

Factors Associated with Uptake of Contraceptives among HIV Positive Women on Dolutegravir based Anti-Retroviral Treatment at Health Centres of Kampala Capital City Authority. A cross sectional study in Uganda.

Leah Mbabazi

Infectious Diseases Institute

Mariah Sarah Nabaggala

Infectious Diseases Institute

Suzanne Kiwanuka

Makerere University

Juliet Kiguli

Makerere University

Stephen Okoboi

Infectious Diseases Institute

Eva Laker

Infectious Diseases Institute

Barbara Castelnovo

Infectious Diseases Institute

Mohammed Lamorde

Infectious Diseases Institute

Arthur Kiconco

Makerere University

Mathius Amperiize (✉ mathius166@gmail.com)

Infectious Diseases Institute <https://orcid.org/0000-0002-4104-4830>

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Abstract

Background In May 2018, the World Health Organisation issued a teratogenicity alert for HIV positive women using dolutegravir (DTG) and emphasised increased integration of sexual and reproductive services into HIV care to meet contraceptive needs of HIV positive women. However, there are scarce data on the impact of this guidance on contraceptive uptake.

Objective To investigate the uptake of contraceptives and the factors affecting the uptake of contraceptive services among the HIV positive women of reproductive age who use DTG.

Methods A cross-sectional survey was conducted from April 2019 to July 2019, in five government clinics in central Uganda where DTG was offered as the preferred first-line antiretroviral treatment (ART) regimen. We randomly selected 359 non-pregnant women aged 15-49 years using DTG-based regimens. We used interviewer administered questionnaires to collect data on demographics, contraceptive use, social and health system factors. We defined contraceptive uptake as the proportion of women using any method of contraception divided by the total number of women on DTG during the review period. We described patients' characteristics using descriptive statistics. Factors associated with contraceptive uptake were investigated using Poisson regression at multivariable analysis (STATA 14).

Results Of the 359 participants, the mean age was 37(SD=6.8), half 50.7% had attained primary level of education and average monthly income <100,000Ushs. The overall level of Contraceptive uptake was 38.4%, modern contraceptive uptake was 37.6% and 96.4% of the participants had knowledge of contraceptives. The most utilised method was the injectable at 58.4% followed by condoms 15%, IUD 10.7%, pills 6.4%, implants 5.4%, and least used was sterilization at 0.7%. Predictor factors that increased likelihood of contraceptive uptake were; religion of others category AIRR=1.53(95% CI: 1.01, 2.29) and parity 3-4 children AIRR=1.48(95% CI: 1.14, 1.92). Reduced rates were observed for age 40-49 years AIRR=0.45(95% CI: 0.21, 0.94), unemployment AIRR 0.63(95% CI: 0.42, 0.94), not discussing FP with partner AIRR=0.39(95% CI: 0.29, 0.52) and not receiving FP counselling AIRR=2.86 (95% CI: 0.12, 0.73). Non-significant variables were facility, education level, marital status, sexual activity, experienced side effects of FP and knowledge on both contraceptives and DTG.

Conclusion This study shows a low-level uptake of contraceptives and injectable was the most used method. It also indicated that FP counselling and partner discussion on FP increased contraceptive uptake. Therefore, more strategies should be put in place to increase male involvement in family planning programs and scale up the integration of family planning services into HIV care and management programs.

Introduction

Globally, HIV prevalence is higher among individuals of reproductive age group with women being most vulnerable at 50% of the 37.9 people living with HIV, of which majority of the infections are in low income countries (1). In Uganda, the women are disproportionately affected by HIV with prevalence much higher

at 8.8% compared to 4.3% in men. Among the women, it is higher in age groups of 35-49 years (12.9%) who are at their peak of reproductive ages (2). The HIV positive women often get unplanned pregnancies and experience negative effects of pregnancy on their health, which leads to poor obstetric outcomes and it contributes to new paediatric HIV infections through vertical transmission (3). The magnitude of the public health burden of unintended pregnancies in HIV positive women is well illustrated in Uganda, 40% of pregnancies are unplanned; yet Uganda has a general fertility rate of 5.4 children per woman and the neonatal mortality is 27 per 1000 live births (4)

The prevention of mother to child transmission of HIV (PMTCT) strategy advocates a four-pronged approach of elimination of new HIV infections among children and keeping their mothers alive. In Uganda, Mother To Child Transmission (MTCT) of HIV has tremendously reduced to 1% at 6 weeks post-delivery, HIV positivity among infants has reduced to 3.1% with 3241 health facilities PMTCT services (5). The second prong of PMTCT is the provision of Family Planning (FP) at all HIV care ART centres. This area has remained a challenge in Uganda where the unmet need for contraception is at 41.2% in HIV positive women compared to 28% of the general population (4). Delivery of FP services to HIV positive women is still inadequate because of the parallel nature of FP and HIV services. Integrating family planning services into HIV services has been an approach to make both more accessible to HIV positive women and couples living with HIV (6).

In 2016, the World Health Organisation issued ART guidelines for use Tenofovir/lamivudine/dolutegravir (TDF/3TC/DTG) as the newly recommended first line regimen because of its high efficacy and few side-effects compared to Efavirenz based regimen (7). Therefore, Uganda adopted the new ART guidelines in 2018 by switching all men, girls below 14 years of age and premenopausal beyond 49 years of age. Women ages 15-49 years have been excluded from the regimen due to fears of potential side effects on unborn babies. Women 15-49 years on long-term family planning methods are eligible for this new drug (8).

Infectious diseases institute (IDI) is one of the HIV care institutions that started the roll out of DTG in early 2018 among the Kampala Capital City Authority (KCCA) health facilities. Overall, 3276 HIV positive women of reproductive age have been switched to DTG at KCCA health facilities as of March 2019 (9).

The general data of uptake of FP among these women who are switched to DTG is currently unavailable. Limited research and studies have been done to tackle the uptake, knowledge and experiences of the women on family planning post the switch from their previous regimens to the DTG regimen. This study, therefore intends to explore the contraceptive uptake and its related factors among HIV positive women who are receiving DTG based ART at the KCCA health facilities that are affiliated to IDI, Uganda.

Materials And Methods

Ethical permission

The investigator obtained study approval the Makerere University Institute of Public Health Higher Degrees Research and Ethics Committee (HDREC), Kampala City Council Authority (KCCA), Uganda National Council of Science and Technology (UNCST) and the Science and Research Committee (SRC) of IDI Mulago. All study materials including the protocol, consent forms and data collection tools were approved prior to use. We also obtained written informed consent from each participant prior to all study activities.

Study design

This study used a cross-sectional survey design covering a period of three months that is from April to July 2019.

Study sites

The study was conducted at the six ART clinics of KCCA health centres that are affiliated to Infectious Diseases Institute (IDI) Kampala Uganda. The 6 KCCA HCs that provide ART services are Komamboga HC3 in Kawempe division, Kiswa HC3 in Nakawa division, Kawaala HC3 in Rubaga division, Kisugu HC3 in Makindye division, Kitebi HC3 in Rubaga division and Kisenyi HC4 in the central division. IDI currently provides HIV care to approximately 40,000 People Living with HIV (PLHIV) under the outreach Programme to six KCCA HCs. Of these patients, 3276 were HIV positive women aged 15-49 years who have been put on DTG ART regimen as of March 2019. Kawaala HC had the highest number of women on DTG at 1293 women, followed by Kisenyi HC at 1079 women, Kiswa HC at 679, Kitebi HC at 165, Komamboga HC at 60 women and Kisugu HC had not enrolled any woman onto DTG by the time of sampling in March 2019. Therefore, the study sites were 5 out of the 6 excluding Kisugu HC which did not qualify for this study because it did not have the target study population.

Recruitment of study participants

HIV positive women aged 15-49 years receiving DTG based regimen at the KCCA health centers were screened for the study. This study excluded the women who were pregnant. Sample size was 393 calculated using Kish Leslie formula. The number of participants per study site was obtained using the proportionate to size sampling method. Then simple random sampling was used to obtain the participants for administration of questionnaires. Participants were invited for the study via telephonic calls, 359 women turned up for consenting and data collection.

Study Variables

Data was collected on demographics, social factors, individual, and health system factors. An interviewer administered structured questionnaire was used by trained research assistants for data collection on

independent and outcome variables.

Outcome variable: Uptake of any contraceptive methods among HIV females on DTG ART. It was the proportion of HIV females on DTG based ART who uptake the contraceptive methods defined as self-reported use of at least one of the contraceptive methods at the time of the study. It was assessed by asking the participants a dichotomous question that requires a response of yes or no. The indicator was the proportion of HIV positive women on DTG ART who were using contraception by the time of the study. The different types of contraceptives utilized by the women were assessed. Proportions were calculated for each of the contraceptive methods by dividing the number of women using a specific contraceptive method by the total number of HIV women on DTG. Further calculations were done to determine the uptake of modern contraceptives.

Independent variables: The demographic variables such as age, marital status, parity, education and religion were evaluated in comparison to the uptake of contraceptives;

Age was measured in complete years from date of birth and it was put into categories. The indicator was the number of women with a particular age category. Marital status was assessed by categories of married, single, divorced, cohabiting and proportions were calculated per the marital status category. Parity was assessed categorically by asking the number of children each woman had and the women chose from the categories of 1-2, 3-4, 5-6 children and none. The number of women was calculated per category. The assessment of religion was categorised as Anglican, Catholic, Muslim, Pentecostal and others. Proportions of women that are per type of religion were calculated.

Another variable was knowledge of the participants on contraceptives and DTG. Questions were asked to determine how informed they are on FP and how they acquired that information. They were asked if they were aware of the side effects of DTG and if they knew the importance of using FP while taking DTG based ART regimen. The participants were able to state at least two FP methods and at least one side effect of DTG. The level of knowledge was categorised using a dichotomous response of poor knowledge for the women who stated one or less contraceptive and DTG side effects. Good knowledge for those who stated two or more contraceptives and DTG side effects.

Other individual factors such as level of education was assessed according to the highest level of education attained. Employment status was assessed as employed, unemployed, self-employed and proportions were calculated per education level and type of employment. They were also asked the amount of salary they earn in Ugandan Shillings for those who were employed. The proportions of women per salary category were calculated. Participants were also asked about the side effects experienced while using any FP method and proportions of each side effect were calculated. They were also asked about their sexual activity in the last month categorised as sexual acts once a month, once a week, once a day or more than once a day.

For social factors, participants were asked if they disclosed to their partners about their use of contraceptives (for the participants who used any contraceptive), disclosure of HIV status and if the

husbands approved of their use of contraceptives.

The health system factors included the level of privacy assessed by asking women if FP services were given in a private room separate from other clients. Availability of the contraceptives services was assessed by asking the women if always received the method of their choice from the facility. In addition, women were asked if they received FP counselling at the facility. They were measured using a Likert scale of low, moderate, high and very high. The attitude of health workers was assessed using a Likert type score of poor, good, very good. Proportions were calculated for all the health system factors.

Data collection

The qualitative data was collected from the participants using in-depth interviews. We used in-depth interview to get a deeper understanding of the participants' knowledge of DTG and contraceptives, also their experiences on DTG and contraceptives. The PI with a research assistant conducted the interviews for approximately one hour in a quiet private room to minimise noise interruption and ensure privacy. The in-depth interview guide was used to interview the participants. The interview guide had eleven semi structured open ended questions with probing questions. Participants were purposively selected, consented for the study, given phone calls and invited into a securely private room to ensure confidentiality. An audio voice recorder was used to capture all qualitative data and notes were taken during the In-depth interviews. We carried out in-depth interviews until the 12th participant from whom we realised there were no new ideas or themes therefore data was collected to the point of data saturation. Data saturation for the questions concerning experience on DTG and contraception was reached during the 9th interview at 75%. While for the questions concerning knowledge of contraceptives and DTG, data saturation was reached during the 11th interview at 90%. One more interview was done to make sure we had exhausted all the responses, ideas, and themes on all questions thus we confirmed data saturation at the 12th interview.

Data management

The quality of the data collected was cross checked daily for completeness of the questionnaires by the PI or by the research assistants. In addition, the data were checked for missing information. Password protected folders were created on the computer to store all the collected data. The questionnaires were coded and entered into Epi-data using a double entry procedure to ensure validation. The data were cleaned to remove errors and then exported to STATA version 13 for further analysis. Data backup drive was created in the PI's computer and other backup data was created on flash discs. All the blank questionnaires, filled questionnaires, blank consent forms, signed consent forms and protocol were kept in a lockable cabin.

Data analysis

Initially, univariate analysis was carried out to describe the exposure and outcome variables. The continuous variable age was measured using measures of central tendency i.e. mean, median, interquartile. Then categorical variables such as level of knowledge, marital status education level, discussion of FP, sexual activity and availability of health services were measured using proportions and presented in tables, and graphs. The outcome variable level of uptake of contraceptives was measured using proportions and the same applies to the different contraceptive methods utilised. Data were presented in tables, pie charts and bar graphs.

At the bi-variate level; analysis was done to determine if there exists an association between the exposures variables and outcome variable using the Poisson regression model. Contingency tables were used to tabulate uptake per independent variable by the use of row percentages. Poisson regression was used because the proportion of women who used contraceptives was more than 10% so it was the right model for analysis of the bivariate and multivariable data. Unadjusted Incidence Rate Ratios (IRR) were then calculated at the bivariate level. To assess the independent association of the predictors, multivariable analysis was performed where all independent variables with a p-value of less than 0.2 at bivariate analysis and those with biological significance were considered for multivariable analysis. We used a cut off p-value <0.2 at bivariate analysis because it had a margin wide enough to study all pertinent and potentially predictive variables. It was also the most used p-value in the studies we referenced, such as the study of Bongomin et al, 2018. A Poisson regression model was used and adjusted Incidence IRRs were calculated and variables with p-value less than 0.05 at a confidence interval of 95% were considered statistically significant.

Results

Description of Socio-demographic characteristics among respondents

Out of an estimated 393 sample, 359(91.3%) women were enrolled in the study and 34 participants did not turn up for screening.

Background characteristics assessed in the study included age, education level, religion, marital status, and a monthly income as described in Table 2. Most respondents 142(39.6%) belonged to the age category of 40-49 years with a mean age of 37 years (SD=6.8). Slightly over half 182(50.7%) of the respondents had attained a primary level of education while only 18(5.0%) had attained a tertiary level of education. Most respondents 123(34.3%) were Catholics and the least 23(6.4%) were of other religions (Adventists, Buddhists, Pentecostal). The majority 188(52.4%) of the respondents had an average monthly income of less than 100,000/= Uganda shillings. Most of the respondents were married 160(44.6%) and a few were widowed 40(11.1%). Most of the women 149(41.5%) had between 3 to 4 children while 25(7.0%) had no children. Table 1 summarizes the basic demographics of the respondents.

Table 1: Basic demographics of the respondents

Variable	Category	Frequency (n=359)	Percentage (%)
Name of facility	Kawaala	153	42.6
	Kisenyi	124	34.5
	Kiswa	054	15.0
	Kitebi	020	05.6
	Komamboga	008	02.2
Age	15-24	012	03.4
	25-29	048	13.4
	30-34	064	17.8
	35-39	093	25.8
	40-49	142	39.6
Education level	None	053	14.8
	Primary	182	50.7
	Secondary	124	34.5
Religion	Anglican	151	42.1
	Catholic	123	34.3
	Moslem	062	17.3
	Others	023	06.4
Average gross monthly (UGX)	<100000	188	52.4
	100000-400000	130	36.2
	400001-800000	041	11.4
Marital status	Single	081	22.6
	Married	160	44.6
	Divorced/separated	078	21.7
	Widow	040	11.1
Parity	1-2	114	31.8
	3-4	149	41.5
	4-6	071	19.8
	None	025	07.0

Employment status	Unemployed	077	21.6
	formally employed	111	30.9
	Self employed	171	47.6

Level of uptake of contraceptives among HIV positive women of reproductive age who are on DTG based ART at IDI-KCCA Health centers.

The majority 221(61.6%) of the 359 participants were not using any form of contraceptive with only 138(38.4%) indicating use of any contraceptive method. Additionally, only 135 of the 359 participants (37.6%) were using modern contraceptives as shown in table 3 below.

Table 2: Uptake of contraceptives

Uptake of any contraceptive method	Frequency (n=359)	Percentage (%)
Yes	138	38.4
No	221	61.6
Uptake of any modern contraceptive method		
Yes		
No	135	37.6
	224	62.4

Contraceptive methods utilized by HIV positive women of reproductive age who are on DTG based ART at IDI-KCCA Health centers.

Out of the 138 respondents that utilised contraceptives, majority of them 82(58.6%) used injectable (Depo-Provera), followed by condoms 21(15%), Intrauterine Device (IUD) 15(10.7%) and condoms 15(10.7%). It was also noted that out of the 138 contraceptive users, majority 135(97.8%) were using modern contraceptives while only 3(2.2%) were using traditional contraceptives. Figure 3 shows the different FP methods currently used by the respondents.

Factors that influence the uptake of contraceptives

Individual factors -Experience with contraceptives use

The experience of contraceptive use was reported to influence the choice of method to use as participants preferred a trial and error than that which was compatible with the body (less or no side effects).

Reasons for using or not using contraceptives

Of the 221/359(61.6%) who did not use contraceptives, 90/221(40.7%) did not use contraceptives because they were not sexually active and feared side effects caused by the contraceptives 54/221(24.4%). It was noted that some participants were giving more than one response. Table 6 below shows the different reasons respondents gave for not using contraceptives.

Table 3: Reasons for not using contraceptives

Variable	Category	Frequency (n=221)	Percentage (%)
Reasons for not using any form of contraceptive	Not approved by partner	14	06.3
	Fear of side effects	54	24.4
	Not sexually active	90	40.7
	Doesn't know where to get them from	03	01.4
	Not aware of any contraception	02	0.9
	Thinks cannot conceive now/ at menopause	19	08.6
	Would like to conceive	10	04.5
	Prefers herbal	02	0.9
	Not interested	19	08.6
	Not allowed in religion	03	01.4
	Considers moon beads and condoms as non-FP methods	05	02.3

Commonly experienced side effects

Out of the 138 users of contraception, most respondents 84(60.9%) reported they had ever experienced side effects with contraceptive use and attributed the side effects to the contraceptive method used. Of the 84, the majority 73(86.9%) reported experiencing menstrual changes and 15(17.9%) reported weight gain as shown in figure 4. Note that respondents would give more than one answer from the options in the questionnaire.

Social Factors

Sexual partner involvement in contraceptive use

Of the 255 women who had partners, most respondents 145(56.9%) did not discuss family planning methods with a sexual partner while almost half 160(62.7%) reported that the partner approves contraceptive use. This analysis excluded the 104 women who had no sexual partners as shown in table 7 below.

Table 4: Sexual partner involvement in contraceptive use

Variable	Category	Frequency (n=255)	Frequency (%)
Family planning discussed with the sexual partner	Yes	110	43.1
	No	145	56.9
Sexual partner approval on the use of family planning	Approves	160	62.7
	Disapproves	095	37.3

Need factors

Sexual activity in last one month

Out of the total 359 participants, the majority 245(68.2%) reported sexual activity and 114(31.8%) reported no sexual activity in the last month.

In detail, most of the women 118(32.9%) reported one sexual act in the last month, followed by 114(31.8%) women who reported no sexual activity in the last month. The least number of women 03(0.8%) reported having sexual acts more than once a day.

The table below shows in detail the sexual activity of the women in the last month

Table 5: Sexual activity in the last month

Sexual activity	Frequency (%)
Once a month	118(32.9)
Once a week	68(18.9)
Twice a week	47(13.1)
Once a day	09(2.5)
>Once a day	03(0.8)
None	114(31.8)
Total	359

Fertility desire

Out of the 359 women, majority 221(65.6%) reported they did not want to produce any more children and very few reported they wanted to have 3 or 4 more children 17(05.0%)

Table 6: desire to have more children

Number of children	Frequency (%)
1-2	95(28.2)
3-4	17(05.0)
>4	26(01.2)
None	221(65.60)
Total	359

Health system factors.

Source of family planning services

More than half of the 138 FP users, 78(56.3%) accessed family planning services from government hospitals while the least 5(3.5%) accessed them from private hospitals as shown below in figure 5

Out of the 359 women, majority of the respondents 255(71.0%) reported a good attitude toward the FP service providers, 256(71.3%) reported a high level of privacy, 210(58.5%) high level of availability of contraceptives. All these variables are shown in table 9 below.

Table 7: Health system factors that influence uptake of contraceptives

Variable	Category	Frequency n (%)
		359(100)
Attitude of family planning service providers	Poor	030(8.4)
	Good	255(71.0)
	Very good	074(20)
Privacy at the facility	low	064(17.8)
	High	256(71.3)
	Very high	039(10.9)
Availability of the contraceptives at the facility	Moderate	120(33.4)
	High	210(58.5)
	Very high	029(8.1)
	High	179(49.9)
	Very high	049(13.7)
Satisfaction with the family planning services at the facility	Moderate	131(36.7)
	High	189(52.9)
Counselling offered at the facility	Very high	037(10.4)
	Yes	269(74.9)
	No	090(25.1)

Factors associated with uptake of contraceptives am HIV+ women on DTG ART at the unadjusted (bivariate) level

Factors that could influence the overall use of contraceptives were grouped into individual/social factors and Facility-related factors for analysis as shown in table 10.

The Poisson regression model was used to identify a relationship between the variables with the main outcome uptake of contraception. Unadjusted Incidence Rate Ratios (IRR) were calculated and variables with a P value of more than 0.2 at a 95% Confidence Interval would be excluded from the multivariate level of analysis. The following variables had P-value of more than 0.2; Income, possession of children, the period of HIV infection, the period of taking DTG ART, desire to have children, awareness on DTG causing congenital anomalies, awareness on side effects of DTG, attitude of health workers and level of privacy at the facility. Thus, they were not included in the subsequent multivariable analysis.

Table 8: Factors associated with uptake of contraceptives (Bi-variate analysis)

Variable	Contraceptive uptake (count and row %)		Unadjusted IRR (95% confidence interval)	P value
<i>Individual and social factors</i>	Yes	No		
Facility				
Kawaala	63(41.2)	90(58.8)	1.00 (ref)	
Kisenyi	32(25.8)	92(74.2)	0.63 (0.44, 0.89)	0.010
Kiswa	30(55.6)	24(44.4)	1.35 (0.99, 1.83)	0.054
Kitebi	07(35.0)	13(65.0)	0.85 (0.45, 1.59)	0.612
Komamboga	06(75.0)	02(25.0)	1.82 (1.17, 2.84)	0.008
Age				
15-24	04(33.3)	08(66.7)	1.00 (ref)	
25-29	30(62.5)	18(37.5)	1.88(0.82, 4.30)	0.14
30-34	38(59.4)	26(40.6)	1.78(0.78, 4.07)	0.17
35-39	39(41.9)		1.26(0.55, 2.90)	0.59
40-49	54(58.1)		0.57(0.24, 1.36)	0.21
	27(19.0)	115(81.0)		
Education level				
None	12(22.6)	41(77.4)	1.00 (ref)	
Primary	64(35.2)	118(64.8)	1.55 (0.91, 2.65)	0.107
Secondary	62(50.0)	62(50.0)	2.21 (1.30, 3.75)	0.003
Religion				
Anglican	51(37.8)	100(66.2)	1.00 (ref)	
Catholic	49(39.8)	74(60.2)	1.18 (0.86, 1.61)	0.300
Moslem	23(37.1)	39(62.9)	1.10 (0.74, 1.62)	0.641
Others	15(65.2)	08(34.8)	1.93 (1.33, 2.80)	0.001
Employment status				
Formally employed	55(49.6)	56(50.4)	1.00 (ref)	
Self employed	58(33.9)	113(66.1)	0.68 (0.52, 0.91)	0.008
Unemployed	25(32.5)	52(67.5)	0.66 (0.45, 0.95)	0.026

Marital status				
Single	33(40.7)	48(59.3)	1.00 (ref)	
Married	78(48.8)	82(51.2)	1.19 (0.88, 1.63)	0.252
Divorced/separated	23(29.5)	55(70.5)	0.72 (0.47, 1.12)	0.143
Widow	4(10.0)	36(90.0)	0.25 (0.09, 6.46)	0.004
Parity				
1-2	48(42.1)	66(57.9)	1.00 (ref)	
3-4	64(43.0)	85(57.0)	1.02(0.77, 1.36)	0.891
5-6	19(26.8)	52(73.2)	0.64(0.41, 0.99)	0.044
None	07(28.0)	18(72.0)	0.67(0.34, 1.29)	0.229
Sexual activity (in last one month)				
Yes				
No	111(45.3)	134(54.7)	1.00 (ref)	
	27(23.7)	87(76.3)	0.522 (0.37, 0.75)	<0.001
Discuss FP with partner				
Yes	85(77.3)	25(22.7)	1.00 (ref)	
No	53(21.3)	196(78.7)	0.28 (0.21, 0.36)	<0.001
Awareness on contraceptives				
Yes	137(39.6)	209(60.4)	1.00 (ref)	
No	01(7.7)	12(92.3)	0.19 (0.03, 1.29)	0.089
Awareness of the importance of contraception on DTG				
Yes	86(51.5)	81(48.5)	1.00 (ref)	
No	52(27.1)	140(72.9)	0.53 (0.39, 0.69)	<0.001
Health system factors				
FP counselling provided at the facility				
Yes	124(46.1)	145(53.9)	1.00 (ref)	
No	14(15.6)	76(84.4)	0.34 (0.20, 0.56)	<0.001
Availability of contraceptives at the facility				

Low				
High	27(22.5)	93(77.5)	1.00 (ref)	
Very high	92(43.8)	118(56.1)	1.95 (1.35, 2.81)	<0.001
	19(65.5)	10(34.8)	2.91 (1.90, 4.45)	<0.001

Factors associated with uptake of contraceptives among HIV+ women on DTG ART at the adjusted (multivariable) level

A Poisson regression model was used for multivariable analysis, adjusted Incidence Rate Ratios (IRR) were calculated and a P value of 0.05 was used at a 95% confidence interval. The variables that were statistically significant with a P value <0.05 at 95% CI were the age of respondents, religion, parity, discussion of FP with partners and counselling offered at the facility as shown in table 11.

Regarding demographic factors, the participants who were in the age category of 40-49 years were less likely to use contraception compared to those of 15-24 years at an AIRR=0.45(95% CI: 0.21, 0.94). For parity, women who had 3-4 children were 1.5 times more likely to use family planning than those who had 1-2 children at AIRR=1.48(95% CI: 1.14, 1.92). Those who had 4-6 children were not statistically significant. The participants of the religion of others were 1.5 times more likely to use FP than the Anglicans at AIRR=1.53(95% CI: 1.01, 2.29). Regarding employment status, unemployed women were less likely to use contraceptives at AIRR 0.63(95% CI: 0.42, 0.94) than the ones who were formally employed.

For social factors, the women who did not discuss FP with their partners were less likely to use FP compared to those who discussed at an AIRR of 0.39(95% CI: 0.29, 0.52). For Health facility factors, the participants who did not receive FP counselling were less likely to use FP at AIRR=2.86 (95% CI: 0.12, 0.73) than those who received FP counselling.

The variables that were not statistically associated with uptake of contraceptives with a P>0.05 at a 95% CI were facility, education level, marital status, sexual activity, awareness on contraceptives, awareness on the importance of contraception on DTG and availability of contraceptives at the facility.

Table 9: Factors associated with uptake of contraceptives (Multivariable analysis)

Variable	Unadjusted IRR (95% confidence interval)	P value	Adjusted IRR (95% confidence interval)	P value
<i>Individual and social factors</i>				
Age	1.00 (ref)		1.00 (ref)	
15-24	1.88(0.82, 4.30)	0.14	0.87(0.43, 1.75)	0.696
25-29	1.78(0.78, 4.07)	0.17	0.81(0.39, 1.69)	0.570
30-34	1.26(0.55, 2.90)	0.59	0.71(0.36, 1.42)	0.333
35-39	0.57(0.24, 1.36)	0.21	0.45(0.21, 0.94)	0.035
40-49				
Religion				
Anglican	1.00 (ref)		1.00 (ref)	
Catholic	1.18 (0.86, 1.61)	0.300	1.07(0.81, 1.41)	0.650
Moslem	1.10 (0.74, 1.62)	0.641	0.97(0.71, 1.33)	0.868
Others	1.93 (1.33, 2.80)	0.001	1.53(1.01, 2.29)	0.040
Employment status				
Formally employed	1.00 (ref)		1.00 (ref)	
Self employed	0.68 (0.52, 0.91)	0.008	0.94(0.73, 1.21)	0.620
unemployed	0.66 (0.45, 0.95)	0.026	0.63(0.42, 0.94)	0.024
Parity				
1-2	1.00 (ref)		1.00 (ref)	
3-4	1.02(0.77, 1.36)	0.891	1.48(1.14, 1.92)	0.003
5-6	0.64(0.41, 0.99)	0.044	1.33(0.86, 2.08)	0.201
None	0.67(0.34, 1.29)	0.229	1.43(0.67, 3.05)	0.354

Discuss FP with partner				
Yes	1.00 (ref)		1.00 (ref)	
No	0.28 (0.21, 0.36)	<0.001	0.39(0.29, 0.52)	<0.001
<i>Health system factors</i>				
FP counselling provided	1.00 (ref)		1.00 (ref)	
Yes	0.34 (0.20, 0.56)	<0.001	0.56(0.34, 0.92)	0.022
No				
Constant	N/A	N/A	1.00(0.37, 2.72)	0.998

Discussion

Level of uptake of contraceptives among HIV positive women

The overall level of uptake of contraceptives for this study was 38.4% while uptake of modern contraceptives was 37.9%; the results were almost similar to the Uganda Demographic Health Survey (UDHS) results that reported a contraceptive prevalence rate (CPR) of 39% and modern contraception (mCPR) of 35% among currently married women (10). However, a recent study among HIV positive women carried out at an urban HIV clinic of Infectious Diseases Institute (IDI) in Uganda showed a lower contraceptive uptake (24%) (Nakalema, 2018). Equally, a lower rate was obtained in a study carried out in mountain communities of western Uganda, of 16.3% indicating lower rates of contraceptive use in rural areas compared to urban areas (11). Research from other countries and settings like Ethiopia, a higher contraception use rate was noted among HIV positive women at 44.3% (12). A Cameroon study that assessed the family planning needs of people living with HIV/AIDS found higher contraceptive use of 46.4% (13) well as a study in Ghana reported that 42.6% of the participants and or their partners were using any form of contraception at the time of the study in HIV positive women (14). The differences in the rates could be attributed to the difference in sampling methods and techniques in the population of HIV positive women.

The low level of contraceptive uptake in this study could be attributed to infrequent sexual activity among the women who had been switched to DTG. In an HIV positive group of women, the same was noted from a study carried out in Canada, where women noted facing challenges navigating healthy and

satisfying sexual lives despite good HIV treatment outcomes (15). Therefore, family planning services should be further integrated into maternal-child care of the minimum health care package to increase its awareness.

Different contraceptives utilized by HIV positive women of reproductive age who are on DTG based ART at IDI-KCCA Health centers.

Injectable hormonal method (Depo-Provera) was the most used family planning method with 58.6% of the 138 FP users. The majority 77(55.4%) made this family planning choice depending on its safety (55.4%), effectiveness (17.3%) and convenience (10.8%). It is still similar to the general population results of the UDHS which showed that the most popular method of family planning was the injectable method at 19% of all the FP users (10). This could be explained by the fact that women want short-term reversible methods, which can be easily stopped in case of side effects. Melaku & colleague (2014) also reported that injectables and male condoms were the most commonly used types of contraceptives. On the contrary, a cross-sectional survey done at an urban HIV clinic in Uganda reported a decline in the use of the injectable method from 61.2% to 38.8% after the WHO DTG alert. It also reported an increase in the use of both IUD and implants from 27.4% to 72.6% and 42.9% to 57.1% respectively. These changes were attributed to effective person centered FP counselling (16). In addition, a study in Gondor Ethiopia found that the most commonly used contraceptive method among their HIV positive clients was the IUD at 28.4% of the 894 participants (17) because the women preferred more reliable longer acting FP methods. On the contrary, another study in the same country Ethiopia reported condoms as the most commonly used form of contraception at 70.2% because of its dual protection from both STI/HIV transmission and pregnancy (13).

The individual, social and health system factors that influence uptake of contraceptives

Individual factors

Regarding demographic factors, the participants in this study who were in the age category of 40-49 years were 0.5 times less likely to use contraception compared to those of 15-24 years. This may be because 40-49 years is a less sexually active age group because these women are most times premenopausal or have finished child bearing especially in an urban population where this study was conducted. The majority of the women switched to DTG in the ART facilities were of ages 40-49 years and this age group is presumed to be less sexually active. Qualitative findings of this study confirmed these findings. Similarly, a study in Ethiopia reported a higher likelihood of family planning uptake by those between 25 and 34 years than older females (18).

Concerning employment, unemployed women were 0.6 times less likely to use contraception than the formally employed women in this study. As reported by the qualitative results of this study that most

women decided to get FP services from private clinics therefore, those who can get private FP services are more likely to use FP services. This was similar to a study that analysed data from the Demographic Health Surveys of 21 African countries which showed that wealth and education were positively associated with contraceptive use (19). Regarding parity, women who had 3-4 children in this study were more likely to use contraception than the ones with 1-2 children. The women with 5 or more children have a tendency to perceive themselves as less at risk of unplanned pregnancy because of less or no sexual activity thus accompanied by minimal or no contraceptive use. However, a study in Uganda reported increased odds of contraceptive use among women with higher numbers of surviving children (20).

In this study, the participants of the religion category of others were 1.5 times more likely to use FP than the Anglicans. However, this was different from the results of a study in Uganda which reported that Catholics were less likely to use modern FP methods (21). This was documented in a recent study, that the Catholic Church has long been only allowing the natural methods of family planning. And those who were known to use artificial methods were marginalized in church and despite a modern era, the Catholic church still insists on its opposition to the use of any artificial method of family planning and has reiterated on several occasions that the catholic church will only allow the natural methods (22). Level of education did not influence the uptake of contraceptives according to results of the present study but may affect the choice of FP method as also reported by another study that showed no significant association with contraceptive use (23)

In this study, side effects of menstrual changes and weight gain were the most experienced at 86.9 and 17.9% respectively. This has been a long standing indicator of poor contraceptive practices in many studies including a recent study in Kenya which found that fear of side effects and adverse reactions were a major barrier to contraceptive use (24) and a study in Nigeria also reported similar results (25). The qualitative study results of the present study confirmed this finding. This indicates that regardless of the efforts to implement family planning services, such unpleasant effects to the service users may lead to poor adherence or even to completely reject the service regardless of the risk of not using the service.

Social factors

Regarding social factors, the women who had no sexual activity in the last month were less likely to use contraception compared to those who had sexual activity. This could be because the women associated FP use with increased sexual activity. This was supported by qualitative study results.

Regarding partners' discussion about FP, most of the participants did not discuss family planning methods with a partner (39.9%) yet almost half (44.6%) reported that the partner approves contraceptive use. Those who did not discuss FP with their partners were less likely to use FP compared to those who discussed it. Partner contribution and approval of family planning uptake have been reported to positively foster the contraceptive use among women as reported by the Malawi Male Motivator project that increased ease and frequency of communication within couples were the only significant predictors of uptake (26). Although marital status was not highly associated with FP use in the current study, the input

of a partner contributes a lot to contraceptive uptake as some women may not use contraceptives due to fear of family discord. Esambe and colleagues (2018) also found out that non-discussion of FP by a couple and partner disapproval of contraception were significantly associated with a high unmet need for contraception. Therefore, more couple based FP interventions should be encouraged.

Health system factors

More than half (56.3%) of the respondents accessed family planning services from government hospitals while the least 3.5% accessed them from private hospitals. Leading in providing free contraceptive care are the government hospitals but the private hospitals also act as an adjunct to ensure the service availability (27). However, the cost of services in private may limit their ability to afford private contraceptive services especially for the study participants whose average monthly income is < USD 27.

For Health facility factors, the participants who did not receive FP counselling were less likely to FP use than those who received FP counselling. However, the study qualitative results reveal that FP counselling is emphasized after delivery, which may not be sufficient that such services need to be provided just after diagnosis and most especially after switching to DTG therapy. This is in line with a narrative review report which stated that person centered counselling approaches were less consistent in improving uptake and continuation of family planning among clients (28). It should be noted that family planning counselling has been key at disseminating information on DTG use at HIV caregiving facilities and here participants have a chance to express freely and inquire more about reasons for family planning use. FP counselling also positively affects the attitude of use and reduction of myths and misconceptions (29).

Majority of the women reported a good attitude of health workers at the ART facility. This is supported by another study that reports that participants mentioned good reception by the health staff, short waiting times, and free services as most important in contraceptive service satisfaction and uptake (30). As already reported in this study, the majority of participants used the injection method, which is an expensive method, especially when got from private health facilities thus more reason for women to receive it from the government health centers. The negative attitudes shown by some health workers may give room for a private setting to receive these mothers in need of FP services (31). The variables that were not statistically associated with uptake of contraceptives with a $P > 0.05$ at a 95% CI were; the attitude of health workers, privacy and availability of contraceptives at the facility. The health facility did not influence contraceptive uptake because all facilities were under IDI support for HIV services, hence receiving and delivering similar HIV care services altogether. The availability of contraceptives at the facility did not influence contraceptive uptake probably because the study participants were enrolled from government health facilities where these services are available and for free.

Public Health Significance of the study

This study contributes to the understanding of the high unmet need for contraception among HIV positive women in Uganda. It also throws more understanding of the low uptake of contraceptives among HIV positive women by identifying the factors affecting contraceptive use in this population. It contributes to the limited literature on DTG use among women of reproductive age.

Study limitations

The main limitation of the study is that data were cross-sectional in nature therefore it was not possible to draw any temporal relationship between contraception use and its determinants.

Another limitation was social desirability bias where some participants could have given responses in a favourable manner fearing negative evaluations.

Recall bias was also a study limitation since some questions in the questionnaires and interview guides required recalling past events or experiences.

Conclusion

In conclusion, the contraceptive prevalence rate in this study was low at 38.4% with the majority using the injectable method at 58.6%. The modern contraceptive prevalence rate (37.6%) in this study was lower than the mCPR target set by the Ugandan government at the FP2020 summit in 2017. The majority of participants (96.4%) had knowledge of contraceptives and the majority (68.2%) were aware that congenital anomalies were associated with DTG use in pregnancy. The predictor factors that increased the likelihood of contraceptive use were the age of respondents, parity, religion, discussion of Family Planning with partner and FP counselling. However, variables such as health facility, education level, marital status, sexual activity, knowledge on contraceptives, and knowledge of importance of contraception on DTG were not statistically significant.

Declarations

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Figures

Uptake of the different Contraceptives

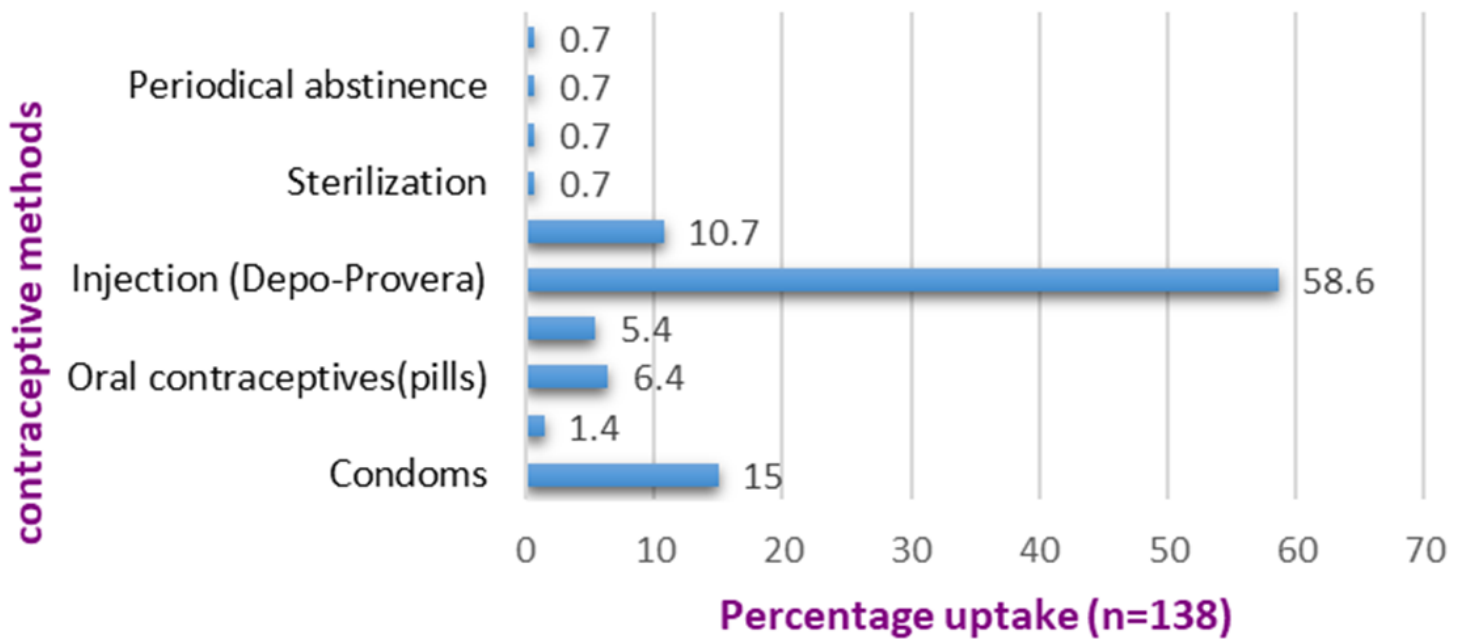


Figure 1

Family planning methods use

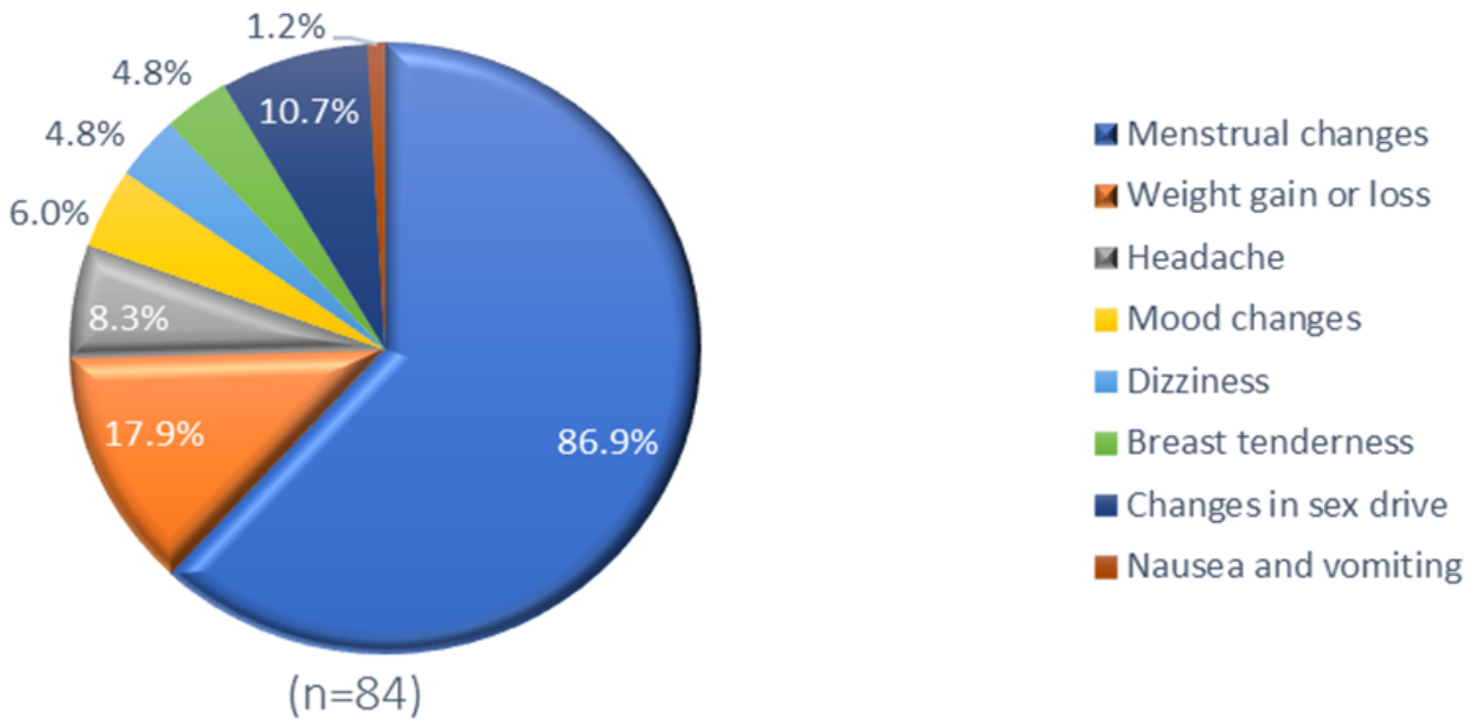


Figure 2

Commonly experienced side effects

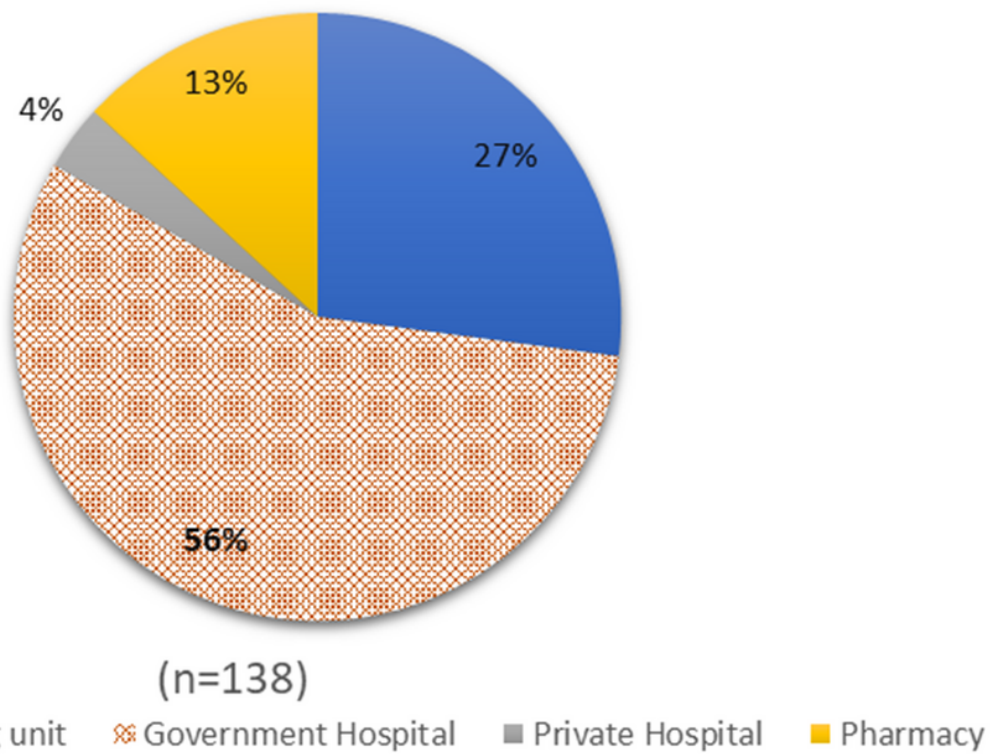


Figure 3

Type of health facility providing family planning services