Correlates of Sexual Initiation: A study Among Never-married Adolescents (10-19) in Uganda

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Abstract

This paper elucidates factors associated with onset of penetrative sexual intercourse among never-married adolescents in Uganda based on data sourced from the Straight Talk Evaluation Survey comprising 2,133 records. The likelihood of sexual initiation was modeled using the logistic regression in a range of socio-demographic, knowledge, attitude and behavior factors. In the results, nearly one in eight adolescents (12.2%) had initiated sexual intercourse before age 19. Noticeably, the odds of sexual initiation were higher among adolescents at later ages, male, out-of-school, those involved at large in activities that predispose risky behavior and with a relatively high level of knowledge on reproductive health and HIV issues; while, lower among adolescents with a progressive attitude towards premarital sex. Consequently, early sex education focusing on clarification of core values related to premarital sex, control in exposure to risky behavior through increased parental involvement and prioritizing schooling particularly among girls were remedies suggested.

Keywords: *Sexual Initiation, Never-married Adolescents, Uganda*

In Uganda, just like the rest of the world, there has been a sudden surge of interest in studying matters related to sexuality during the last decade mainly on the account of the threat of HIV/AIDS pandemic. Adolescence, a stage defined in the ages 12-18 by the WHO and UNICEF, is a crucial phase of development. Oftentimes, menarche starts at a much earlier age, even at ages 10-11; thus, the age limits may differ in various set-ups. Nevertheless, a considerable proportion of adolescents are oriented to sexual intercourse, yet oftentimes lack comprehensive knowledge on sexuality and reproductive health. No wonder, studies documenting early onset of sexual intercourse have associated this stage with level of unprotected sex (UNFPA, 2005; Sekatawa, 2000), increased risk of unwanted pregnancies and STI (for example, Sarantaki, 2003; WHO, 2004), multiple sexual partners, maternal morbidity and Mortality as well as truncated education opportunities (Coker, 1994; Lydia, 2001).

Sexual desires, attitudes, opportunities and behaviors among young people are associated with by a multi-layered mix of factors comprising, however not limited to: **1)** demographics of age and sex (for example, Adam, 2003; AGI, 2001; Lydia, 2001), residence (Adman, 2003; UBOS & Macro International, 2006), family structure (Federal Inter-agency Forum on Child and Family Statistics, 1998; Halpern, 1999; Bruce & Joyce, 2006; UNICEF, 2002; Luke, 2003), schooling status (UNAIDS, 2008; UBOS & Macro International, 2006), religion (for example, Beck, Cole & Hammond, 1991; Cochran & Beeghley, 1991; Charlotte, 2000); religious affiliation has also been considered an important influencing factor of attitude shaping against premarital sex (for example, Charlotte, 2000; Beck, 1991; Isaac, 2000; Claudia et al., 2003); **2)** behavior factors comprising exposure to activities that predispose risky behavior (for example, Horton-parker, 1999; Narayanaswamy, 2003; Thu, 2008); **3)** Knowledge of reproductive health and HIV issues (Narayanaswamy, 2003; UN, 1994, 1999); 4) exposure to mass media (for example, Wingood, 2001; Claudia, 2003; UBOS and Macro International, 2001; Susan, Karusa, Watson & Muhwezi, 2007).

Worth noting, is the fact that young people (under 19), according to the 2006 DHS, occupy a substantial proportion of Uganda's population; and, are said to be vulnerable to participate in sexual activities. They are a key factor in all development programming not

only as consumers and beneficiaries of services, but also a major production resource. However, their ability to contribute to nation's productivity certainly depends to a great extent on how well they can avoid health risks, especially those associated with their sexual and reproductive health. To this end, the need to assess adolescent's sexual behavior, particularly outside of marriage, is key issue for Uganda's young generation.

DATA AND METHODS

Secondary data was sourced from the 2006 Straight Talk Foundation and Population Council community based survey implemented in six districts of Uganda namely Apac, Arua, Ntungamo, Soroti, Kamuli and Kisoro. Based on a total of 2,052 household obtained from 12 counties, 24 sub-counties and 48 parishes, a sample of 2,133 never-married adolescents aged 10-19 were interviewed.

Sexual initiation, denoting adolescents reporting having engaged in penetrative sexual or vaginal intercourse, was modeled using a binary outcome - either adolescent had first sex before age 19 represented by a '1'or delayed sex represented by a '0'. Thus, a binary logistic regression was adopted in establishing the collective net impact of the explanatory variables conceptualized to be: demographics, exposure to media, reproductive health and HIV knowledge, attitude towards premarital sex and involvement in activities that predispose risky behavior. A standard probability value (p-value) criterion for keeping predictors for further analysis suggested by Hilbe (2011) was adopted - predictors with a parameter p-value of above 0.5 during the Univariate Logistic Regression were excluded from the final model, unless otherwise; it's unlikely that these variables will contribute anything to the final model.

RESULTS

The analysis relates to adolescent with the following profile in the main: similar proportion of male and females, median age of 15, predominately Christians (90.8%), rural by residence (75.4%), living in two-parent family structures and enrolled in primary (68.4%) followed by post-primary (18.1%) education levels.

Correlates on Sexual Initiation

In the descriptive results, nearly one in eight adolescents (12.2%: 95%CI 10.8 – 13.6) had ever had an experience in penetrative sexual intercourse before age 19. The statistic points to a delayed onset of sexual intercourse by a bigger proportion of the adolescents. Following a binary outcome, the likelihood of penetrative sexual onset among adolescents (10-19) was modeled using a logistic regression. Results of predictor selection criterion following the univariate logistics regressions presented in Table 1, implied regressing on all the variables in the final model.

Table 1: Proceedings of Univariate Logistic Regression on Potential Predictors

Variables: Item	OR[a]	LL[b]	χ^2	p-value
Sex: Female	0.57	-779.79	16.4	0.0000
Age: 14-16	0.79	-786.57	2.9	0.0866
Age: 17-19	4.89	-722.18	131.7	0.0000
Residence: Rural	0.74	-786.04	3.9	0.0457
Exposure to ST[c] Material: No	0.74	-786.12	3.8	0.0505
Religion: Catholic	0.84	-786.54	1.6	0.1943
Religion: Protestant	2.03	-781.76	11.2	0.0008
Religion: Born Again	0.45	-783.07	8.6	0.0033
Religion: Other	0.34	-786.61	1.5	0.2133
Schooling Status: Primary	0.22	-707.88	119.9	0.0000
Schooling Status: Post-primary	1.81	-760.97	13.7	0.0002
Family Structure: Father Only	1.34	-786.73	1.0	0.3064
Family Structure: Mother Only	1.22	-786.56	1.3	0.2372
Family Structure: Other	1.29	-786.12	2.2	0.1327
Exposure to Risky Behavior: Some Extent	1.34	-785.63	4.8	0.0282
Exposure to Risky Behavior: Great Extent	10.12	-694.71	186.6	0.0000
Attitude towards premarital Sex: Disapprove	0.33	-698.52	32.5	0.0000
Attitude towards premarital Sex: Not sure	1.59	-714.06	1.4	0.2327
Reproductive Health and HIV knowledge	2.94	-760.63	41.7	0.0000

[a]OR denotes the estimated Odds Ratios

[b]LL denotes Log Likelihood estimates

[c]ST denotes Straight Talk

Table 2: Likelihood Estimates of Sexual Onset among Never-married Adolescents

Variables[a]		β_i	OR[b]	Std. Err	p-value
Age					
	10-13	**0.000**	**1.00**	.	.
	14-16	0.928	2.53	0.276	0.001
	17-19	1.429	4.17	0.276	0.000
Residence					
	Urban	**0.000**	**1.00**	.	.
	Rural	-0.364	0.69	0.192	0.059
Schooling Status					
	Out-of-school	**0.000**	**1.00**	.	.
	Primary	-1.140	0.31	0.223	0.000
	Post primary	-0.942	0.38	0.240	0.000
Sex					
	Male	**0.000**	**1.00**	.	.
	Female	-0.368	0.69	0.172	0.033
Exposure to ST Material[c]					
	Yes	**0.000**	**1.00**	.	.
	No	0.710	2.03	0.220	0.001
Exposure to Risky Behavior[d]					
	None	**0.000**	**1.00**		
	Some Extent (1-2)	0.984	2.67	0.201	0.000
	Great Extent (3++)	2.404	11.07	0.242	0.000
Attitude towards Premarital Sex					
	Approve	**0.000**	**1.00**	.	.
	Disapprove	-0.878	0.41	0.248	0.000
	Not sure	0.782	2.18	0.520	0.133
Reproductive Health and HIV knowledge		0.774	2.16	0.252	0.002
Const.		**-2.939**		**0.545**	**0.000**

Note. LR χ^2 *= 353.18, p < 0.001, n = 1883*

[a]Bold variable items represent reference categories adopted

[b]OR denotes estimated Odds Ratios

[c]Straight Talk (ST) Material: ST Radio, ST Paper and Young Talk Paper

[d]Exposure to Risk Behavior: A pooled score of involvement in risk behaviors was used where a value of '0' represents no involvement while a value of '8' represents involvement in all the risky behaviors.

Proceedings of Model Post-estimation

The model post-estimation procedures carried out comprised: **a)** Specification error of link function, **b)** Hosmer and Lemeshow Chi-square goodness of fit, and **c)** Classification accuracy of the model.

Table 3: Specification Errors of Link Function of Logit Model

Estimates		Coef.	Std. Err	p-value
	_hat	0.896	0.125	0.000
	_hatsq	-0.035	0.038	0.351
	_cons	**-0.016**	**0.123**	**0.891**

Table 4: Classification Table of Logit Model

	Observed		
Classified	Initiated	Not initiated	Total
Initiated	51	37	**88**
Not initiated	176	1619	**1795**
Total	227	1656	**1883**
Criteria	0.50		
Sensitivity	22.5%		
Specification	97.7%		
False positive rate	2.2%		
% correctly classified	**88.7%**		

Firstly, the specification error tests presented in Table 3 shows that the model was well specified as predicted by hat statistic (**_hat**: $p < 0.001$); the hat-square (**_hatsq**) statistic shows that no additional variables were significant ($p > 0.05$). As regards to classification accuracy of model, results in Table 4 show that the proportion of actual cases that were classified as cases (sensitivity of classification) were 22.5%, while the proportion of actual controls that were classified as controls (specification of classification) is 97.7%.

The low sensitivity was attributed to the small proportion of adolescents initiated to sexual intercourse in the sample - few cases predicted values that meet the 0.5 criterion. However, the proportion of observations correctly classified was 88.7%.

Thirdly, the results of the ROC curve using the area under the curve, which is the key statistic in evaluating the quality of the ROC, shows that the model has excellent discriminatory power *(AUC = 0.845)*; model accurately classifies observations into the various categories of the dependent variable. Finally, the Hosmer and Lemeshow Chi-square goodness of fit (GOF) test shows that the model was a good fit – data adequately fits the approach well ($\chi^2 = 799.3,\ p = 0.549$).

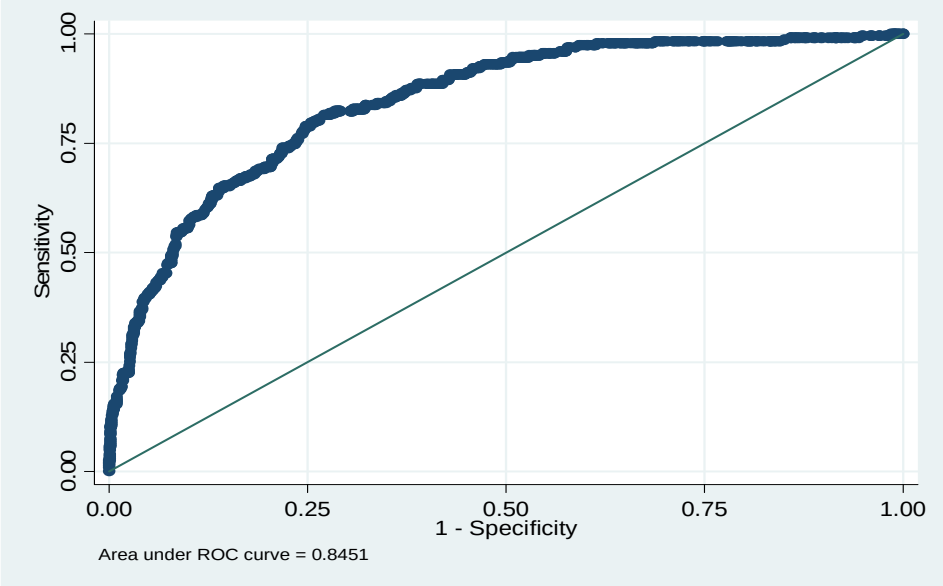

Figure 1: Receiver Operating Characteristic (ROC) curve Estimates of the Logit Model

Summary of the Findings

Though religious affiliation and family structure had small probability estimates during the Univariate Logistic analysis ($p < 0.5$), their contribution to the final model was negligible. In other words, removal of these variables from the final model hardly caused any variations in the beta estimates; thus, variables were excluded from the model. In the results, significant associations with the likelihood of sexual onset before age 19 were noted for the variables namely age, schooling status, sex, exposure to risky behavior, knowledge of reproductive health and HIV issues, attitude towards premarital sex and

exposure to ST radio and print materials ($p < 0.05$). The details of associations according to results in Table 2 were as follows:

- Adolescents at the later ages were more likely to initiate sex before age 19 compared to their peers at the lower ages of 10-13 ($p < 0.05$); the odds among the 14-16 and 17-19 age groups came at 2.53 and 4.17, respectively
- In-school adolescents had reduced odds of sexual onset before age 19 compared to the out-of-school ($p < 0.05$); primary and post-primary schooling adolescents had 69% and 62% reduced odds of initiating sex, respectively
- Conspicuously, females had 31% reduced odds of sexual onset before age 19 compared to the males
- Exposure to risky behavior to some extent (OR = 2.6) and to a greater extent (OR = 11.1) was associated with increased odds of sexual onset before age 19 compared to none exposure
- A progressive attitude towards premarital sex was associated with 59% reduced odds of sexual onset (OR = 0.41)
- Surprisingly, a relatively high level of knowledge on reproductive health and HIV issues was associated with 2.16 increased odds of sexual onset before age 19
- Non-exposure to ST radio and print material was associated with 2.03 increased odds of sexual onset before age 19

DISCUSSIONS AND CONCLUSIONS

A small proportion of adolescents initiating sex before age 19 (12.2%) points us to the fact that majority had delayed onset. The findings corroborate research by the Alan Guttmacher Institute that reports a small number of early teens being sexually active by age 18 (AGI, 2001). Nevertheless, the evidence of early sexual initiators points to the existence of health related risks, particularly those related to sexual behavior, among adolescents as early as age 10; thus, affirming the need for early sex education focusing on clarification of core values related to premarital sex.

In the results particularly, quite a number of associations with socio-demographic, knowledge, attitude and behavioral factors were supported. In the results, the likelihood of sex initiators is consensually noted to be higher among males (for example, Adam, 2003; AGI, 2001; Lydia, 2001; UBOS and Macro International, 2006), out-of-school (UNAID, 2008; UBOS and Macro International, 2006), adolescents exposed to activities that predispose risky behavior (Narayanaswamy, 2003; Thu, 2008), those with relatively high level of knowledge regarding reproductive health and HIV issues (for example, Narayanaswamy, 2003) and those who approve or not sure about their position regarding premarital sex (for example, Claudia, 2003).

Similar to the Claudia's 2003 six-country study on programs including absence and delayed sexual initiation aspects, adolescents receiving related messages through Straight Talk Foundation materials (ST Radio, ST and Young Talk papers) were less likely to initiate sexual intercourse before age 19. Certainly, the suggestion that exposure of young people to sexual talk and sexual content in media influences their sexual behavior is supported (Claudia, 2003; Wingood, 2001). While Claudia (2003) reports reduced odds of sexual initiation among adolescents exposed to media campaigns on abstinence, Wingood (2001) on the other hand reports increased odds of sexual behavior among adolescents exposed to X-related movies. In Uganda, similar findings were realized in a 2001 study by UBOS and Macro International regarding the use of mass media for transmitting HIV/AIDS information. Though responses varied with education level and residence, an overwhelming acceptance regarding the use of mass media in transmitting information was noted. To this end, if indeed exposure to Straight Talk Foundation materials (print and Media) improves adolescent's knowledge of reproductive health and helps them adopt safer behaviors (Susan et al., 2007), then expanding the coverage of abstinence campaigns beyond ST catchment areas will go along way in safe guarding adolescents against a series of health risks, particularly those related to their sexual behavior.

The influence of family structure on likelihood of sexual onset among adolescents is debatable. While Ted (2002) identified sexual initiators among single-parent families, Kathleen et al. (2005) suggests that greater parent involvement was related to lower sex onset only when youths lived in socio-economically advantaged neighborhoods. In this

study particularly, sexual onset during adolescence did not vary between single and two-parent family structures. The variations in context of neighborhoods, cultures and families may be the key in understanding variations of sexual behavior of adolescents in Uganda and other countries.

Despite slight variations noted, the correlates of sexual initiation among never-married adolescents in Uganda relate favorably with experiences reported in the literature among other countries. Consequently, early sex education focusing on clarification of core values related to premarital sex, control in exposure to risky behavior through increased parental involvement and prioritizing schooling particularly among girls are remedies suggested.

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