

*Full Length Research Paper*

# Childbearing intentions among sexually active HIV-infected and HIV-uninfected female adolescents in South Africa

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**Women of reproductive age account for nearly half of all HIV-infected people worldwide. Childbearing intention among HIV-infected women is complicated by social and reproductive concerns related to their HIV status. We conducted a cross-sectional study of HIV-infected and HIV-uninfected sexually active South African women aged 17 to 21 in order to compare their childbearing intentions and to identify predictors of the desire to have children among women with HIV. We found the rate of childbearing intention to be similarly high among both HIV-infected and HIV-uninfected study participants (80 and 79% respectively,  $p=0.81$ ). History of previous parity was found to be associated with decreased intention to have children. No difference in childbearing intention was found between HIV-infected women on anti-retroviral therapy (ART) and women not on ART. High rates of childbearing intention among HIV-infected women require integration of reproductive health services with comprehensive HIV/AIDS care in order to mitigate the risks of sexual and vertical transmission of HIV.**

**Key words:** HIV, childbearing intention, South Africa, anti-retroviral therapy.

## INTRODUCTION

Decisions about childbearing among HIV-infected women are complicated by concerns regarding family planning methods, sexual transmission of HIV, risk of maternal orphanhood, community expectations, and vertical transmission of HIV. Childbearing intentions may be influenced by a number of variables including age, time since diagnosis of HIV, treatment with anti-retroviral therapy (ART), and history of parity. To achieve the goals

of comprehensive HIV care, childbearing intentions require regular evaluation in order for women to make informed decisions regarding this complex reproductive health scenario. Nearly half of all HIV-infected people globally are women of reproductive age (UNAIDS, 2016).

Approximately 66% of all new HIV infections occur in sub-Saharan Africa with the highest incidence occurring in Southern Africa (UNAIDS, 2016). In South Africa, an

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estimated 29% of pregnant women are living with HIV (Goga et al., 2016). Although ample evidence exists that many HIV-infected women desire children, the identified predictors of childbearing intention have varied among previous studies.

In addition, little prior research has directly compared childbearing intention between HIV-infected and HIV-uninfected women from the same community. Finally, there is a paucity of research specifically aimed at evaluating the fertility desires of HIV-infected adolescents. Young women are the key drivers of the HIV epidemic in South Africa (Murray et al., 2014), the country with the largest population of people living with HIV (Murray et al., 2014). We compared childbearing intentions between HIV-infected and HIV-uninfected sexually active South African adolescent females, ages 17 to 21. In addition, among our HIV-infected participants, we compared childbearing intentions between those on anti-retroviral therapy (ART) and those not on ART. Finally, using bivariate and multiple logistic regression analyses, we assessed predictors of these intentions.

## MATERIALS AND METHODS

Between October 2013 and March 2015 we conducted a cross-sectional study of 50 HIV-infected and 50 HIV-uninfected young, sexually active, South African women, ages 17 to 21 years. Cohort enrollment occurred sequentially until the goal of 50 participants in each group was met.

Study participants were surveyed in English and/or Xhosa regarding their childbearing intentions, contraception use, sexual history, HIV care (HIV-infected only), and demographic variables. The primary outcome, childbearing intention, was defined as an affirmative answer to the question, "Do you intend to have children at any time in the future?" Responses of "don't know" were considered lack of affirmative childbearing intention.

All participants were recruited from a youth community center and clinic in two indigent township communities in Cape Town, South Africa where surveys were interview-administered by staff. These study sites offer HIV testing and counseling, treatment for sexually transmitted infections, and free contraceptives and condoms. Informed consent (age 18 years or older) or parental consent along with signed adolescent assent (age 17 years), was obtained from all participants. In order to confirm HIV status, all study participants underwent HIV testing on the same day as survey administration. The University of Rochester's Research Subject Review Board and the University of Cape Town's Human Research Ethics Committee granted ethical approval for this study.

Descriptive statistics were calculated separately for HIV-infected and HIV-uninfected women using means and standard deviations (for continuous variables) and frequencies and percentages (for categorical variables). Comparisons between HIV-infected and HIV-uninfected women were performed using independent measures *t*-tests and  $\chi^2$  tests for independence. All analyses were performed in SPSS 23.

## RESULTS

Demographic and behavioral variables of our cohort are presented in Table 1. Childbearing intention was high

among both HIV-infected and HIV-uninfected members of our cohort (80 and 79% respectively,  $p=0.81$ ). No significant differences between number of past pregnancies and number of past live births were identified between groups and approximately two thirds of the cohort was nulliparous. Likewise, HIV-infected and HIV-uninfected members of our cohort had similar numbers of lifetime sexual partners and most were monogamous over the previous six months. Contraception use was nearly universal in our cohort although HIV-infected women were more likely to report condom use.

Bivariate analyses were conducted to identify potential predictors of childbearing intention. Among the entire cohort, women with no history of pregnancy were more likely to have childbearing intentions than those with one or more past pregnancies (76 versus 24%,  $p=0.001$ ). Similarly, women with no history of live births had greater childbearing intentions than those who had given birth to one or more children (78.5 versus 21.5%,  $p<0.001$ ). This finding held true when analyzing HIV-infected women only, with 72.5% of never pregnant participants reporting positive childbearing intention compared to 27.5% of women with a history of pregnancy ( $p=0.038$ ). Age of the participant was not found to be predictive of childbearing intention. Multiple logistic regression analyses supported these findings - the likelihood of childbearing intentions was significantly higher for individuals with no history of live births (Odds Ratio = 12.35,  $p<0.001$ ) or with no history of past pregnancy (Odds Ratio = 7.19,  $p=0.002$ ) when controlling for patient age, HIV status, and contraception use.

A comparison of demographic and behavioral variables between HIV-infected participants on ART and not on ART is presented in Table 2. No difference was identified between groups regarding childbearing intention. Pregnancy history, contraception use, and number sexual partners also did not significantly differ between groups. Time since HIV diagnosis (among HIV-infected participants) was not found to be predictive of childbearing intention.

## DISCUSSION

This study identified similarly high levels of childbearing intention among HIV-infected and HIV-uninfected young women. This high proportion of intention among HIV-infected African women (80%) exceeds that reported in previous literature. A survey study of HIV-infected Malawian women aged 18 to 40 years found a proportion of childbearing intention of 50.4% (Kawale et al., 2014).

Similar studies of HIV-infected women aged 18 to 49 in Ethiopia and Ghana identified intention proportions of 44% (Asfaw and Gashe, 2014) and 58% (Gyimah et al., 2015), respectively. Past research among HIV-infected South African women also reported childbearing intention that was lower than identified in our study: a 45%

**Table 1.** Participant Demographics and Behavioral Variables.

<b>Variables</b>	<b>HIV-infected (n = 50)</b>	<b>HIV-uninfected (n = 50)</b>	<b>P-value</b>
Age	19.6 (SD 1.40)	18.4 (SD 1.40)	<0.001
Childbearing Intention	40 (80%)	39 (78%)	0.81
<b>Number of Past Pregnancies</b>			
0	33 (66%)	34 (68%)	0.84
1	15 (30%)	15 (30%)	
2	2 (4%)	1 (2%)	
<b>Number of Live Births</b>			
0	33 (66%)	36 (72%)	0.80
1	16 (32%)	13 (26%)	
2	1 (2%)	1 (2%)	
<b>Current Contraception</b>			
Condom	49 (98%)	41 (82%)	0.008
Injection	29 (58%)	32 (64%)	0.54
Pill	1 (2%)	4 (8%)	0.17
None	1 (2%)	1 (2%)	1.00
<b>Lifetime Sexual Partners</b>			
1	11 (22%)	4 (8%)	0.054
2-5	34 (68%)	44 (88%)	
>5	5 (10%)	2 (4%)	
<b>Sexual Partners - Last 6 Months</b>			
1	48 (96%)	47 (94%)	0.65
2-5	2 (4%)	3 (6%)	

proportion of intention was found among a Cape Town cohort aged 25 to 34 (Cooper et al., 2009), and 30% proportion was identified in a cohort aged 18 to 44 in Soweto (Kaida et al., 2011).

The only study we identified of HIV-infected African women with a level of childbearing intention similar to our findings was from Burkina Faso and reported as an intention proportion of 70% (Lemoine et al., 2011). The high proportion of childbearing intention among our HIV-infected participants may be related to the young age of our cohort. Most previous research on this subject has included all adult women of childbearing age whereas our cohort comprised of women aged 17 to 21, of whom the majority (67%) had not yet had children.

With the increased life expectancy of HIV-infected persons in the era of ART, it is understandable that HIV-infected women have childbearing intentions that may be equal to those of their HIV-uninfected counterparts, despite additional reproductive and social complications associated with their HIV status, most notably the risks of sexual and vertical transmission of HIV. Still, there is a paucity of literature comparing childbearing intentions between these groups from within the same community.

One such study from South Africa found HIV-infected

women to have less than half of the childbearing intention compared to HIV-uninfected women residing in the same township (Kaida et al., 2011). Our finding of no difference in childbearing intention between these two groups contrasts notably with this prior work from South Africa. These divergent findings may reflect age differences between the two study cohorts (child-bearing intention was higher among the younger participants in the Soweto study), cultural differences between these geographically and socially distinct communities (Cape Town versus Soweto), or possibly a change over time in childbearing intention among women with HIV.

Contradictory evidence regarding predictors of childbearing intention among women with HIV has been presented in prior research. While several studies have found younger age to be associated with increased childbearing intention (Asfaw and Gashe, 2014; Haddad et al., 2016; Kawale et al., 2014; Lemoine et al., 2011), some have identified increased age as a positive predictor of childbearing intention (Gyimah et al., 2015; Laar et al., 2015). A meta-analysis of fertility desires among HIV-infected men and women identified age less than 30 to be strongly associated with fertility intention (Berhan and Berhan, 2013). Given the very young age

**Table 2.** HIV-infected participant demographics and behavioral variables.

Variables	On ART (n = 22)	Not on ART (n = 28)	P-value
Childbearing Intention	18 (82%)	22 (79%)	0.78
<b>Number of Past Pregnancies</b>			
0	15 (68%)	18 (64%)	0.20
1	5 (23%)	10 (36%)	
2	2 (9%)	0 (0%)	
<b>Number of Live Births</b>			
0	15 (68%)	18 (64%)	0.46
1	6 (27%)	10 (36%)	
2	1 (5%)	0 (0%)	
<b>Current Contraception</b>			
Condom	22 (100%)	27 (96%)	0.37
Injection	17 (77%)	12 (43%)	0.014
Pill	0 (0%)	1 (4%)	0.37
None	0 (0%)	1 (4%)	0.37
<b>Lifetime Sexual Partners</b>			
1	7 (32%)	4 (14%)	0.33
2-5	13 (59%)	21 (75%)	
>5	2 (9%)	3 (11%)	
<b>Sexual Partners in the Past 6 Months</b>			
1	22 (100%)	26 (93%)	0.20
2-5	0 (0%)	2 (7%)	

and narrow age range of our cohort we did not identify age as a predictor of childbearing intention in our study.

Previous parity has also been found to be associated with childbearing intention. Some prior research has found a history of giving birth to be associated with decreased prospective childbearing intention among HIV-infected women (Abbawa et al., 2015; Asfaw and Gashe, 2014; Kawale et al. 2014; Melaku et al., 2014). A study of HIV-infected Ghanaian women, however, found childbearing intention to be positively associated with a history of childbearing (Gyimah et al., 2015). Our findings were consistent with the bulk of prior literature reporting greater childbearing intention among nulliparous HIV-infected women compared to those with a history of giving birth.

ART became widely available in South Africa in April 2004. Since that time, access to ART in South Africa has increased very substantially and is available in the township communities in which this study was conducted. In addition, the Western Cape Government has a three-phase program for the prevention of mother-to-child transmission of HIV that includes antenatal testing, ARTs, and post-natal ARTs for babies until HIV-status is determined. Still, not all women in our cohort were on ART therapy at the time of our study. In addition to incomplete access to ART, high rates of ART refusal in

this population may also have contributed to incomplete coverage in our cohort (Katz, et al., 2011). We did not find a difference in childbearing intention between HIV-infected women on ART and those not on ART. This is similar to prior findings among South African women (Kaida et al., 2011) and in the aforementioned meta-analysis (Berhan and Berhan, 2013). Some studies, however, have found being on ART to be correlated with increased childbearing intention (Abbawa et al., 2015; Asfaw and Gashe, 2014; Cooper et al., 2009).

While the level of childbearing intention among the HIV-infected women in our cohort may be higher than that presented in previous work, it is clear that many HIV-infected African women desire to have children, despite the complications that their medical condition may present. Contraceptive counseling has long been an essential component of comprehensive AIDS care but it is also important to assist HIV-infected women to achieve their reproductive goals. Integration of HIV care and reproductive health care, focusing on safe conception, is essential. Pre-exposure prophylaxis, for example, has been shown to be an effective method to decrease the risk of HIV transmission during condomless sex (Ndase et al., 2014). Optimizing reproductive outcomes for HIV-infected women will require family planning and counseling services to transit successfully to services

aimed at safe conception, prevention of mother-to-child transmission, and safe feeding of the newborn.

Our study has several important limitations. Due to the relatively small sample size, our ability to identify important differences between groups and sub-groups may be limited. Although our cohort included only sexually active women who are thus engaged in decision-making regarding reproduction, the overall young age of our study participants limits the generalizability of our findings. The generalizability of our findings may also be limited by cultural and geographic factors. Self-reporting of childbearing intention may not represent actual intention and may be influenced by perceived community expectations. Finally, our study did not include men and therefore cannot reflect their contribution to childbearing intention among HIV-infected women in their community.

## Conclusion

In our cohort, childbearing intention was high among both HIV-infected and HIV-uninfected participants. Having no history of pregnancy and never having given live birth were identified as predictors of childbearing intention. Among HIV-infected women, being on ART was not found to be associated with childbearing intention.

Given the high rate of childbearing intention, comprehensive HIV/AIDS care for women of reproductive age requires both family planning and conception counseling to manage the risks of sexual and vertical transmission of HIV.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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