Differences in fertility preferences and contraceptive behaviors by HIV status for women and men in 17 Sub-Saharan African countries

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Introduction

From the public health perspective, preventing unintended pregnancy and the transmission of HIV is a very high priority in Sub-Saharan Africa, where HIV prevalence and unmet need for contraception are the highest in the world (UNAIDS and WHO, 2007; Sedgh et al., 2007). The recent expansion of anti-retroviral therapy is enhancing the lives of people living with HIV and raising hopes for a normal life. Whether and how this improvement affects the relationship between HIV status and achieving fertility goals, including prevention of unintended pregnancy, are not yet clear. New evidence on this relationship is needed to ensure better understanding of the implications for service needs.

This paper provides a regional overview of the extent to which fertility desires and contraceptive behaviors differ by HIV status (based on biomarker testing in population-based surveys). Analyses are based on recent, nationally representative Demographic and Health Surveys (DHS) for 17 Sub-Saharan African countries. Bivariate and multivariate, including multilevel, analyses are conducted to explore the relationships. Although some studies have undertaken similar analyses, almost all have been small scale, ad-hoc studies, and the few that are large are limited to one country and did not include the community level variables (Adair, 2007).

We examine the following hypotheses for women and men across the 17 countries:

- HIV positive women and men are less likely to desire more children than their HIV negative counterparts. This is based on the assumption that uncertainty about how long they will be able to take care of their children, worry about who will take care of their orphaned children, fear that new born children will be infected, and concerns that pregnancy may negatively affect the mother's health, are likely to cause those who are HIV positive to want to limit childbearing relative to those who are negative.

- HIV positive women and men are more likely to have unmet need for contraception than HIV negative men and women. This is based

on the assumption that HIV positive women and men will be more motivated to avoid having more children, and in addition may be less consistent users, or may fear that contraceptive use will exacerbate the progression of their infection or bring health side effects from use, with the result that HIV positive individuals who need contraception are less likely to be using a method.

Additionally, for countries with data on HIV-related health services, we expect that:

- HIV status will have a diminished association with fertility preferences and protective behavior for people living in communities with more HIV-related health services (namely, prevention of maternal-to-child transmission of HIV and antiretroviral therapy) compared to those in communities with fewer of these services because the availability of these services may ameliorate the underlying arguments described above (e.g., concerns about being able to care for their children, fear of transmitting the virus to a newborn child, worry about the health impact of pregnancy, fear of health side effects from using contraceptives).

Data and methods

Data are from recent Demographic and Health Surveys (DHS) conducted in Burkina Faso, Cameroon, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Malawi, Mali, Niger, Rwanda, Senegal, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. The surveys are nationally representative surveys of women aged 15-49 and men aged 15–59 with large sample sizes (see Table 1). The surveys typically cover a wide range of indicators in the areas of sexual and reproductive behavior and health. The particular surveys listed above are the first generation of the DHS to include biomarker testing for HIV, with a sub-sample of the respondents being tested for HIV in most cases (Mishra et al, 2007). Thus, these data are very appropriate for this study because we are able to link the results of the HIV test to respondents' sexual and reproductive health behaviors, preferences and needs.

Service Provision Assessments (SPA) are conducted in some but not all countries that have a DHS survey. This type of survey collects data from health facilities about the services available in a country. Health-related topics covered in the SPA surveys include costs, availability of services, infrastructure and quality of care. The standard SPA survey includes some questions on HIV/AIDS-related services. However, in 2004 MEASURE DHS developed a special HIV/AIDS SPA to meet the needs of the President's Emergency Plan for AIDS Relief (PEPFAR). This study

draws on SPA data focusing on HIV or HIV/MCH collected in Kenya (2004), Rwanda[1] (2007), Tanzania (2006), Uganda (2006) and Zambia (2005). The HIV/AIDS SPA focuses on the delivery of HIV – related preventive care and support services, including prevention of maternal-to-child transmission of HIV and antiretroviral therapy (MEASURE DHS 2007). We conduct separate analyses for women and men to examine the association of HIV status with the following three indicators of fertility preferences and contraceptive behaviors:

1. **Desire for a/another birth:** This measure is obtained from responses to the question "Would you like to have (a/another) child, or would you prefer not to have any (more)?" (If pregnant, the question was prefaced by "After the child you are expecting …"), and is obtained for fecund non-sterilized women and men.

2. **Unmet need for contraception:** This is defined as the proportion of fecund and sexually-active women and men who do not want to have a child soon (in the next 2 years) or who do not want any more children, and are not using any method of contraception.

3. **Condom use at last intercourse**: This is defined as the proportion of women and men who were sexually active in the past year and who used the condom at last intercourse in the last 12 months.

HIV status, the key independent variable, is based on the results of the biomarker test administered in the survey in combination with other questions on whether the respondent was tested at a prior time, and whether the respondent knew that previous test result, to classify respondents according to their probable knowledge of their HIV status. This proxy measure is necessary because the information available from the survey does not indicate with certainty whether respondents knew, at some point prior to the interview, that their HIV status was positive or negative. In the HIV module of the DHS, respondents were asked if they have ever been tested. Those who answered affirmatively were then asked if they received the result, but they were told not to tell it to the interviewer. The newly created measure of probable knowledge of HIV status has four categories:

a) Positive on biomarker test, tested previously and knows the results.
b) Positive on biomarker test and either tested previously and did not receive results, or no previous test.
c) Negative on biomarker test and either tested previously and did not receive results or no previous test.
d) Negative on biomarker test, tested previously and knows the result.

[1] Data in Rwanda were collected June-September 2007 and are not yet available.

A limitation of this measure is that with the data available, we are not able to determine with certainty whether or not the respondents know their status.

Other demographic and socioeconomic covariates are age, urban/rural residence, parity, union status, education and relative poverty status, which are included in the analysis as control variables to obtain the "net" association between HIV status and fertility preferences and contraceptive behavior. These covariates are selected because their measurement is comparable across countries in the DHS surveys and previous studies have found them to be important predictors of sexual activity and reproductive preferences, behavior and needs.

All covariates are employed as categorical variables in the analysis. Age, parity, union status and education were measured at the time of the survey and are based on responses to direct questions. For example, for age and education, the respondents were asked, respectively, "How old were you at your last birthday?" and "What is the highest level of school you attended: primary, secondary, or higher?" Residence was obtained as part of the sample identification information and defined as "rural" or "urban". Relative poverty status is a DHS constructed variable based on information collected on a number of household possessions. Using factor analysis, the information was summarized to obtain wealth quintiles, which group respondents into five categories of poverty status (Rutstein et al. 2004).

The analytical methods involve bivariate and multivariate examination of the relationships between the three outcome variables and HIV status. We begin with bivariate analysis to determine the magnitudes of the outcome variables and their differentials by HIV status without controlling for the effect of any other factors (i.e., the "gross effects" of HIV status on fertility preferences and contraceptive behaviors). To obtain the "net effects" of HIV status on the outcome variables and test the hypotheses specified above, we undertake multivariate analyses, controlling for age, parity, union status, education, residence and poverty status. Since all the outcome variables defined above are binary, logistic regression is used for all multivariate analyses.

For the countries with SPA data on HIV-related services availability (Kenya, Rwanda, Tanzania, Uganda and Zambia), we undertake further analysis that includes service availability covariates. The SPA variables included in the analysis are availability of: voluntary counseling and testing (VCT); clinical care and support services for people living with AIDS (CSS); antiretroviral therapy (ART); and prevention of mother to child transmission (PMTCT). Because these additional variables are

collected for geographic areas, their inclusion enhances our understanding of the association of the health service context for HIV and AIDS and individual fertility and contraceptive outcomes. HIV-related service variables are matched to respondents' area of residence. To properly account for the inclusion of variables at both the individual and aggregate geographic-level, we employ multi-level models to predict the outcomes.

References

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Table 1: Selected Characteristics of Demographic and Health Surveys in Sub-Saharan Africa with HIV Testing Data

Country, date	Total # of respondents interviewed in survey		# tested for HIV		HIV response rates		HIV prevalence		Among all women, % who want no more children	Among sexually-active women, % using contraception
	Men*	Women**	Men	Women	Men	Women	Men	Women		
Burkina Faso, 2003	3,605	12,477	3,418	4,223	86%	92%	1.9	1.8	20	16
Cameroon, 2004	5,280	10,656	5,098	5,287	90%	92%	4.1	6.8	17	31
Ethiopia 2005	6,033	14,070	5,124	5,956	76%	83%	0.9	1.9	39	15
Ghana, 2003	5,015	5,691	4,274	5,311	80%	89%	1.5	2.7	26	27
Guinea 2005	3,174	7,954	2,964	3,875	88%	93%	0.9	1.9	19	11
Kenya, 2003[a]	3,578	8,195	2,941	3,285	70%	76%	4.6	8.7	36	40
Lesotho, 2004/05	2,797	7,095	2,246	3,032	68%	81%	19.3	26.4	51	39
Malawi, 2004	3,261	11,698	2,404	2,864	63%	70%	10.2	13.3	32	32
Mali 2006	3,405	12,849	3,069	3,882	76%	85%	1.3	2.0	19	9
Niger 2006	3,549	9,223	3,231	4,441	84%	91%	0.7	0.7	9	11
Rwanda 2005[a]	4,820	11,321	4,741	5,679	96%	97%	2.2	3.6	33	17
Senegal 2005	3,761	14,602	3,303	4,521	76%	85%	0.7	0.9	16	12
Swaziland 2006	4,156	4,987	3,602	4,584	78%	87%	19.7	31.1	53	54
Tanzania, 2003[a,c]	5,659	6,863	4,994	5,753	77%	84%	6.3	7.7	na	29
Uganda, 2004/05[a]	8,830	10,826	8,298	10,227	84%	89%	5.0	7.5	34	25
Zambia 2001/02[a,b]	2,145	7,658	1,772	2,135	73%	79%	12.6	17.8	30	33
Zimbabwe 2005/06	8,907	7,175	5,554	7,491	63%	76%	14.8	21.1	33	53

* Men interviewed were aged 15-59, except in Kenya, Malawi and Zimbabwe (15-54 years old) and Swaziland and Tanzania (15-49 years old).
** Women aged 15-49 were interviewed in all countries.

a Country has HIV/AIDS SPA data.
b Intend to replace the current data with data from the 2007 ZDHS.
c Data are from an AIDS Indicator Survey where question about desire for more children was not asked.