

**ASSOCIATION OF FAMILY PLANNING INTEGRATION WITH CONTRACEPTIVE
UPTAKE IN KENYAN HIV TREATMENT CENTERS**

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ABSTRACT

Association of Family Planning Integration with Contraceptive Uptake in Kenyan HIV
Treatment Centers

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Objective: To assess facility-level integration of family planning (FP) into HIV care and contraceptive use among HIV-infected women on antiretroviral therapy (ART).

Study design: We conducted a national cross-sectional study with key informants and HIV-infected women on ART to assess integration of FP into HIV care at 108 HIV care and treatment centers with >1000 ART clients per year. Separate surveys were administered to key informants and HIV-infected women. We classified facilities offering FP services in the same facility as care as integrated facilities.

Results: Overall, 108 facilities throughout Kenya were evaluated, and 4748 HIV-infected women were enrolled. The majority (73%) of facilities offered integrated FP services. Integrated facilities were more common in the Nyanza region than Nairobi (77% vs 35% respectively, $p=0.06$). Integrated FP services were more likely to be offered in public compared to private

facilities [PR: 1.86, 95% CI: 1.11-3.11; p=0.02]. Contraceptive use [modern contraception, dual FP method, and long-acting reversible contraception (LARC) and non-barrier short-term methods] were significantly higher in facilities that offered integrated FP services (p<0.001 for all).

Conclusions: The majority of high volume facilities in Kenya integrated FP services into HIV care. Integrating FP services within HIV care may increase modern contraceptive use among HIV-infected women.

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INTRODUCTION

Family planning (FP) is an important public health intervention, with significant health benefits for women and their families. FP prevents pregnancy-related morbidity and mortality, while promoting birth spacing, which also leads to improved child health. (1) FP is important for HIV-infected women to reduce the rate of mother-to-child HIV transmission (MTCT), prevent unintended pregnancies, and improve maternal and child health (MCH) outcomes (2). Prevention of unintended pregnancies among women living with HIV is one of four pillars of a comprehensive prevention of mother-to-child HIV transmission (PMTCT) strategy (3). FP also helps HIV-infected women delay future pregnancies until they can be effectively treated with ART and suppress maternal HIV viral load – the most important predictor of PMTCT. Additionally, FP offers HIV-serodiscordant couples time to consider safer conception strategies to reduce periconception HIV risk to HIV-uninfected male partners (4-5).

Both WHO and Kenyan guidelines recommended integrating FP into routine HIV care and treatment to improve access to FP among HIV-infected individuals and HIV outcomes (6-7). Prior studies have demonstrated that integration of FP into HIV care improves FP uptake among HIV-infected women in sub-Saharan Africa, including increased use of condoms and other modern contraceptive methods (8-10). One Kenyan trial showed that integrating FP into HIV care led to a 19% decrease in pregnancy incidence over 2 years (11). While integration of FP into HIV care has been shown to be an effective and cost-efficient strategy to improve contraceptive coverage and improve MCH (12), gaps in service delivery may limit utility of this approach. For example, HIV care providers may provide a limited range of FP services (i.e., only offer condoms) despite training to offer comprehensive FP methods and services (13). Moreover, consideration of service delivery characteristics alone is insufficient to understand how to achieve effective, sustained delivery of integrated FP services into HIV care at scale. Previous studies suggest structural and organizational factors might impede delivering integrated FP and HIV services. (2, 14-16). However, the impact of these factors on the ability to offer integrated services or improve contraceptive use have not been explored. We conducted a national evaluation of HIV Care and Treatment Programs in Kenya to assess the impact of facility-level

factors on integration of FP into HIV care, and compare contraceptive use among HIV-infected women on ART at integrated vs. non-integrated facilities.

METHODS

Study design and sampling

Between June and September 2016, we conducted a cross-sectional study, sampling 109 facilities with HIV Care and Treatment Programs with >1000 ART clients per year in seven of eight regions in Kenya. The Northeastern region was excluded from the sampling frame due to logistical constraints. In each facility, one key informant responsible for the facility's HIV Care and Treatment Program was identified by an official in-charge (i.e., facility matron or supervisor) and administered a standardized survey. In addition, all women attending HIV Care and Treatment Programs were also asked to complete a survey on FP administered by study staff. Women were eligible for study participation if they were HIV-infected, between 15 and 49 years, had vaginal heterosexual intercourse within the past 6 months, and were able to provide informed consent. Women who were pregnant or had tubal ligations were excluded.

Study procedures

Key informants were asked about their facility and HIV Care and Treatment Program, including facility type, ART patient volume and provision of ART and PMTCT services. They were also asked several questions about provision of FP services, including staffing levels, stock-outs of FP commodities, and FP referrals. Women were asked about FP during individual surveys, including current FP use, type of FP methods used, receipt of FP services at the facility where they were seeking HIV care, and type of FP services received.

The Institutional Review Boards (IRB) at the University of Washington and Centers for Disease Control and Prevention (CDC), and the Kenya Medical Research Institute (KEMRI) Ethical Review Committee (ERC) approved the conduct of this study.

Key definitions and statistical analysis

We defined integrated FP facilities as those that offer FP in the same facility as HIV Care and Treatment Programs – what previous studies called a “one-stop shop” model (17). Modern contraceptive methods included condoms, injectables, implants, intrauterine devices (IUDs), and oral contraceptives (OCs). Long-acting, reversible contraception (LARC) included IUDs and implants, while non-barrier short-term methods included injectables and OCs. Dual-method use consisted of condoms plus another modern contraceptive method. Other methods include vaginal ring, lactation, abstinence, herbal methods, standard days method, withdrawal, and rhythm. Counties were classified as by HIV burden (low, medium, or high) based on the 2015 Strategic Direction Summary SDS (18).

Continuous variables were compared using *t*-tests and categorical variables compared using Pearson’s chi-square tests. Contraceptive prevalence rate (CPR) is calculated as the proportion of women who are practicing, or whose sexual partners are practicing, any form of contraception; similarly this proportion was also calculated for modern contraceptive use and is presented as the modern contraceptive prevalence rate (mCPR). Mean CPRs were calculated by site using survey data from women and compared between integrated vs. non-integrated facilities. Poisson generalized linear models with a log-link function were constructed to assess the relationship between cofactors and FP integration; this method is an appropriate when the prevalence of the outcome is high (19-20). Variables with $p < .10$ were included in the multivariate model. Location of integrated FP sites vs. non-integrated sites were mapped using ArcGIS (Redlands, CA). All other statistical analyses were conducted using STATA 14 (College Station, TX).

RESULTS

General Facility Information and HIV-related Characteristics

Among 31 counties included in the study, 18 (58%) were high or medium HIV burden (Figure 1). A total of 108 facilities were included in the study (1 facility that met eligibility criteria was not included due to a delay in obtaining facility approval to conduct the study during the study

period), 89% were hospitals, over half (63%) were public (Table 1), and 78% were located in medium/high HIV burden counties. One third (n=35, 32%) of facilities were in Nyanza, 20 (19%) in Nairobi, and only 6 (6%) were from the Coast (Figure 1). The majority of respondents in the facility survey were nurses (59%) and 33% were clinical officers. The median number of ART patients accessing care each month was 1,500 [IQR: 900-2,361] and the median number of ART patients treated per staff each month was 78 [IQR: 50-130] (Table 1).

FP Integration

Overall, 73% of facilities offered integrated FP services in the same facility as HIV Care and Treatment Centers. Integrated facilities were less prevalent in Nairobi than the Nyanza region (35% vs.77%, respectively; prevalence ratio (PR): 0.45, 95% confidence interval (CI): 0.20-1.04; $p<0.06$) (Table 2). Public facilities were significantly more likely to offer integrated FP services compared to non-public facilities (private/non-governmental organization (NGO) supported) (76% vs. 24%, respectively; PR: 1.86, 95% CI: 1.11-3.11) Facility type (hospital vs. clinic), ART patient volume, ART patient to staff ratio, and offering PMTCT services were not significantly associated with offering integrated FP services ($p>.10$).

Among facilities that offered integrated FP services, most (82%) followed up with clients to confirm FP was received when patients were referred (Table 3). Among the 29 facilities that did not offer FP services, almost all (90%) provided referral services to another facility. Median waiting time to receive FP services after arriving at integrated HIV care centers was 20 minutes [IQR: 10-30] based on surveys from key informants. One third of providers delivering care in the HIV care center were also trained to deliver FP. Key informant surveys indicated that almost all integrated facilities (>90%) discussed IUDs, implants, injectables, OC, and condoms with HIV-infected women (Table 3). Across all integrated sites, injectables (50%) were the most frequently FP method provided, followed by condoms (35%) and implants (12%). In the past year, 32% of integrated facilities experienced FP method stock-outs; 60% of condoms and 40% of injectables.

Facility-level FP services received by HIV-infected women are shown in Figure 2. At integrated facilities, the proportion of HIV-infected women who reported receiving FP services at the time

of survey was significantly higher than at non-integrated facilities (18% and 13%, respectively; $p < 0.001$). Overall, 12% of HIV-infected women at both integrated and non-integrated facilities only reported receiving a consultation on FP, but the proportion of women reported receiving a FP method (e.g., initial prescription or insertion, removal, change of method, and refill) was higher at integrated facilities than at non-integrated facilities (7% and 3%, respectively; $p < 0.001$).

The majority of HIV-infected women (89%) reported using a FP method in the last month at integrated facilities, compared to 80% of women at non-integrated facilities ($p < 0.001$) (Figure 3). The mCPRs were 80% and 88% at non-integrated vs. integrated facilities, respectively ($p < 0.001$). In addition, the proportion of HIV-infected women using dual FP methods who sought care at integrated facilities was also higher than at non-integrated facilities (40% and 30%, respectively; $p < 0.001$). Compared to non-integrated facilities, use of LARC and non-barrier short-term methods were significantly higher at integrated facilities (Figure 4). However, use of condoms alone, or use of other FP methods were similar at integrated and non-integrated facilities.

DISCUSSION

In this national evaluation of FP integration into HIV Care and Treatment Centers in Kenya, we found that the majority of facilities (73%) offered integrated FP services and 90% offered FP referrals if integrated FP services were not available. Integration of FP services was associated with higher mCPR and use of LARC, and non-barrier short term barrier methods among HIV-infected women. Integration was more common in Nyanza where HIV prevalence exceeds 15% in many counties compared to Nairobi, where the HIV prevalence is 6.8% (21). In addition, public facilities were nearly twice as likely to offer integrated FP services than private facilities. It is likely that policy guidance on offering integrated care and sustained funding allocated from national centers to public facilities influenced facility provision of integrated services (10). We found that integration did not vary by HIV burden or the client volume, which suggests that integration may be feasible broadly regardless of HIV burden or client volume.

Although FP integration has been implemented widely across Kenya, we identified several organizational challenges within integrated centers. HIV care providers were expected to offer

FP services within the context of HIV care; however, only one third of providers in integrated facilities been trained on FP, limiting ability to provide high quality FP services. These findings are consistent with findings from a qualitative study among HIV providers at youth voluntary counseling and testing (VCT) clinics with integrated FP services in Kenya, in which only 33% of providers interviewed were ever trained in FP (22). In another evaluation of integrated FP services conducted in 9 Sub-Saharan Africa countries, staff shortage, inadequate training of HIV care providers in delivering FP services and low awareness of integration guidelines were reported challenges (2). In our study, higher contraceptive use at integrated facilities may suggest that healthcare providers influence FP use and decision-making and additional healthcare provider training on FP services could enhance their effectiveness. Stock-outs of contraceptive commodities were common in our study and may have prevented clients from receiving FP or specific FP methods, potentially decreasing mCPR. Stock-outs of FP commodities has been previously reported in integrated HIV clinics in Eastern and Central Kenya and other parts of sub-Saharan Africa (2, 23).

Poor clinic readiness to offer FP services may influence provision of FP method, and contraceptive method mix among women. Injectables were the most frequently provided and used FP method in Kenya, but IUD use was very low. High patient volumes and lack of providers trained to deliver IUDs may have limited administration of IUDs. Moreover, providers need to provide comprehensive HIV services which could limit time for FP counseling and services. Women may be deterred from waiting for FP services after already waiting for HIV care. There is a need for systems to improve provider training on FP, clinic flow, and prioritization of FP care within the context of HIV care. Prior qualitative studies have noted that provider workload and long waiting times were aggravated by integration, with additional tasks and increased demand for FP services, but lacked systems adaption to support integration (23-24). Despite high prevalence of integration in HIV Care and treatment centers, addressing these challenges may reduce unmet need for FP services at integrated facilities.

Dual FP use in our study was low (< 40%), which is consistent with findings from previous studies in Africa (8, 25). Although mCPR was high (88%), it was largely driven by high condom use (70%), non-condom contraception use remained low (<34%). High condom use has benefits

for the prevention of heterosexual HIV transmission (26-27). However, condoms are relatively ineffective for contraception, making dual FP use important for preventing unintended pregnancy and improving MCH outcomes (28). One trial in Zambia suggested that providing LARC at HIV testing sites leads to increased LARC uptake among HIV-infected clients (29). Given the high reliance on condoms for pregnancy prevention in our study, addressing system- and service delivery level challenges such as inadequate trained staff, time constraints, and stock-outs of commodities may facilitate the provision of more effective FP methods and diversify the method mix among HIV-infected women. In addition, balancing counseling around HIV/STI prevention and prevention of pregnancy may help continue to support condom use for dual protection of HIV/STI and unintended pregnancy.

Our study contributes to the understanding of how broader system and service delivery level factors may influence the integration of FP services. We had a large sample size of HIV-infected women sampled from over 100 facilities across Kenya, and analyzed data from both patient and facility perspectives. Facilities were drawn from over 30 counties across seven regions of Kenya with a high volume of ART clients, and is representative of these types of facilities. However, our study had limitations. Our results may not be generalizable to facilities with a lower volume of ART clients. Some factors evaluated may have less heterogeneity in high volume facilities than in lower volume facilities, including patient volume and provider-client ratios. Since the Northeast region was excluded, our results may not provide accurate estimates of national programming; however, the HIV prevalence of this region is low (<1%). Despite the large sampling frame, our facility-level analysis was based on a small sample, which limits statistical power. Finally, results from key informants may be subject to recall or social desirability bias.

We found the majority of high volume facilities in Kenya integrated FP services into HIV care, and integration was associated with modern contraceptive use among HIV-infected women. Despite the high prevalence of integration, there remained health system and service delivery challenges to be addressed to improve integration of FP services within HIV Treatment Centers.

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TABLES AND FIGURES

Table 1. Characteristics of facility survey respondents and facilities

		All facilities (N=108)
		N [%] or Median [IQR]
<i>Characteristics of survey respondents</i>		
Title	108	
Medical officer		2[2]
Clinical officer		36[33]
Nurse		64[59]
Counselor		2[2]
Other		4[4]
Age	105	40[32-50]
Female		76[70]
<i>Facility characteristics</i>		
High/medium HIV burden county	108	84[78]
Region^{***}	108	
Central		10[9]
Coast		6[6]
Eastern		13[12]
Nairobi		20[19]
Nyanza		35[32]
Rift valley		12[11]
Western		12[11]
Hospital (vs. clinic)	95	85[89]
Public^{***}	108	68[63]
ART patient volume (per month)	106	1500 [900-2361]
Number of ART patients treated per staff (per month)	104	78[50-130]
Offers PMTCT	108	104[96]

FP = Family planning, IQR = interquartile range, ART = Antiretroviral therapy, PMTCT = Prevention of mother-to-child HIV transmission

* p<0.05, ** p<0.01, *** p<0.001

Table 2. Correlates of integration of family planning services into HIV care

	Integration of FP services		Poisson Generalized Linear Model	
	N [%] Median [IQR]		Crude PR [95% CI]	p
	Yes	No		
HIV burden ^a				
Low	20 [83]	4 [17]	1.19 [0.71-1.97]	0.51
Medium/high	59 [70]	25 [30]	ref	ref
Region				
Nyanza	27 [77]	8 [23]	ref	ref
Nairobi	7 [35]	13 [65]	0.45 [0.20-1.04]	0.06
Other ^b	45 [85]	8 [15]	1.10 [0.68-1.77]	0.69
Hospital vs. clinic				
Hospital	63 [74]	22 [26]	1.21 [0.60-2.44]	0.59
Clinic	9 [90]	1 [10]	ref	ref
Public facility	60 [88]	8 [12]	1.86 [1.11-3.11]	0.02
ART patient volume per month (>1500)	37 [47]	11 [38]	1.10 [0.71-1.71]	0.67
No. of ART patients treated per staff per month (>78)	38 [48]	15 [52]	0.96 [0.62-1.50]	0.86
PMTCT ^c				
Yes	76 [73]	28 [27]	0.97 [0.31-3.10]	0.99
No	3 [75]	1 [25]	ref	ref

PR=prevalence ratio, CI=confidence interval ; ART = Antiretroviral therapy, PMTCT = Prevention of mother-to-child HIV transmission

^a Compared to high/medium HIV burden counties

^b Other regions include Central, Coast, Eastern, Rift Valley, and Western provinces.

^c PMTCT: Facilities offering PMTCT services.

Table 3. Characteristics of facilities offering integrated family planning services (N=79)

	N	N [%] or Median [IQR]
Provides FP follow-up ^a	79	65[82]
Providers trained to deliver FP (%)	78	30[14-50]
Waiting time for FP services (minute) ^b	77	20[10-30]
FP methods discussed		
IUD	79	74[94]
Implants	79	76[96]
Injectable	79	77[97]
OC	79	73[92]
Condoms	79	77[97]
Other ^c	79	61[77]
Most frequently provided FP method	79	
IUD		1[1]
Implants		9[12]
Injectable		39[50]
OC		1[1]
Condoms		27[35]
Natural methods		1[1]
Facilities experiencing any FP stock-outs (past year)	79	25[32]
Stock-outs by method		
IUD	25	5[20]
Implants	25	6[24]
Injectable	25	10[40]
OC	25	5[20]
Condoms	25	15[60]
Duration of stock-outs by method ^d		
IUD	8	90[19-135]
Implants	5	60[3-90]
Injectable	5	28[7-60]
OC	7	60[0-90]
Condoms	4	34[5-150]

FP=Family planning, IQR=interquartile range, IUD=intrauterine device, OC=Oral contraception

^a Among facilities offering FP referrals are provided at this HIV Care Centers, clients are followed up to confirm FP has been received.

^b Average number of minutes a patient waits to receive FP services at this facility

^c Other methods include abstinence, natural methods, and diaphragm.

^d Number of days experiencing stock-outs in the past year.

Characteristics in this table are based on key informant surveys.

Figure 1a. Location of facilities (N=108) by county HIV burden and family planning integration

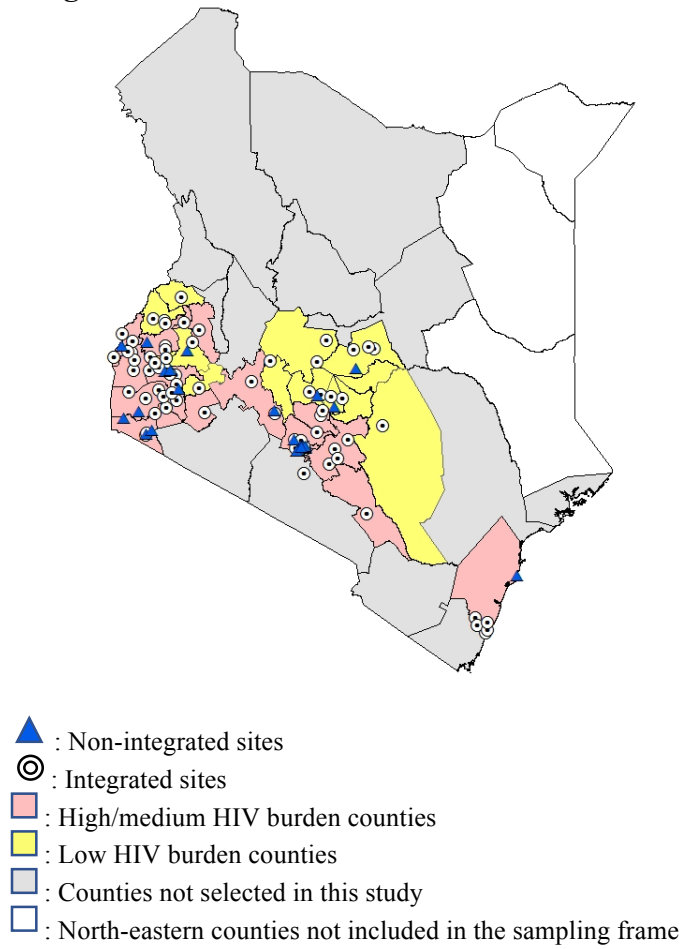


Figure 1b. Location of Nairobi facilities, by integration of family planning services

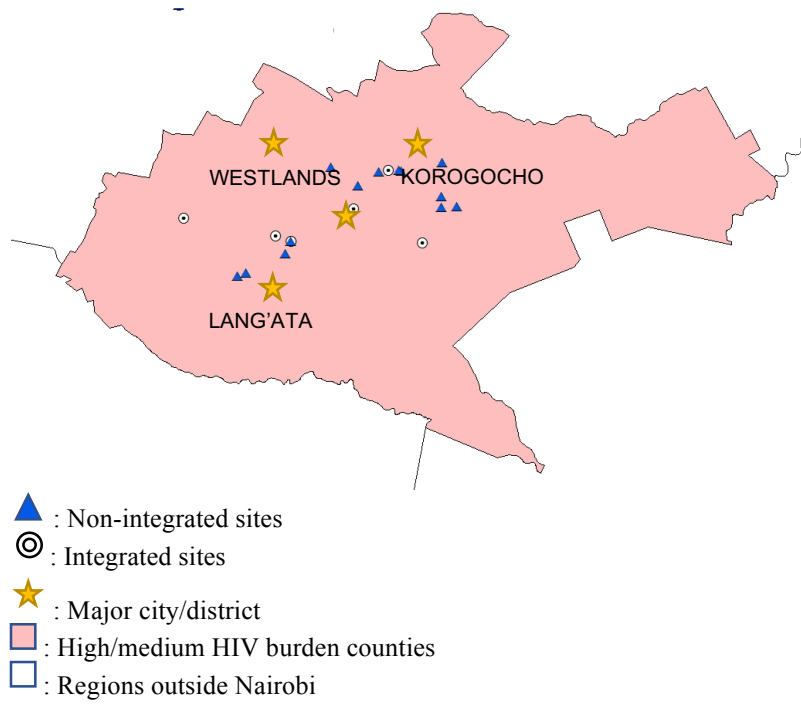


Figure 1c. Location of facilities in Nyanza, by integration of family planning services

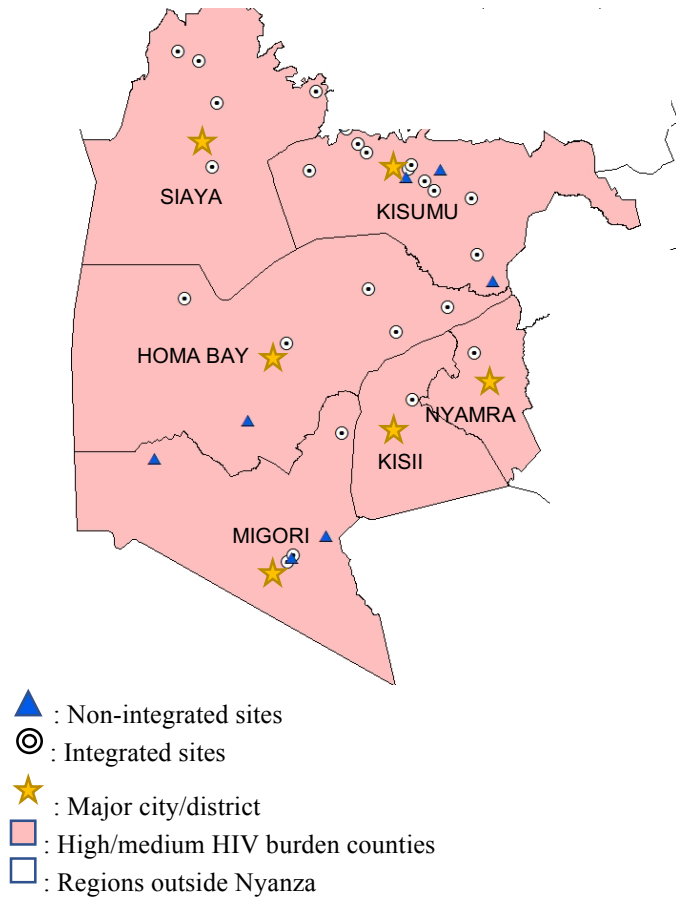
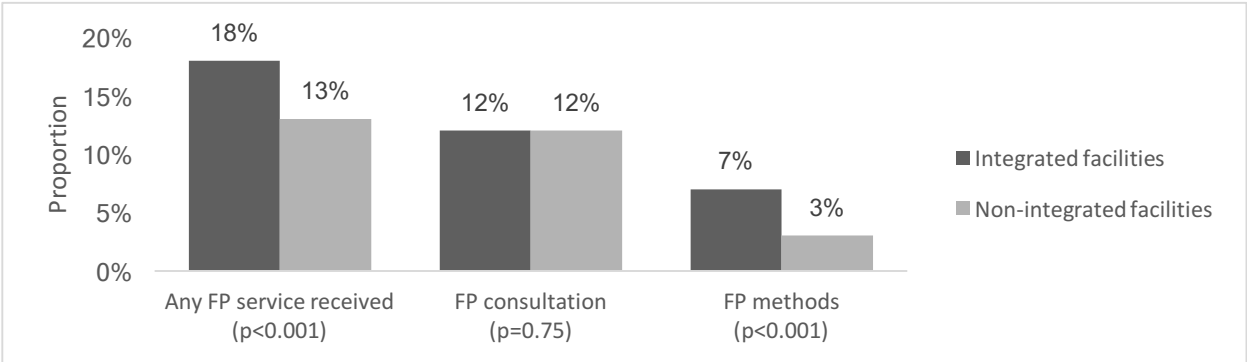


Figure 2. Receipt of any family planning service, by integration of family planning services

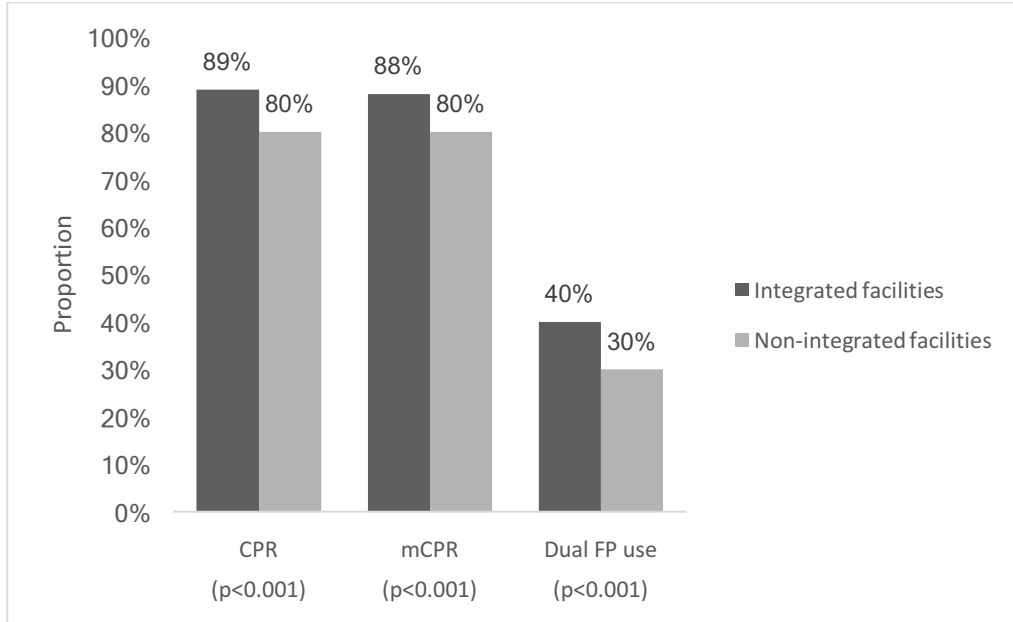


FP=Family planning

Integrated facilities are facilities offering FP services at the same facility as HIV Care and Treatment Centers.

FP methods includes initial prescription or insertion, removal, change of method, and refills.

Figure 3. Mean facility contraceptive prevalence rates, by integration of family planning services



FP=Family planning

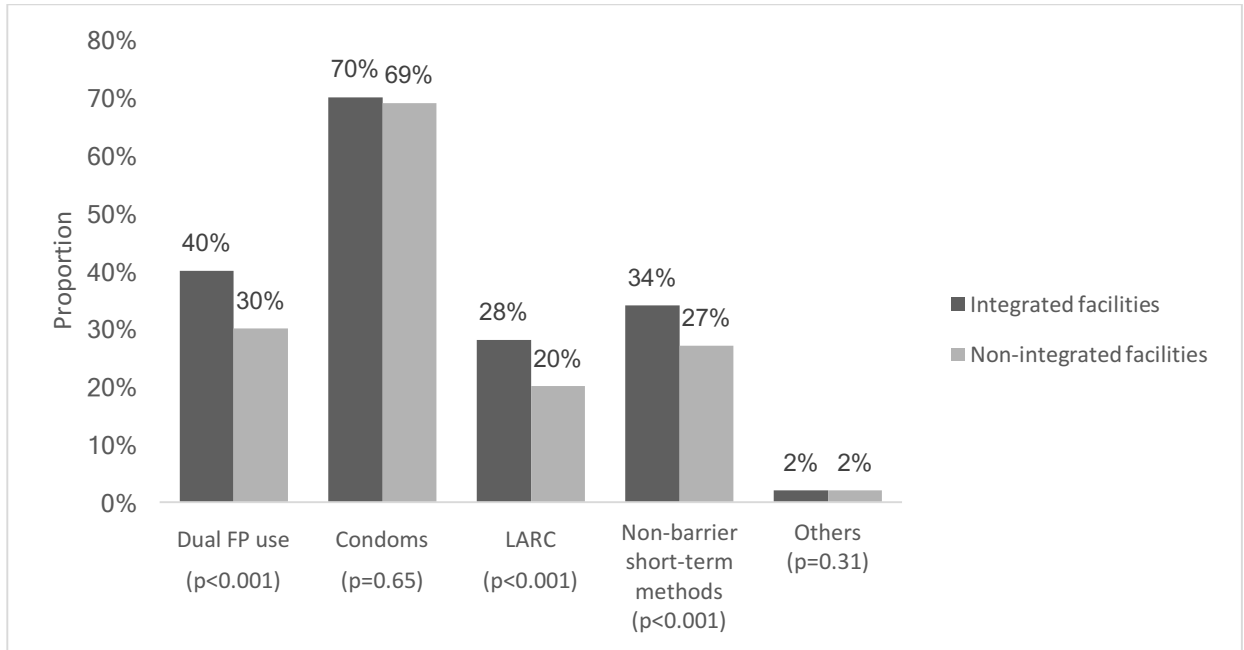
CPR=Contraceptive prevalence rate; which is calculated as % of women who are practicing, or whose sexual partners are practicing, any form of contraception. Here, mean CPRs were calculated by site using survey data from women

mCPR=modern contraceptive prevalence rate

Modern contraception included condoms, injectables, implants, intrauterine devices (IUD), and oral contraceptives (OCs).

Dual FP methods include condoms and another modern method.

Figure 4. Contraceptive method mix, by integration of family planning services



FP=Family planning; LARC = Long-acting, reversible contraception.

Dual FP methods include condoms and another modern method.

Others include vaginal ring, lactation, abstinence, herbal methods, standard days method, withdrawal, and rhythm.