Sexual behaviour and Reproduction Intentions among People Living with HIV/Aids and are on Antiretroviral Treatment in Uganda

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Abstract

This paper examined the sexual behavior and reproductive intentions of People with HIV/Aids who are on Antiretroviral Treatment. The treatment has improved the health and survival of People with HIV/Aids, which may have changed their sexual behaviour and reproduction intentions and decisions. Questionnaires and Focus Group Discussions were used to collect information on sexual activity, reproductive intentions and characteristics of PHAs, and the logistic regression was used for analyses of data. The results showed that 73% and 63% of males and females respectively were sexually active and 35% of males and 28% of females reported intention to have children. Older, never married, those with 2 or more children, those in domestic chores and students were less likely to be sexually active and intent to have children. Multiple partnering and none use of HIV prevention were associated with sexual activeness and intention to have children. This findings call for innovation in HIV prevention and reproduction for People with HIV/Aids.

Background to the study

Until 2000, HIV/Aids programmes in sub-Saharan Africa focused on prevention. These programmes were implemented through massive education of the population about the principle routes of HIV infection as heterosexual activity. The methods of prevention promoted were the ABC approach. Abstinence was promoted mostly among young people and those with no stable sexual partners, faithfulness among the married and those with stable sexual partners and condom use was promoted among those who could not abstain as well as be faithful. In the last decade, although prevention remained a top priority in the region, Aids care and support has become increasingly important mainly because of: first, the number of Aids cases was increasing rather rapidly; secondly the impact of Aids mortality was also increasing rapidly including the burden of ophanhood and growing numbers of pediatric Aids; thirdly the need to keep PHAs alive as a means of mitigating many impacts of Aids especially on the family; and lastly the increasing availability of Highly Active Antiretroviral Treatment (HAAT).

Antiretroviral medication has greatly improved the health status and life expectancy of people infected by HIV. It has also greatly reversed capabilities that would otherwise be gradually lost due to the burden of illness such as social and economic viability and sexual activity. Studies in America and Europe indicated that the introduction of antiretroviral treatment has enabled PHAs to regain their sexual viability. This was sometimes associated with increased incidence of risky sexual behaviour involving people with the virus (Stolte, et al 2004). This is because of the belief that ART reduces the transmissibility of HIV by reducing the virus load.

There is growing evidence that suggests that people on ART are increasingly becoming sexually active and many of them are involved with partners who are HIV negative (Aloisi et al, 200). Some of these people practice unsafe sexual behaviour patterns such as not using condoms and having multiple sexual partners (Ostrow, et al., 1999, Huebner, et al., 2001, Tun, 2003, Vanable et al., 2003 and Crepaz, 2004). Katz (2002) and Girardi et al (2001) found that there were increase in unprotected sex and multiple partnering among individuals

who were sero-positive and were on HAAR. Similarly, McCowan, (2004) asserted that unprotected sex was associated with use of HAART among HIV sero-positive individuals. Wilson, et al., (2002) also found that women whose ART adherence level was low were more likely to report that they had engaged in unprotected sexual activity.

In Uganda Bunnell, et al., (2006) found no evidence suggesting that ART is associated with risky sexual practices. It was however noted that indeed people on ART were increasingly becoming sexually active, but risky sexual behaviour reduced by 70%. It was also found that most risky sexual acts occurred among married couples. This is plausible if these couples have intentions to have children and or are in concordant relationships. A study by Bateganya, et al., (2005) also found that that ART was not associated with increased sexual risk behaviours but was associated with high rates of disclosure and more consistent condom use. However, there is a new concern that ART may predispose individuals to risky sexual behaviour that may lead to further spread of HIV.

HIV prevention and Aids care shrouded fertility and reproduction concerns among PHAs. It was generally presumed that people living with HIV would not desire to have children and in fact most HIV/Aids programmes discouraged childbearing among PHAs and childbearing was often considered accidental or due to ignorance of their HIV/Aids status. Until 1996 in the developed countries, and 2000 in most of sub-Saharan Africa, HIV infected persons were of certain early death and nearly had no known chance of reproduction because of the high risk of transmitting the virus to their sexual partners and their unborn babies. This situation has changed with the introduction of antiretroviral therapy, which has not only improved the health status of PHAs, but enabled them to live much longer. ART has also made the Prevention of Mother to Child Transmission of HIV (PMTCT) possible, reducing transmission rate to as low as 2% (International Parental HIV group 1999). The gains in health and economic self reliance, and PMTCT could have made PHAs rethink their reproductive decisions and want to bear children.

Many studies have outlined the challenges posed by HIV in reproduction and the need to review reproductive policies and practices to accommodate the needs of HIV positive people is getting overdue. From the late 1990s there have been calls to change public health opinion against reproduction by PHAs (Faden and Kass, 1996). There is evidence that some PHAs continued to bear children knowingly regardless of the risk of mother to child transmission and the risk of transmitting HIV to their spouses. Advising people with HIV not to have children probably caused non disclosure to spouses as well as exposed many children to HIV infection. In-depth interviews with HIV positive women in Ivory Cost revealed that 12 of the 15 women conceived against counseling not to do so (Akribi et al, 1999).

Stigmatizing PHAs who knowingly bear children is a common occurrence even among professional health workers. Bedimo (2002) noted that it is apparent among public health practitioners that PHAs should not bear children. Coopper et al (2005) also noted that childbearing by PHAs is often seen as being irresponsible. In Zambia, those who seek to reproduce also faced resentment from fellow PHAs (Bruyn, 2002). This perception is an abuse of the rights of PHAs to enjoy what they value and risk furthering improvements in public health. It is possible that this perception undermined HIV prevention strategies especially in marriage. Women who had not disclosed their HIV status were more likely to reproduce than those who did (Cooper et al, 2005). In Uganda, there has been an increase in HIV infection among married couples (MoH 2006; UAC 2006). Research elsewhere among

PHAs has revealed a number of reasons including age, marriage and childlessness for the desire to bear children, posing new medical, ethical and legal challenges (Garcia, 2002).

HIV infection occurs mostly among the young and sexually active people most of whom either have just started their reproductive carrier or are just about to begin. It should also be noted that many children born with HIV or acquired the infection in childhood are now adults and may be sexually active and may want to become parents. Most of the PHAs who expressed the desire to have children willingly are relatively young compared to those who do not want to have children (Ranjan, 2006; Ogilvie et al. 2007). Evidence in the United States of America among PHAs under 30 years of age showed that about 28-29% of HIV positive men and women wanted to have children, and 61% of women and 59% of men reported that they would like to have one or more children in future (Chen, 2001). A study in Zimbabwe revealed that childbearing decision among women PHAs depended largely on their age (Feldman and Maposhere, 2002).

Marriage is an important factor in childbearing decisions, regardless of HIV. In most societies the primary purpose of marriage is to bear children and extend lineages and therefore marriage without children is often resented (Ntozi, 1999). The failure to bear or delay childbearing in marriage may results in a lot of pressure on the couple and may lead to dissolution of marriage (Baryamutuma, 2007). Women are known to bear the wrought of childlessness more than men and are therefore often under a lot of pressure from both sides of the marriage to bear children, HIV withstanding. In Taiwan Nai-Ying and Muek (2003) studied 14 couples and found that some of them have reproduced after HIV diagnosis and the decision to have children involved relatives and friends. In Cape Town, South Africa, HIV positive married women reported strong family pressure to reproduce (Cooper et al, 2005). In Canada Ogilvie et al, (2007) found that women with regular partners were associated with increased likelihood of reporting the intention to have children in future.

The number of children ever born has traditionally played an important role in fertility decisions. Demographic evidence clearly shows that couples would strive to have children as long as they have not achieved the desired number and composition of children surviving. Conversely spouses would demand for children from their partners as long as they have not individually achieved the desired number and composition of children. This is expected to be even more for people with HIV who have children who are infected or have no children at all and have no access to assisted reproductive technology. Klein at al (2003) found that HIV positive persons who had no children were going to greater length to have children including risking their health. Similarly, Rudin et al (1998) in a study of a cohort of HIV positive women found that 43% had actually planned getting pregnant and had no plans to terminate the pregnancy on account of HIV. In South Africa, Myer et al (2007) also found that PHAs on ART with fewer children desired to have children.

The advent of highly active antiretroviral therapies has helped improve the health status of AIDS patients. As a result, people infected by HIV and those who develop AIDS can now expect to live long and healthier lives. At the moment, it is not known how long a person on ART will live, but there is evidence that some people have already lived for more than 2 decades with HIV. It is therefore likely that HIV infected people can reconsider their childbearing options and decisions (Sonnenberg et al, 2005; Landon et al, 2007). A study done by Kirshenbaum et al (2004) in the USA found that pregnancy termination among PHAs reduced with access to ART with the majority reporting improvements in their health status as a reason for not terminating their pregnancy.

In Uganda where ART has a short history it is important to explore childbearing desires among PHAs more broadly. In 2002, UNAIDS estimated that approximately 5000 to 10,000 people were on ART in Uganda. By mid 2004, about 25,500 people were estimated to be on ART (MoH, 2004) and through the Drug Access Initiative, which started in 1998, and the Accelerating Access Initiative, which started in 2000, grants from various sources including, the Multi country HIV/AIDS Program (MAP), the Presidential Emergency Plan for AIDS Relief (PEPFAR), the Global Fund for AIDS, TB and Malaria (GFATM), and Non Governmental Organizations and research projects, many Ugandan PHAs needing ART now have access to the treatment. This paper therefore presents findings of an investigation into the factors associated with sexual behaviour and child bearing intentions among PHAs who are on antiretroviral treatment in Uganda.

Methodology of the study

This paper examined the factors that may be associated with sexual and reproductive intentions among males and females living with HIV and have started ART in Uganda. The study was based on interviews with 413 PHAs on ART involving 141 males and 272 females. The study was done among PHAs attending treatment at Nsambya and Mulugo hospitals, which are the two most commonly visited referral hospitals in Uganda where ART rollout has a wide coverage and PHAs are more effectively organized. A patient attending treatment at these hospitals and clinically qualifies to start ART is provided with free ART. The sample for the quantitative data was randomly selected from a list of ART beneficiaries.

The data for the study was collected using structured questionnaires and Focus Group Discussions. The questionnaire collected data on sexual activity status, reproductive intentions, and health status of PHAs at the time of the survey, duration on ART, HIV status of spouses or sexual partners, HIV prevention practices and number of sexual partners, and demographic and social characteristics of the respondent. The main characteristics of respondents collected include sex, age, marital status, children ever born, religion, place of residence, occupation and level of education. These data was collected to enable analysis of patterns of sexual behaviour and reproductive intentions of PHAs who are on ART.

On the other hand, focus group discussions (FGD) were used to collect qualitative data. Two focus group discussions were constituted among the selected PHAs one for Males and another for females. The focus groups consisted of 8 males and 10 females. Qualitative data collection focused on reasons for sexual activity, reasons for given reproductive intentions, attitudes on HIV prevention strategies, and general health behaviour and practices among PHAs.

In collecting data on sexual activity status and reproductive intentions, a person was considered to be sexually active if he or she had sexual intercourse in the three months preceding the study regardless of the type of partner; and a person was also considered to have intentions of having children if he or she reported the intention to father or give birth to a child in the future respectively.

Characteristics of study population

The selected demographic and social characteristics of the respondent are presented in Table 1. Distribution by sex shows that 34% and 66% of PHAs were males and females respectively

indicating that females were considerably more than males. The table further shows that males were older than females with 49% of males being older than 40 or more years compared to 37% of females in the same age group. Conversely there were more females (24%) in the youngest age group of less than 30 years than males (12%). The table also shows that 66% of males and 46% of females were married. The proportion never married was higher among males (17%) than females (11%). Conversely females were more likely to be widowed than males.

The importance of children ever borne cannot be understated. In this regard the number of children ever born by PHAs was investigated and presented in Table 1. The table shows that 11% of male and female PHAs had no children while 13% of males and 24% of females had at least one child. The majority of PHAs with two or more children were males.

As part of assessing the health impact of ART, the health status of PHAs at the time of the study was probed and the result presented in Table 1 indicates that only 41% of males and females alike reported fairly good health status. The HIV status of spouses of PHAs was also probed. The result shows that 32% of males and 35% of females were concordant. Only 11% of males and 7% of females were discordant. More females than males had never known the HIV status of their spouses. Regarding HIV prevention strategies, the majority of males (46%) reported they did not use any HIV prevention strategy compared to 15% of females. Only 18% and 15% of males and 24% and 22% of females said they abstained and used condoms as a HIV prevention strategy respectively.

Table 1 further shows that most males and females were Catholics and Protestant. Fifteen percent of males and 20% of females were Moslem while Pentecostals comprised of 16% and 17% of males and females respectively. The proportion of males and females in other religious groups was only 6%. The distribution of PHAs by place of residence shows that only 14% of males and females were living in rural areas.

Description of respondents by main activity indicated that nearly 14% of males and 17% of females were engaged in peasant farming. More males were professionals (27%) and businessmen (52%) compared to females. The proportion of students was 7% for males and 5% for females. Twenty two percent of females were engaged in domestic chores. Regarding education, more males (41%) reported they attained some secondary education compared to females (36%). Only 26% of males and 14% of females attained tertiary education. The proportion of males with primary education was 27% compared to 40% among females. More females (9%) than males (4%) had no education.

The distribution of respondents by the selected background characteristics show that PHAs are adequately represented in all categories of selected characteristics. This makes the analysis of the association between these characteristics and sexual behaviour and reproductive intentions of PHAs on ART viable.

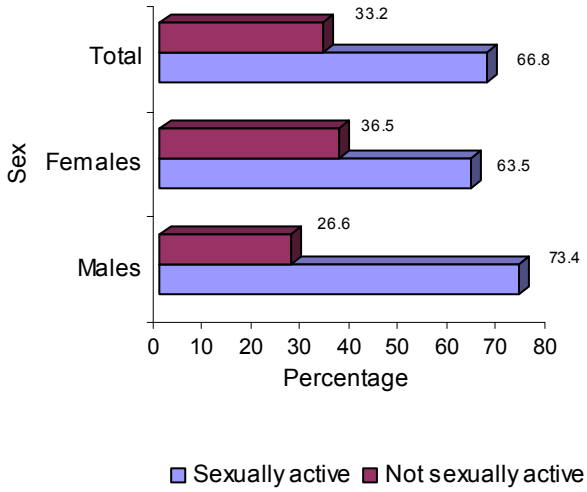
Table 1 Percentage distribution of respondents by selected characteristics, according to sex

Characteristics	Men=141	Women=272	Total=413
Age			
Under 30	12.13	24.09	20.10
30-39	38.13	39.05	38.74
40+	49.64	36.86	41.16
Marital Status			
Never married	10.79	10.95	10.90
Currently married	65.47	46.35	52.78
Separated/divorced	7.19	17.53	14.04
Widowed	16.55	25.18	22.28
Children Ever Borne			
0	10.79	11.31	11.14
1	12.95	24.45	20.58
2	26.62	31.39	29.78
3	18.71	18.98	18.89
4+	30.94	13.87	19.61
Health Status			
Fairly good health	40.58	40.81	40.73
Fairly poor health	59.42	59.19	59.27
HIV status of partner			
HIV positive	32.09	34.55	33.62
HIV negative	11.19	6.82	8.47
HIV status unknown	56.72	58.64	57.91
HIV prevention strategy			
Condoms	15.11	21.53	19.37
Faithfulness	20.86	39.78	33.41
Abstinence	17.99	23.72	21.80
None	46.04	14.96	25.42
Religion			
Protestant	31.65	28.47	29.54
Catholic	31.65	29.20	30.02
Moslem	15.11	19.71	18.16
Pentecostal	15.83	17.15	16.71
Others	5.76	5.47	5.57
Place of residence			
Kampala	85.61	86.13	85.96
Others	14.39	13.87	14.04
Main activity			
Peasant farmer	13.67	17.15	15.98
Professional	27.34	13.87	18.40
Business	51.80	41.24	44.79
Students	7.19	5.47	6.05
Domestic chores/housewives	-	22.26	14.77
Education status			
No education	4.32	9.49	7.75
Primary	27.34	40.51	36.08
Secondary	41.73	35.77	34.77
Tertiary	26.62	14.23	18.40
Total	100.0	100.0	100.0

Patterns of Sexual activity

Patterns of sexual activity of ART beneficiaries were analyzed by carrying out cross-tabulations between characteristics of PHAs and sexual activity. Respondents were asked about their sexual activity status at the time of the survey.

Figure 1. Percentage distribution of respondents by sexual status and gender



A person was considered to be sexually active if he or she reported having had sex at least once in the last 3 months. Respondents were asked whether or not they had sex in the last three months preceding the survey and the results are presented in Figure 1 by gender. The figure shows that overall nearly 67% of respondents reported that they were sexually active at the time of the study. Of those who reported that they were sexually active, 73% were males and 63% were females. The study shows that more males were sexually active than females. Being sexually active was also found to be significantly associated with gender at less than 95% confidence level.

Analysis of sexual activity status by demographic and social characteristics of respondents was also done and the results are presented in Table 2. The table shows the distribution of PHAs who reported they were sexually active by age and gender. The result shows that the proportion sexually active increased by age between ages under 30 and 30-39 and there after declined by age to age group 40 or more. Being sexually active was also found to be significantly associated with age for females than for males. It was also found that the proportion of males who are sexually active increased with the number of children ever born. However, among females, the proportion of those who reported they are sexually active decreased with the number of children ever born. This means that fewer women with 3 and 4 or more children were sexually active at the time of the study. Sexual activity was found to be significantly associated with the number of children ever born for females than for males. Analysis of sexual activity status was also done by marital status and gender. The finding presented in Table 2 shows that being sexually active was significantly associated with marital status for both males and females. The result of the analysis shows that being sexually active varies with marital status even among PHAs with those who are married more likely to

be sexually active than those who are currently never married, separated/divorced and widowed.

Sexual activity status was also analyzed by perception of individual health status of PHAs. Health status was categorized into good health and poor health. The result shows that there was no difference between being sexually active and health status among males. About 73% of males were sexually active in the past three months regardless of their health status. Conversely, more females who reported they were sexually active in the three months preceding the study also reported being healthier than those who reported they were not sexually active. These results should however be taken with caution because it is likely that some of these women were indeed healthier and could therefore be sexually active three months before the study than they were at the time of the study. It is also plausible that the health status of the respondents changed recently. The study also assessed the sexual active status by HIV prevention strategy. The result shows that being sexually active is significantly associated at the 99% confidence level among both males and females. The result in Table 2 shows that 91% of males and females and 87% of males and females who reported using condoms and using no HIV prevention methods were sexually active. More males and females who used condoms or nothing at all where sexually active compared to those who were faithful or abstained three months before the study.

The sexual activity status of PHAs was also examined by religious denominations. The result shows that religion was significantly associated with being sexually active among males than among females. The result presented in Table 2 shows that the proportion of Moslem males (95%) followed by Catholic males (81%) and males in other religious groups (75%) who reported being sexually active at the time of the study were greater than protestants (61%) and Pentecostals (59%). Furthermore, more urban males (78%) reported being sexually active compared to rural males (45%) and being sexually active among males was significantly associated with place of residence. However, being sexually active was not associated with place of residence among females.

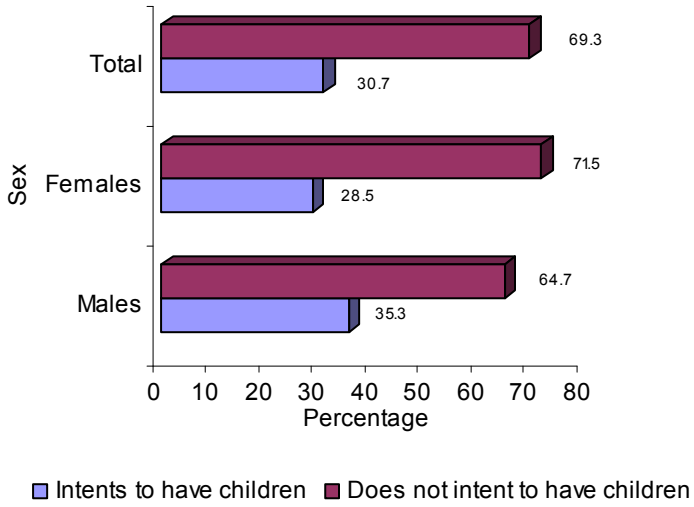
The association between sexual actively and main activity was also examined for both males and females. The result presented in Table 2 shows that the study found a significant association between sexual activity and main activity among males. The table shows that the proportion of professional males (84%) followed by males involved in business (75%) who were sexually active were greater than males who reported they were engaged in peasant farming (63%) and students (40%). Main activity was found to be not associated with sexual activity among females. Furthermore, the association between sexual activity and level of education was also examined. The findings show that level of education was associated with sexual activity status among male PHAs. The proportion of males who were sexually active was highest among those with primary education (87%) followed by those with tertiary education (81%). The least sexually active were males with secondary level of education (60%). On the contrary, although sexual activity among females was associated with education, it is apparent that the proportion of females who reported being sexually active decreased with the level of education.

Patterns of reproductive intentions

The availability of ART has greatly improved the possibility of PHAs to have children through the PMTCT. However the intention to have children has not been well documented among PHAs who are on antiretroviral treatment. There is evidence in the developed

countries that point to the intention of PHAs on ART to have children. This paper investigated the intentions of PHAs in Uganda regarding child bearing. It also identified who among the PHAs intents to have children by examining the demographic and social attributes of those who reported they intent to have children. Figure 2 shows that overall 30% of PHAs who participated in this study reported that they intent to have children. The distribution by gender shows that 35% of males and 28% of females reported that they intent to have children. The result shows that nearly 4 in 10 females and 3 in 10 males on ART reported they intend to have children in future.

Figure 2. Percentage distribution of ART recipients by intention to have children



The examination of the characteristics of PHAs on antiretroviral treatment who reported they intent to have children is presented in Table 2. The table shows that the proportion of males and females who reported they would like to have children decreased with age. Younger (under 30 years) PHAs of both gender reported they intent to have children compared to those who were 40 or more years. The proportion who reported intention to have children is higher among males than females at all ages.

Analysis of the intention to have children was also done by number of children ever born by PHAs on ARV and the result presented in Table 2. The table shows that for both gender the proportion who reported intention to have children decreased with the number of children ever born. More males and females who have never had a child reported intentions to have children than those with one, two, three and four or more children. However, among those with one child or more, more males than females reported intentions to have children. At 3 and 4 or more children, males were 3 and 6 times more likely than females to report intention to have children. The number of children ever born was significantly associated with reproductive intentions among female than among males.

Marital status of PHAs was also examined to assess its effect on the reproductive intentions. The result shows that marital status of female PHAs was significantly associated with the intention to have children in the future with nearly 40% of those separated or divorced. 33% of those never married and 30% of those currently married reported the intention to have children. The finding presented in Table 2 shows that fewer widows and widowers (14% and 17% respectively) reported they intent to have children.

The effect of health status of PHAs on ART was assessed to find out if the perception of health status has an effect on intentions to have children among PHAs on ART. The result shows that health status of PHAs is significantly associated with intention to have children among PHAs on ART. The result shows that 43% and 35% of males and females on ART respectively who reported they perceived their health status has improved were more likely to desire having children compared to 23% of males and 19% of females who reported they perceived their health status as poor. The association between current HIV prevention strategies of PHAs and intention to have children was also examined and it was found that HIV prevention strategy was associated with intention to have children among males. Overall more males than females reported they intent to have children for all categories of HIV prevention strategies. Nearly 47% of males who did not adopt any HIV prevention strategy reported they intend to have children followed by 42% of males who reported using condoms. The proportion of males and females who reported they intent to have children and abstained or remained faithful to their sexual partners were similar.

Furthermore the analysis examined the reproductive intentions of PHAs who are taking ART by religion. The result presented in Table 2 show that there is significant association between religion of males on ART and their intention to have children. Moslem males on ART were nearly 3 times more likely to report intention to have children than Protestants and Pentecostals. The result indicates that religion is associated with intention to have children among males than females. The study also examined the association between main activity and intention to have children. The result shows that main activity was significantly associated with the intention to have children among females. More business women (37%) and women in domestic chores (31%) reported intentions to have children compared to 13% among students, 15% among professionals and 19% among peasant farmers. The main activity of males appears not to be associated with intentions to have children. Place of residence, level of education and HIV status of respondents' partner were not associated with intentions to have children among males and females in the study.

Table 2 Percentage distribution of PHAs on ART who were sexually active and intent to have children by background characteristics

	Sexually active		Intent to have children	
Characteristics	**Males**	**Females**	**Males**	**Females**
Current age				
Under 30	70.59	69.70	64.71	54.55
30-39	81.13	73.83	49.06	31.78
40+	68.12	48.51	17.39	7.92
	P=0.262	P=0.000	P=0.000	P=0.000
Children Ever Born				
0	53.33	54.84	40.00	61.29
1	77.78	62.69	55.56	49.25
2	72.97	83.72	35.14	22.09
3	73.08	53.85	23.08	9.62
4+	79.07	39.47	32.56	5.26
	P=0.409	P=0.000	P=0.265	P=0.000
Marital Status				
Never Married	66.67	56.67	40.00	33.33
Currently Married	82.42	76.38	37.36	30.71
Separated/Divorced	50.00	62.50	50.00	39.58
Widowed	52.17	43.48	17.39	14.49
	P=0.007	P=0.000	P=0.213	P=0.017
Health Status				
Good Health	73.21	54.05	23.21	18.92
Poor Health	73.17	70.19	42.68	35.40
	P=0.577	P=0.005	P=0.018	P=0.003
HIV status of Partner				
HIV Negative	73.33	66.67	46.67	46.67
HIV Positive	83.72	71.05	30.23	31.58
Don't know HIV status	72.37	78.29	38.16	30.23
	P=0.364	P=0.380	P=0.476	P=0.433
HIV prevention strategy				
Use condoms	91.67	90.91	41.67	18.18
Be faithful	72.41	72.48	31.03	30.28
Abstain	24.00	20.00	16.00	16.92
None	87.50	87.80	46.88	36.59
	P=0.000	P=0.000	P=0.032	P=0.113
Religion				
Protestant	61.36	60.26	22.73	26.92
Catholic	81.82	62.50	31.82	22.50
Moslems	95.24	62.96	71.43	31.48
Pentecostal	59.09	74.47	31.82	38.30
Other	75.00	53.33	37.50	26.67
	P=0.015	P=0.477	P=0.004	P=0.408
Residence				
Urban	78.15	64.41	37.82	29.24
Rural	45.00	57.89	20.00	23.68
	P=.0.002	P=0.439	P=0.123	P=0.481
Main activity				
Peasant	63.16	63.83	26.32	19.15
Professional	84.21	60.53	34.21	15.79
Business	75.00	67.26	38.89	37.17
Student	40.00	40.00	30.00	13.33
Domestic chores/Housewives		63.93		31.15
	P=0.028	P=0.353	P=0.748	P=0.025
Education Status				
No Education	66.67	61.54	16.67	26.92
Primary Education	86.84	69.37	47.37	31.53
Secondary Education	60.34	59.18	31.03	24.49
Tertiary Education	81.08	58.97	32.43	30.77
	P=0.020	P=0.419	P=0.269	P=0.704

Determinants of sexual activity

Results of bivariate analysis indicated that 60% of females and 55% of males who were on ART at the time of the survey reported being sexually active. This finding is consistent with American (Stolte, 2004) and European experience (Aloisi et al, 200) where people on Art were found to have regained their sexual viability to the extend that they even engage in unsafe sexual practices because of the perception of low HIV transmission due to the effect of ART (Capbell et al 2000). Further more qualitative results among PHAs on ART indicated that people on ART are likely to become sexually active. Improved health status resulting from ART was reported as the main reason for being sexually active.

> "ART leads to improvement in the health status of PHAs said Peter. Before I started ART a year ago, I never used to feel having sex or even think about sex. I was too weak. Now my sexual feelings and desires have retuned and I have sex using condoms" (Peter PHA Kampala).

> "It was difficult to think about sex because most people in my community knew I lost my wife to AIDS and soon I started suffering of the disease. However, after six months after I started treatment, I feel like having sex and sometimes we have sex with my partner who also has HIV using condoms" (John, Jinja)

In the following analysis, the binary logistic regression analyses was fitted to identify the most important predictors of sexual activity among PHAs who reported that they were sexually active at the time of the study and were on ART. The variables included in the model were sex, age, religion, place of residence, occupation, level of education, children ever born, marital status, Number of sexual partners and HIV prevention strategy. The results of the analysis are presented in Table 3.

The table shows that females were more likely to be sexually active than males. The odd of a female being sexually active was 1.3 times that of males and being female is a significant predictor of sexual activity. Age was also found to be a significant predictor of sexual activity. Older PHAs aged 40 or more years were found to be less sexually active than younger PHAs aged Under-30 years.

The number of children ever born was found to be a significant predictor of sexual activity among PHAs on ART. PHAs with one child and 4 children were 3.7 and 4.6 times more likely to be sexually active than PHAs without children. Having a child is significant predictor of sexual activity. PHAs on ART who are married and have a child infected with HIV are likely to be sexually active with the hope that they will get a child who is free of HIV. This is also likely to happen because PHAs with children were more likely to be married and therefore already in a stable unions that facilitate sexual activity. It is also difficult for PHAs without children to be sexually active if they are single due to the difficulty of getting sexual partners. Qualitative data appear to support the argument that single PHAs suffer a lot of stigma especially if there status is known (Baryamutuma, 2007). This makes it difficult for them to attract sexual partners. It was reported that some PHAs have given up sex altogether due to the stress associated with having HIV/Aids.

> "Many couples who have HIV positive children or whose children died of Aids are willing to attempt having children now that there is a possibility of having a child free of HIV through PMTCT, which may encourage them to be sexually active" (Robert, Kampala).

> "People known to be HIV positive are feared in the community. The community always thinks they will infect others, so they tend not to engage in much interaction except within their families or organizations of PHAs for nearly all types of support" (Angela, Kampala).
>
> "HIV/Aids demoralize people from sexual activity. It makes you think that you are doing something wrong or even sinning, and gradually people may forget about enjoying sex. Sex simply stops being something enjoyable for many people with HIV" says Peter in Kampala.

Marriage is also a predictor of sexual activity with those in marriage being significantly associated with sexual activity. Those in marriage are more likely to be sexually active than the separated/divorced and the widowed. They are also more likely to engage in risky sexual practices than those who remain single (Bateganya, 2005). The never married are less likely to be sexually active compared to the married. This is again likely to be a result of the effect of having a stable sexual partner. Those not in stable unions such as the never married, separated/divorced and the widowed are less likely to be sexually active. The stigma that PHAs face is likely to prevent those not in unions from having sexual partners, therefore depriving them of enjoying sex.

Table 3 also shows that the number of sexual partners is a significant predictor of sexual activity among PHAs on ART. The study noted that a number of PHAs on ART reported having multiple partners and these PHAs are 4.1 times more sexually active than those without sexual partners. Multiple sexual partnering was also found to be significantly associated with sexual activity. This finding again concurs with what was found in Italy among drug user HIV patients on ART (Girardi, 2001). This result is expected since multiple sexual partnering implies having sex more often than having no or one partner. Although having one sexual partner is not statistically significantly associated with being sexually active, PHAs with one sexual partner were 1.2 times more sexually active than those without sexual partners.

The three types of HIV prevention strategies commonly used to prevent HIV transmission mainly condom use, faithfulness and abstinence was also included in the logistic regression. This was done due to the perception that those who are faithful and use condom are more likely to be sexually active. As expected PHAs who reported abstinence as the HIV preventive strategy of choice were associated with lower levels of sexual activity than those who used condoms. On the other hand, PHAs who reported not using any HIV preventive methods were 1.3 times more sexually active than those using condoms.

Furthermore, Table 3 presents result on the effect of occupation on sexual activity among PHAs. Occupation was categorized into peasant farmer, professionals, business persons, students and those engaged in domestic chores/ housewives. Peasant farmers were taken as the reference category. The table shows that students and those involved in domestic chores/housewives were significantly associated with sexually active status. People involved in domestic chores/housewives are 1.3 times more sexually active than peasant farmers. However, students are less likely to be sexually active than those involved in peasant farming. Compared to peasant farmers, professionals and those involved in business were also less likely to be sexually active. Students are less likely to be sexually active mainly because they are likely to be single and therefore without stable sexual partners. Their HIV status therefore

effectively militates against sexual activity if they do not have stable sexual partners. On the other hand people engaged in domestic chores/housewives are expected to be sexually active since they are in marriage.

Determinants of reproductive intentions

To determine the main predictors of reproductive intentions, the binary logistic regression was used. The model shows factors that affect reproductive intention for PHAs who reported that they intent to have children. The predictor variables included in the model were sex, age, marital status, children ever born, religion, residence, occupation, education, and number of sexual partners.

Table 3 shows that a number of PHA characteristics were significant predictors of the intention to have children among PHAs on ART. The results show that females were less likely than males to report intention to have children and being a female is not a significant predictor of intention to have children. This is consistent with the view that females often are coursed in to having children by their spouses and relatives (Cooper 2005). They may also decide to have children as a means of attaining social security provided by their spouses. On the other hand males are in a stronger position to demand children from their spouses, HIV withstanding. Childbearing is seen as a responsibility that females must undertake in order to ensure the extension of the lineage of their spouses. This is particularly expected if the couple have no surviving child. This result is consistent with qualitative data which indicated that some female and male PHAs said they would like to have more children. The most commonly mentioned reasons for intention to have children include lack of own biological children, expected mortality of sickly children due to AIDS and the desire of spouses to have additional children.

> "I would like to have children in future because I am still young and I don't have a child of my own. A child is important for me to keep on living after my death" said a 20 year old, Agnes.
>
> "The child I have is sick. He has AIDS. I would like to have a healthy child by fully using the PMTCT service being provided" reported Jane.

The intention to have children is more likely among concordant couples with no, one or a sick child as shown below:

> "I and my wife have considered having at least one more child. However, we must first be healthy and work so that we can look after the children" (John).
>
> "I definitely want to have a child and I think with PMTCT in place, I and my spouse will have a child without HIV" (Anna, Kampala).

The result also shows that older PHA are less likely to intent having children than younger PHAs. The results in Table 3 shows that PHAs aged 40 years or older are less likely to intent having children compared to PHAs under 30 years. The association between PHAs aged 40 or more years and the intention to have children is significant. PHAs less than 30 years are more likely to desire to have children because many of them either do not have children or have not yet achieved their family size desires. On the other hand those who are 40 or more years have already had children. This finding is also consistent with FGD findings which show that younger PHAs lament about their situation and possible risk of childlessness.

> "I am young and I have AIDS which makes me sad because it will prevent me from having my own children" (Tom, Kampala).
>
> "I am young and single. I would like to get married and have children of my own some day, but who will I marry to give me children in my state" (Jane, Kampala).

The number of sexual partners was also found to influence reproductive intentions among PHA who are on ART. The finding in Table 3 shows that PHAs with multiple partners are 2.9 times more likely to report intention to have children than those without stable partners. It is possible that having multiple sexual partners is a strategy to ensure that children are born. For the case of males, it is likely that they are in a polygamous union. The logistic regression results shows that being Moslems is significantly associated with intentions to bear children. The result shows that Moslems are 2.1 time more likely to report intention to have children than Catholics. Although being a Protestant is also significantly associated with the desire to have children, Protestants are less likely than Catholics to report intention to have children. Being a catholic was also found to be a significant predictor of intentions to have children with Catholics reporting that they are less likely to intent to have children than Protestants.

HIV prevention strategies were also found to be associated with intentions to have children among PHAs on ART. PHAs who reported being faithful and not using any HIV prevention strategy were 2.33 and 2.35 time respectively more likely to report intentions to have children in future than those who reported using condoms. Conversely, PHAs who reported abstinence as a HIV prevention strategy were less likely to report intentions to bear children in future. The findings indicate that being faithful and having intention to have children and not using a HIV prevention method is clear indicator that the respondents want to maximize the available opportunities of having children. It is also likely that both partners in the relationships have HIV/Aids thereby making it easier for them to reach common childbearing decisions.

Regarding main occupation in which PHAs on ART were engaged, it was found that only being a student was a significant predictor of intention to have children. It was found that students were less likely to report that they intent to have children than those who were peasant farmers. This is probably because of a number of factors associated with being students: first they may have no means of livelihood, they may also not be having any stable relationships to rely on and finally they may be more aware of risks of childbearing in their state and therefore decide not to have children.

Art improves the health status of PHAs and because of this PHAs on ART may consider having children. The result of health status and intention to have children shows that PHAs on ART who reported their health was still poor reported intention to have children in future. This is likely because of the anticipated good heath after ART.

Table 3 Odds ratios for the likelihood that respondents are sexually active and intent to have children in future

Predictors	Sexually active Odds ratio	Intents to have children Odds ratio
Sex		
Males ®	1.00	1.00
Females	1.13**	0.52
Age		
Under 30 ®	1.00	1.00
30-39	0.69	0.50
40+	0.26***	0.10****
Marital Status		
Married ®	1.00	1.00
Never married	0.72**	0.65
Widowed	0.43	0.66
Separated/divorced	0.71	1.56
Children Ever Born		
None ®	1.00	1.00
1	1.08	0.43
2	3.64**	0.08****
3	1.56	0.65****
4+	2.15	0.10***
Number of sexual partners		
None ®	1.00	1.00
One	1.21	1.56
Multiple	4.11***	2.91**
HIV prevention strategy		
Condoms ®	1.00	1.00
Faithfulness	0.56	2.33**
Abstinence	0.07****	1.33
None	1.34	2.35**
Residence		
Urban ®	1.00	1.00
Rural	0.64	0.65
Main activity		
Peasant farmer ®	1.00	1.00
Professional	0.79	0.86
Business	0.57	1.29
Students	0.26*	0.04***
Household chores	1.30*	1.24
Education		
None ®	1.00	1.00
Primary	2.16	1.79
Secondary	1.48	2.21
Tertiary	1.6	3.21
Religion		
Protestant ®	-	1.00
Catholics	-	0.46**
Moslems	-	2.10
Pentecostals	-	1.30
Others	-	2.02
Health Status		
Fairly Health ®	-	1.00
Fairly un healthy	-	2.48***

® Reference category; * Significant at <0.1; ** at <0.05; *** at <0.01; **** at <0.001; and **** at <0.0001

Conclusions

The findings of the study suggest that sexual activity status and the reproductive intentions of the study subjects are linked. Most sexually active respondents also intend to have children. Probably it is the intentions to have children which influenced the sexual behaviour of many of the respondents. That is why younger PHAs, those in marriage and those without children are sexually active and also intent to have children in future. This finding also point to the problem many young people who get infected at the prime of their life, who are about to start their families and more importantly those who were born with the virus and are now entering their reproductive ages. Regrettably though, this number of young people is large in sub-Saharan Africa and their family and reproductive desires should not be taken for granted. Mention should also be made of women who may engage in sexual activity and reproduction out of pressure. The African family institution strongly encourages childbearing and many couples and individuals within marriage may find it difficult to resist the demands of the family and its extensions regarding childbearing. The desire to have children is natural and even those widowed would desire that they have their own children for both emotional as well as cultural reasons. As a result of pursuing the long term objective of having children, PHAs may engage in unprotected sex thereby putting their spouses and their unborn children to the risk of HIV infection and exposing partners to drug resistant strains of the virus. Ultimately this may worsen the HIV/Aids situation in Africa which is already overburdened by the disease and inadequate resources for continued ART.

Therefore, the findings in this paper, and others in the region and beyond should be the basis of the beginning of addressing reproductive rights of PHAs. More fundamentally efforts should be put in place to enable PHAs who would like to have children to do so. It is recognized that PMTCT is by far the most available option on the table. However other options including but not limited to assisted reproduction technology should be considered.

References

Aloisi MS, Serraino D, Ferrara M, Lauria NF, Carballo M, Mnforte A, Rezza G, Moroni M, Carisi G, Alessandrini A, Giacobbi D, Cremonini L, Ranieri S, Montroni M, Ippolito G. "Sexual behaviour of women living with HIV/AIDS naïve for antiretroviral therapy: the ICONA-BEHEPI Study". *AIDS Care*, Volume 12, Issue6 December 200, 789-795.

Aka-Akribi-Dago H, Dulou AD, Msellati P, Dossou R, and Welffens- Ekra C.1999. "Issues surrounding reproductive chice for women living with HIV in Abidjan, Cote D'Ivoire" *Reproductive Health Matters* Vol.17 (13) 77-86.

Baryamutuma R. 2007. Factors affecting decision making regarding childbearing among people living with HIV/AIDS in Uganda. MA. Dissertation Makerere University.

Batenganya M, Colfax G, Leigh AS, Kiyto C, Mugenyi P, Serwada D, Mayanja H, and Bansberg D. "Antiretroviral therapy and sexual behaviour: A comparative study between antiretroviral Naïve and Experienced patients at an urban HIV/AIDS care and research center in Kampala, Uganda". *AIDS Patient Care and STDs* Volume 19, November 11, 2005.

Bedimo AL, Bessinger R, Kissinger P. 2002. Reproductive Choices among HIV positive women" *Social Science and Medicine*. Vol 46 (2) 171-179.

Bunnell R, Ekwaru JP, Solberg P, Wamai N, Bikako-Kajura, Were W, Coutinho A, Liechty C, Madraa E, Rutherford G, and Mermin J. "Changes in sexual behaviour and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda" *AIDS*. 2006 Jan 2;20 (1):85-92.

Chen JL, Phillips KA, Kanouse DE, Collins RL, and Miu A. 2001. Fertility desires and intentions of HIV positive men and women" *Family Planning Perspectives* Vol. 33 (3) 144-152.

Cooper D, Bracken H, Myer L et al. 2005. "Reproductive intentions and choice among HIV infected individuals" in Cape Town South Africa, Lessons for Reproductive Policy Services and Provisions."

Crepaz N. and Marks G. 2002. "Towards an understanding of sexual risk behaviour in people living with HIV A review of social psychological and medical findings" *AIDS* 16:135-149.

Felman R and Maposhere C. 2000. "Safer sex and reproductive choices: Findings from HIV positive women: Voices and choices in Zimbabwe. *Reproductive Health Matters* Vol. 11 (22) 162-173

Girardi E, Aloisi MS, Serraino D, Ferrara M, Lauria NF, Carballo M, Mnforte A, Rezza G, Moroni M, Carisi G, Alessandrini A, Giacobbi D, Cremonini L, Ranieri S, Montroni M, Ippolito G and ICONA Group " Sexual behaviour of heterosexual individuals with HIV infection naïve for antiretroviral therapy in Italy" *Sexually Transmitted Infection*s 2001. 77:130-134.

Huebner GM and Gerend MA. 2001. The relations between beliefs about drugs treatment for HIV and sexual risk behaviour in gay and bisexual men. http://www.ncbi:nlm.nih.gov/entrez/query.fcgi.

International Parental HIV Group. 1999. "The mode of delivery and the risk of vertical transmission of human immunodeficiency virus type-1 a meta analysis of 15 prospective cohort studies, *New England Journal of Medicine*, 340 (13): 977-987.

Katz MH, Schwarz SK, Kellog TA, Klausner JD, Dilly JW, Gibson S. and McFarland W. 2002. "Impact of highly active antiretroviral therapy on HIV sero-insidence among men who have sex with men: San Francesco" *American Journal of Public Health* 92: 388-394

Kristshenbaun SB. et al. 2004. "Throwing the dice: Pregnancy decision making among HIV positive women in four US cities" in *Perspectives on sexual and Reproductive Health* Vol 36.p82

McCowan JP, Shah SS, Ganea CE, Blum S, Ernst JA, Irwin KL, Olivio N. and Wiedle PJ. 2004. Risk behaviour for the transmission of human immunodeficiency Virus among HIV seropositive individuals in an urban setting. http://www.ncbi:nlm.nih.gov/entrez/query.fcgi.

Nai-Ying K, and Muecke M. 2005. "Reproductive Decision making among couples with HIV/AIDS in Taiwan. In *Journal of Nursing* sts.nthu.edu.tw/nststs/92w-paper/1018naiying%20k0.ppt

Ostow DE, Kelly JA, Chmiel JS, et al. Attitudes towards highly active antiretroviral therapy are associated with sexual risk taking among HIV infected and uninfected homosexual men. *AIDS* 2002; 16:775-780

Ranjan S. 2006. "Fertility and desire for children among HIV infected persons with special reference to Mumbai" http://paa2006.princeton.edu/download.aspx?submissionid=60164.

Stolte IG, Duckers HTM, Geskus RB, Coutinho RA and Wit JBF. Homosexual men change to risky sex when perceiving less threat of HIV/AIDS since availability of highly active antiretroviral therapy: A longitudinal study, *AID*S 2004; 18:303-309.

Tun W, Celentano DP, Vlahov D, Strathdee SA. 2003. Attitudes towards HIV treatment influence unsafe sexual and injection practices among injection drug users. http://www.ncbi:nlm.nih.gov/entrez/query.fcgi.

Vunable PA, Ostrow DG, and McKiran DJ. 2003. Viral load and HIV treatment attitudes as correlates of sexual risk behaviour in HIV positive gay men. http://www.ncbi:nlm.nih.gov/entrez/query.fcgi.