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Factors Associated with Modern Contraceptives among Reproductive Age Women on Antiretroviral Therapy Receiving HIV Related Care in Gasabo District, Rwanda

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Abstract

Family planning in HIV Positive women is still an issue. Data on contraceptive utilization among HIV positive woman is still needed, despite incremental efforts in addressing their reproductive health. Therefore, the present study aims to determine the factors associated with modern contraceptive use among reproductive age women on ART receiving HIV related care in Gasabo District. A cross sectional study was conducted among HIV positive women aged between 15 - 49 attending HIV clinics at Kibagabaga hospital and Remera health center. 423 participants recruited from the two health facilities using systematic random sampling method for selecting participants and pre-tested questionnaire was structured and used to collect data from participants regarding socio-demographic characteristics, modern contraceptives use and accessibility. The majority of respondents 43.5% were aged between 26 - 35 and a significant number 39.7% of them were cohabitating. The findings illustrated that 49.9% of women on ART receiving HIV related care were using modern contraceptive method. The women on ART receiving HIV related care with a number of children ranging between 4 and above were less likely to use modern contraceptive method [AOR = 0.273; 95%CI = 0.121 - 0.617; P = 0.002] compared to women with number of children ranging from 0 to 1 child. This study calls government to design a vibrant specific sensitization program for modern contraceptive use among women and strategies are required to increase the use of dual and long-term modern contraceptive methods among women who do not want more children in order to reduce MTCT and to ensure better health of women living with HIV.

Keywords: *Modern Contraceptives; Antiretroviral Therapy; HIV Related Care*

Introduction

Human immunodeficiency virus (HIV) continues to be a main public health issue globally, so far more than 36 million people around the world live with it. However, it has become a manageable health condition due to increasing access to effective HIV prevention, diagnosis, care and treatment, which resulted into the decline of the incidence [1].

In order to meet Sustainable development goals (SDGs), policies, programs and services linking reproductive health (RH) and HIV/AIDS, has been acknowledged on international level as an important step. Family planning (FP) is an important element of reproductive

health that has to be linked to HIV programs. Therefore, an integration of family planning services in HIV treatment, prevention and care services is highly needed to leverage increased accessibility of contraceptive use for people who don't want unplanned conception or to have healthy and safe pregnancy, partum and postpartum periods [2].

Antiretroviral Therapy (ART) enables HIV positive women to experience an almost normal resume to normal life that may comprise of a continuation of sexual activity, childbearing and decrease the risks of vertical transmission and infecting their partners. Therefore, the prevention of undesirable pregnancies in WLHIV and mother-to-child HIV transmission (MTCT) is among the key pillars of World Health Organization (WHO) [2].

However, unintended pregnancies are still a concernamong women living with HIV in developping countries and mainly in subsharan Africa, and could be prevented if the level of the contraceptives use is increased [3].

Worldwide, since 1990 to 2019, fertility rate has declined from 3.2 live births per woman to 2.5, with 49% of all women in the reproductive age (15 - 49 years) using a contraceptive method. In sub-Saharan Africa region, total fertility felt from 6.3 births per woman in 1990 to 4.6 in 2019, with the use of contraceptive methods increasing from 13% in 1990 to 29% in 2019 [4].

Rwanda is among the most densely populated nations in Africa with a fertility rate ranging from 3.4 in urban to 4.3 in rural areas. The overall prevalence of modern contraceptive use by women in their age of reproduction in Rwanda has increased over the last decade from 4% in 2000 to 64% in 2019 to 2020 [5]. However, there is less information about the prevalence of contraceptive utilization among HIV positive Women on ART in Rwanda.

In sub-Saharan African countries we still observe that women living with HIV still encounter more unintended pregnancy than their HIV negative counterparts. Family planning is the best solution in addressing such gaps being observed. Prevention of unplanned pregnancies in HIV-positive women can bring significant reduction of MTCT as well as improve health of these women. Although Rwanda has remarkably made great achievements during the last decade in HIV response especially in prevention of mother to child HIV transmission, a number of pregnancies in women living with HIV continues to be observed [6]. Women living with HIV in Rwanda are encouraged to prevent unplanned pregnancies and make safe conceptions. However, modern contraceptive utilization among whom of childbearing age on ART or its reporting, little has been known. The only available data collected by the national HIV program are collected on HIV infected women during breastfeeding period [6]. According to the HMIS data, by March 2021, 987 women living in Gasabo District reported to use any modern contraceptive. This calls decision makers, HIV and reproductive health implementing stakeholders and researchers for action to bridge the gap, about the use of modern contraceptive among HIV positive women under antiretroviral treatment in developing countries and its recording [7]. This research is therefore intending to assess the prevalence of modern contraceptives utilization and its associated factors among women in reproductive age on ART receiving HIV related care in Kigali, Gasabo district. This district is the most populated in Rwanda with a population of 585,435 of which 48.3% are women. Gasabo represents 46.8% of the total population of Kigali city. 18,942 People Living with HIV, making 41% of all PLHIV in Kigali are in Gasabo district. Among them, 13,693 are women in reproductive age [6].

Purpose of the Study

The purpose of this study were to determine the prevalence of modern contraceptives use, to identify individual factors influencing the use of modern contraceptive and to identify structural factors affecting use of modern contraceptives among women in reproductive age on ART receiving HIV related care in Gasabo District.

Methods

Study design

This study used a cross sectional study design which and was conducted among HIV positive women on ART who were in childbearing age (15 - 49 years) attending Kibagabaga Hospital and Remera Health Center in Gasabo District, Kigali City for HIV related care. For the prevalence of women in reproductive age on ART who have been using modern contraceptives and factors influencing them need to be recorded once, this study used a quantitative approach in the descriptive components of factors associated with the use of modern contraceptives in the above-mentioned population.

Target population

Target population in this study was only limited to women who were HIV positive, aged between 15 to 49 years old and taking ART in Gasabo District, specifically in Kibagabaga Hospital and Remera Health Center in the period of the study. Rwanda health system in HIV related care is decentralized from Referral level to Health Center. Family Planning services are being offered at Kibagabaga Hospital as well as in Remera Health Center except that only Family Planning surgical methods are only done at the Hospital. Inclusion criteria was to be woman aged between 15 to 49 years old and all women who were no longer in reproductive age were excluded.

Sample size and sampling procedure

The number of proportional sample size by Health facility was calculated based on the proportionate allocation sampling technique from 423 respondents where ni = n Ni/N. The first participant was selected using simple random sampling technique while the remaining participants were selected using systematic sampling method. To apply this method, we computed the size of our population (N) at each health facility over the size of the sample (n) of each selected health facility. After choosing randomly the starting member of the sample, we kept adding the same interval to the random number until we reach the target.

A pre-established questionnaire prepared in English was translated in Kinyarwanda and was used in one-to-one interview with selected participants. Participants were selected from women who are meeting the inclusion criteria and coming to their routine medical appointments at the two health facilities after signing informed consent. The research assistant/Nurse other than the ones working in the Health Facilities helped in interviewing and fulfilling the questionnaire.

Reliability and validity of questionnaire

Reliability and validity are essential concepts used to evaluate the quality of research data collection instrument. They indicate how method and technique used are trustworthy or the test can accurately measure what it intends to measure. A questionnaire was designed based on research questions and was pre-tested in pilot study so as to evaluate its contents, understandability of questions and flexibility in collecting required data responding to the objectives of the study. Reliability or internal consistency of the questionnaire measurements was tested by Cronbach Alpha Coefficient using SPSS where the alpha value has to be ranging between 0 and 1. The more the alpha value is close to 1 (≥ 0.7), the more the tool is reliable. Our questionnaire items were more reliable or consistent if the computed Alpha value approaches 1. The validity was ensured based on experts and lectures who were review it and provide their feedback. It was also tested using Pearson correlation coefficient to measure the correlation between each items of the tool computed by SPSS.

Data analysis and ethical consideration

After data collection, a database was created using excel, then Statistical Package for Social Sciences (SPSS) software version 21 was used for Data analysis. Data were summarized using descriptive statistics (frequency, central tendencies and standard deviation). Bivari-

ate logistic regression analysis was used to ascertain the association between use of modern contraceptives and determinant of its uptake. Multivariate logistic regression analysis was used to identify factors associated independently with the use of modern contraceptives. Chi square and odds ratios with 95% confidence interval was used to assess the strength and level of associations between variables. All statistical tests were carried out at 5% significance level.

The study was conducted according to the principles of good clinical practices. Participation was voluntary and participant remained with full of freedom to be part or not of this study and have right to discontinue at any time. Researcher sought for participant consent before any attempt of beginning data collection and did not ask and or indicate participants' names on study questionnaire. As it was a cross sectional study, there was no changes in a daily HIV related care that participants receive. The information was kept in a confidential and secured place. No identification of the patient was mentioned on the questionnaire. Data was also stored in a secured way with access only to research team. The proposal was submitted for ethical clearance to ethical committee of Kibagabaga Hospital and Remera Health Center, Gasabo District and Kigali City, Rwanda. The study results were shared with these Health Facilities administration before dissemination or publication.

Results

Demographic characteristics of respondents

As indicated in table 1, those are socio-demographic characteristics of 423 respondents all reached and data collected using questionnaire through face to face interview.

Variables	Frequency	Percent
Age Group		
18 - 25	58	13.7
26 - 35	184	43.5
36 - 45	148	35
> 45 years	33	7.8
Marital status		
Single	92	21.7
Married	123	29.1
Cohabitating	168	39.7
Separated/Divorced/ widow	40	9.5
Educational Level		
None	34	8
Primary	286	67.6
Secondary	103	24.3
Heath insurance		
Any	113	26.7
Mutuelle	293	69.3
RSSB	17	4
Number of children		
0-1	159	37.6
2-3	198	46.8

The table 1 shows that the majority of respondents 184 (43.5%) were aged between 26 - 35 and a significant number 168 (39.7%) of them were cohabitating. This table also shows that the 198 (46.8%) of respondents had the number of children ranging between 2 - 3, 229 (54.1%) of them belonged to second category and 113 (26.7%) of them were unemployed by the time of data collection.

Sexual behavior and adherence to ART

Sexual behavior and adherence to ART could be the contributing factor of modern contraceptive use, even if it is not included in research objectives but it will be discussed on.

Variables	Frequency	Percentage
Time length on ART		
1M to 2 Years	70	16.5
3 to 5 Years	52	12.3
6 to 8 years	102	24.1
9 years and above	199	47.0
Current ART regime		
TDF+3TC+EFV	12	2.80
TDF+3TC+DTG	387	91.50
ABC+3TC+DTG	24	5.70
Previous ART		
TDF+3TC+NVP	55	13
TDF+3TC+EFV	235	55.6
TDF+3TC+DTG	93	22
AZT+3TC+NVP	40	9.5
Current status of adherence to ARVs		
Good	353	83.5
Bad	70	16.5
Recent VL		
Undetectable/TND	306	72.3
Below 200 copies	80	18.9
200 and above copies	37	8.7
Other clinical conditions		
Yes	15	3.5
No	408	96.5
Sexually Active		
Yes	359	84.9
No	64	15.1
Desire to have more children		
Yes	342	80.9
No	81	19.1
Does your patterner support it?		
Yes	103	24.3
No	320	75.7

Table 2: *Sexual behavior and adherence to ART.*

The table 2 shows that a big number of respondents were on ARV for many years to 9 and above and 387 (91.50%) are currently on TDF+3TC+DTG as ART regime. Among respondents 408 (96.5%) had no other clinical conditions, 359 (84.9%) were sexually active and 342 (80.9%) had the desire to have more children but 320 (75.7%) of them were not supported with their partners to have more children.

Presentation of findings

The findings of this study are presented according to the three research objectives. The first objective was to determine the prevalence of modern contraceptives use in women on ART receiving HIV related, the second objective was to identify individual factors influencing the use of modern contraceptive among women on ART receiving HIV related care and the third objective was to identify structural barriers/factors affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo District.

Prevalence of modern contraceptives use in women on ART receiving HIV related care in Gasabo District

The first objective was to determine the prevalence of modern contraceptives use in women on ART receiving HIV related care and the single question was used to reach this objective. That question was asking which contraceptive method that respondent use, whether tradition or modern and the prevalence of those who were using modern method have been easily found.

Variables	Frequency	Percentage
Currently use Contraceptive M		
Yes	282	66.7
No	141	33.3
Method Used		
Traditional	71	16.8
Modern	211	49.9
Have you ever used Modern CM?		
Yes	281	66.4
No	142	33.6
Type of traditional method Used		
Calender/colar-based method	83	19.6
Symptom-based method	29	6.9
Locational amenorrhea method	30	7.1
Types of Modern contraceptive method used		
Injection Depo Provera/Sayana/Noristera	92	21.7
Pills/Condom	74	17.5
Implant Jadelle/Implano	109	25.8
Did you experience side effect of CM?		
Yes	238	56.3
No	185	43.7
Type of side effect		
Headache	52	12.3
Bleeding	89	21.0
Decreased libido	51	12.1
Vaginal Dryness	46	10.9
Pregnant while using CM		
Yes	138	32.6
No	285	67.4
Type of CM which was used		
Injection Depo Provera/Sayana/Noristera	44	10.4
Pills/Condom	39	9.4
Implant Jadella/ Implanon	55	12.8

Table 3: *Prevalence of modern contraceptives use in women on ART receiving HIV related care in Gasabo district.*

Respondents were asked whether they have ever used modern contraceptive method and 281 (66.4%) of them confirmed that they did while 211 (49.9%) of them were using modern contraceptive method. Implant Jadelle/Implano was the modern contraceptive method which has been used more where 205 (25.8%) of respondents was using it followed by Provera/Sayana/Noristera which has been used by 92 (21.7%) respondents. Among respondents who have been using modern contraceptive method, 238 (56.3%) of them experienced side effect and most of those who had side effect 89 (21.0%) experienced bleeding. 138 (32.6%) of respondents got pregnant while using Modern contraceptive method and among them 55 (12.8%) were using Implant Jadelle/Implano.

Graphical presentation of prevalence of modern contraceptive use

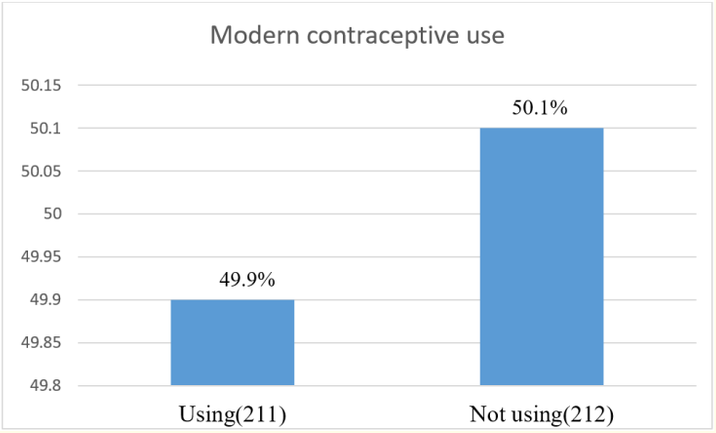

Figure 1: *Prevalence of modern contraceptive use.*

The figure 1 shows that 211 (49.9%) of women on ART receiving HIV related care were using modern contraceptive method while 212 (50.1%) of them were not using it.

Individual factors influencing the use of modern contraceptive among women on ART receiving HIV related care in Gasabo District, to use modern contraceptives (Bivariate analysis)

The second objective was to identify individual factors influencing the use of modern contraceptive among women on ART receiving HIV related care. Bivariate analysis was performed to check variables of social demographic which are statistical significant associated with modern contraceptive use with p-value < 0.05 calculated at 95%CI.

Variables	Modern contraceptive use				P-Value
	Using		Not Using		
	n	%	n	%	
Age group					0.007
18-25	18	31.00	40	69.00	
26-35	95	51.60	89	48.40	
36-45	84	56.80	64	43.20	
>45 years	14	42.40	19	57.60	
Marital status					0.003
Single	36	39.10	56	60.90	
Married	77	62.60	46	37.40	
cohabitating	82	48.80	86	51.20	
Separated/Divorced/ widow	16	40.00	24	60.00	
Educational Level					0.01
None	11	32.40	23	67.60	
Primary	155	54.20	131	45.80	
Secondary	45	43.70	58	56.30	
Heath insurance					0.006

Any	42	37.20	71	62.80	
Mutuelle	161	54.90	132	45.10	
RSSB	8	47.10	9	52.90	
Number of children					<0.001
0-1	59	37.10	100	62.90	
3-Feb	106	53.50	92	46.50	
4 and above	46	69.70	20	30.30	
Religion					0.438
Catholic	69	46.30	80	53.70	
Protestant	136	52.30	124	47.70	
Other	6	42.90	8	57.10	
Whealth category					0.942
Category 1	20	48.80	21	51.20	
Category 2	116	50.70	113	49.30	
Category 3	75	49.00	78	51.00	
Source of income					<0.001
Unimployed	37	32.70	76	67.30	
Saraly	112	55.40	90	44.60	
Business	62	57.40	46	42.60	
Time Length on ART					0.3
1M to 2Years	38	54.30	32	45.70	
3 to 5 Years	31	59.60	21	40.40	
6 to 8 years	46	45.10	56	54.90	
9 years and above	96	48.20	103	51.80	
Current ART regime					0.346
TDF+3TC+EFV	4	33.30	8	66.70	
TDF+3TC+DTG	197	50.90	190	49.10	
ABC+3TC+DTG	10	41.70	14	58.30	
Previous ART					<0.001
TDF+3TC+NVP	24	43.60	31	56.40	
TDF+3TC+EFV	127	54.00	108	46.00	
TDF+3TC+DTG	52	55.90	41	44.10	
AZT+3TC+NVP	8	20.00	32	80.00	
Current status of adherence to ARVs					0.03
Good	184	52.10	169	47.90	
Bad	27	38.60	43	61.40	
Recent VL					0.002
Undetectable/TND	168	54.90	138	45.10	
Below 200 copies	26	32.50	54	67.50	
200 and above copies	17	45.90	20	54.10	
Other clinical conditions					0.785
Yes	8	53.30	7	46.70	
No	203	49.80	205	50.20	
Sexually Active					<0.001
Yes	161	44.80	198	55.20	
No	50	78.10	14	21.90	
Desire to have more children					<0.001
Yes	199	58.20	143	41.80	
No	12	14.80	69	85.20	
Does your patterner support it?					0.321
Yes	47	45.60	56	54.40	
No	164	51.30	156	48.80	

Table 4: *Individual factors influencing the use of modern contraceptive among women on ART receiving HIV related care in Gasabo District, to use modern contraceptives (Bivariate analysis).*

The table 4 shows that eleven variables were statistically significant associated with modern contraceptive use with p-value < 0.05 calculated at 95%CI and those variables are: age group, marital status, educational level, health insurance, number of children, source of income, previous ART, recent VL, sexually active and desire to have more children.

Variables	AOR	95%CI		P-Value
		Lower	upper	
Age group				
18-25	Ref			
26-35	0.639	0.294	1.390	0.259
36-45	0.744	0.302	1.831	0.520
>45 years	1.811	0.564	5.818	0.318
Marital status				
Single	Ref			
Married	0.836	0.370	1.89	0.667
cohabitating	1.249	0.600	2.597	0.552
Separated/Divorced/ widow	2.088	0.759	5.744	0.154
Educational Level				
None	3.072	1.107	8.522	0.031
Primary	1.279	0.706	2.316	0.417
Secondary	Ref			
Heath insurance				
Any	2.013	0.583	6.955	0.269
Mutuelle	1.227	0.390	3.863	0.726
RSSB	Ref			
Number of children				
0-1	Ref			
2-3	0.564	0.312	1.020	0.058
4 and above	0.273	0.121	0.617	0.002
Source of income				
Unemployed	Ref			
Salary	0.418	0.237	0.739	0.003
Business	0.284	0.145	0.556	<0.001
Previous ART				
TDF+3TC+NVP	Ref			
TDF+3TC+EFV	0.642	0.325	1.268	0.202
TDF+3TC+DTG	0.59	0.272	1.282	0.183
AZT+3TC+NVP	3.093	1.086	8.809	0.035
Current status of adherence to ARVs				
Good	0.605	0.278	1.318	0.206
Bad	Ref			
Recent VL				
Undetectable/TND	Ref			
Below 200 copies	2.556	1.408	4.638	0.20
200 and above copies	1.027	0.364	2.903	0.96
Sexually Active				
Yes	Ref			
No	0.154	0.073	0.325	<0.001
Desire to have more children				
Yes				
No	11.207	5.454	23.03	<0.001

Table 5: *Individual factors influencing the use of modern contraceptive among women on ART receiving HIV related care in Gasabo District, to use modern contraceptives (Multivariate analysis).*

The women on ART receiving HIV related care with noneducational level were more likely to use modern contraceptive method [AOR = 3.072; 95%CI = 1.107 - 8.522; P = 0.031] compared to those with secondary educational level. The women on ART receiving HIV related care with a number of children ranging between 4 and above were less likely to use modern contraceptive method [AOR = 0.273; 95%CI = 0.121 - 0.617; P = 0.002] compared to women with number of children ranging from 0 to 1 child. Respondents relied on salary were less likely to use modern contraceptive method [AOR = 0.418; 95%CI = 0.237 - 0.739; P = 0.003] and Business women were less likely to use modern contraceptive method [AOR = 0.284; 95%CI = 0.145 - 0.556; P = < 0.001] compared to unemployed respondents. Women who were on AZT+3TC+NVP previously, were more likely to use modern contraceptive method [AOR = 3.093; 95%CI = 1.086 - 8.809; P = 0.035] compared to women who were previously on TDF+3TC+NVP. Women who were not sexually active were less likely to use modern contraceptive method [AOR = 0.154; 95%CI = 0.073 - 0.325; P = < 0.001] compared to sexually active women. Respondents with no desire to have more children were more eleven times likely to use modern contraceptive method [AOR = 11.207; 95%CI = 5.454 - 23.03; P = < 0.001] compared to respondents with desire to have more children.

Structural barriers affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo district

The third objective was to identify structural barriers/factors affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo District.

Variables	Frequency	Percentage
Distance from home to health center		
<30 Min	80	18.9
30 Min to 1h	261	61.7
>1 hour	82	19.4
Have you been counselled on using modern contraceptives?		
Yes	323	76.4
No	100	23.6
Is MCM provided at your health facility?		
Yes	282	66.7
No	141	33.3
Is that service provided at your favorable days?		
Yes	254	60
No	169	40
I frequently waited a long time when I came for services		
Agree	237	56
Disagree	186	44
CM and other materials were available when I came for services		
Agree	254	60
Disagree	169	40
My health providers were knowledgeable on providing the service		
Agree	238	56.3
Disagree	185	43.7
My health providers treated me with respect		

Agree	285	67.4
Disagree	138	32.6
My health providers gave me good physical care		
Agree	232	54.8
Disagree	191	45.2
My health providers gave me good advice		
Agree	217	51.3
Disagree	206	48.7
I was informed of possible side effects		
Agree	223	52.7
Disagree	200	47.3
Side effects of contraceptive methods were well managed		
Agree	184	43.5
Disagree	239	56.5
My health providers answered all of my question		
Agree	**265**	**62.6**
Disagree	158	37.4
My health providers kept my privacy		
Agree	**328**	**77.5**
Disagree	95	22.5
My health care provider attempted to reach me after I stopped using FP services		
Agree	132	31.2
Disagree	291	68.8
Do you think HIV positive women use modern contraceptive methods?		
Yes	206	48.7
No	217	51.3

Table 6: *Structural barriers affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo district.*

The research findings revealed that 61.7% of respondents used 30 minutes to 1 hour to reach health center, 74.4% said that they have been counselled about how to use modern contraceptives before and 40% of respondents said that the services of modern contraceptives were not provided on their favorable day. Among 56% of participants often used to wait for long time by the time of seeking services and 56.6% of them disagreed with the statement which was asking whether the side effects of modern contraceptives were well managed.

Variables	Modern contraceptive use				P-Value
	Using		Not Using		
	n	%	n	%	
Distance from home to health center					
<30 Min	45	56.3	35	43.8	0.317
30 Min to 1h	129	49.4	132	50.6	
>1 hour	37	45.1	45	54.9	

Have you been counselled on using modern contraceptives?					
Yes	184	57.00%	139	43.00	<0.001
No	27	27.00%	73	73.00	
Is MCM provided at your health facility?					
Yes	164	58.20%	118	41.80	<0.001
No	47	33.3	94	66.70	
Is that service provided at your favorable days?					
Yes	162	63.80%	92	36.20	<0.001
No	49	29.00%	120	71.00	
I frequently waited a long time when I came for services					
Agree	120	50.60%	117	49.40	0.727
Disagree	91	48.90%	95	51.10%	
CM and other materials were available when I came for services					
Agree	179	70.50%	75	29.50%	<0.001
Disagree	32	18.90%	137	81.10%	
My health providers were knowledgeable on providing the service					
Agree	169	71.00%	69	29.00%	<0.001
Disagree	42	22.70%	143	77.30%	
My health providers treated me with respect					
Agree	187	65.60%	98	34.40%	<0.001
Disagree	24	17.40%	114	82.60%	
My health providers gave me good physical care					
Agree	166	71.60%	66	28.40%	<0.001
Disagree	45	23.60%	146	76.40%	
My health providers gave me good advice					
Agree	157	72.40%	60	27.60%	<0.001
Disagree	54	26.20%	152	73.80%	
I was informed of possible side effects					
Agree	160	71.70%	63	28.30%	<0.001
Disagree	51	25.50%	149	74.50%	
Side effects of contraceptive methods were well managed					
Agree	142	77.20%	42	22.80%	<0.001
Disagree	69	28.90%	170	71.10%	
My health providers answered all of my question					
Agree	177	66.80%	88	33.20%	<0.001
Disagree	34	21.50%	124	78.50%	
My health providers kept my privacy					
Agree	205	62.50%	123	37.50%	<0.001
Disagree	6	6.30%	89	93.70%	
My health care provider attempted to reach me after I stopped using FP services					
Agree	104	78.80%	28	21.20%	<0.001
Disagree	107	36.80%	184	63.20%	
Do you think HIV positive women use modern contraceptive methods?					
Yes	131	63.60%	75	36.40%	<0.001
No	80	36.90%	137	63.10%	

Table 7: *Structural barriers affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo District (Bivariate analysis).*

The table 7 shows that fourteen variables were statistically significant associated with modern contraceptive use with p-value < 0.05 calculated at 95%CI and those variables are; to be counselled about modern contraceptive use, provision of modern contraceptive services at health facility, favorable day of modern contraceptive services, availability of modern contraceptive materials, knowledge of health care providers towards modern contraceptive services, to be respected by health care providers, good physical care from health care providers, good advice from health care providers, to be informed about side effect, Good management of side effect, health care providers answered all questions, health care providers kept secret, health care providers make follow up and use of modern contraceptive method among HIV positive women.

Variables	AOR	95%CI		P-Value
		Lower	Upper	
Have you been counselled on using modern contraceptives?				
Yes	1.773	0.94	3.344	0.077
No	Ref			
Is MCM provided at your health facility?				
Yes	Ref			
No	0.551	0.278	1.092	0.088
Is that service provided at your favorable days?				
Yes	Ref			
No	2.362	1.196	4.664	0.013
CM and other materials were available when I came for services				
Agree	0.216	0.12	0.387	<0.001
Disagree	Ref			
My health providers were knowledgeable on providing the service				
Agree	0.737	0.311	1.748	0.489
Disagree	Ref			
My health providers treated me with respect				
Agree	Ref			
Disagree	2.963	1.321	6.646	0.008
My health providers gave me good physical care				
Agree	Ref			
Disagree	1.46	0.562	3.791	0.437
My health providers gave me good advice				
Agree	Ref			
Disagree	1.136	0.39	3.31	0.816
I was informed of possible side effects				
Agree	0.697	0.342	1.422	0.321
Disagree	Ref			
Side effects of contraceptive methods were well managed				
Agree	0.715	0.263	1.94	0.51

Disagree	Ref			
My health providers answered all of my question				
Agree	0.597	0.318	1.119	0.107
Disagree	Ref			
My health providers kept my privacy				
Agree	Ref			
Disagree	0.115	0.044	0.298	<0.001
My health care provider attempted to reach me after I stopped using FP services				
Agree	Ref			
Disagree	1.384	0.7	2.734	0.35
Do you think HIV positive women use modern contraceptive methods?				
Yes	Ref			
No	1.12	0.564	2.224	1.12

Table 8: *Structural barriers affecting use of modern contraceptives among women on ART receiving HIV related care in, Gasabo district (Multivariate analysis).*

The respondents who said that the day of modern contraceptive services was not favorable were more likely to use modern contraceptive method [AOR = 2.362; 95%CI = 1.196 - 4.664; P = 0.013] compare to respondents who said that day of service is favorable. Women who agreed that modern contraceptive materials were available at the day of service were less likely to use modern contraceptive method [AOR = 0.216; 95%CI = 0.12 - 0.387; P = < 0.001] compared to women disagreed with that statement. Respondents who said that they treated with respect during the service were more likely to use modern contraceptive method [AOR = 2.963; 95%CI = 1.321 - 6.646; P = < 0.008] compared to those who treated with no respect. The respondents who disagreed that health care providers don't keep secret were less likely to use modern contraceptive method [AOR = 0.115; 95%CI = 0.044 - 0.298; P = < 0.001] compared to respondents agreed that their secrets have been kept.

Discussion of the Study Findings

Although different studies were carried out in Rwanda on the use of Family Planning thus far they have focused on married women in reproductive age and therefore this study was conducted considering women on ART receiving HIV related care in Kigali. The present study revealed that almost ahalf of women on ART receiving HIV related care were currently use modern contraceptive method and this prevalence is considered to be low. The remaining percentage of respondents have been using traditional methods like; symptom based method, calendar/ color based method and locational amenorrhea while others were using none.

The study conducted in northern Tanzania was not far from the present study where it revealed that about a half of participants were currently using modern contraceptives and the method which have been used mostly was male condom [8].

This study has also focused on individual factors which may influence the use of modern contraceptive method, and revealed that there were different factors which contribute to modern contraceptive method including:; educational level, number of children, source of income; to be sexually active and the desire to have more children.

The stated factors are contrary with the ones from the study conducted in Ethiopia which revealed that information related to contraceptive use and family size found to be the factors associated with contraceptive use [9].

The results findings of this study showed that to be counselled about modern contraceptive use was a structural factor which was statistically significant associated with modern contraceptive use among women on ART living with HIV, but a low percentage have been counselled about modern contraceptive use before starting using it.

The present study was in some line with the study conducted from Kilimanjaro region, where it revealed that more than half of the HIV-positive women attending Care and Treatment Clinics reported having ever received counseling on modern contraceptive use at their respective care and treatment clinics, and among those counseled a significant number of participants were counseled on dual contraceptive use [10].

Conclusion

The main purpose of this study was to assess the prevalence of modern contraceptives use and its associated factors among women on ART receiving HIV related care in Kigali, Gasabo District and the study revealed that almost ahalf of women on ART receiving HIV related care were using modern contraceptive method. The study results also showed that there were some individual factors which were statistically significant associated with modern contraceptive use with p-value < 0.05 calculated at 95%CI and there were also fourteen structure barriers shown to be statistically significant associated with modern contraceptive use among women on ART receiving HIV related care in Gasabo district. The result can't be generalized for whole country in consideration of the study design, sample size and the characteristics of study population of Gasabo district as it is one of Kigali city Districts may differ from the characteristics of people from other different rural areas of the country.

Appendix 1: Questionnaire

Questionnaire ID: /…… /

Date of survey: /……..DD/……..MM/……YYYY/

Health facility ……

1. Socio-demographic section			
1.	What is your age?		
2.	What is your place of residence? (sector)		
3.	What is your health insurance?	1.I do not have any	
		2.CBHI/Mutuelle	
		3.RSSB	
		4.Private	
4.	What is your Marital status?	1 = Single	
		2 = Married	
		3 = Divorced/separated/Widowed	

5.	How many children do you have?	1 = None	
		2 = Two	
		3 = Three	
		4 = Four	
		5 = More than 4	
6.	What is your Religion?	1 = None	
		2 = Christian roman catholic	
		3 = Christian protestants	
		4 = Muslim	
		5 = Other, specify	
7.	What is the highest level of Education you have completed?	1.None	
		2.Primary	
		3.Secondary or TVET	
		5.University	
8.	What is your Ubudehe category?	A	
		B	
		C	
		D	
		E	
		F	
9.	What is your main source of income?	1.Salary	
		2.Trade/Business	
		3.Other	
10.	How much do you earn per month?	1 = 0	
		2 = 0-50000	
		3 = 50000-100000	
		4 = 100000 and above	
2. Clinical and reproductive health section			
1.	For how long are you informed of your HIV status?		
2.	For how long have you been on ART?		
3.	Do you have other clinical conditions?	1.Yes	
		2.No	
4.	If **Yes**, which condition do you have? **(Choosing all applies)**	1.Hypertension	
		2.Diabetes	
		3.Cardiopathy	
		4.Asthma	
		5.Cancer	
		6.Other	
5.	Are you sexually active?	1.Yes	
		2.No	

6.	Do you desire to have (other)children?	1.Yes	
		2.No	
7.	If **Yes**, is your partner supportive for your children desire?	1.Yes	
		2.No	
		3.other	
3. Contraceptive methods section			
1.	Do you currently use contraceptive method?	1 = Yes	
		2 = No	
2.	If **Yes**, which contraceptive method?	1.Natural methods	
		2.Modern methods	
		3. Other, specify……..	
3.	If you use traditional method, which one?	1.Calendar/Collar-based method	
		2.Symptoms-based method	
		3.Coitus interruptus	
		4.Lactational amenorrhea method	
		5. Other	
4.	If you use modern contraceptive method, which one?	1. Injection Depo Provera/Noristera	
		2. Pills	
		3. Condoms	
		4. Implant Jadelle/Implanon	
		5. Implant DIU	
		6.Tubal ligation	
5.	Did you experience side effects of contraceptive methods? (**For those who currently use modern contraceptives**)	1.Yes	
		2.No	
6.	Have you ever got pregnant while using modern contraceptive?	1.Yes	
		2.No	
7.	How many times did it happen?		
8.	Which method were you using? (**For those who got pregnant while using modern contraceptives**)	1. Injection Depo Provera/Noristera	
		2. Pills	
		3. Condoms	
		4. Implant Jadelle/Implanon	
		5. Implant DIU	
		6.Tubal ligation	
4. Quality of contraceptive method service			
1.	Have you been counselled on using modern contraceptives?	1.Yes	
		2.No	

2.	What is the time distance between your residence and the Health facility?	1. Less than30 minutes	
		2. Between 30 minutes and 1 hour	
		3. Between 1 hour and 1h30	
		4. More than 1h30	
3.	Is your contraceptive method provided at your health facility?	1.Yes	
		2.No	
4.	Is the service provided at your favorable days?	1.Yes	
		2.No	
5.	How is the service provided by your HCP? Please circle one option from only in each row; 1 = Strongly Disagree 2 = Disagree 3 = Neither Agree or Disagree 4 = Agree 5 = Strongly Agree		
	I frequently waited a long time when I came for services	1 2 3 4 5	
	Contraceptive methods and other materials were available when I came for services.	1 2 3 4 5	
	My health providers were knowledgeable on providing the service	1 2 3 4 5	
	My health providers treated me with respect.	1 2 3 4 5	
	My health providers gave me good physical care	1 2 3 4 5	
	My health providers gave me good advice	1 2 3 4 5	
	I was informed of possible side effects.	1 2 3 4 5	
	Side effects of contraceptive methods were well managed	1 2 3 4 5	
	My health providers answered all of my question	1 2 3 4 5	
	My health providers kept my privacy.	1 2 3 4 5	
	My health care provider attempted to reach me after I stopped using FP services.	1 2 3 4 5	
5. Predictors of family planning uptake among HIV positive women			

1.	If you don't use modern contraceptive methods, why?		
	1 = Desired pregnancy	Yes	No
	2 = Accidentally became pregnant	Yes	No
	3 = Distance to contraceptive service is too long	Yes	No
	4 = Became ill from something else not related to contraceptives	Yes	No
	5 = Out of town	Yes	No
	6 = Service is expensive	Yes	No
	7 = No longer have a partner	Yes	No
	8 = No longer having sex with partner	Yes	No
	9 = Infrequent sex	Yes	No
	10 = Husband does not support to use modern contraceptives	Yes	No
	11 = religious beliefs conflict with using contraceptives	Yes	No
	12 = Lack of health insurance	Yes	No
	13 = don't have knowledge about family planning	Yes	No
	14 = Bad attitudes of health providers	Yes	No
	15 = ART would interfere with contraceptive method	Yes	No
	16 = Side Effects	Yes	No
	17 = Husband uses contraceptive method	Yes	No
	18 = Other……		
2.	Why do you think HIV positive women do not use modern contraceptive methods? Please tick the right answer (s)		
	1 = Desired pregnancy	Yes	No
	2 = Accidentally became pregnant	Yes	No
	3 = Distance to contraceptive service is too long	Yes	No
	4 = Became ill from something else not related to contraceptives	Yes	No
	5 = Out of town	Yes	No
	6 = Service is expensive	Yes	No
	7 = No longer have a partner	Yes	No
	8 = No longer having sex with partner	Yes	No
	9 = Infrequent sex	Yes	No
	10 = Husband does not support to use modern contraceptives	Yes	No
	11 = religious beliefs conflict with using contraceptives	Yes	No
	12 = Lack of health insurance	Yes	No
	13 = don't have knowledge about family planning	Yes	No
	14 = Bad attitudes of health providers	Yes	No
	15 = ART would interfere with contraceptive method	Yes	No
	16 = Side Effects	Yes	No
	17 = Husband uses contraceptive method	Yes	No
	18 = Other……		

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