Context: The evolution of HIV/AIDS into a manageable chronic illness due to antiretroviral therapy (ART) is generating a growing interest in the reproductive preferences of HIV infected men and women. Since fertility intentions are strong predictors of eventual fertility, they require a clear understanding, especially in the context of expanding access to ART and consequent reproductive health service needs of PLWHA. Yet, little is known about the fertility desires of HIV-infected persons in sub-Saharan Africa in the current treatment era. Previous research assessing the impact of HIV/AIDS on fertility intentions has produced mixed results, with studies showing negative, positive, or no association between HIV status and fertility intentions. Similarly, emerging evidence on the effect of ART on fertility desires is mixed. A majority of extant evidence on HIV and fertility preference is, by and large, quantitative descriptive accounts of predictors, with little or no explicit theoretical understanding. In order to contribute to the debates and knowledge on this topic, we investigate the fertility desires of PLWHA and whether or not they differ by their ART treatment status. Our data are based on evidence from Nairobi slums, reflecting the need for evidence that better reflects the contemporary lives of many African urban residents and rural-urban migrants. We seek to answer the following broad research question: What are the fertility intentions of HIV-infected persons in the ART era? From the broader question three subsidiary research questions are framed: Do fertility desires among PLWHA differ by ART treatment status? Which factors affect fertility desires among PLWHA? How can our theoretical understanding of fertility preferences of PLWHA in the era of ART be improved?

Methods: This paper uses data from a cross-sectional sequential mixed methods study on sexual and reproductive health behaviour among PLWHA in Nairobi slums. This study adopted a sequential mixed methods design, which involved a phase of quantitative survey interviews followed by a qualitative phase on a subsample to help explain and interpret relationships identified in the quantitative analyses. A population-based sample of respondents (n=513) was systematically recruited from a geographically delineated area covered by the Nairobi Urban Demographic and Health Surveillance System – a subsample of which was followed for in-depth interviews (n=41). This was supplemented by key informant interviews (N=14) with health care providers. This study adopted a systematic sampling procedure which attempted to circumvent potential "institutional bias" problems associated with clinic based convenience samples commonly used for research on HIV-infected persons. The study adopted quota sampling, using sero-prevalence ratios in the study sites, to ensure proportional representation of the following characteristics – which are associated with HIV prevalence in the population – in the final sample: gender, age, ethnicity, marital status and educational status. A subsample, selected on the basis of sexual and reproductive health outcomes in the survey was followed-up for in-depth interviews.

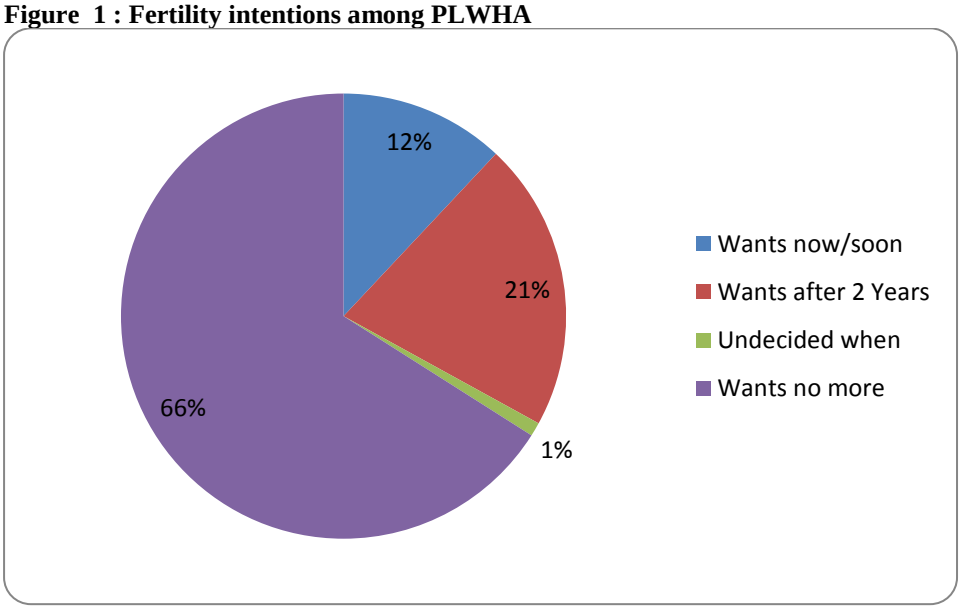
Interviewer administered structured and semi-structured interviews were conducted with selected respondents who met the eligibility criteria. To be eligible, respondents were required to be HIV positive, aged over 18 years (for men) and 18-49 years (for women), and registered residents of the demographic surveillance system and willing to provide informed consent. All research instruments were translated by the principle investigator together with research assistants into the local language (Kiswahili) and

back translated by an independent researcher into English for validity. Both qualitative and quantitative data were collected through face-to-face interviews, mostly in respondents' homes.

The desire for children in the survey was measured by the question "Would you like to have a/another child or would you prefer not to have any (more) children?". Those who indicated that they wanted a/another child were asked about the total number of children they would like to have in future and their sex composition. They were also asked about how long they would like to wait before having a/another child. These are standard questions that are routinely asked in Demographic and Health Surveys. Fertility desire is created as binary dichotomous outcome variable. Descriptive, bivariate and multivariate logistic regression methods were used to assess independent relationships between fertility desire and socio-demographic and health factors. In-depth interviews were conducted to help explain and interpret quantitative findings on fertility intentions and reproductive experiences. Qualitative data were transcribed, coded and thematically analysed by the principal investigator. Quantitative and qualitative data are integrated in analysis and interpretation.

Findings: More than a third (34%) of men and women living with HIV expressed a desire for future fertility. Over one fifth (21%) of women and men with HIV/AIDS would like to wait two years or more for their child, and 12% would like to have a child soon (within two years). Just one per cent of PLWHA were undecided about when they would like to have their next child. Two thirds (66%) of PLWHA do not want to have any/more children (Figure 1).

Figure 1 : Fertility intentions among PLWHA



There was no significant variation of fertility desires with ART treatment status among PLWHA. Independent predictors of fertility desire were younger age, male sex, higher number of living children, middle wealth quintiles and higher scores of social support (Table 1).

Table 1: Predictors of fertility desire among PLWHA

CHARACTERISTIC	ODDS RATIO	P-VALUE	95% CI	
Sex				
Female (Ref)	1.00			
Male	4.17	0.000	2.46	7.07
Age				
18-29 years	2.50	0.017	1.18	5.28
30-39 years	1.57	0.119	0.89	2.78
40+ years (Ref)	1.00			
Living children				
0 (No child)	29.07	0.000	8.51	99.33
1 to 2	8.99	0.000	4.29	18.83
3 to 4	2.03	0.059	0.97	4.24
5+ (ref)	1.00			
Social support	1.59	0.019	1.08	2.34
Wealth (5 quintiles)				
Poorest (Ref)	1.00			
Second quintile	1.54	0.250	0.74	3.22
Third quintile	2.15	0.033	1.06	4.37
Fourth quintile	2.19	0.048	1.01	4.76
Wealthiest	1.68	0.172	0.80	3.51
ART status				
On ART (Ref)	1.00			
Not on ART	0.75	0.222	0.47	1.19

Qualitative findings indicate that fertility intentions are fraught with ambivalence, reflecting a conflict between social and moral pressures. Respondents suggested that infection with HIV is not only disruptive and a threat to individual life, but also a threat to parenthood and personal integrity. Childbearing intentions of PLWHA are, to a great extent, reflective of a quest to regain some normalcy for social approval and moral validation. For some, having children is a show of being normal, healthy and socially upright. For others, the quest for moral validation may work against fertility desires as conceiving may transmit HIV to children and sexual partners and ultimately orphanhood, acts that were presented as immoral:

> KA17: I always hear that there are drugs that people are given to prevent the baby from getting infected with the virus. But then don't you think that I will infect the person that I am going to sleep with (in order to conceive], with the HIV virus? I cannot give somebody the virus knowingly like that just for him to impregnate me and then go and take drugs that will prevent the child from getting the virus. What about that man?..God might bless me and I give birth to another child who is HIV negative and then I die shortly after that, and leave them to suffer. .I don't see the need of mistreating my children (widowed mother of 2, aged 30)

Expanding availability of ART and prevention of mother-to-child transmission (PMTCT) provides the possibility of PLWHA to prevent perinatal and sexual transmission of HIV. These interventions offer PLWHA the possibility of realizing their fertility goals. However, worries about the possibility of vertical and horizontal transmission abound, even when these interventions are available. HIV-positive women also fear the negative effect of pregnancy and childbirth on their own health status, because pregnancy is understood to lead to deterioration in health.

> INTE: You said that you want another child, right?
> KC04: Well, I might. It is normal to have children, but I can't have more than one child with him so that they are just four in total. But my mind does not want to give birth at all, because of my status. You know we were told [during counselling] that if you know your status you should not give birth frequently and shedding blood, as this may weaken you. So I don't know.(cohabiting mother of 3, aged 27)

Conclusion: Increasing access to ART and PMCT programmes is changing the landscape of fertility intentions, allowing some PLWHA to realise their reproductive goals. Prevailing pronatalism values and stigma against HIV/AIDS in most sub-Saharan Africa contexts means that, for many PLWHA having children is seen as necessary for "normal" and healthy adult life. However, the social rewards of childbearing conflict with moral imperatives of HIV prevention, presenting a dilemma about "proper" reproductive behaviour of PLWHA. As such fertility intentions of PLWHA are fraught with ambivalence and ambiguity, irrespective of their treatment status.

Key words: Fertility intentions, HIV/AIDS, PLWHA, ART, Nairobi slums.