Sexual multipartnership and condom use among adolescent boys in four sub-Saharan African countries

Guiella Georges, Department of demography, University of Montreal
Email: georges.guiella@umontreal.ca

Background

Despite some signs of progress in terms of the stabilizing of the global epidemic (UNAIDS, 2008; 2010), halting the spread of the HIV virus remains a big challenge for programs and policies worldwide. Sub-Saharan Africa is the most heavily affected by HIV, accounting for 68% of all people living with HIV and for 72% of AIDS deaths in 2009 (UNAIDS, 2010). Moreover, in this part of the world the epidemic among adolescents is the fastest growing. Young people of 15-24 years old accounted for 45% of new HIV infections in 2007, notwithstanding evidence that in recent years knowledge of the epidemic and how to prevent HIV infection has increased among them (UNAIDS, 2008). Unless young people adopt protective behaviors, the global HIV epidemic cannot be reversed in a near future as there is no HIV/AIDS cure on the horizon at present (Marston and King, 2006; Bankole et al., 2007; UNAIDS, 2008; 2010).

In addition to this global pandemic, young people in Sub-Saharan Africa are facing another major reproductive health problem: unwanted pregnancies. Among adolescent women, the proportions of recent births in the early 2000s that were reported to be either mistimed or unwanted were 23% in Burkina Faso, 40% in Ghana, 40% in Malawi and 39% in Uganda (Westoff and Bankole, 2002; Bankole et al., 2007). This situation has led often to unsafe abortion (Guillaume and Desgrées du Loû, 2002; Calvès, 2002; Guillaume, 2003; Singh et al., 2005; Rossier et al. 2006; Singh et al., 2006; Sedgh et al., 2007).

Research on adolescents' sexual behavior has shown that a range of factors including lack of reproductive health and HIV/AIDS information and services contribute to heightened risk of HIV among young people (UNAIDS, 2006; 2008, 2010; Juarez and LeGrand, 2005; Bankole et al., 2007). It has been widely argued that having multiple sexual partners concurrently or sequentially and not using condoms are among the most risky behaviours (Caraël, 1995b; Santelli et al., 1998; Mensch et al., 2006; Juarez et al., 2008). In a study in Uganda, Mermin et al. (2008) have shown that risk factors associated with recent HIV infection included number of sex partners in past year, with men who have had two or more sexual partners being 2.9 times more likely to be infected compared to those who have had just one sexual partner in the last 12 months.

As we can see, for sexually active individuals, except being faithful with an uninfected partner, the condom is to date the only method which has been proven to be highly effective in curtailing the transmission of HIV (Wald et al., 2001; Meekers and Klein, 2002; Bankole et al., 2007; Adebola et al., 2008; UNAIDS, 2010). This has been clearly

stressed on before: “Any number of other factors may influence who has sex with whom and whether they use condoms, but the act that spreads the virus, in the overwhelming majority of cases, is an act of unprotected sex” (MEASURE Evaluation program, 2001:10).

Factors influencing adolescents’ protective and risky behaviors include individual characteristics as well as contextual elements surrounding them. Thus, it has been shown that adolescents’ growing independence from parents makes them more vulnerable to peer pressures, especially at younger ages (Juarez and LeGrand, 2005; Biddlecom et al., 2009). In some contexts, having sexual intercourse is perceived to be important in affirming masculinity as well as the transition from boyhood to manhood (Marston and King, 2006), while having multiple sexual partners is seen by adolescents as a matter of prestige. Therefore, adolescent males tend to exhibit their invincibility and often defy each other to pursue numerous sexual partners in order to express their virility (Juarez and LeGrand, 2005; Marston and King, 2006; Juarez et al., 2008), leading to overlapping partnerships (Mensch et al., 2006).

On the other hand, parental monitoring (Harrison et al., 2008 ; Biddlecom et al., 2009) as well as religiosity and spiritual convictions (rather than being a membership of a given religion) (Bozon, 1993; Sauvain-Dugerdil et al., 2008), have often been identified as protective resources.

Despite these studies on the determinants of sexual multipartnership and condom use among adolescents, these two important behavioral variables have been often analyzed separately, resulting in a lack of thorough understanding of joint factors that affect them. And yet, while it is important to know which adolescents are likely to have multiple sexual partners and which ones are also likely to use condom, in terms of prevention strategy it is more important to know which adolescents are likely to use condoms when they have multiple partners. As stated by UNAIDS (2010), “for maximum effect [in halting HIV spread], all routes to reducing the risk of sexual exposure to HIV must be pursued simultaneously” (UNAIDS Report on the Global AIDS epidemic, 2010: 68).

Using data from nationally-representative surveys of adolescents, this study examines the simultaneous effects of individual, socio-economic and contextual factors on sexual multipartnership and condom use among adolescent boys of 12-19 years old in four sub-Saharan African countries: Burkina Faso, Ghana, Malawi and Uganda. More specifically, it examines the extent to which individual characteristics as well as parental support are acting as simultaneous predictors of risky and protective behaviors.

Data and methods

Data source

The National Adolescents Surveys used here are largely modeled on the Demographic and Health Surveys (DHS), while two additions make them particularly appropriate for the purposes of the present analysis: first, they interviewed adolescents starting at 12 years of age (whereas the DHS only interviews respondents age 15 and above); and

second, they included detailed questions on adolescents' characteristics and sexual behaviors. The surveys were nationally representative and household-based with a two-stage stratified sample design based on the sample frame and the same clusters used by the National Statistical Offices for the Demographic and Health Surveys in the four countries. The sampling design entailed a first-stage systematic selection of census areas and a second stage selection of households within the selected census areas based on an updated household listing. All eligible 12 to 19 year old youth and de facto residents in each sampled household were included in the survey. Consent from a parent or caretaker was required for minor adolescents (12-17 years old) before the eligible adolescent was authorized to participate in the survey. A total of 5,955 adolescents of 12-19 years old were surveyed in Burkina Faso (3,016 boys and 2,939 girls), 4,430 in Ghana (2,229 boys and 2,201 girls), 4,031 in Malawi (2,052 boys and 1,979 girls) and 5,112 in Uganda (2,510 boys and 2,602 girls). However, the present analysis is limited to sexually active adolescent boys.

Methods of analysis

Given the widely assumed correlation between the two dependent variables (multipartnership and condom use), the probability of having the two events are not independent. Therefore for the multivariate analysis, we use a *probit* model to account for this correlation (Greene, 2005). The first dependent variable is "having had multiple sexual partners in the last 12 months" and the second dependent variable is "having used condom systematically with sexual partners in the last 12 months". We define systematic use of condom in the last 12 months (coded 1) as having used a condom with all or the one non-cohabiting partner regardless of its consistency. The ρ parameter measures the correlation that adolescent boys have had multiple partners in the last 12 months and have simultaneously used condom systematically. The estimated coefficients β_1 and β_2 allow us to gauge direction and statistical significance of each variable effects on the two dependent variables (Greene, 2005). Pooled analyses were performed by combining the data from all four countries and adding country identifier variable in the logistic regression model. In the descriptive results, bivariate analysis of age differences in sexual activity and background characteristics was conducted using chi-square tests and adjusted with the *svyset* procedure from STATA version 11 to take into account the complex sample design of the survey in each country.

Results

Descriptive results

Results on entry into sexuality show two opposite pattern between the East and South African countries (Uganda and Malawi) and the two West African countries. Indeed, adolescent boys enter into sexuality earlier in the first two countries than in the two other countries. At age 15-17 while 9% of adolescent boys in Ghana and 23% in Burkina Faso have ever had sex, 41% and 52% of them did so respectively in Uganda and Malawi at the same age.

The great majority of sexually active adolescent boys have had one sexual partner in the last 12 months. However the proportion of those who have had two and more sexual partners is not negligible. Thus, 13% of adolescents aged 12-14 in Burkina and Uganda report having had two and more sexual partner in the last 12 months. Overall, the likelihood of having multiple sexual partners raises with age: the older the adolescent the higher the likelihood to have had two and more sexual partners.

Condom use at first sex is rather low across all countries especially among younger adolescents. However, condom use at first sex raises with age: the older the adolescent the higher the likelihood to have used. Adolescent boys in Burkina Faso are more likely to have used a condom at first sex compared to those of the other three countries. In Uganda, among adolescents aged 15-19 who have had one non-cohabiting sexual partner in the last 12 months, 42% of them have used a condom while only 22% of those who have had two and more sexual partners have systematically used a condom ($p<0.01$). The situation is roughly the same in Burkina Faso where these proportions are respectively 45% and 28% ($p<0.5$).

Multivariate results

Two *probit* models were estimated: a first model restricted to independent variables that are unlikely to be endogenous (not presented in this abstract) and a second model, where a series of HIV-related knowledge variables have been introduced in order to capture the impact of knowledge and communication on adolescent boys' sexual behaviors. And these variables are presumed potentially endogenous (Greene, 2000; Akwara et al., 2003; Juarez and LeGrand, 2005). Endogeneity exists when reverse causality is possible between dependent and independent variables (Juarez and LeGrand, 2005). For example, having heard messages about HIV transmission may lead to more protective behaviors (use of condoms during risky sexual encounters, no multipartnership), but adolescent boys' sexual behaviors may also lead them to seek more information through messages.

The following results interpretation is based on the full model (table 1). It presents the estimated coefficients from *probit* models of having had multiple sexual partners in the last 12 months and systematic condom use at the same period. We also present the predicted probability of the two events for adolescents of different characteristics (the four last columns), after controlling for the effects of all other variables. Thus, P11 is the probability that an adolescent who has had multiple partners in the last 12 months has also used condom systematically; P10 the probability that he has had multiple partners and did not use condom systematically, P01 the probability that he did not have multiple partners (he has had one partner) and did use condom systematically. Finally, P00 is the probability that he did not have multiple partners (he has had only one sexual partner) and did not use condom systematically. The two first columns (gross effects) show the direct effect of each independent variable on sexual multipartnership and condom use in the last 12 months among adolescents.

Table 1: Model 2: Estimated coefficients of probit model for multiparnership and condom use in last 12 months among adolescents in the four countries (pooled data) including HIV-related knowledge variables.

	Gross effects		Model 2		Predicted probability (%)			
	Multipart	Condom use	Multipart	Condom use	P11	P10	P01	P00
Age at survey								
12-14 years	1	1	1	1	1.0	7.3	23.6	68.2
15-17	0.27	0.58***	0.42*	0.25	3.2	13.0	28.9	55.0
18-19	0.43*	0.89***	0.65**	0.44*	5.7	16.2	32.5	45.5
First sex before 15								
No	1	1	1	1	3.5	9.9	32.8	53.9
Yes	0.21*	-0.38***	0.46***	-0.16	5.8	18.9	25.3	49.9
Level of schooling								
None	1	1	1	1	2.4	17.4	17.6	62.6
Primary	-0.17	0.11	-0.12	0.37**	3.4	13.5	27.1	55.9
Secondary and higher	-0.05	0.96***	-0.09	0.98***	6.9	10.5	45.1	37.5
Religious attendance								
Less than once/month	1	1	1	1	5.0	14.7	30.6	49.7
At least once a week	-0.14	-0.14	-0.13	-0.06	3.9	12.7	29.9	53.4
More th. once a week	-0.07	-0.07	-0.15	-0.09	3.6	12.5	29.2	54.7
Parental control								
Low	1	1	1	1	5.4	17.3	27.0	50.3
Medium	-0.12	0.15	-0.17	0.05	4.4	13.7	29.6	52.3
High	-0.53***	0.17‡	-0.52***	0.14	2.7	8.0	34.0	55.3
Household wealth index								
Poorest	1	1	1	1	4.8	16.5	25.4	53.4
Second	-0.08	0.31*	-0.11	0.19	5.0	13.3	31.3	50.4
Middle	-0.11	0.22	-0.17	0.11	4.2	12.7	29.3	53.8
Fourth	0.01	0.33*	-0.09	0.06	4.5	14.4	27.6	53.5
Wealthiest	-0.23	0.96***	-0.37‡	0.28	3.6	9.0	35.6	51.9
Residence								
Rural	1	1	1	1	3.9	13.5	29.0	53.6
Urban	0.01	0.67***	0.04	0.18	5.1	13.2	33.8	47.9
Country								
Burkina	1	1	1	1	6.2	11.9	39.7	42.2
Ghana	0.24	-0.13	0.24	-0.80***	3.5	21.3	18.0	57.2
Malawi	-0.16	-0.32*	-0.14	-0.47**	3.0	11.9	27.8	57.3
Uganda	-0.07	-0.14	-0.02	-0.46**	3.7	13.9	27.5	55.0
HIV-related knowledge								
Healthy-looking person can be HIV+								
No	1	1	1	1	2.5	11.8	25.1	60.6
Yes	0.15	0.47***	0.17	0.26*	4.5	13.8	31.1	50.6
Know PLWA†								
No	1	1	1	1	4.1	13.8	28.8	53.4
Yes	-0.03	0.19*	-0.02	0.08	4.3	13.0	31.0	51.7
Know PDWA†								
No	1	1	1	1	3.8	13.5	28.4	54.3
Yes	-0.03	0.22*	0.01	0.08	4.3	13.3	30.4	51.9
Media exposure on HIV								
Has seen TV message								
No	1	1	1	1	3.8	12.8	30.0	53.3
Yes	0.12	0.44***	0.11	0.04	4.7	14.5	30.3	50.5
Has heard Radio message								
No	1	1	1	1	3.9	13.1	29.4	53.7
Yes	0.04	0.22‡	0.03	0.04	4.3	13.4	30.2	52.2
Ever seen condom demonstration								
No	1	1	1	1	3.3	13.9	26.1	56.7
Yes	0.13	0.52***	0.03	0.25**	4.7	13.1	32.7	49.5
ρ (rho)			-0.240***					
Log-likelihood			-1277.02					

Significant at: ‡ p<0.1; * p<0.05; ** p<0.01; *** p<0.001; Notes: † PLWA: People living with AIDS; PDWA: People who died of AIDS

Findings from gross effects show a co-occurrence of multipartnership and condom use among older adolescents (18-19 years) compared to younger adolescents (12-14 years). They are significantly more likely to have multiple sexual partners (coefficient of 0.43 with $p<0.05$) but also more likely to use condom systematically (coefficient of 0.89 with $p<0.001$). This tendency is also confirmed in the full model. The probability of using condom in case of multipartnership is about 6 times higher among older adolescents than among younger ones.

Adolescents who became sexually active earlier (having had first sex before age 15) are significantly more likely to have had multiple sexual partners in the last 12 months (coefficient of 0.21 and $p<0.05$), but also less likely to have used condom systematically (coefficient of -0.38 and $p<0.001$).

Adolescents who reported high parental control are less likely not only to have multiple sexual partners (coefficient of -0.53), but they are also more likely to use condom when multiparnertship occurs (coefficient of 0.17 and $p<0.10$). This result suggests that notwithstanding parents' declining influence over their children's behavior in recent years, they continue to play important roles in promoting adolescents' responsible sexual behavior. This is rather encouraging on condition that public and nongovernmental organizations integrate parents as cornerstones in adolescents' sexual and reproductive health programs.