HHS Public Access

Author manuscript

AIDS Care. Author manuscript; available in PMC 2017 August 01.

Published in final edited form as:

AIDS Care. 2016 August ; 28(8): 1027–1034. doi:10.1080/09540121.2016.1140891.

Reproductive intentions and family planning practices of pregnant HIV-infected Malawian women on antiretroviral therapy

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Abstract

The objective of this study was to describe the pregnancy intentions of pregnant HIV-infected Malawian women on antiretroviral therapy (ART) for at least 6 months prior to the current pregnancy, and to assess whether time on ART was associated with pregnancy intention. We conducted a cross-sectional analysis of HIV-infected Malawian women receiving antenatal care at a government hospital with a survey assessing ART history, reproductive history, and family planning use at conception. We used Pearson's chi-square tests and Fisher's exact tests to compare these parameters between women on ART greater than 24 months with those on ART less than 24 months. Modified Poisson regression was performed to assess the association between time on ART and pregnancy intention. Most women (75%) reported that their current pregnancy was unintended, defined as either mistimed (21%) or unwanted (79%). Women on ART for longer than 2 years were more likely to report an unintended pregnancy (79% versus 65%, p=0.03), though there was no significant association between time on ART and pregnancy intention in multivariate analysis. Most women (79%) were using contraception at the time of conception, with condoms being most popular (91%), followed by injectables (9%) and the implant (9%). HIV-infected women on ART continue to experience high rates of unintended pregnancy in the Option B+ era. As Option B+ continues to be implemented in Malawi and increasing numbers of HIV-infected women initiate lifelong ART, ensuring that the most effective forms of contraception are accessible is necessary to decrease unintended pregnancy.

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Conflicts of interest: The authors have no conflicts of interest to report.

Keywords

HIV; family planning; Malawi; antiretroviral therapy

Introduction

HIV and maternal mortality account for a significant proportion of morbidity and mortality among women worldwide (Hogan et al., 2010). Malawi is disproportionately affected by both, with an HIV prevalence rate of 11% and a maternal mortality rate of 460 deaths per 100,000 (WHO, 2014). In July 2011, the country initiated a four-pronged strategy for HIV management, including prevention of unintended pregnancies among HIV-infected women via provider-initiated family planning of depot medroxyprogesterone (DMPA) injections and initiation of lifelong antiretroviral therapy (ART) for all HIV-infected pregnant and breastfeeding women, regardless of CD4+ count or WHO clinical stage, under the Option B + policy (Malawi Ministry of Health, 2011). The result was a substantial initial increase of 748% in the number of women on ART between the second quarter of 2011 preceding Option B+ and third quarter of 2012 (Centers for Disease Control & Prevention, 2013). By the second quarter of 2013, 73% of pregnant HIV-infected women were on ART (Malawi Ministry of Health, 2013).

Malawi also has high rates of unintended pregnancy, especially among HIV-infected women. Not surprisingly, Malawi also has a high unmet need for contraception (National Statistical Office, 2011). While the 2010 Malawian Demographic Health Survey reported that 41% of pregnancies in Malawi are unintended (National Statistical Office, 2011), a 2011 survey of HIV-infected women receiving treatment at an ART clinic in Lilongwe found that 68% of patients' last pregnancies were unintended (Haddad, 2011). The most recent study of the reproductive practices of urban Malawian women on ART found that fertility rates tend to increase as length of time on ART increases beyond 6 months (Tweya et al., 2013), a finding similar to those cited previously in the region (Kaida et al., 2008; Tai et al., 2007). However, data were collected prior to the initiation of Option B+ in Malawi, and the fertility desires of women may have changed following nationwide implementation of the new policy. In a recent study of postpartum Malawian women, HIV-infected women were more likely than their HIV-uninfected counterparts to desire no further children (O'Shea et al., 2015). ART status was not measured in this study, however, and the association between ART and fertility desire among HIV-infected women remains largely unknown in the Option B+ era.

Malawi's high fertility rate and low overall contraceptive prevalence underscore the need to understand the fertility desires of HIV-infected women. Specifically, it is important to understand how women receiving ART in the Option B+ era feel about having subsequent pregnancies, to ensure that any gaps in family planning are identified and met. Therefore, the primary objective of this study was to describe the current pregnancy intentions and family planning practices of pregnant women who had initiated ART at least 6 months prior to their current pregnancy. The secondary objective of this study was to evaluate the association between time on ART and current pregnancy intention.

Methods

We conducted a cross-sectional study of pregnant HIV-infected Malawian women who initiated ART prior to their current pregnancy. Recruitment took place at the antenatal clinic of Bwaila Hospital, a District Hospital in Lilongwe, Malawi with over 15,000 deliveries per year. Eligibility criteria included HIV-infected pregnant women, aged 18 to 45 years, who were on ART for at least 6 months prior to the current pregnancy. Women were recruited from March to July 2014.

Sample Size and Study Population

We planned to enroll a convenience sample of 220 participants, based on the number of HIV-infected women on ART whom we estimated would be eligible for and interested in the study during the recruitment period at Bwaila. In 2013, there was an HIV prevalence of 14.7% among pregnant women receiving care at Bwaila, and an estimated one-third of these women were on ART at the time they became pregnant. From January to June 2013, 6,735 women received antenatal care at the facility. Therefore, we estimated that 55 pregnant HIV-infected patients on ART per month could potentially be recruited for the study.

Study Recruitment

All antenatal patients at Bwaila Hospital were screened for eligibility into the study. Eligible patients were taken to a private room and underwent the informed consent process in Chichewa with a Research Assistant fluent in both English and Chichewa. Those willing to provide informed consent were enrolled.

Data Collection

Participants completed a face-to-face 30-minute survey, which collected information on demographics, HIV history, ART regimen history and reason for ART initiation, reproductive intentions, and family planning knowledge and preferences. ART history and date of last DMPA injection and subdermal implant insertion, if applicable, were verified using the patient's health passport. Dates of method use for the injectable contraceptive, IUC, and implant were collected from the health passports to ascertain whether the pregnancy occurred within the period of efficacy of the method.

Measures of Pregnancy Intention and Time on ART

A pregnancy was defined as 'Intended' if the participant had wished to become pregnant at the time of conception, 'Mistimed' if the participant had wished to become pregnant at a later time, and 'Unwanted' if she had not wished to become pregnant at any time. The primary exposure of interest, time on ART, was dichotomized into less than or greater than two years.

Data Management and Statistical Analysis

Paper documents and consent forms were kept in study binders in a locked study office. All study data were double entered into a password-protected Microsoft Access study database, which was constructed with appropriate logic and validation checks to minimize data entry

error. The Access data were exported and analyzed using Stata version 13.0 (StataCorp, College Station, TX).

Descriptive statistics were calculated for categorical variables, and the Student's t-test was used to compare continuous variables by pregnancy intention. Pearson's chi-square tests and Fisher's exact test were used to compare distributions of categorical variables by pregnancy intention. A two-sided p-value of 0.05 was considered statistically significant for all comparisons.

Modified Poisson regression with robust variance to estimate prevalence ratios was performed to evaluate the association between time on ART and the outcome of current pregnancy intention. In this analysis, we compared Mistimed versus Intended pregnancies and Unwanted versus Intended pregnancies. The fully adjusted model included variables that were possible confounders of time on ART and pregnancy intention, including age, number of living children, and first pregnancy with the woman's current partner.

Ethical considerations

Ethical approval for this study was obtained by both the University of North Carolina-Chapel Hill Institutional Review Board and the Malawian National Health Sciences Research Committee.

Results

A total of 480 patients were screened, of whom 237 were eligible. 220 (93%) eligible participants participated in the study. The most common reasons for ineligibility were lack of a complete health passport, being on ART for less than 6 months, and age under 18 years. 17 eligible patients declined to participate. Most common reasons for nonparticipation were lack of time and desire for partner approval prior to study participation.

Demographic characteristics and ART history

Most of the women surveyed (63%) were between the ages of 25 and 34 years, and nearly all (94%) were currently married (Table 1). A majority of women (74%) had been diagnosed with HIV at least 3 years ago. Half of women (48%) had initiated ART in the pre-Option B+ era, though most women (82%) had been on ART less than 5 years. Nearly all women (95%) were on the current Malawian first line combination of Tenofovir/Lamivudine/Efavirenz. Sixty-eight percent of women had initiated ART according to WHO clinical stage or CD4 criteria, while 32% initiated ART while pregnant or breastfeeding.

Current pregnancy intention

Seventy-five percent of surveyed women stated that their current pregnancy was either Mistimed (16%) or Unwanted (59%). Women who had been on ART for 2 years or more were more likely than those on ART for less than 2 years to have an Unwanted pregnancy (65% versus 45%) and less likely to have a Mistimed pregnancy (14% versus 20%) or Intended pregnancy (21% versus 35%; p=0.03)(Table 2). Women who were on ART for 2 years or more were also more likely to have been married for at least 5 years (68% versus

47%; p=0.005), less likely to report this was their first pregnancy with their partner (35% versus 53%; p=0.01), and less likely to have no living children (7% versus 26%; p<0.001). In multivariate analysis, there was no significant association between time on ART and having a Mistimed versus Intended pregnancy when adjusted for age, number of living children, and first pregnancy with the participant's current partner (Adjusted PR 1.07; 95% CI: 0.60, 1.91)(Table 3). There was also no significant association between time on ART and having an Unwanted versus Intended pregnancy (Adjusted PR 1.08; 95% CI: 0.85, 1.37). In this model, the only predictor of having an Unwanted pregnancy was the number of living children (Adjusted PR for Unwanted versus Intended pregnancy: 1.18; 95% CI: 1.09, 1.28). Reason for ART initiation did not significantly change the beta coefficient in either of the pregnancy intention analyses, and was by itself not associated with pregnancy intention.

Contraception used at conception

Seventy-nine percent of women reported using at least one contraceptive method during the time of conception (Table 2). Among these 173 women, the most common methods reported were condoms (91%), followed by injectables (9%), and the implant (9%). Dual method use was reported by 38 (22%) contraceptive users, of whom 11 were using oral contraceptives, 11 were using injectables, 8 were using implants and 1 had undergone tubal sterilization. Seven other participants reported abstinence, natural family planning, breastfeeding or withdrawal in addition to condom use. Of the 15 women reporting injectable use, 3 had become pregnant during the contraceptive efficacy period of their last injection. Ten were overdue for their next injection at the time of conception, and 2 were unsure of last injection date. Of the 16 women reporting implant use at the time of conception, 2 had been using the 3-year etonogestrel implant and 14 were using the 5-year levonorgestrel implant. All users of the levonorgestrel implant had the implant placed within the past 5 years of use and were thus still within its contraceptive efficacy period. Both women using the etonogestrel implant had the method placed within the past 3 years, within its contraceptive efficacy period. All 16 implant users were using efavirenz-based ART at the time of conception.

Future family planning preferences

When asked how many children they desired in the future, most women (75%) did not want any more children (Table 2). Nearly all women (99%) did not desire an additional pregnancy in two years. Most women (87%) stated that their partner had a positive attitude towards family planning. The most common methods women planned to use postpartum were condoms (88%), female sterilization (69%), and the implant (60%).

Discussion

The majority of pregnant HIV-infected women on ART stated that their pregnancy was Unwanted (59%) or Mistimed (16%). In unadjusted analysis, women who were on ART longer appeared to be more likely to experience an Unwanted pregnancy. However, after adjustment, length of time on ART was not associated with current pregnancy intention because women on ART for longer periods of time generally had more living children. Number of living children, not time on ART, was the main determinant of pregnancy intention in our population. The high proportion of women who experienced an unintended

pregnancy underscores a need to ensure access to the most effective contraceptive methods as growing numbers of HIV-infected women continue to initiate lifelong ART in the Option B+ era.

ART use has previously been associated with increased pregnancy rates in sub-Saharan Africa when compared to HIV-infected women not using ART (Kaida et al., 2006; Makumbi et al., 2011; Myer et al., 2010), either due to improvements in health leading to higher probability of conception or increased hope following treatment initiation leading to increased fertility desire. Interestingly, the majority of our participants reported that their current pregnancy was unintended, suggesting that the former justification may have been more common in our study population. HIV status alone has not been shown to deter repeat pregnancy in studies from South Africa, Tanzania, Botswana, and Zimbabwe (Bussmann et al., 2007; Myer, Morroni, & Cooper, 2006; Myer, Morroni, & Rebe, 2007; Sedgh, Larsen, Spiegelman, Msamanga, & Fawzi, 2005; Smee, 2011). The relationship between length of time on ART and pregnancy intention has not been assessed in the Option B+ era. We found no association between length of time on ART and pregnancy intention among our study participants. This may be attributable to similar overall health status between those who had been on ART despite differing lengths of time on ART and reasons for ART initiation. As increasing numbers of women initiate ART under Option B+, they will also likely be in good health at the time of enrollment and without compromised immune status. Similarly, women on ART for longer time may enjoy improved health status from long-term treatment, leading to similar fertility desires between the two groups.

Most of our participants experienced an Unwanted, rather than a Mistimed pregnancy. In other words, they did not desire any more children. Attitudes toward reproduction among HIV-infected women are complex, given cultural norms promoting childbearing and social stigma surrounding HIV (Cooper et al., 2007). On one hand, HIV-related concerns have been described as deterrents to childbearing, stemming from poor health, fears of pregnancy's negative effects on health, and anxiety of HIV transmission (Chen, Philips, Kanouse, Collins, & Miu, 2001; Cooper et al., 2007; da Silveira Rossi, Fonsechi-Carvasan, Makuch, Amaral, & Bahamondes, 2005; Kirshenbaum et al., 2004). Consistent with this trend, postpartum HIV-infected Malawian women at the same hospital were more likely than their HIV-uninfected counterparts to report unintended pregnancy and decreased future fertility desire (O'Shea et al., 2015), while knowledge of HIV-infected status also decreased fertility desire among nonpregnant Malawian women (Hoffman et al., 2008). However, those with fewer living children and positive subjective health reported increased fertility intentions, which is consistent with other studies in sub-Saharan Africa (Loko et al., 2005; Nebie et al., 2001). HIV infection is not the sole determinant of childbearing preferences, which may also be influenced by experiences with ART. A majority of patients at an ART care center in Ethiopia desired future pregnancy (Negash, Yusuf, & Tefera, 2013), while HIV-infected patients in South Africa reported that the positive health benefits of ART would make them reconsider reproductive options (Cooper et al., 2007). Our findings demonstrate that many HIV-infected women in Malawi desire to limit childbearing despite consistent access to ART and cultural norms promoting childbearing. However, we do not know whether our participants' fertility desires are a result of stigma surrounding HIV status, perceived health status, or other compelling socioeconomic or cultural reasons. A

multitude of competing factors and life circumstances affect childbearing intentions and evolve throughout a woman's reproductive years (Sennott & Yeatman, 2012). The growing availability of lifelong ART under the Option B+ policy will add another level of complexity to reproductive decision-making among HIV-infected women. Our findings underscore the need to ensure that HIV-infected women are provided the most effective contraceptive methods to meet their family planning needs and counseled appropriately throughout their reproductive years.

Understanding women's contraceptive preferences while ensuring access to reliable methods of contraception is an important unmet need. The unintended pregnancies experienced by our population may have been the result of a combination of increased probability of conception due to improved immunological status, insufficient contraceptive coverage, and potentially decreased contraceptive efficacy due to ART. Most of our study participants reported using condoms as the method of contraception rather than more effective methods. We did not collect specific information regarding the consistency of condom use or personal control over condom use. Fewer women were using hormonal methods at the time of conception, which is consistent with their lower contraceptive failure rates. Dual method use with condoms and another family planning method was low, which is not unexpected, as women using two contraceptive methods are less likely to become pregnant. Given the high rates of unintended pregnancy experienced by our population and the low reported usage of effective, female-initiated contraception, it is essential to understand why many HIV-infected women who do not desire pregnancy are not using the most effective family planning methods to prevent pregnancy. HIV-infected women in the region have previously reported experiencing pregnancy while using contraception. One third of HIV-infected postpartum Malawian women reported using contraception before their most recent pregnancy, with the most popular methods being condoms, followed by injectables and oral contraceptives (O'Shea et al., 2015). Half of HIV-infected pregnant Zimbabwean women also reported using contraception prior to their current pregnancy (McCoy et al., 2014). These pregnancies may also be attributable to insufficient or inconsistent use of effective contraception, such as high rates of condom use and low dual method use. The majority of women using injectables in our study were overdue for their next injection when they became pregnant, indicating potential pregnancies due to inability to consistently access and use effective contraception.

Hormonal contraceptive failure among women on ART, such as those reported by our participants, have also been reported by HIV-infected South African women (Schwartz et al., 2012). Among these women, 8.6% of unplanned pregnancies involved hormonal contraceptive failure, including two failures from combined oral contraceptives and seven from injectables. Two (1%) of our 173 study participants who were using contraception were using the etonogestrel implant, while 14 (8%) were using the levonorgestrel implant at the time they became pregnant. Reduced etonogestrel and levonorgestrel concentrations have been reported in users of the subdermal implant who were also on efavirenz-based ART (Scarsi et al., 2014; Vieira et al., 2014). Notably, the implant was the third most common method our study participants planned to use postpartum. Given the efavirenz-based regimen used under the Malawian Option B+ guidelines, the potential interaction raises concerns about reduced contraceptive efficacy in HIV-infected women who initiate ART and wish to use the implant to prevent pregnancy. Nonetheless, the contraceptive implant remains one of

the most effective methods available to HIV-infected women on ART wishing to prevent pregnancy and was still associated with lower pregnancy rates than short-acting contraceptive methods among women using efavirenz in a large study in Kenya (Patel et al., 2015). Further studies are needed to counsel women on ART about the most effective methods of contraception available.

Despite Malawi's success in scaling access to ART among pregnant women in recent years, many HIV-infected women on ART remain unable to fully achieve their family planning goals. Malawian family planning providers have previously cited understaffing, lack of trained providers in LARC insertions, and insufficient family planning commodities in clinics as barriers to access to family planning, in addition to community biases towards short-acting methods (manuscript under review). As greater numbers of Malawian women continue on lifelong ART, a shift in policy is urgently needed to prioritize the comparatively lagging family planning prong of the HIV management strategy by addressing these barriers, and improving the current integration of HIV and family planning care. Such efforts would require a focus on the integration of a wider range of evidence-based contraceptive methods, in addition to condoms and short-acting methods, as part of standard ART care. Simultaneous efforts are required to better understand why, in addition to barriers to family planning provision, Malawian HIV-infected women on ART are not using the most effective contraceptive methods available to meet their family planning goals, and how they make their contraceptive decisions.

We did not collect specific information regarding the current health status of our participants, which limits the generalizability of our results to the broader population of HIV-infected women on ART. Many participants who initiated ART in the Option B+ era reported initiating therapy for CD4 or WHO criteria. This may be because most women who initiated ART in the Option B+ era may have yet to experience another pregnancy. Given the negative impact of HIV disease progression on fertility and the fact that all women in our sample were able to achieve pregnancy (Ross et al., 2004), our study participants were likely healthier than the general population of HIV-infected women on ART. Nonetheless, with the continued implementation of Option B+ in Malawi, many HIV-infected women will continue to be at high risk of unintended pregnancy.

In conclusion, our population of HIV-infected Malawian women on ART experienced high rates of unintended pregnancy in the Option B+ era. Many of these pregnancies can be attributed to insufficient use of the most effective methods of contraception, including dual method use and effective long-acting contraception. As ART coverage is increased in Malawi, greater country-level priority must be placed on prevention of unintended pregnancy among HIV-infected women to achieve their family planning goals while preventing mother-to-child transmission of HIV. As Option B+ continues to be implemented in Malawi and increasing numbers of HIV-infected women initiate lifelong ART, ensuring that we understand their fertility intentions and contraceptive decision making process will allow us to design and promote effective strategies to help them to meet their family planning needs and reduce their high rates of unintended pregnancy.

Acknowledgments

Source of funding: This study was funded by the UNC-CH, Johns Hopkins, Morehouse School of Medicine, and Tulane University Fogarty Global Health Fellowship (NIH 5R25TW09340-01; PI: Charles van der Horst), the Office for Research on Women's Health, the UNC Center for AIDS Research (NIH P30-AI50410-14; PI: Ronald Swanstrom) and Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD080485; PI: Hosseinipour). Michele O'Shea was funded by the Fulbright-Fogarty Fellowship in Public Health. Dr. Tang is supported by the Fogarty International Center at the National Institutes of Health (1K01TW009657-01). Dr. Hosseinipour is supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD080485; PI: Hosseinipour). Dr. Rosenberg is supported by the National Institute of Mental Health (K99MH104154-01A1).

The authors would like to thank the study participants, Limbikani Chimndozi, the antenatal unit of Bwaila Hospital, and the Lilongwe District Management Team for their assistance and support of this study.

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Table 1

Demographics and ART History by length on ART

	Less than 2 years		Greater than 2 years		All women (N=220)		Pearson Chi^2 p-value
	N	%	N	%	N	%	
Age							
18–24	20	(30)	22	(14)	42	(19)	
25–34	38	(58)	101	(66)	139	(63)	
≥35	8	(12)	31	(20)	39	(18)	0.02
Trouble with food/clothing/meds							
Yes	46	(70)	127	(82)	173	(79)	
No	20	(30)	27	(18)	47	(21)	0.03
Education							
None or some primary	19	(29)	55	(36)	74	(34)	
Primary to some secondary	29	(44)	70	(45)	99	(45)	
Secondary and above	18	(27)	29	(19)	47	(21)	0.3
Marital status							
Married	61	(92)	145	(94)	206	(94)	
Separated/Divorced	1	(2)	4	(3)	5	(2)	
Never married in relationship	0	(0)	3	(2)	3	(1)	
Never married not in relationship	4	(6)	2	(1)	6	(3)	0.1 *
Years married							
0–4 years	32	(53)	47	(32)	79	(39)	
5+ years	28	(47)	98	(68)	126	(61)	0.005
Marriage number							
1st marriage	30	(49)	58	(40)	88	(43)	
2nd + marriage	31	(51)	87	(60)	118	(57)	0.2
Years from HIV diagnosis							
≤2 years	39	(60)	19	(13)	58	(27)	
3–5 years	15	(23)	59	(9)	74	(34)	
6+ years	11	(17)	74	(49)	85	(40)	<0.001
Time of ART initiation							

	Less than 2 years		Greater than 2 years		All women (N=220)		Pearson Chi^2 p-value
	N	%	N	%	N	%	
Pre Option B+[a]	0	(0)	105	(68)	105	(48)	
Post Option B+	66	(100)	49	(32)	115	(52)	<0.001*
Reason for ART initiation							
Pregnant/breastfeeding	12	(19)	58	(38)	70	(32)	
WHO stage/CD4 count	52	(81)	95	(62)	147	(68)	0.006
Current ART regimen							
d4T/3TC/NVP	1	(2)	0	(0)	1	(1)	
AZT/3TC/NVP	4	(6)	5	(3)	9	(4)	
TDF/3TC/EFV	61	(92)	149	(97)	210	(95)	0.2*

[a]Option B+ defined as date begun at study site in September 2011

*Fisher exact P-value

Table 2

Reproductive history and past contraceptive use by pregnancy intention

	Less than 2 years		Greater than 2 years		All women (N=220)		Pearson Chi^2 p-value
	N	%	N	%	N	%	
Pregnancy intention							
Intended	23	(35)	32	(21)	55	(25)	
Mistimed	13	(20)	22	(14)	35	(16)	
Unwanted	30	(45)	99	(65)	129	(59)	0.03
First pregnancy with partner?							
Yes	35	(53)	53	(35)	88	(40)	
No	31	(47)	100	(65)	131	(60)	0.01
Living children							
0	17	(26)	11	(7)	28	(13)	
1–3	47	(71)	115	(75)	162	(74)	
≥4	2	(3)	28	(18)	30	(14)	<0.001
Future children desired							
0	39	(60)	124	(81)	163	(75)	
≥1	26	(40)	29	(19)	55	(25)	0.001
Desire pregnancy in 2 years							
Yes	2	(3)	0	(0)	2	(91)	
No	64	(97)	154	(100)	218	(99)	0.03
Primigravida							
Yes	10	(15)	4	(3)	14	(6)	
No	56	(85)	150	(97)	206	(94)	<0.001 *
History of previous pregnancy while HIV+							
Yes	23	(35)	97	(63)	120	(55)	
No	43	(65)	57	(37)	100	(45)	<0.001
History of miscarriage							
Yes	21	(32)	35	(23)	56	(26)	
No	45	(68)	119	(77)	164	(75)	0.2
Partner pregnancy intention							

	Less than 2 years		Greater than 2 years		All women (N=220)		Pearson Chi^2 p-value
	N	%	N	%	N	%	
Intended	43	(65)	64	(42)	107	(49)	
Mistimed	10	(15)	18	(12)	28	(13)	
Unwanted	13	(20)	70	(46)	83	(38)	0.001
Using modern method during conception							
Yes	50	(76)	123	(80)	173	(79)	
No	16	(24)	31	(20)	47	(21)	0.5
Contraception used during conception Abstinence							
Yes	1	(2)	5	(4)	6	(3)	
No	49	(98)	118	(96)	167	(97)	0.7*
Natural family planning							
Yes	2	(4)	3	(2)	5	(3)	
No	48	(96)	120	(98)	168	(97)	0.6*
Withdrawal							
Yes	0	(0)	3	(2)	3	(2)	
No	50	(100)	120	(98)	170	(98)	0.6*
Breastfeeding							
Yes	0	(0)	1	(1)	1	(1)	
No	50	(100)	122	(99)	172	(99)	1.0*
Condoms							
Yes	47	(94)	111	(90)	158	(91)	
No	3	(6)	12	10)	15	(9)	0.6*
Dual method use							
Yes	6	(12)	32	(26)	38	(22)	
No	44	(88)	91	(74)	135	(78)	0.04
Emergency contraception							
Yes	0	(0)	0	(0)	0	(0)	
No	50	(100)	123	(100)	173	(100)	N/A
Oral contraceptives							
Yes	2	(4)	10	(8)	12	(7)	

	Less than 2 years		Greater than 2 years		All women (N=220)		Pearson Chi^2 p-value
	N	%	N	%	N	%	
No	48	(96)	113	(92)	161	(93)	0.5*
Injectables							
Yes	2	(4)	13	(11)	15	(9)	
No	48	(96)	110	(89)	158	(91)	0.2*
Implant							
Yes	3	(6)	13	(11)	16	(9)	
No	47	(94)	110	(89)	157	(91)	0.6*
Type of Implant							
Implanon	0	(0)	2	(15)	2	(13)	
Jadelle	3	(100)	11	(85)	14	(87)	1.0*
Intrauterine contraception							
Yes	0	(0)	0	(0)	0	(0)	
No	50	(100)	123	(100)	173	(100)	N/A
Female sterilization							
Yes	0	(0)	1	(1)	1	(1)	
No	50	(100)	122	(99)	172	(99)	1.0*
Male sterilization							
Yes	0	(0)	0	(0)	0	(0)	
No	50	(100)	123	(100)	173	(100)	N/A

*Fisher exact P-value

Table 3

Factors associated with having a Mistimed versus Intended pregnancy[a]

	Unadjusted PR	(95% CI)	Adjusted PR	(95% CI)
Time on ART greater than 2 years	1.13	(0.66 1.94)	1.07	(0.60 1.91)
Age	1.02	(0.97 1.08)	1.0	(0.93 1.07)
Number of living children	1.21	(1.0 1.47)	1.26	(0.98 1.63)
First pregnancy with partner	0.98	(0.57 1.66)	1.13	(0.66 1.93)

PR=prevalence ratio, CI=confidence interval

[a]Observations exclude inappropriate responses and nonresponses.

Table 4

Factors associated with having an Unwanted versus Intended pregnancy[a]

	Unadjusted PR	(95% CI)	Adjusted PR	(95% CI)
Time on ART greater than 2 years	1.34	(1.03 1.72)	1.08	(0.85 1.37)
Age	1.04	(1.02 1.06)	1.01	(0.99 1.04)
Number of living children	1.23	(1.15 1.32)	1.18	(1.09 1.28)
First pregnancy with partner	0.79	(0.63 0.98)	0.89	(0.72 1.08)

PR=prevalence ratio, CI=confidence interval

[a]Observations exclude inappropriate responses and nonresponses.