



Published in final edited form as:

AIDS Care. 2025 January ; 37(1): 43–53. doi:10.1080/09540121.2024.2414077.

Perspectives of healthcare providers around providing family planning services to women living with HIV attending six HIV treatment clinics in Lusaka, Zambia

Amy Medley^a, Tiffiany Aholou^a, Sherri Pals^a, Tiffany G. Harris^b, Brenda Senyana^b, Mollie Braaten^b, Prisca Kasonde^b, Tina Chisenga^c, Annie Mwila^d, Keith Mweebo^d, Fatima Tsiouris^b

^aU.S. Centers for Disease Control and Prevention, Division of Global HIV and TB, Atlanta, GA, USA

^bICAP at Columbia University, Mailman School of Public Health, New York, NY, USA

^cZambian Ministry of Health, Lusaka, Zambia

^dU.S. Centers for Disease Control and Prevention, Division of Global HIV and TB, Lusaka, Zambia

Abstract

While international guidelines recommend integration of family planning (FP) and HIV services, limited research has been done to explore how healthcare providers perceive the feasibility and utility of integrated services. To address this gap, we administered a standardized questionnaire to 85 providers from 6 HIV clinics in Lusaka, Zambia, before (April–May 2018) and after (May–June 2019) implementing an enhanced model of FP/HIV service integration. We tested for differences in FP knowledge, attitudes and practices between the two time periods with tests appropriate for paired observations. The proportion of providers self-reporting direct provision of contraceptives increased significantly for several methods including oral contraceptives (14% vs. 26%, $p = 0.03$), injectables (9% vs. 25%, $p < 0.001$), implants (2% vs. 13%, $p = 0.007$) and intra-uterine devices (2% vs. 13%, $p = 0.007$). In-depth interviews were also conducted post-integration with 109 providers to solicit their feedback on the benefits and challenges of offering integrated services. While providers were highly supportive of integrated services, they identified several challenges including widespread belief in FP myths among female clients, the need to consult a male partner prior to starting FP, lack of trained staff and space, and frequent stockouts of contraceptives and equipment. Addressing these challenges will be critical in designing future services.

Keywords

HIV/AIDS; family planning; women living with HIV (WLHIV); Zambia

CONTACT Amy Medley, igm8@cdc.gov, U.S. Centers for Disease Control and Prevention, Division of Global HIV and TB, 1600 Clifton Road, MS-E04, Atlanta, GA 30333, USA.

Disclosure statement

No potential conflict of interest was reported by the author(s).

SUSTAINABLE DEVELOPMENT GOALS

SDG 3: Good health and well-being; SDG 5: Gender equality

Introduction

In 2020, 36.0 million adults aged 15 years and older were living with HIV, with women and adolescent girls accounting for 53% of all HIV infections (Joint United Nations Programme on HIV and AIDS (UNAIDS), 2021). Approximately 72% of women and girls living with HIV (WLHIV) were on anti-retroviral treatment (ART) and about 64% had achieved viral suppression (UNAIDS, 2020). In 2019, 30% of Zambian women aged 15–49 years reported having an unmet need for family planning (defined as the percentage of women of reproductive age who want to stop or delay childbearing but are not using any method of contraception; Population Reference Bureau, 2012) resulting in an estimated 410,000 unplanned pregnancies (Family Planning, 2030, 2020). Unplanned pregnancies are common among WLHIV in sub-Saharan Africa (Mekie et al., 2021; Sutton et al., 2018) and present significant health risks for both the woman and her infant including a higher risk for maternal and infant mortality (Calvert & Ronsmans, 2013; Kassebaum et al., 2014; Matthews et al., 2013; Prendergast & Evans, 2023), and babies born pre-term, stillborn or at low birth weight (Duerr et al., 2005; Wedi et al., 2016).

Access to sexual and reproductive health (SRH) services is a key strategy for reducing mother-to-child transmission (World Health Organization (WHO), 2010; Hladik et al., 2009) and HIV-related mortality and morbidity (Ford et al., 2021). WHO guidance states that WLHIV should have the ability to make independent and informed decisions about their own reproduction, including the right to freely choose whether to have children, how many children to have and what age to have them (Kumar et al., 2015; WHO, 2017). In recognition of the importance of SRH services for WLHIV, UNAIDS has set a new goal that 95% of women and girls of reproductive age will have their HIV and SRH needs met by 2030 (United Nations General Assembly, 2021; WHO, 2022).

Integration of family planning (FP) services into HIV treatment programs has been shown to be an effective (Haberlen et al., 2017; O'Reilly et al., 2013) and cost saving (Reynolds et al., 2008; Shade et al., 2013; Wall et al., 2020) strategy to increase WLHIV's access to SRH services and to reduce their unmet need for FP. Integrated services are supported by the Zambia Consolidated Guidelines for Treatment and Prevention of HIV Infection, which also allow task shifting of some HIV services to community-based distributors (CBDs) to support WLHIV who are stable on ART (Zambia Ministry of Health, 2020). This includes offering contraceptives in addition to HIV medication refills, to ensure continuity of both HIV treatment and FP services as part of differentiated service delivery models.

Despite this, integrating FP and HIV services in Zambia has faced several challenges. Resource constraints, including limited funding and a shortage of HIV care providers trained to offer comprehensive FP services, have made it difficult to implement and sustain integrated services across the country (Lince-Deroche et al., 2020; Warren et al., 2017). Furthermore, HIV and FP services have traditionally been delivered and funded as vertical

and siloed services, creating barriers to coordination and integration (Kachale et al., 2022). Cultural and social barriers also contribute to the lack of integration. Stigma surrounding both HIV and contraceptive use, especially among young women, can prevent women from seeking out FP services from HIV care providers (Nattabi et al., 2011). Gender dynamics, which often discourage women from making autonomous reproductive health decisions, further complicate the uptake of FP services among WLHIV (Nattabi et al., 2011).

Thus, while international and national guidelines recommend integration of FP and HIV services, these barriers help explain why Zambia has struggled to fully implement this model. Moreover, limited research has been done to explore how HIV healthcare providers (HCPs) perceive the feasibility and utility of integrated services. This mixed methods study used both standardized questionnaires and in-depth interviews to obtain the perspectives of HCPs on the perceived benefits and barriers of implementing an enhanced model of FP/HIV service integration at six health facilities in Lusaka, Zambia based on their own experiences.

Materials and methods

Data presented are from a larger study examining the impact of an enhanced model of FP/HIV integrated service delivery on contraceptive uptake and dual method use among WLHIV attending six health facilities in Lusaka, Zambia (Medley et al., 2023). The model, which was implemented from August 2018 to April 2019, had three main components: (1) improving documentation and monitoring of FP services in patient monitoring tools (paper-based and electronic); (2) strengthening integration of FP and HIV services by training six HIV care providers per facility – including two nurses, two lay counselors (LCs) and two CBDs – in FP service delivery and offering a full range of FP methods within the HIV clinic (e.g., oral contraceptive pills (OCPs), injectables, implants and intra-uterine devices (IUDs)) and (3) facilitating referrals to CBDs and other health facilities for FP services, as needed. FP services were offered in a private space within the HIV clinic and each facility was provided with specula and other necessary equipment (e.g., cotton wool, gloves, forceps, etc.) to safely offer a wider range of FP services. All contraceptive methods were provided by the Zambia Ministry of Health.

Study design and analysis

Quantitative methodology—Providers from each of the six HIV clinics included in the study were asked to complete a standardized questionnaire in English before (April–May 2018) and after (May–June 2019) the intervention to evaluate their perception of the feasibility and utility of delivering FP services within HIV clinics. To be eligible, providers had to be employed at one of the six health facilities for at least 3 months; provide direct patient care to WLHIV within the HIV clinic; be at least 18 years old; and provide written informed consent.

The questionnaire included questions on providers' demographic characteristics and their knowledge, attitudes and practices regarding FP service delivery (Table 1). A five-item index was used to measure the providers' general knowledge about FP among WLHIV as well as knowledge about OCPs and injectables. Four-item indices were used to measure knowledge about implants and IUDs. These indices were developed in consultation with a panel of

experts including representatives from the Zambia Ministry of Health, FP providers, and implementing partner staff who helped select items of interest based on their professional experience in Zambia. Correct responses for each item on the index were summed and used to calculate a mean knowledge score and standard deviation for each of the five indices. Analysis was restricted to providers who completed both the pre- and post-intervention questionnaires. Differences in FP knowledge, attitudes and practices comparing the pre-intervention and post-intervention assessments were tested for statistical significance using an exact McNemar test for categorical variables, and a paired *t*-test for continuous variables.

Qualitative methodology—During the post-assessment period, semi-structured in-depth interviews (IDI) with HCPs were conducted by trained social workers not affiliated with the study. Interviews were conducted in English and included all HCPs from the six clinics who had worked at the HIV clinic for at least 6 months, regardless of whether they participated in the quantitative portion of the study. All IDIs were recorded and transcribed verbatim. Transcripts were then uploaded into NVivo 13 for analysis. A preliminary codebook based on the interview discussion guide was developed a priori and then revised based on emerging themes that arose during analysis. All transcripts were independently coded by two analysts and resulting code sets compared weekly. Discrepancies were discussed until consensus was reached. Main themes and sub-themes were identified, and illustrative quotes pulled from the transcripts to capture benefits and challenges to FP service delivery as described by the HCPs.

Ethical considerations—Protocols for this evaluation were reviewed and approved by Institutional Review Boards at the following institutions: Columbia University, U.S. Centers for Disease Control and Prevention, and the University of Zambia Biomedical Research Ethics Committee.

Results

Pre- and post-intervention questionnaires with HCPs

A total of 85 HCPs completed both the pre- and post-intervention questionnaires (Table 2). Most providers were nursing aides (52%; 44), nurses/midwives (28%; 24), LCs/CBDs (13%; 11), doctors (4%; 3) and pharmacists (4%; 3). Providers were mostly female (78%; 66) and the average age was 39.5 years (standard deviation (SD) $\pm$ 11 years). During the pre-intervention interviews, providers reported an average of 8 years of experience in their current profession (SD $\pm$ 10 years) and 6 years' experience working in the HIV clinic (SD $\pm$ 9 years). While 71% (60) of providers reported offering FP services as part of their job duties, only 31% (26) had received training or mentorship in FP service delivery.

General FP knowledge was high during the post-intervention assessment (mean score of 4.0 out of 5). However, the knowledge of specific methods including OCPs (2.7 out of 5), injectables (1.5 out of 5), implants (2.2 out of 4) and IUDs (<0.9 out of 4) was low and did not differ significantly between the pre- and post-intervention assessments (all *p* > 0.05; Table 3). Providers generally held positive attitudes towards providing FP services with the majority agreeing that they were comfortable providing contraceptives (96%, 78) and safer conception counselling (99%, 81) to their clients. They also agreed that their clients were

comfortable receiving FP services as part of their HIV care (98%, 82). These attitudes did not differ significantly between the pre- and post-intervention assessments (all $p > 0.05$; Table 3).

Following the intervention, HCPs were significantly more likely to report distribution of OCPs (14%–26%, $p = 0.03$, Table 4), provision of injectable contraceptives (9% vs. 25%, $p < 0.001$), implant insertion and removal (2% vs. 13%, $p = 0.007$), and IUD insertion and removal (2% vs. 13%, $p = 0.007$). Providers also reported referring less women to other clinics and health facilities for FP services (73% vs. 57%, $p = 0.03$). Counseling on and provision of condoms decreased following the intervention (95% vs. 79%, $p = 0.002$; 94%–85%, $p = 0.03$, respectively). The provision of safer pregnancy counseling and screening and treating sexually transmitted infections (STIs) did not differ significantly between the pre- and post-intervention assessments (both $p > 0.05$; Table 4).

In-depth interviews with HCPs

A total of 109 providers completed post-intervention in-depth interviews including 66 LCs, 11 CBDs and 32 nurses. In these interviews, providers described improved access to FP services as the main achievement of the enhanced FP/HIV model. They indicated the integrated model was more efficient as it eliminated the need for WLHIV to wait in two separate queues and helped decongest the maternal and child health (MCH) clinic.

Women are benefiting a lot from this because everything is done under one roof. This has reduced the amount of time a client would wait to access both services.
(Nurse)

Since all FP methods were offered in the HIV clinic, referrals were less common and mostly consisted of physical escort to the MCH clinic if the HIV clinic was experiencing stockouts or was too congested. Providers also felt that FP messages improved women's health by encouraging child spacing and delaying pregnancy until the achievement of viral suppression and that FP access reduced the number of WLHIV reporting unplanned pregnancies. Providers universally recommended that FP/HIV integrated services be expanded to other health facilities and that they be involved in that expansion,

I think the people who are coming up with this same program should first come to the facility and talk to the in-charge and people who have done this family planning so that they can put all the challenges together and see how best they can come up with the solution. (Nurse)

Provision of FP services within the HIV clinic

FP services offered by HCPs included screening for hypertension, tuberculosis, diabetes, and STI signs and symptoms (including cervical cancer screening), syndromic treatment for any STIs identified; and assessment for any potential drug–drug interactions,

You look at the drug that they are taking, because some drugs when combined with family planning can have a drug interaction and a woman may end up getting pregnant. (LC)

Providers also described giving messages around dual method use (contraceptive + condoms) to prevent STIs and unintended pregnancies.

We tell them to make sure to use condoms because a family planning method can't protect them from STIs or cervical cancer; so [they] are supposed to use dual method. (CBD)

Safer conception counseling focused on ensuring women was healthy enough for pregnancy. Women who had been on ART for less than 6 months or who had a high viral load were counseled to wait to conceive until their viral load had been suppressed to reduce the risk of transmitting HIV to the baby,

We first have to ask them if they are on treatment, ... then we would like to check the CD4 count, the viral load so that we know if she is healthy Because it is not just about having a baby, but we want them to be having healthy babies. (LC)

Once viral suppression was achieved, women desiring a pregnancy were counseled to stop their FP method, including having their implants or IUDs removed. Providers also counseled women taking TLD regimens to switch to an efavirenz-based regimen due to concerns around an increased risk of birth defects,¹

For HIV-positive clients we, because of what medication they are taking more especially on TLD, we talk to them about them telling us when they want to start having children again because they have to switch them to efavirenz. (Nurse)

Education around timed condomless sex was also provided by discussing the “menstrual cycle and then advising them to have sex on that particular day when they are fertile” and then “once they conceive, they must be advised to get back to the condoms to make sure that the child is safe from getting infected [with HIV]”. Providers also asked women about their partner's HIV status and encouraged her to bring him to the facility for HIV or viral load testing. They also counseled both partners on “how best they can have unprotected sex for them to become pregnant”. Women who became pregnant were immediately referred to the MCH clinic for prevention of mother-to-child transmission services.

Role of CBDs

Providers described CBDs as facilitators between the health facility and community. They created demand for FP services through health talks and helped dispel myths that hindered FP uptake out in the community. While they were not allowed to initiate women on a contraceptive method, they could provide refills of OCPs and injectables and distribute condoms to women in the community. CBDs also referred women who were interested in initiating a new FP method or who requested a long-acting method to the health facility for care. One nurse described CBDs as helping “to decongest the clinic and relieve the clients from the pressure of travelling so far to the clinic”.

¹This counseling to switch regimens was aligned with national policy at the time this study was conducted. This policy has since been updated to recommend TLD as the preferred regimen for women living with HIV who are pregnant or considering pregnancy.

Challenges and recommendations related to FP/HIV integrated services

Providers highlighted several challenges and recommendations for program improvement (Table 5). At the individual level, providers described a lack of FP knowledge and a belief in myths that contraceptives caused infertility, birth defects, cancer and fibroids as the main challenge to providing FP services. Women were also concerned about the possible side effects of contraceptives including abnormal bleeding (either bleeding being too heavy, spotty or stopping all together), dizziness, weight gain and headaches. To address these challenges, providers recommended that nurses and LCs continue education efforts in the facility and that CBDs continue to educate women out in the community.

At the relational level, several providers mentioned that women were unable or unwilling to accept FP without their partner's approval. Women were often afraid of negative reactions from their partners if they were to initiate a FP method without his knowledge or consent. Providers felt involving male partners in FP services within the HIV clinic was important to address this challenge so that the couple had a shared understanding of the benefits of FP and could make joint contraceptive decisions.

At the provider level, a lack of trained providers to meet the demand for FP services was the most common challenge. If any of the trained staff were sick or transferred to other clinics within the facility, queues could become very long and/or FP services interrupted. This caused some women to leave the HIV clinic without receiving their requested FP service,

When there is a long queue due to many clients, some will not enter to access family planning services; they will leave. (LC)

Staff who had not received formal FP training, felt unprepared to support delivery of FP services within the HIV clinic. Participants recommended that additional providers be trained in FP service delivery to reduce the workload. They also recommended that this training be offered annually to account for staff turnover and to provide regular technical updates.

While all six clinics had a room within the HIV clinic to offer FP services, limited space and multipurpose use of these rooms for cervical cancer screening and other services posed structural challenges that impacted the provision of services. Nurses also mentioned not having the equipment they needed to insert implants and IUDs including insertion packs and adjustable lighting. Providers requested that this equipment be provided, and that additional space be found within the HIV clinic to create a dedicated room for providing FP services.

Five of the six clinics reported stockouts of FP commodities including condoms, OCPs and injectables during the study. The length of stockouts varied – some as short as a few days while others were 3 months or longer. To address stockouts, providers attempted to borrow contraceptives from the MCH clinic or other nearby health facilities or advised women to buy the contraceptive from a local pharmacy so the provider could then administer it,

Sometimes we are out of stock of some family planning method. So, if they have money, they go and buy. Then they come and we inject them. (CBD)

If women were unable to buy the contraceptive, they were advised to temporarily switch methods until the contraceptive was restocked,

We always first tell them about the available methods, but if they can't switch, then we encourage them to be using condoms for the time being. But after the medication comes, we tell them to come and access their method of choice. (LC)

Providers requested that both the pharmacy within the facility and the Ministry of Health increase the number of contraceptives provided to the HIV clinic to prevent future stockouts.

Discussion

Providers were highly supportive of the enhanced model of FP/HIV integration and suggested that it be continued and expanded to other health facilities throughout Zambia. The provision of several contraceptive methods increased significantly following the intervention including OCPs, injectables, implants and IUDs, and the number of women referred to FP services outside the HIV clinic declined. During in-depth interviews, providers described several improvements that likely contributed to the success of the integrated model including improved provider training in FP service delivery, enhanced client education and increased provider comfort in delivering FP services within HIV clinics.

Despite the training offered as part of this intervention, FP knowledge about certain contraceptive methods remained low among some of the HIV care providers. This finding raises real concerns about the feasibility of fully integrating FP and HIV services and underscores the need for sustained educational efforts to ensure providers are both knowledgeable and confident in offering a range of contraceptive options to WLHIV. Moreover, at the time of this study, concerns had been raised that dolutegravir-based regimens may be associated with an increased risk of birth defects (Zash et al., 2018) and as a result nurses described switching women who desired a pregnancy to a less effective regimen as part of safer conception counseling. Further investigation has found no association between dolutegravir and congenital abnormalities (Hill et al., 2018; Zash et al., 2019). Ongoing refresher training is therefore needed to keep providers abreast of the rapidly changing knowledge around drug–drug interactions and to ensure additional providers are trained in FP service delivery to address human resource constraints (Nkhoma et al., 2022). These trainings should be offered annually to address staff turnover and include practical demonstrations and mentorship. Trainings can be provided in-person or through telehealth platforms such as Project ECHO (Wood et al., 2022; Bikinesi et al., 2020).

As in previous studies, providers described several myths and misconceptions that acted as barriers to women's uptake of FP methods, despite their availability within the HIV clinic (Newmann et al., 2013; Wall et al., 2018). Providers emphasized the need to provide FP education and counseling, both within health facilities and out in the community, to help dispel these myths. As differentiated service delivery models for WLHIV who are stable on ART continue to expand, CBDs are well-positioned to support health facilities by dispelling FP myths, encouraging ART and contraceptive adherence, and supporting FP service delivery within the community (Brunie et al., 2016; Chin-Quee et al., 2013; Grimsrud et al., 2017; Hagey et al., 2018; Okegbe et al., 2019). Further operational research

is needed on how best to engage CBDs to support integrated FP/HIV services, including provision of adequate compensation and supportive supervision to prevent CBD burn-out and attrition (Wall et al., 2020).

Providers also identified the need to offer FP counseling to male partners to improve FP uptake. A study in Kenya found that men living with HIV were supportive of FP and preferred obtaining FP services at their HIV clinics (Patel et al., 2014). Other studies have suggested that integrated FP/HIV services normalized FP for both men and women and helped foster male involvement in FP services (Newmann et al., 2013; Tao et al., 2015). Future programs offering integrated FP services to men and couples within HIV clinics could help facilitate shared decision making around fertility and contraception. Careful attention will be needed to balance men's involvement in FP programs with the right of women to make informed decisions about their own health care (Tao et al., 2015).

Similar to findings from other studies, structural barriers include frequent stockouts and lack of space and equipment (Adamchak et al., 2010; Chen et al., 2020; Mutemwa et al., 2013; Newmann et al., 2013). Providers described limited options for coping with stockouts and generally advised women to either purchase the contraceptive directly or to temporarily switch methods until the preferred contraceptive came back into stock. In this study, providers were not systemically tracking contraceptives distributed nor using information from medical records to forecast the number of contraceptive methods needed to meet demand. Training providers to use routine program data for forecasting and establishing proper stock management systems may help prevent stockouts (Rasmussen et al., 2018; Zuniga et al., 2022). Collaboration across various health sectors to integrate funding streams and supply chain systems for contraceptives and HIV medications will also be needed to limit stockouts (Bravo et al., 2020).

This analysis has several limitations. First, health facilities were purposefully selected, and the number of providers interviewed was relatively small. Thus the views expressed may not be generalizable to other HCPs from Lusaka or from non-urban facilities in Zambia. Interviews were conducted by staff employed by the implementing partner which may have led to a social desirability bias in some of the responses. This study did not include a control group. Therefore, we cannot rule out the possibility that external factors, beyond the enhanced model of FP/HIV service integration, contributed to the observed changes in service provision and provider attitudes. Future studies could benefit from a more robust study design to strengthen evidence on the impact of integration. Finally, nuances of language and nonverbal communication may have been lost during the transcription process.

Nevertheless, this study has shown that HIV providers are willing and able to provide FP services as part of routine HIV care, adding to the growing evidence base supporting the integration of these services (Nkhoma et al., 2022). Key steps to address the challenges identified by HIV care providers include the need for continuous training on both family planning and HIV drug-drug interactions, addressing commodity stockouts, combatting common FP myths through community education, and offering FP services to men and couples. A phased approach, starting with well-supported facilities, followed by national scale-up, could facilitate the expansion of this model throughout Zambia. Improving

WLHIV's access to FP services will not only contribute to improvements in their health and the health of their children (Khosla et al., 2015; Narasimhan et al., 2015) but will also respect their right to make informed decisions about their own reproductive health (Kumar et al., 2015).

Acknowledgments

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Table 1.

Items used to measure HIV Care Providers' Knowledge about family planning and specific contraceptive methods at six health facilities in Lusaka, Zambia, April 2018-June 2019.

Scale	Item ^a
General Knowledge about Providing Family Planning (FP) Services to Women Living with HIV (WLHIV)	Pregnancy may hasten the progression of HIV in some women Use of hormonal contraceptives may increase the risk that an HIV-positive woman will transmit HIV to her uninfected male partner HIV-positive clients with HIV symptoms should consider starting ART to lower viral load and improve health before getting pregnant Use of hormonal contraceptives may increase HIV disease progression among women. HIV-positive women stable on ART and using a hormonal contraceptive to prevent pregnancy do NOT need to use condoms
Knowledge about Oral Contraceptive Pills	Women need to undergo a pelvic exam before being prescribed the pill Combined oral contraceptive pills may lead to changes in monthly bleeding patterns. Rifampicin or rifabutin for tuberculosis treatment may make oral contraceptive pills less effective at preventing pregnancy Some ARVs may make oral contraceptive pills less effective Women with very high blood pressure should not use combined oral contraceptive pills
Knowledge about Injectables Including Depo-Provera (DMPA) and Noristerat (NET-EN)	Depo-Provera causes permanent infertility if used for a long time Women using Depo-Provera should return to the clinic after 3 months for another injection The Depo-Provera injection can be as much as 7 days late and still prevent pregnancy Depo-Provera can be safely used by HIV-positive women who are currently breastfeeding In some studies, Depo-Provera has been found to increase the risk that a woman will become infected with HIV
Knowledge about Implants Including Jadelle, Norplant or Implanon	Implants provide protection against pregnancy for 3–7 years, depending on the type of implant There is a delay of 6 months after the implant is removed before a woman's fertility returns Implants may cause birth defects if the woman becomes pregnant or is pregnant during insertion There is some evidence that Jadelle implants may be less effective at preventing pregnancy among women taking efavirenz-based ART regimens
Knowledge about Intra-Uterine Devices (IUDs)	The copper-bearing IUD can be effective for up to 10 years Women with an active case of gonorrhea (evidenced by a muco-purulent vaginal discharge or vaginal discharge syndrome) should not have an IUD inserted before the disease is treated IUDs are generally not recommended for HIV-positive women, even if they are stable on ART Adolescents and women who have not had a baby cannot use an IUD

^aResponse options include True, False, Don't Know, or Refused.

Table 2.

Demographic characteristics of health care providers, lay counselors and community-based distributors at six health facilities in Lusaka, Zambia, April 2018-June 2019.

Variable	<i>N</i> = 85 ^a
Cadre, <i>n</i> (%)	3 (4)
Doctor	24 (28)
Nurse/Midwife	44 (52)
Nursing Aide	11 (13)
Lay Counselor/Community-Based Distributor	3 (4)
Pharmacist/Pharmacy Tech	
Gender, <i>n</i> (%)	19 (22)
Male	66 (78)
Female	
Age in years, mean (SD)	40 (11)
Length of Time in Current Profession in years, mean (SD)	8 (10)
Length of Time Working in HIV Clinic in years, mean (SD)	6 (10)
Ever received FP training/mentorship, <i>n</i> (%)	10 (12)
Yes, received training only	13 (15)
Yes, received mentoring only	3 (4)
Yes, received mentoring and training	59 (69)
No, have received neither training nor mentoring	
Provides FP services as part of job duties, <i>n</i> (%)	60 (71)
Length of time providing FP services, mean (SD)	3.5 (3)

^a All 85 providers completed questionnaires at both the pre- and post-assessments.

Table 3.

Self-reported family planning (FP) knowledge and attitudes among health care providers, lay counselors, and community-based providers at six health facilities in Lusaka, Zambia comparing the pre- and post-intervention assessments, April 2018-June 2019.

Variable	Pre-intervention N = 85	Post-intervention N = 85	p-value ^c
General knowledge about FP among women living with HIV (WLHIV), Mean (SD) ^a	3.9 (1.1)	4.0 (1.2)	0.68
Knowledge about oral contraceptive pills among WLHIV, Mean (SD) ^a	2.5 (1.3)	2.7 (1.4)	0.10
Knowledge about injectables (DMPA or NET-EN) among WLHIV, Mean (SD) ^a	1.5 (0.9)	1.5 (1.0)	0.92
Knowledge about implants (Norplant, Jadelle, Implanon) among WLHIV, Mean (SD) ^b	2.1 (0.9)	2.2 (1.1)	0.75
Knowledge about intra-uterine devices among WLHIV, Mean (SD) ^b	2.3 (0.9)	2.5 (0.9)	0.08
Number of providers who hold positive attitudes towards providing FP services to WLHIV (n, % agree) Feasible to assess pregnancy intentions of WLHIV during routine visits	60 (74.1)	59 (76.6)	0.65
Feel comfortable providing contraceptives to WLHIV who wish to delay/prevent pregnancy	80 (94.1)	78 (96.3)	1.00
Feel comfortable providing safer conception counseling to WLHIV who want to get pregnant	84 (98.8)	81 (98.8)	1.00
Feel comfortable assessing HIV-positive clients for STI signs and symptoms	73 (86.9)	73 (90.1)	0.56
Important distribute condoms to HIV-positive clients at every clinic visit	83 (97.7)	82 (97.6)	1.00
My patients feel comfortable receiving family planning services from me (n, % agree)	81 (97.6)	77 (97.5)	1.00

^a Five-item index with a possible score ranging from 0 (no knowledge) to 5 (full knowledge).

^b Four-item index with a possible score ranging from 0 (no knowledge) to 4 (full knowledge).

^c P-values for categorical variables are from exact McNemar tests; p-values for continuous variables are from paired t-tests.

Table 4.

Self-reported family planning (FP) services offered by health care providers, lay counselors, and community-based providers at six health facilities in Lusaka, Zambia comparing the pre- and post-intervention assessments, April 2018-June 2019.

Variable	Pre-intervention <i>N</i> = 85 <i>n</i> (%)	Post-intervention <i>N</i> = 85 <i>n</i> (%)	<i>p</i> -value ^a
Conducts fertility assessment among WLHIV as part of routine clinical visits	66 (77.7)	57 (67.1)	0.12
Provides counseling on FP methods	43 (50.6)	37 (43.5)	0.35
Traditional methods (LAM or standard days)	81 (95.2)	67 (78.8)	0.002
Condoms	47 (55.3)	48 (56.5)	0.88
Oral contraceptive pills	39 (45.9)	41 (48.2)	0.75
Injectables (DMPA or NET-EN)	32 (37.7)	36 (42.4)	0.54
Implants (Jadelle/Implanon)	32 (37.7)	30 (35.3)	0.74
Intra-uterine devices (IUD)	24 (28.2)	23 (27.1)	0.85
Sterilization (tubal ligation/vasectomy)			
Directly provides FP services			
Distribute condoms to patients	80 (94.1)	72 (84.7)	0.03
Distribute oral contraceptive pills	12 (14.1)	22 (25.9)	0.03
Provide injectable contraceptives	8 (9.4)	21 (24.7)	<0.001
Implant insertion and removal	2 (2.4)	11 (12.9)	0.007
IUD insertion and removal	2 (2.4)	11 (12.9)	0.007
Provides referral for FP services not available within the HIV clinic	62 (72.9)	48 (56.5)	0.03
Provides safer conception/pregnancy counseling to HIV-positive clients who would like to get pregnant	67 (78.8)	65 (76.5)	0.71
Screens and treats for other sexually transmitted infections	33 (38.8)	41 (48.2)	0.11
Screen			
Treat	24 (28.2)	23 (27.1)	0.78

^a*P*-values from exact McNemar tests.

Table 5.

Challenges and recommendations shared by 109 health care providers implementing integrated family planning and HIV services at six health facilities in Lusaka, Zambia, April 2018-June 2019.

Level	Challenges	Recommendations for Improvement
Individual	Belief in Myths around Family Planning <i>"Some women were refusing family planning saying that they don't know what damage it may cause to them to be on both ART and family planning."</i> (Lay Counselor) <i>"Some of them decline due to the myths and misconception that are there, like maybe when you are not using Depo you become infertile."</i> (Nurse) <i>"Others say that family planning causes unborn babies to be born with some deformities."</i> (Lay Counselor) <i>"Some people say that some methods of family planning damages the womb, causes cancer;"</i> (Community-Based Provider) <i>"Some say that these family planning methods can bring fibroids."</i> (Lay Counselor) Adolescent Girls Who Are Below the Age of Consent <i>"I think the only challenge is when you have these teenage girls who come seeking for family planning without the consent of the parents is a real challenge because we are not allowed to attend to young girls."</i> (Lay Counselor)	Provide Family Planning Education at the Facility and in the Community <i>"Sometimes all that they need is sensitization; they just have to know the good part about family planning."</i> (Lay Counselor) <i>"So, most of those who refuse, they do that because of myths in the community; but after teaching, some of them change their minds and begin to do family planning."</i> (Lay Counselor)
Relational	Need to Consult Male Partner Prior to Starting Family Planning <i>"Mostly women refuse because they want to make a decision together with their husbands because if she does it alone [without the husband's approval], that is where you find marriages are breaking in the community."</i> (Lay Counselor) <i>"Most of the women have complained that their spouses, since they are not available when they are being counseled to take a particular method, they say it is difficult for them to start telling their partners about it; since most of the times the male folks are not comfortable with the contraceptives that are being taught."</i> (Lay Counselor)	Develop Guidance on How to Offer FP Services to Adolescents <i>"So, if a provision could be put in place for them because they also need some help."</i> (Lay Counselor) Encourage Women to Come with Their Partner for FP Services <i>"I think in terms of family planning, it is better that also the nurses or the counselors to encourage the women to becoming with their husbands. It will help the couple to have the same decision. You will find maybe your wife has put the implant and discover that you are not having children and meanwhile I really want children and yet she didn't discuss with me, the husband."</i> (Lay Counselor)
Provider	Lack of Trained Staff Leading to Long Wait Times and Busy Workloads <i>"Yes, that one is there; you will find that a client who has come needs Jodelle and when you go to look for one who administers it, you will find that she is busy and tells you to wait. So, you will find that the client will not manage to wait for long hence she will go back without accessing her family planning."</i> (Community-Based Distributor) <i>"When we first went for training in family planning, we were 4, but now we are just the 2 of us and sometime there is serious workload, hence we need more to be trained."</i> (Nurse) <i>"We are few and the communities are big for example [this community] has 10 zones. So, for 2 people to cover the whole community is a serious challenge. They should train more CBDs,"</i> (Community-Based Distributor)	Train More Providers in FP Service Delivery, Particularly CBDs <i>"So, you find that the people who are trained in the department are gone, so it's important that these trainings can be ongoing so that there is sustainability."</i> (Nurse) <i>"If the government would have taken it up to train every nurse in FP so that even if they are sent to ART department, they should be able to provide that service. So that it's just a matter of allocating which ever nurse is on duty can do the service."</i> (Nurse)
Structural	Lack of Space and Equipment to Provide Family Planning Services <i>"So, the challenge is the room that offers those services is just a single room so if maybe you have 10 or 20 clients who want the service, you will find that they will be delayed due to a small room."</i> (Lay Counselor) <i>"The family planning room is sometimes used for cervical cancer screening, and we struggle to find free space when you have client and making the client to wait longer."</i> (Nurse) <i>"Then the other thing I think sometimes we don't have enough equipment to use. I find that if we have a lot of patients you feel like 4-5 patients, we need to sterilize these things."</i> (Nurse) <i>"Like for IUD we don't have a lighter. So, we use our phones to light when we are putting in an IUD, which is not good enough."</i> (Nurse) Frequent Commodity Stock-Outs <i>"Like there are times we run out of stock, there are times we don't have any type of family planning."</i> (Nurse)	Create a Dedicated Space for Providing Family Planning Services <i>"We need a bigger room where you can assign a lot of service providers to offer that service."</i> (Lay Counselor) <i>"I think when they come in again, they should make sure that that room is meant for family planning only; and they should make sure that the in charge should know that the room they have been given is for family planning only. No matter what happens, even when they are having a viral load campaign, they should find other means of collecting samples or something."</i> (Nurse) <i>"So at least if we can have enough [IUD] packs to use for family planning it could also help and I think there's also a need to train more people to help out."</i> (Nurse) Order More Contraceptives to Prevent Stock-Outs <i>"The suggestion is that we need to tell the Ministry of Health that they should be</i>

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Level	Challenges	Recommendations for Improvement
		<i>ordering the drugs in advance to avoid stock outs. ” (Nurse) “I would urge them to up their stocks so that we can have this service readily available, every day and at the right time. By so doing, we would better do the job.” (Community-Based Distributor)</i>