting a long-acting method) and treated 3627 women with PAC. Over 93% of FP clients would recommend FP services at the facility to a friend or family member. Findings support growing evidence that women affected by conflict require family planning services, and that demand does not decline as long as quality services remain accessible. An adaptable reproductive health programme model that embraces innovative approaches is necessary for establishing services and maintaining quality during acute conflict. DOI: 10.1080/26410397.2019.1610279*

**Keywords:** Yemen, family planning, contraception, post-abortion care, supportive supervision, supply chain, conflict, humanitarian crisis, political instability, reproductive health

## Introduction

Since March 2015, Yemen has been mired in a conflict, both inter- and intra-state in character, which has had a devastating effect on civilians and health infrastructure. Armed civil conflict and airstrike campaigns by the Saudi-led coalition, subsequent widespread food insecurity, and an unprecedented cholera outbreak left three-quarters of the population – 22.2 million people – in need of

humanitarian assistance in 2018.<sup>1,2</sup> In total, 16.4 million people lack access to basic health care, with 9.3 million in acute need.<sup>1</sup> The complex interplay of ongoing conflict, infectious disease, and food insecurity in a country with endemic poverty has placed women and girls at greater risk of negative reproductive health outcomes, including unwanted pregnancy, unsafe abortion, severe obstetric complications and related mortalities,

sexually transmitted infections, and gender-based violence.<sup>2</sup>

An estimated 3 million Yemeni women of reproductive age are directly affected by the ongoing conflict, including 1.1 million who are currently pregnant.<sup>2</sup> Women and girls are in critical need of access to basic services that can meet their reproductive health needs, including access to family planning and obstetric care services.<sup>2</sup> Due to underlying socio-economic factors such as poverty, under-development, gender inequality, and weak health care systems, women have long faced significant barriers to essential reproductive health services.<sup>3</sup> The current political crisis has further exacerbated existing vulnerabilities in the health system.<sup>1,4</sup> It has exhausted medical commodity stocks, human resources, and funding for basic health services, which has reduced women's access to reproductive health care.<sup>1</sup> Poor pre-crisis reproductive health indicators and low prioritisation of reproductive health services by donors, the government, and humanitarian actors since 2015 has had an unmeasured impact on the health of 10.9 million Yemeni women and girls in need.<sup>1</sup> Limited conflict-period data on reproductive health service access are available. The last Health Resources Availability Monitoring System (HeRAMS) conducted by the World Health Organization (WHO), however, found less than 50% of the health system was functional as of October 2016.<sup>5</sup>

While conflict impedes access to reproductive health services, research from African contexts suggests that it does not hinder the demand by women for effective ways to space or limit pregnancies.<sup>6–8</sup> Demand for a full range of contraception, including long-acting methods, has continued in Save the Children (SC) supported facilities throughout the conflict in Lahj and Hodeida governorates in Yemen. SC has been implementing a Family Planning (FP) and Post-abortion Care (PAC) programme in Yemen since 2012. Sixteen public health facilities are managed and run by the Yemeni Ministry of Public Health and Planning (MoPHP) and supported by SC through the FP and PAC programme. The programme provides comprehensive, high-quality FP and PAC services through provision of supplies and equipment, clinical capacity building, district and governorate health management capacity building, and health system strengthening.

Complex humanitarian emergencies are marked by the fracturing of basic services and institutions, collapsing the public sector and

causing populations to lose access to critical services and commodities. This is certainly the case in Yemen. The political environment in Yemen has been under constant flux. Airstrikes by the Saudi-led coalition (with the United Arab Emirates also playing a major role) continue in 2019. The Houthi government in the north and the Hadi government in the south issue conflicting decisions and mandates that affect SC's access and scope of programme operations, disrupt the programme's medical supply chain, and influence social norms in areas of programme operation that may in turn influence women's access to health care. Although data-driven literature discussing access to reproductive health care in Yemen after March 2015 is limited, grey literature consistently highlights the collapse of the Yemeni health system, which has had a severe effect on women's access to life-saving care.<sup>1,9,10</sup>

Despite proven demand from crisis-affected women, contraception and PAC services are often neglected or deprioritised within traditional primary health care humanitarian response packages.<sup>7,8</sup> The programme data collected by SC's FP and PAC programme support the hypotheses that, 1) demand for reproductive health services remains high in emergency contexts, including those in the Middle East, and 2) if quality services are available, demand will continue to gradually increase as new services, such as long-acting reversible contraceptives (LARCs), are introduced into the contraceptive method mix. SC's ongoing support and capacity strengthening for these facilities has allowed reproductive health services to continue for Yemenis, even through lasting conflict and frequent political changes. Reproductive health programs with an emphasis on quality of care can succeed in complex settings and mitigate the negative effect that conflict can have on women's reproductive health. This study contributes to data-driven research on demand for FP and PAC services in Yemen and other emergency contexts.

## Background

Yemen is one of the poorest countries in the Arab region, with one of the highest population growth rates in the world.<sup>11</sup> In 2014, nearly one-fifth of the population was living on less than \$1.90 a day,<sup>12</sup> 41% of the population was under 15 years old,<sup>13</sup> and one-quarter of Yemeni youth were unemployed.<sup>14</sup> A youth bulge, chronic poverty, and

rapid population growth have long stressed public services, utilities, and the Yemeni labour market.<sup>13</sup> In late 2014, prior to the beginning of the present conflict, 15.9 million people in Yemen were already in need of humanitarian assistance, including 8.4 million lacking access to basic health care.<sup>15</sup> Although the civil conflict has greatly increased levels of need, Yemen was already in the midst of crisis due to poor leadership, lack of development, gender inequality, corruption, frequent conflict, and weak rule of law which led to a culture of impunity for rights violations and exploitation.<sup>9,15,16</sup>

Indicators of reproductive health in Yemen have historically been poor, an issue that is both rooted in and exacerbated by gender inequality and low levels of human development. Yemeni women hold few legal, social, or cultural rights, exhibited by the fact that Yemen ranks last on the World Economic Forum's Global Gender Gap Index (GGI), a ranking that it has held since the inception of the index in 2006.<sup>17</sup> Given the depth and breadth of gender inequality in Yemen, it is unsurprising that Yemen has had one of the highest maternal mortality ratios (MMR) in the Arab region, low contraceptive prevalence rates, low utilisation of skilled providers for deliveries, and high rates of home births, based on various sources of data collected between 1997 and 2013.<sup>3,18,19</sup> Estimates of the MMR in Yemen vary widely, from 148<sup>18</sup> to 385<sup>20</sup> per 100,000 live births in 2013 and 2015, respectively. This MMR is, by either estimation, one of the highest in the Arab region and is expected to increase due to the ongoing conflict.<sup>21</sup> Demographic and Health Survey (DHS) data from 2013 found that 29% of married women in Yemen were using a modern method of family planning with a large difference between women in rural areas (24%) and women in urban areas (40%).<sup>18</sup> The National Reproductive Health Strategy (2011–2015), written before the current conflict, identified poor access to and usage of maternal health and FP services as major obstacles to better public health in Yemen.<sup>22</sup> While reproductive health indicators have improved in Yemen over the last two decades, experts have voiced fears that the delicate progress made towards improving reproductive health access and service availability will be shattered by the ongoing conflict.<sup>1,10</sup>

The conflict and political crisis have led to regular stockouts of reproductive health supplies, including FP commodities, through the deliberate targeting and blockades of seaports.<sup>23</sup> Yemen's

health care system is particularly vulnerable to failures in governance and supply chain disruption.<sup>4,23,24</sup> Even in 2014, prior to the beginning of the conflict, the entirety of contraceptive supply in Yemen was donor-funded.<sup>24</sup> It was managed separately from the MoPHP supply chain for essential health commodities, rendering the supply chain vulnerable to disruption.<sup>24</sup> A 2016 needs assessment of reproductive health supply chain management also reported the chain was functioning below expectation due to lack of financing, transport links destroyed by conflict, inappropriate warehousing, poor procurement planning, and absence of MoPHP action.<sup>23</sup>

Attacks on health care facilities are also a major concern,<sup>4,5</sup> with at least 93 attacks on hospitals orally verified by UNICEF in the first 22 months of the conflict.<sup>25</sup> In addition to attacks on facilities, health facilities have been closing operations due to critical supply shortage, structural damage from attacks, and lack of human resources.<sup>5</sup> UNFPA estimated in 2018 that only one-third of health facilities that provide reproductive health services in Yemen were still functioning.<sup>2</sup>

In addition to the risks of personal security faced by health personnel, public servants in all sectors have faced salary disruption.<sup>1</sup> At least 1.25 million civil servants, including health personnel, have not received their salaries or received them only intermittently since August 2016.<sup>1</sup> Public budget deficit has also affected sufficient allocation of operating costs for social services such as health care.<sup>1</sup> Without functional facilities and personnel, women are unable to access reproductive care, which could cause negative reproductive health outcomes like unintended pregnancies, unsafe abortions, and maternal morbidity and mortality to rise.

### *Project implementation approach*

Save the Children, in partnership with the MoPHP, began supporting six health facilities in Lahj governorate in 2012 to provide comprehensive FP and PAC services, including three hospitals, two health centres and one health unit, with catchment populations ranging from 7,000 to 120,000. Yemen's overall population is estimated at 28.25 million people within which Lahj Governorate has an estimated population of 875,000.<sup>26</sup> The programme started as a response to a population influx to Lahj and Aden following the Yemeni Uprising in 2011 and Abyan offensive in 2012. The programme

focuses on increasing the availability of high quality reproductive health services through clinical capacity building, infrastructure rehabilitation, supply chain management, strengthening health management information systems, and tailored community mobilisation. In order to address gaps in FP and PAC service provision, there is a specific focus on expanding the existing contraceptive method mix to include LARC methods like intra-uterine devices (IUDs) and contraceptive implants. Additional focus is placed on training mid-level providers in manual vacuum aspiration (MVA) for uterine evacuation, in accordance with WHO guidelines,<sup>27</sup> and ensuring that post-abortion clients have informed access to contraception, so as to allow women to space and limit pregnancies. Benefiting from the learned experience of three years of programme implementation in Lahj governorate, SC was able to expand these FP and PAC services quickly to Hodeida governorate to meet the needs of the internally displaced persons fleeing the March 2015 airstrikes by the Saudi-led coalition.

The initial airstrikes, population displacement, and mounting conflict around Hodeida in 2015 threatened women's access to comprehensive reproductive health services. SC expanded the FP and PAC programme to 10 additional facilities (including one hospital, five health centres, and four health units with catchment populations ranging from 6,175 to 42,539) in Hodeida governorate in June 2015 to address the immediate needs of conflict-affected women and girls among the 2.62 million people living in Hodeida.<sup>26</sup> Due to access constraints and the pressing timeline, the Hodeida programme was launched through remote guidance to national staff and the MoPHP, led by the team that was previously trained in Lahj.

### Clinical capacity building and supervision

In order to provide the full range of contraceptive options, including LARC, and ensure the PAC protocol includes MVA in accordance with WHO guidelines,<sup>27</sup> the programme had to build the clinical capacity of mid-level providers in Lahj and Hodeida. Competency-based clinical trainings were organised in partnership with Yamaan Foundation (local affiliate of Marie Stopes International) and the MoPHP. The trainings focused on balanced counselling, infection prevention, LARC insertion and removal, MVA provision, and post-abortion counselling on contraceptive options. Prior to the crisis in 2015, a cadre of clinical supervisors

affiliated with the MoPHP attended a training-of-trainers, then cascaded the training to new service providers amidst the conflict. This cadre proved essential when international access to Yemen was restricted due to conflict, and rising insecurity caused high turnover of previously trained providers stationed in supported health facilities. Service providers who were trained in FP and PAC services pre-crisis provided on-the-job training to new providers in supported facilities. By December 2016, the master trainers had conducted FP and PAC training for 48 clinical staff at all 16 supported health facilities. The duration of the classroom training was limited for FP to five days of theory and five days of supervised practice, and for PAC, three days of theory and two days of supervised MVA practice. Follow-up on-the-job trainings for each topic were conducted by trained MoPHP supervisors, using videos, e-learning modules, and clinical checklists. The project aims to maintain at least three trained and skilled staff to provide services at each of the 16 facilities in accordance with the quality of care framework designed for this project.

Recognising that skills are not always mastered and retained through a single training and that high-quality services require routine monitoring, Save the Children trains and supports the MoPHP to offer supportive supervision. Supportive supervision is "a process of guiding, helping, training, and encouraging staff to improve their performance continuously in order to provide high quality health services".<sup>28</sup> National and district staff supervisors from the MoPHP were trained to evaluate counselling and clinical skills with the use of standardised checklists, provide constructive feedback and coach the providers on areas to improve, as well as facilitate prioritised action plans to encourage improvement before the next visit. Guidance and support were provided over the phone and WhatsApp if face-to-face meetings were not possible due to insecurity or access constraints.

### Supply chain support

At several points during the war in Yemen, the port areas have been attacked or blockaded,<sup>29</sup> preventing the delivery of essential medicines and supplies into the country.<sup>23</sup> Furthermore, the roads and infrastructure have been destroyed during the fighting and pose considerable risk for those travelling with supplies within Yemen. Based on the history of contraceptive supply chain disruption in Yemen, the programme anticipated supply chain

breakdown and worked to redistribute stock between facilities. The programme team used service delivery statistics to calculate adequate security stock levels based on anticipated client load, population movement, and facility capacity. Additional kits with MVA and LARC supplies were pre-emptively provided to the facilities in areas where demand was anticipated to increase due to displacement. The programme also liaised with the MoPHP to ensure their stocks could be utilised when required. Procurement of supplies and commodities was coordinated between the MoPHP, Yamaan Foundation, and UNFPA. As implants are not available in MoPHP stocks or UNFPA Reproductive Health Kits, a country-wide stock out of implants eventually occurred, which limited the ability of SC-supported facilities to provide this contraceptive method in the first three quarters of 2018.

### Community mobilisation

In Yemen, almost all married women (98%) have some knowledge of modern contraceptive methods<sup>18</sup> and most FP education targets married women of reproductive age. Therefore, community mobilisation efforts in support of FP need to strategically address population groups that may have less access to relevant reproductive health information and go beyond simple knowledge sharing. The FP and PAC programme formulated a strategy to target young married women under 24 years of age, pregnant and postpartum women, older women with daughters of marriageable age, men, and religious leaders. These target populations were reached through individual and small group awareness sessions that use specific, tailored education messages led by a cadre of over 100 trained Community Health Workers (CHWs) who are a part of the Yemeni health system and paid according to governorate policy. The programme has also recruited “Family Planning Champions”, comprised of volunteer clients who were highly satisfied with their contraception services, to discuss with peers why they use, or support the use of, FP and offer information about their own experiences. CHWs engage the community around issues of reproductive health through workshops with religious leaders, small group discussions with women in their homes and men at the mosques or *qat* sessions, and door-to-door home visits with targeted FP and PAC messages. CHWs follow up with FP clients who do not attend a return FP visit at a facility, through phone calls

and home visits, to facilitate continuation. Supportive supervision of CHWs is conducted on a quarterly basis by supervisors, using quality checklists to structure feedback and improve communication efforts. The supervision visits highlighted gaps within the community system, such as CHWs’ lack of confidence to educate the community on LARC and PAC, which were later addressed through further training.

When extensive movement is not possible due to conflict-associated insecurity, CHWs utilise existing small community groups to share focused messages on reproductive health. Security constraints, particularly in Hodeida, limited the extent of community mobilisation efforts in 2018. Implementation of the community mobilisation strategy is now further slowed in 2019 because CHWs must gain authorisation for each planned activity from the respective political groups controlling the areas in which SC-supported facilities operate.

### Monitoring and evaluation

Robust monitoring and evaluation systems have been critical to adapting programme implementation throughout this acute crisis, focusing resources where there is greatest need. A real-time online programme monitoring database, using the DHIS2 platform,<sup>30</sup> was established in 2016 to track and aggregate service delivery data for clients accessing contraception, PAC, and delivery services at the 16 supported facilities. The programme team used this information to redistribute commodities, plan and prioritise supportive supervision visits, and tailor the community mobilisation strategy in each of the facility catchment areas.

When fighting significantly damaged supported health facilities, and when FP and PAC services were expanded to Hodeida governorate in response to conflict escalation, readiness facility assessments were conducted to determine the exact support necessary for each facility to start or resume the provision of FP and PAC services. The findings of this assessment allowed the programme team to determine which facilities could be adequately supported, and which essential supplies, commodities, rehabilitation, and clinical trainings were necessary to ensure quality FP and PAC service availability as quickly as possible.

Research shows that client satisfaction can be an important factor for the uptake and continuation of contraception services.<sup>31–33</sup> In order to



understand how women perceive the quality of the programme's FP services, annual client exit interviews are conducted at each supported facility to solicit feedback and improve accountability to clients. Results are then used by the programme team to target trainings, supervision, and resources to address gaps identified.

The monitoring and evaluation systems described above, as well as routine programme monitoring support, relied on mobile technology such as WhatsApp and mobile applications to transmit data in a more complete, accurate, and timely manner despite insecurity due to conflict. The information was immediately put to use to more efficiently target resources and provide essential feedback throughout reporting chains.

## Methods

A descriptive analysis using health facility data was conducted to assess trends in FP and PAC service delivery from March 2015 to July 2018. Aggregated facility data, including the number of new clients accessing these services, were analysed through the programme database built on the DHIS2 platform.

Client satisfaction and perceived quality of care were measured through client exit interviews, conducted in May 2018 (Hodeida) and July 2018 (Lahj). In both governorates, a trained team of independent, local, female data collectors interviewed 590 (Hodeida,  $n = 419$ , Lahj,  $n = 171$ ) women of reproductive age (between 15 and 49 years old) who were exiting the 16 supported health facilities, using a structured questionnaire adapted from the USAID BASICS HTSP toolkit.<sup>34</sup> Non-probability sampling was conducted in accordance to *A User's Guide for Monitoring Quality of Care in Family Planning*.<sup>35</sup> Participation was requested from every woman of reproductive age who exited the facility, for a fixed time period of one day. Clients were asked whether or not they accessed FP services during their visit and about their experience accessing services at the health facility. Clients who had received an FP method or counselling from the facility (either the day of the interview or in the past) were questioned in regard to their specific experience accessing FP services. To minimise potential courtesy bias, SC hired and trained interviewers independent from the MoPHP and SC. Data were recorded on tablets through KoBo-Toolbox<sup>36</sup> and results were analysed in Stata 13.<sup>37</sup>

## Results

From March 2015 to July 2018, the 16 supported facilities in Lahj and Hodeida provided FP services to 44,572 new clients, including PAC clients who accepted an FP method before discharge (Table 1), with 22.9% accepting a LARC method (Table 2). A new client was defined as someone who starts a family planning method for the first time, switches from one method to another, who began a method elsewhere but comes to a particular facility for the first time to continue, or who has not used the method for six months and restarts the same method. This analysis includes interval and postpartum family planning clients grouped as "standalone family planning clients", while PAC contraception clients are analysed separately in Table 1. PAC services were provided to 3511 women, with 74.3% receiving MVA for uterine evacuation and 33.9% accepting a method of FP before discharge from the facility (Tables 3 and 4).

Even in active conflict, the reproductive health team in Yemen successfully shifted the method mix of contraception from an over-reliance on oral contraceptive pills (OCPs) in 2015 (73.5%), to a more balanced method mix in 2018 with 57.8% OCPs, 18.9% injectables, 20.4% intrauterine devices, and 2.9% contraceptive implants. Low acceptance of contraceptive implants is attributable to frequent stockouts, while other contraceptive methods (OCPs, IUDs, injectables) were available from partners when stock was low. The proportion of LARC acceptors increased from 15.4% in 2015 to 23.3% in 2018, peaking in 2017 at 28.6%. The overall increase in the proportion of LARC acceptance may be related to supervisors training staff on better counselling skills and provision of on-the-job support, while the decrease from 2017 to 2018 is likely due to the repeated stockouts of contraceptive implants, increased political bureaucracy to receive authorisations for programme activities like community mobilisation, clinical training, and supportive supervision, and limited privacy due to space constraints in the health facilities.

Among all respondents to the client exit interviews, 93% ( $n = 541$ ) stated that they would recommend the health facility to friends or family. Among the 589 women who participated in the client exit interviews, 58.6% ( $n = 345$ ) had previously accessed FP services at the facility they were visiting. Satisfaction rates among FP clients were also high, with 96.8% ( $n = 339$ ) reporting that they

**Table 1. No. of new family planning clients by year and governorate, 2015–2018**

Year	No. of standalone family planning clients		No. of post-abortion care (PAC) clients accepting FP before discharge		Total no. of FP clients
	Hodeida 6	Lahj 10	Hodeida 6	Lahj 10	
(No. of facilities)					
2015 (Mar–Dec)	6600	2858	48	436	9942
2016 (Jan–Dec)	6265	4912	176	675	12,028
2017 (Jan–Dec)	6388	6883	258	905	14,434
2018 (Jan–Jul)	3123	4032	157	856	8168
Total, 2015–2018	22,376	18,685	639	2872	44,572

were somewhat satisfied or very satisfied with the FP services that they received at the health facility. We acknowledge that reported satisfaction rates may be subject to reporting bias, given that clients are accessing essential FP and PAC services, in an environment in which these services are of limited availability.

The uptake of PAC services by women has been slow, and it is evident that there are still many women unable to access emergency obstetric services, including PAC. Since 2015, however, the 16 supported facilities have provided PAC to 3511 clients with 74.3% receiving MVA, 9.9% misoprostol, 10.2% not requiring a method of uterine evacuation, and 5.5% receiving dilation and curettage

(D&C). As more providers were trained and equipped to perform MVAs and prescribe misoprostol, D&Cs decreased from 8.9% of PAC uterine evacuation procedures in 2015–2.5% in 2017. Higher rates of D&C are seen in 2018, as programme staff report a high turnover in trained providers working at the supported facilities, in addition to nationwide shortages of PAC supplies and medications. Emphasis has been placed on training service providers how to counsel PAC clients and ensure that FP methods are available and offered before discharge from the health facility. In 2018, 39.7% of PAC clients accepted a FP method before discharge, compared to 18.4% in 2015.

**Table 2. No. of new clients accepting family planning by year and method**

	Implant	Injectable	Intrauterine device (IUD)	Oral contraceptive pills (OCP)	LARC methods
Year, <i>n</i> (%)					
2015 (Mar–Dec)	773 (7.8)	1107 (11.1)	755 (7.6)	7306 (73.5)	1528 (15.4)
2016 (Jan–Dec)	1338 (11.1)	1867 (15.5)	1333 (11.1)	7486 (62.3)	2671 (22.2)
2017 (Jan–Dec)	2226 (15.4)	2420 (16.8)	1906 (13.2)	7882 (54.6)	4132 (28.6)
2018 (Jan–Jul)	236 (2.9)	1544 (18.9)	1670 (20.4)	4712 (57.8)	1906 (23.3)
Total (Mar 2015–Jul 2018)	4573 (10.3)	6938 (15.6)	5654 (12.7)	27,386 (61.4)	10,237 (22.9)

**Table 3. Client exit interviews, satisfaction by governorate**

	Hodeida <i>n</i> = 419	Lahj <i>n</i> = 171	Total
	Yes (%)	Yes (%)	Yes (%)
Would recommend facility to others	386 (93.9)	155 (90.6)	541 (93)
Received FP service at this health centre today or previously	260 (62.2)	85 (49.7)	345 (58.6)
Satisfied with the FP services received at the facility (somewhat satisfied or very satisfied)	247 (96.5)	81 (97.6)	328 (96.8)
Would recommend FP services to others	249 (97.7)	84 (100)	333 (98.2)

### Discussion

The political situation has had an undeniable effect on the health system and health of the

population in Yemen.<sup>1,4,5,9,10</sup> The full extent of the impact of the conflict on the health system in Yemen has yet to be ascertained. Prior to the Houthi insurgency in 2015 and subsequent airstrikes by the Saudi-led coalition, reproductive health indicators in Yemen were poor. Access to reproductive health care is now further impeded by violent attacks, infectious disease outbreaks, and acute food insecurity. Public sector health workers have not received salaries in over two years, Saudi-led airstrikes have badly damaged health facilities, and armed groups have further hindered access to health care and commodities through road and port blockades.

This programme model was designed to deliver high quality FP and PAC services to women affected by crisis, with generous and sustained funding from a single, private donor. While the programme had experienced success in Yemen with the six facilities in Lahj, the resiliency of the programme model was put to the test with the Houthi insurgency and subsequent conflict in March 2015. SC Yemen had established partnerships with the MoPHP, UNFPA, and the Yamaan Foundation for Health and Social Development. Now responding to a greater need and larger geographic coverage with the expansion to Hodeida, Save the Children Yemen relied on these partnerships and dedicated funding for FP and PAC services to ensure continued access for crisis-affected women. The programme design embraces innovation and

**Table 4. PAC services: no. of clients, method of uterine evacuation, and family planning acceptance by year**

	2015 (Mar–Dec)	2016 (Jan–Dec)	2017 (Jan–Dec)	2018 (Jan–Jul)	Total
No. of PAC clients	484	851	1163	1013	3511
Method of uterine evacuation, <i>n</i> (%)					
Manual vacuum aspiration (MVA)	375 (77.5)	665 (78.1)	897 (77.1)	672 (66.4)	2609 (74.3)
Misoprostol	35 (7.2)	66 (7.7)	110 (9.6)	137 (13.5)	348 (9.9)
Dilation and curettage (D&C)*	43 (8.9)	47 (5.5)	29 (2.5)	74 (7.3)	193 (5.5)
No uterine evacuation required	31 (6.4)	73 (8.7)	127 (10.8)	130 (12.8)	361 (10.3)
Accepted method of FP before discharge, <i>n</i> (%)	89 (18.4)	261 (30.7)	438 (37.7)	402 (39.7)	1190 (33.9)

\*Per WHO guidance, the preferred method of evacuation of the uterus is manual vacuum aspiration. Dilation and curettage should be used only if manual vacuum aspiration is not available.<sup>28</sup>



technology, alternative clinical training methods, and strategic partnerships. As such, the programme was able to expand into Hodeida governorate in response to immediate need and continue to improve the quality of programme implementation in the face of significant challenges imposed by the conflict.

This programme focused on expanding FP and PAC availability and maintaining a reasonable level of quality so that women could access reproductive health care throughout ongoing and devastating conflict and crisis. As a result, contraception services, including long-acting reversible methods, continue to be provided throughout the crisis to increasing numbers of Yemeni women. Clinical trainings and mentorship improved the capacity of providers to counsel and provide the full range of modern contraceptive methods, resulting in a more balanced method mix over the last three years. Based on the results of the annual client exit interviews, the vast majority of contraception clients are satisfied with the FP services they receive and would recommend the services to family, friends, and neighbours. Women affected by the crisis in Yemen are also able to access quality PAC services. Clinical trainings and supportive supervision enable nurses and midwives to treat PAC clients using MVAs and misoprostol, rather than requiring doctors and facilities capable of providing D&C. Further, MVA and misoprostol are safe and acceptable to women requiring uterine evacuation.<sup>38</sup> Improved counselling and service delivery ensure that an increasing number of PAC clients accept a method of FP before leaving the facility, reducing the risk of a subsequent abortion.

Despite the immense challenges that the conflict and political environment imposed on implementation, SC was able to adapt the core components of the programme model in ways that allowed expansion of quality FP and PAC services to more women affected by the political crisis in Yemen. The clinical training curriculum was adapted to allow the few previously trained expert trainers, who were located in-country, to build capacity of new providers quickly through the utilisation of e-learning and intensive on-the-job mentorship. The limited supply chain was anticipated and commodities were carefully allocated in coordination with reproductive health partners using service-delivery data to project expected need. Information and data were shared between facilities, district health offices, and the SC Yemen country office in Sana'a over WhatsApp and SMS.

Timely reporting was prioritised, recognising its value in making programmatic decisions in the constantly changing environment. The community strategy was adapted for restricted access and insecure environments, targeting existing social groups with information that contraception and PAC services remained available.

Crucially, this programme has received generous, sustained funding that enabled an innovative, adaptable approach to keep FP and PAC services available to the crisis-affected women in Yemen. Dedicated funding for FP and PAC services proved essential for the first two years, as the institutional humanitarian response funding to address health needs prioritised nutrition, cholera treatment, and general primary health consultations without specific focus on reproductive health services. Over time, SC has been able to incorporate FP and PAC services into broader health programming in six governorates in Yemen in 2018 through diversified funding, with potential for further scale up.

### *Limitations*

This paper presents aggregated facility data from one programme in two governorates in Yemen; this data is neither population-based nor representative. The catchment populations of the supported facilities are overlapping, and therefore do not provide a sufficient population denominator. This limits the analysis and conclusions we are able to draw regarding the access and quality of reproductive health services for the governorates in which the programme operates and the country as a whole. Additionally, this paper does not directly link the service delivery data from the facilities with particular events of the crisis, for example, airstrikes near a facility and subsequent increases or decreases in service access.

### *Conclusion*

Our data and experience implementing this programme show that FP and PAC services can be improved and maintained, and that uptake may increase when a programme is funded adequately to provide clinical capacity building, supply chain support, and ongoing technical assistance. This remains true for reproductive health programming in Yemen, during the world's worst humanitarian crisis, where, despite political decisions that devastate the health care system and impose severe

barriers for women to access services, we have seen that demand for contraception and post-abortion care continues as long as services can remain available. With sustained funding and an adaptable approach, quality family planning and post-abortion care services can be provided and demand for such services can grow, even in the most acute emergencies.

### Acknowledgements

*The authors would like to thank the reproductive health programme team at Save the Children Yemen and the MoPHP reproductive health service providers for their tireless dedication to deliver high quality FP and PAC services in the face of constant challenges and threats. CNM led the conception of the paper and research design, as well as contributed significant portions of the text. KL performed the descriptive data analysis and interpretation and contributed significant portions of the text. MCG contributed to the research design and revised the text for critical programmatic*

*content. SA contributed to the research design and revised the text for critical situational content. SI reviewed the text for critical situational content. All authors reviewed and approved the final version of the manuscript. All authors had access to all the data; the corresponding author had final responsibility for the decision to submit for publication. Authors are listed in order of contribution.*

### Disclosure statement

*No potential conflict of interest was reported by the authors.*

### Funding

*This study was funded by an anonymous private foundation.*

### ORCID

Catherine N Morris  <http://orcid.org/0000-0001-8455-7831>

Meghan C Gallagher  <http://orcid.org/0000-0001-7572-962X>

### References

1. UN Office for Coordination of Humanitarian Affairs (OCHA). 2018 Yemen humanitarian needs overview. New York (NY): OCHA; 2017.
2. United Nations Population Fund (UNFPA). Amid grinding conflict, Yemen's midwives go to heroic lengths to save lives. New York (NY): UNFPA; 2018.
3. United Nations Population Fund (UNFPA), Government of Yemen. Country Programme Action Plan (CPAP), 2012–2015. New York (NY): UNFPA; 2012.
4. Qirbi N, Ismail SA. Health system functionality in a low-income country in the midst of conflict: the case of Yemen. *Health Policy Plan.* 2017;32:911–922.
5. Ministry of Public Health and Population (MoPHP) [Yemen], World Health Organization (WHO). Service availability and health facilities Functionality in 16 governorates: final report. Yemen: MoPHP; 2016.
6. Casey SE, McNab SE, Tanton C, et al. Availability of long-acting and permanent family-planning methods leads to increase in use in conflict-affected northern Uganda: evidence from cross-sectional baseline and endline cluster surveys. *Glob Public Health.* 2013;8(3):284–297.
7. Casey S, Tshipamba M. Contraceptive availability leads to increase in use in conflict-affected Democratic Republic of the Congo: evidence from cross-sectional cluster, surveys, facility assessments and service statistics. *Confl Health.* 2012;11:2.
8. McGinn T, Austin J, Anfinson K, et al. Family planning in conflict: results of cross-sectional baseline surveys in three African countries. *Confl Health.* 2011;5:11.
9. Gressman W. From the Ground Up: gender and conflict analysis in Yemen. Oxford: Oxfam International, CARE International, IASC GenCAP; 2016.
10. United Nations Population Fund (UNFPA). UNFPA humanitarian response in Yemen February 2018. New York (NY): UNFPA; 2018.
11. World DataBank. Yemen, population growth (annual %). Washington (DC): The World Bank; 2016; Available from: <https://data.worldbank.org/indicator/SP.POP.GROW?locations=YE>
12. World DataBank. Yemen, poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population). Washington (DC): The World Bank; 2014; Available from: <https://data.worldbank.org/indicator/SI.POV.DDAY?locations=YE>
13. World DataBank. Yemen, population ages 0–14 (% of total). Washington (DC): The World Bank; 2014; Available from: <https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS?locations=YE>
14. World DataBank. Yemen, Unemployment, youth total (% of total labor force ages 15–24) (modeled ILO estimate). Washington (DC): The World Bank; 2014; Available from: <https://data.worldbank.org/indicator/SL.UEM.1524.ZS?locations=YE>

15. UN Office for Coordination of Humanitarian Affairs (OCHA). 2015 Yemen Humanitarian Needs Overview. New York (NY): OCHA; 2014.
16. Jadallah AAH. Conflict assessment of the Republic of Yemen. Fairfax: School for Conflict Analysis and Resolution, George Mason University; 2015.
17. World Economic Forum (WEF). The Global gender Gap report 2018. Geneva: WEF; 2018.
18. Ministry of Public Health and Population (MoPHP) [Yemen], Central Statistical Organization (CSO), Pan Arab Program for Family Health (PAPFH), ICF International (ICF). (2015). Yemen National Health and Demographic Survey 2013. Yemen: MoPHP, CSO, PAPFH, ICF; 2015.
19. Central Statistical Organization (CSO) [Yemen], Macro International (MI) Inc. Demographic and Maternal and Child Health Survey 1997. Yemen: CSO, MI; 1998.
20. The World Bank. Yemen, maternal mortality ratio (modeled estimate, per 100,000 live births). World DataBank; 2015; Available from: <https://data.worldbank.org/indicator/SH.STA.MMRT?locations=YE>
21. United Nations Population Fund (UNFPA). About Yemen: situation analysis. New York (NY): UNFPA; Available from: <http://yemen.unfpa.org/en/about-yemen>
22. Ministry of Public Health & Population (MoPHP) [Yemen]. Yemen National reproductive strategy 2011–2015. Sana'a: Yemen MoPHP; 2011; Available from: <http://www.mophp-ye.org/arabic/docs/RH/Yemen%20NRHS%20Revised%20Final%20English%20May2011.pdf>
23. Pamela Steele Associates Ltd (PSA). Yemen reproductive health supply chain management: needs assessment. Oxford: PSA; 2016.
24. Spisak C. Yemen: mapping the procurement process for family planning and reproductive health commodities. Washington (DC): USAID Deliver Project; 2015.
25. Briody C, Rubenstein L, Roberts L, et al. Review of attacks on health care facilities in six conflicts of the past three decades. *Confl Health*. 2018;12:19.
26. The Health Cluster, Yemen (Yemen Health Cluster). Annual report 2017. Sana'a: Yemen Health Cluster; 2017; Available from: <https://www.who.int/health-cluster/countries/yemen/Yemen-HC-annual-report-2017.pdf>
27. World Health Organization (WHO). Managing complications in pregnancy and childbirth: a guide for midwives and doctors – 2nd ed. Geneva: WHO; 2017; Available from: <https://apps.who.int/iris/bitstream/handle/10665/255760/9789241565493-eng.pdf?sequence=1>
28. Reproductive Health Access, Information and Services in Emergencies (RAISE). Guidelines for implementing supportive supervision for family planning and post-abortion care services in crisis settings. New York (NY): RAISE; 2012.
29. Security Council Report. Chronology of events [Yemen]. New York (NY): Security Council Report; 2018. Available from: <https://www.securitycouncilreport.org/chronology/yemen.php>
30. Health Information Systems Programme (HISP). District health information system 2 v. 2.28 (DHIS2). Cape Town: HISP; 2017.
31. Agha S, Do M. The quality of family planning services and client satisfaction in the public and private sectors in Kenya. *Int J Qual Health Care*. 2009;21(2):87–96.
32. Azmat SK, Hameed W, Mustafa G, et al. IUD discontinuation rates, switching behavior, and user satisfaction: findings from a retrospective analysis of mobile outreach service program in Pakistan. *Int J Womens Health*. 2014;5:19–27.
33. Bintabara D, Ntwenya J, Maro II, et al. Client satisfaction with family planning services in the area of high unmet need: evidence from Tanzania service provision assessment survey, 2014–2015. *Reprod Health*. 2018;15:127.
34. U.S. Agency for International Development (USAID), BASICS. Basics healthy timing and spacing of pregnancy toolkit: exit interview for contraceptive users. Washington (DC): USAID.
35. MEASURE Evaluation. Quick investigation of quality (QIQ): a user's guide for monitoring quality of care in family planning (2nd ed). Chapel Hill: MEASURE Evaluation; 2016.
36. KoBoToolbox. Kobotoolbox. Cambridge: KoBoToolbox; 2017. Available from: <https://www.kobotoolbox.org>
37. StataCorp LP. Stata Statistical Software: Release 13. College Station (TX): StataCorp LP; 2013.
38. Bique C, Ustá M, Debora B, et al. Comparison of misoprostol and manual vacuum aspiration for the treatment of incomplete abortion. *Int J Gynaecol Obstet*. 2007;98(3):222–226.

## Résumé

La situation politique au Yémen est précaire depuis 2011, date à laquelle une contestation populaire a éclaté pendant le printemps arabe, demandant au Président Saleh de quitter le pouvoir. En mars 2015, une rébellion houthis a pris le contrôle de la

## Resumen

La situación política en Yemen ha sido precaria desde el año 2011 cuando estalló la protesta popular durante la Primavera Árabe, instando al presidente Saleh a renunciar. En marzo de 2015, la insurgencia chiita tomó el control de

capitale Sanaa et a déclenché une guerre civile qui est maintenant caractérisée par une intervention politique et militaire étrangère. Depuis 2015, les centres de santé ont été la cible principale des frappes aériennes et des bombardements. Les ports maritimes ont été bloqués, interdisant la livraison de fournitures et médicaments essentiels, ce qui a contribué à l'effondrement presque total d'un système de santé déjà fragile. Depuis 2012, Save the Children met en œuvre un programme de planification familiale et de soins post-avortement dans deux gouvernorats profondément touchés par la guerre. En dépit des risques associés au conflit, les services de planification familiale et de soins post-avortement enregistrent encore une forte demande. Le soutien suivi aux programmes et le renforcement des capacités ont permis de continuer d'offrir des services de planification familiale et de soins post-avortement aux Yéménites, même quand l'accès à l'aide humanitaire est contrarié. Depuis le début du conflit, en mars 2015, 16 structures ont assuré des services pour 43 218 nouveaux clients de planification familiale (dont 23% ont accepté une méthode à longue durée d'action) et ont dispensé des soins post-avortement à 3627 femmes. Plus de 93% des clients de la planification familiale recommanderaient ces services à un ami ou un membre de leur famille. Les résultats étaient les données toujours plus nombreuses montrant que les femmes touchées par un conflit ont besoin de services de planification familiale et que la demande ne baisse pas tant que des services de qualité restent accessibles. Un modèle de programme de santé reproductive adaptable qui englobe des approches novatrices est nécessaire pour établir des services et maintenir la qualité pendant un conflit aigu.

la capital Sana'a y desató el conflicto civil, que ahora está caracterizado por participación política y militar extranjera. Desde 2015, los establecimientos de salud han sido blanco principal de ataques aéreos y bombardeos. Los puertos marítimos han sido bloqueados, lo cual ha prohibido la entrega de medicamentos e insumos esenciales y ha contribuido al casi colapso de un sistema de salud ya frágil. En 2012 *Save the Children* (SC) inició un programa de Planificación Familiar (PF) y Atención Postaborto (APA) en dos gobernaciones sumamente afectadas por el conflicto. A pesar de los riesgos asociados con el conflicto, aún hay gran demanda de los servicios de PF y APA proporcionados por SC. Continuo apoyo programático y fortalecimiento de capacidad han permitido continuar ofreciendo servicios de PF y APA de calidad a yemeníes, aun cuando se impide el acceso humanitario. Desde el inicio del conflicto en marzo de 2015, 16 establecimientos de salud proporcionaron servicios a 43,218 nuevos usuarios de PF (de los cuales el 23% aceptó un método anticonceptivo de acción prolongada) y brindaron APA a 3627 mujeres. Más del 93% de los usuarios de PF recomendarían los servicios de PF en el establecimiento de salud a sus amistades o familiares. Los hallazgos corroboran el creciente conjunto de evidencias de que las mujeres afectadas por conflicto necesitan servicios de planificación familiar, y esa demanda no disminuirá siempre y cuando servicios de calidad continúen siendo accesibles. Para establecer servicios y mantener calidad durante conflicto agudo, es imperativo aplicar un modelo adaptable de un programa de salud reproductiva que adopte enfoques innovadores.