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The Impact of HIV on Fertility Aspirations in Uganda

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Population Studies Center
University of Michigan
Institute for Social Research

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ABSTRACT

This paper reports on a study of whether a women's personal HIV status, the presence of an HIV+ child in the household, or the presence of foster children in the household, has a measureable impact on a woman's desire for future offspring, net of parity, or son parity, in an area of Uganda with high fertility norms. A survey of 1,594 women age 18-49 yrs visiting outpatient services at Mbarara Regional Hospital in Mbarara Uganda was conducted from June through August 2010. Among survey participants, 59.7% were HIV-positive (HIV+) and 40.3% were HIV-negative (HIV-); and 96.4% of the HIV+ women were currently on anti-retroviral therapy (ART). Logistic regression models were used to investigate the relationships between fertility desires and HIV status, household, and social factors. We found that, despite high fertility norms in Uganda and almost universal use of ART in our sample, HIV+ women were significantly less likely to desire future childbearing relative to HIV- women, and pregnant HIV+ women reported their pregnancies were a problem. The findings suggest a potential unmet need for family planning among HIV+ women in Uganda.

INTRODUCTION

In the absence of anti-retroviral therapy (ART), women infected with HIV (Human Immunodeficiency Syndrome) have both a physiologically reduced risk of pregnancy, and an elevated risk of pregnancy loss (Ross 2004; Lewis 2004; Gray 1998). With ART becoming increasingly available across Africa, both fecundity and fertility desires among HIV+ women have rebounded (Meyer 2010; Maier 2009).

Yet even in countries where ART is widely available, social burden(s) associated with HIV/AIDS may nonetheless affect the desire for children. Detecting such affects requires a comparison of fertility aspirations between those with HIV and those without HIV, with attention to the context of underlying fertility norms, and possible differences in the household structures of those affected by HIV/AIDS. Sustained and generalized HIV/AIDS epidemics (such as that experienced by Uganda over the past 25 years) have resulted in increased HIV/AIDS-related mortality among young adults, a rise in widows and widowers, more household dissolution, female headed- households, and foster children in the household (Hosegood 2004; Taylor 1996; Mukiza-Gapere 1995). It is unclear how such broader HIV/AIDS-related changes at the household level may impact fertility desires.

Uganda was among the first countries in Africa to suffer from a high and generalized HIV epidemic, which peaked at an adult prevalence of more than 30 percent in the early 1990's (UNAIDS, 2008). The country has exceptionally high fertility norms, even for the continent of Africa, with recent demographic surveys reporting a total fertility rate of 6.7 children per woman (UDHS 2006). A recent qualitative report has also emphasized a high cultural demand for sons (Beyeza-Kashesya 2010). Uganda's HIV epidemic has declined precipitously, to an adult prevalence of 6.4% in 2009 (Uganda AIDS Commission, 2009); this decline is attributed to a combination of reduced incident infections through improved prevention behavior and viral load suppression by widespread use of ART, as well as high HIV-related mortality in the early years of the epidemic (Mbulaiteye et al 2002; Wawer et al 1997). ART is widely available in Uganda, including Mbarara (southwest Uganda) where this study was undertaken.

Only one recent study has compared the fertility desires of HIV- to HIV+ women in a context of widely available ART, and the findings point to a significant suppression of fertility aspirations by HIV positive status, irrespective of ART use (Kaida et al., 2011). That study was undertaken in South Africa, where fertility norms are among the lowest on the African continent (i.e. TFR equals 2.6, UN 2007). We have explored the same question in Uganda, a setting with extremely high fertility norms.

The objective of the present study was to investigate the impact of individual HIV status on women's desire for future children, and to investigate whether this association is shaped, in part, by other social consequences of the HIV/AIDS epidemic such as marital history, spousal HIV status, the presence of an HIV+ child in the household, or the presence of foster children.

METHODS

Survey data were collected from 1597 women age 18-49 yrs attending Outpatient clinics at Mbarara Regional Referral Hospital (MRRH) in Uganda, from May through July 2010. Participants were identified in the waiting rooms of two clinical services: the Immune Suppression Clinic (ISS), which serves HIV+ men and women, and the General Outpatient department which serves a patients with non-acute conditions. To facilitate comparison, we sought a recruitment target of 40-60 percent HIV+ women; we monitored self-reported HIV status among the enrolled participants on a rolling basis, and adjusted recruitment in the two clinics accordingly.

MRRH is a 260-bed hospital located in southwestern Uganda, approximately 260km from Kampala, the capital city. The hospital also functions as a teaching hospital for Mbarara University of Science and Technology Medical School. The Immune Suppression (ISS) clinic was established in 1998, and is currently one of three HIV treatment centers in Mbarara Municipality. The clinic serves approximately 13,000 patients, 65 percent of whom are female. Given the hospital's status as a regional referral hospital, the outpatient department receives more 1000 patients each week.

This was a cross-sectional, facility-based study; trained patient trackers approached women in the waiting rooms, and assessed their eligibility to participate in the study, based on whether or not they self-reported having had a prior HIV test (test outcome was not asked at recruitment). All recruited patients then proceeded to a common adjoining research area for their interviews. All women 18-49 years who had ever tested for HIV were eligible to participate in the study. A lower age limit of 18 years was chosen because this is the age of majority in Uganda, when a person can provide consent. Eligibility was not limited to any geographical boundaries or residential location.

Piloting and refinement of the survey instrument and procedures included an initial 210 interviews at the ISS and outpatient clinics, and 3 extended participatory reviews by the entire study team. Four different components were appraised and adjusted: recruitment, location of interviews, the presence of another member of the research team in the interviewing room, and the content and sequence of the questionnaires. Three successive iterations were undertaken before process and content were finalized. The 210 pilot interviews are not included in the final 1597 interviews.

Five trained Ugandan team members conducted interviews in Runyakore, Luganda and English, the predominant languages in Mbarara. Women were interviewed for approximately 30 minutes on their reproductive history, fertility desires, sexual and marital relationships, experience of HIV/AIDS, and numerous attitudinal scales regarding HIV and fertility. No identifiable information was collected to ensure anonymity of survey responses; respondents were assigned randomly generated numbers, and interviews were conducted in closed offices to ensure privacy.

Data Analysis and Statistics

Survey data was coded and entered into ACCESS in Mbarara within 24 hours of collection, allowing immediate review of entries, and quality control on site. Data were then transferred into SAS for statistical analysis, and a combination of descriptive statistics, stratified analyses and multiple logistic regression was undertaken.

During piloting it became clear that women did not distinguish between being legally married and living as if married, and therefore responses were coded as "married or living with a partner as if married", without distinction of legal marital status. Descriptive statistics are presented for all women, but the analysis of fertility aspirations was restricted to women who were "married or living with a partner as if married'.

Women self-reported HIV status; personal awareness of HIV status is nearly ubiquitous in Mbarara at this time, because HIV testing is implemented within the course of routine clinical care in all clinics of this regional facility. In addition, open discussion of CD4 counts is routine, even in public discourse among friends. In all, 798 of married women (77.6 %) reported knowing the HIV status of their partners. These couple-based data were intended to allow analysis of the effects of female HIV status, with control for HIV status in the male partner; however, reported spousal status was highly correlated with women's status, and the discordant cells were too small (e.g. n=18 for HIV- women with an HIV+ spouse), to allow both variables in the model without due concern for collinearity.

Interest in future childbearing was asked in two ways: through a direct question asking "Would you like to have another child / children in the future?" (yes/no); and through a 5-point Likert scale asking women whether they agreed with the statement: "I still want to give birth to more children." Likert scale responses were re-coded as yes/no (agree or strongly agree=yes; all others=no), and regression analyses were run in duplicate using both the direct question responses, and the recoded Likert scale responses, as the outcome variable; the analyses generated nearly identical outcomes, affirming the internal consistently of the responses. For brevity, we only present the regression results based on women's responses to the direct question.

The principle analysis assessed the desire for future offspring in HIV-infected and HIV-uninfected women. Tests of statistical inference used 95% CI of the odds ratio and chi-square (χ^2) tests. To adjust for differences in demographic characteristics and behavior between HIV+ and HIV- women, we estimated odds ratios by multiple logistic regression. Potential confounders included age (as a categorical variable); overall parity (as a continuous variable); son parity (none vs 1+); foster children <18 years living in the household (none vs any); household income (as a categorical variable); women's educational attainment (none or any primary vs any secondary+); second marriage (vs first marriage); and presence of an HIV+ child in the household (yes/no). Goodness of fit was assessed by the log-likelihood ratio. Given the collinearity of overall parity and son parity, we present separate models with each of these variables.

Ethics

Permission to undertake the study was granted by the Faculty of Medicine Research and Ethics Committee, and the Institutional Ethics Review Board of Mbarara University of Science and Technology; the University of Michigan Institutional Ethics Review Board; and the Uganda National Council for Science and Technology Institutional Review Committee. Consents were secured prior to interview.

RESULTS

1597 women undertook the survey, with high participation among all women approached; 3 cases were removed for incomplete data, leaving a total sample of 1,594 women. Based on self-reported HIV status, 59.7% (951) of participants were HIV+, and 40.3% (643) were HIV-. Consistent with recruitment undertaken within a regional referral hospital offering delivery of ART, 96.4% of HIV+ women were currently taking ART. HIV+ women were slightly (but significantly) older than HIV- women; they had lower educational attainment and lower household incomes after controlling for differences in age (Table 1).

Differences in Marital Status and History

HIV+ women were less likely to be currently married or living with a partner as married, even after controlling for age (53.6% vs 82.1%, χ^2 (df=1)=100.2, p<.0001) (Table 1). The lower rates of current marriage among HIV+ women reflected, in part, the higher probability that an ever-married HIV+ woman had been divorced or separated (31.9% versus 18.1%) or had ever been widowed (21.2% versus 4.1%), relative to ever-married HIV- women (χ^2 (df=1)=88.7, p<.0001). But women who were HIV+ were also significantly less likely than HIV- women to have ever been married (83.4% versus 90.2%, respectively) (Mantel-Haenzel age-adjusted comparison of odds: χ^2 (df=1)=18.6, p<.0001).

Among currently unmarried women; 46.4% of HIV+ and 17.9% of HIV- women, there was an equal likelihood of women having ever been separated or divorced, but HIV+ women were three times more likely to have ever been widowed (30.3% versus 9.1%, χ^2 (df=1)=8.23, p=.016).

Reflecting their higher rates of marital dissolution and widowhood, currently married HIV+ women were significantly more likely than HIV- women to be in a second marriage (29.4% versus 15.7%, age-adjusted χ^2 (df=1)=16.3, p<.0001).

A majority of married women (76% overall), reported knowing the HIV status of their husbands: of these 82.9% were HIV+ and 71.2% were HIV- women. Among the married women, 82.5% of HIV+ women reported that their husbands were also HIV+, while only 4.7% of HIV- women reported their husbands were positive for HIV. Comparatively few women (n=155 overall), reported having an HIV+ child of their own in the household, and all of these women were HIV+.

Women with HIV had lower educational attainment, with only 30% reporting more than primary education, whereas nearly half (49.6%) of the HIV- women had achieved this level of schooling (χ^2 (df=1)=100.2, p<.0001). Consistent with lower rates of marriage or live-in partners, HIV+ women also reported a lower distribution of household income than HIV- women (χ^2(df=1)=53.4, p<.0001).

Differences in Household Composition

The average lifetime parity of women who were HIV+ was almost a full child greater than for HIV- women, but this difference reflected their slightly older age, and there was no difference in age-adjusted parity (p=0.797). Approximately half of all women (54.3%) reported caring for children to whom they had not given birth, which was marginally higher among HIV+ women (Table 2). Almost a third of all women (31.5%) had foster children under age 18 living in their household, and a third (29.8%) provided financial support to foster children outside the household; there were no differences between HIV+ and HIV- women in the likelihood of caring for foster children.

The overall majority of women in the sample (61.8%) lived in monogamous households, which included 44.5% living as monogamous couples with children, and 17.3% in extended monogamous households, composed of monogamous couples with children and other family members. An additional 26.2% of the sample lived in single parent households; this included 17.6% composed of a woman and her children, and another 8.6% extended single parent households including a woman, her children, and other family members (Table 3). Household composition was markedly different for HIV+ and HIV- women in this sample,

with HIV+ women almost four times as likely to be living in a single parent household (37.2%, versus 10.2% among HIV- women). Correspondingly, a greater proportion of HIV- women (78.8%) lived in monogamous (or extended monogamous) households, compared to 50.4% of HIV+ women. Single adult households were extremely rare in this sample, representing only 3.6%.

HIV and Fertility Aspirations

In an analysis restricted to women who were married or living with someone as if married, the desire for future children was significantly lower among women who were HIV+ relative to HIV- women. This difference remained significant after controlling for the difference in age between HIV+ and HIV- women (Table 4). These differences in fertility aspirations did not reflect underlying differences in fertility ideals that might have preceded HIV infection. Women were asked their ideal numbers of sons and daughters before starting a family, and the distributions did not differ by HIV status, with a majority of both HIV+ and HIV- women hoping for two sons and two daughters (data no shown).

Non-pregnant HIV+ women were more likely to report that a pregnancy would be a "big problem", but almost half of all HIV- women had a similar response (60.2% among HIV+ women, versus 46.5% among HIV- women), and while this difference was statistically significant (age-adjusted X^2 (df=1) =17.2, p=.0006), when those reporting that a pregnancy would be a "small problem" were added, the differences between HIV+ and HIV- women were negligible.

More concerning was that 36.5% of currently pregnant HIV+ woman felt the pregnancy was a "big problem", and another 12.2% a "small problem"; this contrasted sharply with responses among HIV- women, for whom only 11% found their pregnancy a "big problem" and only 8% a "small problem" (age-adjusted X^2 (df=1) =18.4, p<.0001).

Marriage partners of HIV+ women were less likely to want more children than partners of HIV- women, at least as reported by the women themselves (Table 4). Overall, three-quarters of all couples agreed on whether or not to have more children, but agreements were higher among HIV- couples (81.0% among HIV- couples versus 69.3% among HIV+ couples); again, these data were based on women's reports of men's fertility desires. The other notable difference between couples of HIV+ versus HIV- women was that couples of HIV+ women were far more likely to both agree to have no more children (39.8% vs 23.3% among couples with an HIV- woman). HIV+ women were also more likely to report discordant preferences in which they wanted no more children, but their partner wanted more kids (12%, compared to 5.2% among the couples of HIV- women).

Predictors of Fertility Aspirations

Univariate Analysis

The log odds of wanting more children are presented in Table 5, with unadjusted odds in the first column, and adjusted odds thereafter. As shown, a woman's HIV+ status is associated with an almost 70% lower likelihood of wanting more children. Other HIV-related variables show similarly strong effects, including having an HIV+ spouse, or an HIV+ child in the household. Likewise, the presence of a foster child under age 18 living in the household was associated with lower fertility aspirations, and in this setting having one or more sons was associated with a significant reduction in the desire for children. Consistent with research from many societies, there was a suppression of fertility aspirations with age and parity, while income and education were associated with a greater interest in having more children.

Multivariate Analysis

After adjusting for covariates, women's HIV status remained significantly negatively associated with the desire for more children (for HIV+ women, AOR=0.46, 95%CI 0.33,0.65), as did the highest age category (40+ years), overall parity and the presence of a foster child in the household; a higher level of income (150,001+) continued to have a positive association with fertility aspirations. Several variables examined in the unadjusted analysis were collinear, and therefore some were selectively excluded in the multivariate models. For example, spouse's HIV status corresponded to women's HIV status in 70% of the cases; therefore only women's HIV status was included.

Son parity and overall parity were collinear, but we were especially interested in the extent to which son preference in Uganda may affect other determinants of fertility aspirations: we present 2 multivariate models, one including overall parity, and the other including son parity (Table 5). Both variables were significantly associated with desire for more children but son parity had the greater impact (1+son versus 0 sons, AOR=0.31, 95%CI 0.23-0.44) on future desire for children. When son parity was substituted for overall parity, the association with women's age became more systematic and was statistically significant for more of age categories, suggesting overall parity was a negative confounder for age. Income continued to be positively associated with the desire for more children, although this variable had less impact when son parity was substituted for overall parity in the model. The presence of a foster child under 18 in the household was consistently associated with a decline in fertility aspirations, net of all other factors (with a foster child in the HH, AOR=0.68; 95% CI=0.47,0.92).

DISCUSSION

Our findings indicate that positive HIV status is associated with lower fertility aspirations among women in a setting where fertility norms are among the highest worldwide, despite almost universal use of ART. The important association between HIV status and the desire for children does not eclipse the role of other social determinants of fertility aspirations, including the need for a son, a consistent positive effect of greater household wealth, and a decline in fertility desires when there are foster children in the household.

Restricting our analysis of fertility aspirations to women who were married or living with someone as if married, enables us to examine women's fertility aspirations within a context of marital-like stability, where we would argue that fertility desires are a more reasonable proxy for action. It also enabled us to examine the effect of first versus second marriage and spousal HIV status within a context of presumed a priori conjugal engagement.

Prior literature on the impact of HIV on fertility in Africa can be divided into two distinct historic chapters: before and after the availability of ART. In the former case, early reports affirmed the clinical impact of HIV/AIDS on fertility and pregnancy loss (Gray et al., 1998), including an association between fertility and CD4 levels (Nebei et al., 2001), and negative clinical affects of pregnancy among HIV+ women (Kumar 1997). In the absence of signs and symptoms, the impact of HIV on fertility intentions was found to vary considerably by context and location (Nakayiwa 2006; Kirshenbaum et al 2004; Rutenberg et al 2000; Allen 1995). It was affected by women's awareness of the risks of perinatal transmission, their confidence in the emerging PMTCT interventions (Kirshenbaum et al 2004; Rutenberg et al 2000), and simply by underlying beliefs about the importance of childbearing (Nakayiwa 2006). An earlier study in Rwanda, for example, described a marginal decline in pregnancies among HIV+ women (in the absence of ART), shaped more by whether or not women had achieved a desired fertility norm of four children and less by counseling (Allen et al 1995).

As access to ART has increased, several studies have focused on fertility desires and/or fertility exclusively among HIV+ women, describing the rebound of fertility with ART (Meyer 2010; Maier 2009). This includes a 2005-06 study of 501 HIV+ women in Mbarara Uganda (i.e. the same location as the current study), which found fertility desires positively associated with ART use, and inverse to WHO stage of illness (Maier 2009).

Much less attention has been given to estimating whether experience with HIV or AIDS, even in a context of ART, differentiates women with regard to their fertility aspirations.

Kaida et al (2011) documented such an association in South Africa; here we report similar findings in Uganda. The magnitude of the effect of HIV positive status is slightly greater in South Africa than in Uganda, in both bivariate and multivariate models; this may reflect the higher underlying fertility norms in Uganda. Our sample size is somewhat higher, which may explain the greater differentiation by age in our adjusted models, but the overall message of these two studies is very similar, i.e. that after controlling for age, parity, income and education, HIV positive status is associated with a lowering of fertility aspirations. In Kaida et al's study, use of ART didn't change that association; in our study the association was observed despite nearly ubiquitous use of ART (i.e. among 96%).

In this study we have also made an effort to explore whether or not other marital and household consequences of the HIV/AIDS epidemic are affecting fertility aspirations. In bivariate analysis saw that having an HIV+ child, having an HIV+ spouse, having a foster child in the home, or being in a second marriage had a negative effect on fertility aspirations. However, in the multivariate analysis most of these effects are no longer statistically significant; both having an HIV+ child and second marriage are borderline, and each of the effects were in the expected direction. In each model having a foster child in the home was consistently associated with a reduced likelihood of wanting more children. Foster children cannot be attributed to the AIDS epidemic, but in a country with high AIDS-related mortality, a proportion of foster children are likely to result from AIDS-related deaths. The burden of caring for AIDS orphans has been shown to curtail fertility in Zambia (Rutenberg et al 2000).

Bearing sons is important in many countries, including Uganda (Beyeza-Kashesya 2010), and we found that having 1 or more sons lessened women's fertility aspirations net of other factors, including HIV status. The extent, to which this association reflects a simple parity effect, without special regard for sons, will be examined through further analysis of daughter parity. There is some evidence that having sons lessens the urgency of further childbearing in Africa (Campbell 1997).

A limitation of the present study is that the HIV status is self-reported. Despite an atmosphere in which many clients are observed freely discussing their HIV status and CD4 counts in waiting rooms, the risk of misclassification is nonetheless real, and raises the possibility that some proportion of those 643 women reporting they were HIV negative were, in fact HIV positive. If that were the case, the statistically significant findings reported here would likely represent a conservative estimation of the true differences.

CONCLUSIONS

Our findings suggest a strong association between positive HIV status and lower fertility aspirations in Uganda, and this association persists despite almost universal use of ART in our sample. The lower desire for children is also shaped by the presence of foster children, and whether or not a woman has born a son. The responses of pregnant HIV+ women strongly suggest that they have an unfulfilled need for comprehensive family planning services. ART may be restoring fecundity and fertility desires for many women, but HIV is still exerting a measureable negative effect on the fertility aspirations of women.

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Table 1. Age distribution, educational attainment, marital status, marital history, spousal HIV status, and child HIV status among HIV+ and HIV- women (n=1594), Mbarara, Uganda 2010.

	Total (n=1,594) **% (n)**	**HIV+** (n=951) **% (n)**	**HIV-** (n=643) **% (n)**
Age (years)			
≤ 24	23 (364)	12 (113)*	39 (251)*
25 - 29	22 (354)	19 (184)	26 (169)
30 - 34	22 (351)	25 (236)	18 (115)
35 - 39	15 (242)	20 (194)	8 (48)
40+	18 (284)	24 (224)	9 (60)
Mean Age, years (SD)	*31.1 (7.6)*	*33.3 (7.2)*	*27.8 (7)*
Educational attainment			
No schooling (ref)	11.4 (182)	15.8 (151)	4.8 (31)
Some Primary	54.4 (867)	58.7 (558)	47.9 (308)
More than Primary education	34.2 (545)	25.4 (242)	47.1 (303)
		X^2 (df=1)=57.5, p<.0001*	
Monthly Household Income (Ush)			
0-50,000	41.8 (664)	49.8 (472)	29.9 (192)
50,001-150,000	28.2 (448)	26.0 (246)	31.3 (201)
150,001+	30.1 (478)	24.2 (229)	38.8 (249)
		X^2 (df=1)=53.4, p<.0001*	
Currently married/Living together as married	65.1 (1039)	53.6 (510)	82.1 (528)
		(X2(df=1)=100.2, p<.0001)*	
Current marriage is a 2nd marriage	22.5 (233)	29.4 (150)	15.7 (83)
		(X2(df=1)=16.3, p<.0001)*	
Did the first marriage result in:			
separation/divorce	77.9 (176)	75.0 (108)	82.9 (68)
widowhood	22.1 (50)	25.0 (36)	17.1 (14)
		(X2(df=1)=1.56, p=.212)*	
Currently *unmarried* women	34.9 (556)	46.4 (441)	17.9 (115)
Of these, how many were:			
ever separated/divorced	33.4 (182)	33.3 (145)	33.6 (37)
ever widowed	26.1 (142)	30.3 (132)	9.1 (10)
never married	40.6 (221)	36.3 (158)	57.3 (63)
		X^2 (df=1)=8.23, p=.0163*	
Ever-married women	86.1 (1374)	83.4 (793)	90.2 (580)
		X^2 (df=1)=18.6, p<.0001*	
Of these, how many were:			
ever separated/divorced	26.1 (358)	31.9 (253)	18.1 (105)
ever widowed	14.0 (192)	21.2 (168)	4.1 (24)
		X^2 (df=1)=88.7, p<.0001*	
Spouses HIV Status[1]			
HIV positive	35.2 (362)	68.4 (344)	3.4 (18)
HIV negative	42.4 (436)	14.5 (73)	69.0 (362)
don't know	22.5 (231)	17.1 (86)	27.6 (154)
		X^2 (df=1)=448.4, p<.0001*	
Women with at least one child HIV+	9.7 (155)	**16** (155)	**0** (0)
		X^2 (df=1)=102.8, p<.0001*	
Women currently on Antiretroviral Therapy (ART)	NA (917)	96.4 (917)	NA

*A Cochran-Mantel-Haenszel Test was run to generate an age-adjusted chi-square comparing women by HIV status.

Table 2. Number of children ever born, foster children cared for, and children currently in the households of HIV+ and HIV- women (n=1994), Mbarara, Uganda, 2010.

	Total (n=1594)	**HIV+ (n=951)**	**HIV- (n=643)**
Mean No. of birth children in lifetime	3.0 (2.0)	3.4 (2.0)	2.5 (2.0)
		p=0.797**	
Women providing care for non-birth children? (in or outside the HH) (%)	54.3 (866)	59.5 (565)	47.0 (301)
		p=.0382**	
No. of women with foster children < age 18 yrs living in the HH	31.5 (502)	34.4 (327)	27.2 (175)
		X^2(df=1)=.565**, p=.453	
Providing financial support to foster children outside the HH	29.8 (475)	32.1 (305)	26.5 (170)
		X^2 (df=1)=1.14**, p=.285	
Mean no. children* in HH <5 yrs	0.89 (0.9)	0.81 (0.8)	1.02 (0.9)
		p=.0003**	

* Includes all children in the HH – both birth and foster children.

**Comparison of age-adjusted means, by HIV status.

Table 3. Types of households, HIV+ and HIV- women (n=1594), Mbarara, Uganda, 2010

Household Type	**Total** (n=1594)	**HIV+** (n=951)	**HIV-** (n=643)
Single Householder (woman alone)	3.6 (57)	3.7 (35)	3.4 (22)
Single Parent HH (woman+children)	17.6 (279)	24.6 (232)	7.4 (47)
Extended Single Parent HH (woman+children+other family	8.6 (137)	12.6 (119)	2.8 (18)
Monogamous HH (woman+husband+children)	44.5 (705)	34.6 (326)	59.2 (378)
Extended Monogomous HH (woman+husband+children+other family)	17.3 (274)	15.8 (149)	19.6 (125)
Other Collective HH	8.3 (131)	8.7 (82)	7.7 (49)
		X^2 (df=1)=100.8, p<.0001	

Table 4. The impact of HIV status on the desire for children in the future, and whether or not a future, or a current pregnancy, is regarded as a problem. Sample includes only women who are married, or living with someone as if married (n=1039) Mbarara, Uganda, 2010.

	Total (n=1039) % (n)	**HIV+** (n=510) % (n)	**HIV-** (n=528) % (n)
Wants more children in future	42.4 (440)	27.7 (141)	56.4 (298)
		(X^2(df=1)=39.97, p<.0001)*	
Would pregnancy be a problem?[1]			
A big problem	53.5 (351)	60.2 (204)	46.5 (147)
A small problem	14.6 (96)	8.6 (29)	20.9 (66)
No problem at all	26.1 (171)	24.5 (83)	27.9 (88)
Cannot get pregnant/ Not having sex	5.8 (38)	6.8 (23)	4.8 (15)
		(X^2 (df=1)=17.42, p=.0006)*	
Currently Pregnant	22.8 (237)	14.5 (74)	30.9 (163)
Was this pregnancy a problem?[2]			
A big problem	19.0 (45)	36.5 (27)	11.0 (18)
A small problem	9.3 (22)	12.2 (9)	8.0 (13)
No problem at all	71.7 (170)	51.4 (38)	81.0 (132)
		(X^2 (df=1)=18.4, p<.0001)*	
Spouse/Partner wants more children in future	45.9 (477)	34.3 (175)	57.2 (302)
		(X^2 (df=1)=21.2, p<.0001)*	
Agreement between partners about future children	885 couples	407 couples	477 couples
Both want future children	44.6 (395)	29.5 (120)	57.7 (275)
Both do not want future children	30.9 (273)	39.8 (162)	23.3 (111)
Discordant W (No) & M (Yes)	8.4 (74)	12.0 (49)	5.2 (25)
Discordant W (Yes) & M (No)	4.8 (43)	4.7 (19)	4.8 (23)
Others	11.3 (100)	14.0 (57)	9.0 (43)
		X^2 (df=1)=35.3, p<.0001	

*A Cochran-Mantel-Haenszel Test was run to compare the age-adjusted odds of each outcome, by HIV status

Table 5. The unadjusted and adjusted log odds of ***wanting more children*** in the future (Odds Ratios, and 95% Confidence Intervals). Analysis includes all women currently married or living with someone as if married (n=1039). Mbarara, Uganda 2010.

	Unadjusted OR (95% CI)	Adjusted OR (95% CI) N = 925	Adjusted OR (95% CI) N = 938
HIV Status			
HIV- (ref) (528)			
HIV+ (510)	0.295 (0.228-0.382)	0.461 (0.326 - 0.653)	0.474 (0.341 - 0.659)
Age			
≤ 24 (ref)			
25 - 29	0.559 (0.394 – 0.793)	1.108 (0.722 - 1.700)	0.764 (0.513 - 1.138)
30 - 34	0.287 (0.199 - 0.414)	0.979 (0.609 - 1.573)	0.426 (0.280 - 0.649)
35 - 39	0.124 (0.046 – 0.204)	0.193 (0.622 - 2.289)	0.276 (0.159 - 0.482)
40+	0.071 (0.040 – 0.125)	0.346 (0.160 - 0.750)	0.098 (0.049 - 0.200)
Educational Attainment			
Any primary (ref)			
Secondary+	1.892 (1.453 - 2.465)	1.004 (0.709 - 1.421)	1.363 (0.984 - 1.889)
Parity (continuous)	0.473 (0.425- 0.526)	0.505 (0.439 - 0.581)	N/A
Son parity (categorical)			
0 (ref)			
1	0.249 (0.184 - 0.337)	N/A	0.313 (0.225 - 0.435)
Foster child <18 in HH (categorical)			
0 (ref)			
1	0.525 (0.399 – 0.691)	0.638 (0.450 - 0.904)	0.657 (0.472 - 0.915)
Household Income			
0-50,000 (ref)			
50,001-150,000	1.430 (1.039 – 1.969)	1.306 (0.872 - 1.958)	1.109 (0.754 - 1.632)
150,001+	1.990 (1.461 – 2.711)	2.006 (1.325 - 3.036)	1.590 (1.075 - 2.354)
Partner HIV Status			
HIV- (ref)			
HIV+	0.249 (0.184 – 0.338)	N/A	N/A
Don't know	0.594 (0.431 – 0.820)		
HIV+ Child in HH			
No (ref)			
Yes	0.320 (0.190 – 0.539)	0.740 (0.387 - 1.415)	0.610 (0.324 - 1.149)
Current Marriage			
First (ref)			
Second	0.602 (0.444 – 0.818)	0.987 (0.664 - 1.467)	0.805 (0.550 - 1.177)



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