Condom use at first and latest sexual events among young people: evidence from a rural and peri-urban setting in Uganda

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Abstract

Background: Condom use remains low among young people despite high prevalence of HIV, STIs, and unplanned pregnancy in Uganda.

Objectives: This paper presents patterns of condom use at first and latest sexual events and associated factors.

Methods: The data were obtained from 445 sexually active unmarried people aged 15-24 from one peri-urban and another rural district. Stratified multi-stage cluster sampling technique was applied. Logistic regression was used to identify factors associated with condom use at each of the two sexual events, while multinomial logistic regression was used to establish factors correlated with condom use at both first and last sex.

Results: Factors associated with condom use at each event were residence in the peri-urban district and higher education attainment. Factors correlated with condom use at both first and last sex were residence in peri-urban district ($p<0.001$) and being in school ($p<0.01$). Alcohol consumption and age at first sex were only significant at one event.

Conclusion: Some factors that influence condom use at first sex are different from those that affect condom use at latest sexual event. Prevention programmes against STIs, HIV and unplanned pregnancies among young people focus more on rural areas and those with minimal or no education.

Key words: Multinomial logistic regression, dynamics of condom use, HIV, STI, STD, unplanned pregnancy

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Introduction

Condoms are a core component of basic HIV prevention services recommended by the World Health Organization[1]. When used consistently and correctly, the male condom is effective in reducing sexual transmission of HIV and STDs[2]. The importance of condoms can never be over emphasised especially at a time when prevalence of HIV, STD/STIs, and unplanned pregnancies are still unacceptably high in many countries. UNAIDS estimates that, as of December 2010, a total of 34 million people were living with HIV while 2.6 million were infected in the same year[3].

Young people are among the most vulnerable group as more than half of new HIV infections occur among those aged below 25 years[4]. Unintended pregnancies lead to about 12,000 abortions among adolescents each day[5]. Correct and consistent use of condoms is the best way to prevent both pregnancy and disease[6].

In Uganda, prevalence of condom use at first sex among unmarried young people aged 15-24 has been reported to be 37% for females and 59% for males; while use at latest sex among the same age group is 54% for both males and females[7]. The prevalence of HIV in the general population has been 6.4%[7] but has risen[8]. Only a small proportion of sexually active young people can abstain for even 12 months[9].

Two of the best-recalled sexual events are the first and latest sex. There is a close association of condom use at first sex with lifetime condom use[10] and condom use at last sex is a reasonable proxy for consistent use as indicated by the high correlation between recency and frequenc[11]. This paper investigates condom use at first and last sex, and establishes factors associated with condom use at each of the events separately and at both events. Relatively little work has been done in this area.

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Methods

The data used in this study were obtained in May 2004 from 445 sexually active young people aged 15-24 in Mukono and Kabale districts in Uganda. Mukono is a peri-urban district with its headquarters located 27km from the capital city, Kampala. It is on the highway to Uganda's second largest city, Jinja. Kabale is in extreme south west of the country, 420km from Kampala. The district is largely rural, it is dependent on agricultural produce[12].

A semi-structured questionnaire was used to collect the data. The respondents were randomly selected in a stratified multi-stage cluster survey. This involved use of simple random sampling technique to select sub-counties, parishes and villages, and systematic sampling to select a number of households that ranged from 4 to 14 per village.

The data on condom use were from questions on condom use at first and latest sex. Condom use was categorised in use at first and latest sex, use at only one of the two events and none-use at both events. Those whose first sex was at the same time the last sex were left out of the analysis that combined both times.

A chi-square test was used to test for equality of the proportion of condom use between levels of variables. Binomial logistic regression technique was used to model condom use at first and latest sex. Multinomial logistic regression was used to model condom use at the two events since the outcome resulted in more than two categories[13]: condom use at the two events, use at one of the two and non-users at both events.

The model selection criteria used was based on work by Hosmer & Lemeshow[14] All variables with a *p*-value less than 0.2 in bivariate analysis were put in a model and a backward elimination procedure was followed. While in the multivariable model, variables with the highest *p*-value were removed one at a time until all had a Wald's test[15] *p*-value of less than 0.2. All variables not initially included in the model and those eliminated were also considered one at a time for any major positive influence by examining the changes in log likelihood on the model and the value of the log likelihood ratio test. Pearson's and Hosmer-Lemeshow's chi-square tests were also used to assess the goodness of fit of the models. Models were deemed well fit if there was minimal difference between observed and predicted values[16] and hence higher *p*-values ($p>0.05$).

Results

Description of the respondents

Males were slightly more than females in the sample (males: 53%, females 47%). A higher proportion (59%) of respondents was from Kabale while the rest (41%) were from Mukono (table 1). Most of the respondents (65%) were under 20 years of age; the females were much younger as 78% were aged 15-19 compared to 53% for males ($p<0.001$). Nearly a half of them were in school and 62% had attained at least secondary education. Males were more likely to have attained secondary education than females ($p=0.02$). Most of the respondents (81%) were Christians.

Table 1: Characteristics of the respondents

Characteristics	Male n (%)	Female n (%)	All n (%)	Chi-sq. p-value
District				
Mukono	90(38.3)	94 (44.8)	184 (41.4)	0.61
Kabale	145 (61.7)	116 (55.2)	261 (58.7)	
Age group				
15-19	125 (53.2)	163 (77.6)	288 (64.7)	<0.001
20-24	110 (46.8)	47 (22.4)	157 (35.3)	
In school				
No/never	113(48.1)	107 (51.0)	220 (49.4)	0.55
Yes	122 (51.9)	103 (49.1)	225 (50.6)	
Education				
None/Primary†	77(32.8)	92(43.8)	169(38.0)	0.02
Secondary and higher	158(67.2)	118(56.2)	276(62.0)	
Religion				
Catholic	91(38.7)	77(36.7)	168(37.8)	0.98
Protestant	100(42.6)	92(43.8)	192(43.2)	
Muslim	31(13.2)	29(13.8)	60(13.5)	
Pentecostal/Evangelical	13(5.5)	12(5.7)	25(5.6)	
All	235 (52.8)	210(47.2)	445 (100.0)	

†only 6 males and 10 females had never been to school

Description of first and latest sexual events

A lower proportion of respondents (males, 66%; females, 76%) had first sex within an established relationship compared to latest sex (males, 82%; females, 84%) and this was more evident among males than females. Established relationship referred to girl/boyfriend or a known friend. Other relationship was casual or just a known person and a previously unknown or one time partner. The proportion that had sex within an established relationship was significantly higher among females than males (p=0.03) at first sex but the difference was not significant at last sex.

Table 2: Description of first and latest sex events by gender

Variable	First sex event			Latest sex event		
	Men (%)	Women (%)	p-val	Men (%)	Women (%)	p-value
Type of partner	**n=235**	**n=210**		**n=228**	**n=202**	
Girl/boy friend or known friend	65.8	75.5		82.0	84.2	
Casual (known but not friend)	21.8	12.5	0.03	8.8	8.4	0.44
One time partner (unknown)	12.4	12.0		9.2	7.4	
Age difference with partner	**n=221**	**n=181**		**n=226**	**n=177**	
Younger partner	60.6	4.4	<0.001	78.9	10.2	<0.001
Same age	16.3	5.0		11.5	7.9	
Older (by 1-5 years)	21.3	60.8		8.9	57.1	
Older (by 6+ years)	1.8	29.8		0.9	24.9	
When event occurred (years before survey)	**n=235**	**n=210**		**n=228**	**n=202**	
Within 5 years	76.3	88.1	<0.001	91.7	95.5	0.64
Six+ years	23.7	11.9		2.6	0.0	
Willingness	**n=235**	**n=210**		**n=228**	**n=202**	
Persuasion/coercion	35.7	34.0	0.62	34.3	27.7	0.14
Both willing	64.3	66.0		65.6	72.3	
Reason for use of condom (Users only)	**n=104**	**n=122**		**n=102**	**n=118**	
Did not want a child	16.4	45.9	<0.001	20.0	41.5	<0.001
Avoid HIV	76.9	48.4		73.3	51.5	
Other	6.7	5.7		6.7	6.9	
Reason for not using condom (non-users only)	**n=135**	**n=86**		**n=135**	**n=130**	
Trusted partner	32.6	17.4	<0.001	34.8	22.5	<0.001
Partner refused	4.4	19.8		8.7	25.4	
Other	49.6	39.5		51.1	33.8	
Don't know	13.3	23.3		5.4	18.3	
Source of condoms (Users only)	**n=99**	**n=109**		**n=92**	**n=71**	
Shop	59.6	37.6	<0.001	54.2	38.6	<0.001
Private clinic/Drug shop	21.1	23.9		20.8	25.4	
Health centre	2.0	6.4		12.5	7.0	
Don't know	3.0	22.9		0.8	21.9	
Other	2.0	9.2		11.7	7.0	

A much higher proportion of males had younger partners at first and latest sex. The proportion that had younger partners had increased by latest sex for both males (61% - 79%) and females (4% - 10%) but the increase was more significant among males ($p<0.01$) than females ($p=0.035$).

Females had longer exposure to sex compared to males as 88% had their first sex in previous 5 years compared to 76% for males ($p<0.001$). Nearly all (>91%) had latest sex in previous 12 months. A little over one third of the males and females reported having been coerced or persuaded by their partners to have first sex but this did not change significantly by last sex.

The major reasons for using condoms were avoiding HIV and pregnancy; while the main reasons for not using condoms were related to trust and refusal by the partner. At last sex, 73% of males and 52% of females used condoms to avoid HIV; while 20% of males and 42% of females wanted to avoid pregnancy. The reported sources of condoms were shops, private clinic/drug shops and health centres. Females were more likely to report lack of knowledge of sources of condoms than males.

Reported levels of condom use at first and latest sexual events

Table 3 shows levels of condom use by gender. Overall, half of the respondents used a condom at first sex, with females reporting a higher level of use (59%) than males (43%) ($p<0.001$). The difference in condom use by sex was not significant at latest sex, as 57% of males and 55% of females used condoms. The level of condom use was higher in Mukono than in Kabale at both first and latest sexual events ($p<0.01$). Higher age at first sex (15-24 years) was significantly correlated with condom use at first sex among males and females ($p<0.01$) but not at last sex.

Condom use at first and latest sex was higher among those in school, those who had attained secondary education and those who listened to radio but this was more evident among females. Those who attended private schools were more likely to use condoms than those who attended religious and government founded schools, but this was only significant at last sex ($p<0.05$). The level of condom use among Muslim and Evangelical females was higher than others ($p<0.01$) but they were few in the sample.

Sex with girl/boyfriend, sex without coercion and recent relationship were associated with condom use at both first ($p<0.001$) and latest events ($p<0.001$) while non-use of alcohol was only associated with condom use at latest event. Access to newspapers/magazines and communication with parents about sexual matters, length of stay at place of residence and residing with parents were not significantly associated with condom use at first and latest sex.

Table 3: Levels of Condom use at first and latest sexual activity by gender

	Men			Women		
Variable	**n**	**First** (%)	**Last** (%)	**n**	**First** (%)	**Last** (%)
District		**	***		***	**
Kabale	145	31.1	33.7	116	31.9	43.3
Mukono	90	50.3	71.9	94	81.0	64.3
Age group						*
15-16	34	26.5	53.1	67	62.7	63.5
17-18	57	42.1	54.7	66	57.6	55.6
19-20	58	50.0	63.8	46	54.4	44.4
21-22	51	52.9	64.0	16	75.0	56.3
23-24	35	34.3	42.9	15	46.7	46.7
Age at first sex (years)		***			**	
<15	72	18.1	51.5	71	40.9	48.5
15-24	160	54.4	59.9	139	68.4	58.1
In school					**	***
No	113	39.8	54.6	107	49.5	37.5
Yes	122	45.9	59.2	103	68.9	73.5
Education level			**		**	**
None/ry	158	36.4	43.8	118	45.7	35.3
Secondary	77	46.2	63.2	92	69.5	69.2

Continutaion of table 3

Variable	Men n	Men First(%)	Men Last (%)	Women n	Women First(%)	Women Last(%)
District		**	***		***	**
School attended			**			*
Public	90	44.4	53.4	85	50.6	44.9
Religious	51	35.3	40.8	59	66.1	61.0
Private/Unknown	94	47.1	71.4	54	68.5	69.8
Listens to radio					**	**
No	12	34.6	48.0	32	44.3	37.3
Yes	223	44.0	58.1	178	65.1	62.2
Religion					**	
Catholic	91	41.8	52.3	77	53.3	51.4
Protestant	100	42.0	56.6	92	53.3	52.2
Moslem	31	45.2	57.1	29	82.8	69.2
Pentecostal/Evangelical	13	53.9†	92.3	12	83.3	66.7
Drinks alcohol			**			
No	149	47.7	65.5	160	62.5	52.6
Yes	86	34.9	43.0	50	48.0	62.0
Length of stay at residence						
<=5 years	128	47.7	57.7	127	68.7	51.9
>5 years	107	39.5	50.8	83	52.8	55.6
Resides with						
Both parents	105	40.0	53.5	83	51.8	60.3
Single parent	52	46.2	53.1	72	62.5	55.1
Grandparents/other	77	45.5	53.6	55	65.5	45.3
Willingness to have 1st sex					***	
Involved persuasion/force	84	44.1	53.9	71	42.3	60.0
Both willing	148	42.0	53.6	138	67.4	54.4
Girl/Boyfriend/friend	188	53.9	57.8	174	69.0	57.4
Casual/One time partner	47	21.3	35.0	36	28.9	38.7
When 1st sex took place		***			***	*
Within 1 year ago	77	54.6	54.9	135	69.1	57.0
2-5 years ago	100	50.0	57.0	50	57.1	33.3
6+ years ago	55	14.6	--	25	8.0	--
Attitude to condom use					***	**
Low/medium	99	40.4	51.6	108	61.1	51.5
High	107	46.7	65.4	65	69.2	71.9
Incomplete score	29	37.9	44.8	37	35.1	35.1
All	235	43.0	57.0	210	59.1	55.0

Chi square test p-value * p<0.05 ** p<0.01 *** p<0.001 n=total number of respondents †=n<15

Comparing influences on first sex and last sex

Table 4 shows that being from Mukono and higher level of education were the only factors independently associated with condom use at both first and latest sex. Starting sex late was strongly associated with condom use at first but not at last sex. Listening to radio was correlated with condom use at last sex but it was not significant at first sex. While age was a significant factor for condom use at first sex, it was only influential among males. Conversely, listening to radio and a higher level of education were only significant among females at latest sex.

Pattern of use at both first and last sex

Forty per cent used condoms at both first and latest sex event while 27% used them at only one of the two events, and 33% never used them. With non-use of condom as the base, multinomial logistic regression model showed that those who resided in Mukono and school going females were more likely to use condoms at both first and last sex events than residents of Kabale and non-school going females. The model further shows that residents of Mukono and female alcohol consumers were more likely to use condoms at only one of two events compared to residents of Kabale and female non-alcohol consumers.

Table 4: Factors correlated with condom use at first and latest sex

Covariates	Condom use at first sex		Condom use at latest sex	
	Men OR	Women OR	Men OR	Women OR
District (base=Kabale)				
Mukono	3.01 (1.52-5.96)**	10.88 (2.98-39.79)**	3.62 (1.76-7.45)***	1.62 (0.87-3.03)
Age at first sex (Base<15 years)				
15-24	2.86 (1.43-5.70)**	2.86 (0.85-9.68)	1.09 (0.49-2.42)	0.98 (0.50-1.90)
Education level (Base=Non/primary)				
Secondary	2.06 (1.06-4.00)*	5.86 (1.76-19.51)**	2.09 (0.97-4.52)	3.21 (1.73-5.96)***
Listens to radio (Base=No)				
Yes	1.45 (0.38-5.56)	0.24 (0.06-1.08)	0.69 (0.15-3.31)	0.28 (0.11-0.72)**
Type of partner (base=Girl/boyfriend/friend)				
Casual/one time partner	0.96 (0.67-1.37)	0.76 (0.40-1.46)	0.66 (0.26-1.67)	0.65 (0.27-1.59)
Condom use at first sex (Base=no)				
Yes			11.80 (5.67-24.59)***	++
Goodness of fit χ^2 test p-value	0.36	0.45	0.17	0.15

* p<0.05 ** p<0.01 *** p<0.001

++ Not included in model due high confidence interval (OR=54.6 95%CI: 15.89-183.16) which causes undue confounding effects to other variables

Table 5: Predicted probabilities of condom use at both first and latest sexual events from a multinomial logit model

Variable	Men			Women		
	Used at both events (%)	Used at one event (%)	Did not use at both events (%)	Used at both events (%)	Used at one event (%)	Did not use at both events (%)
District	***	**		***	**	
Kabale	21.4	22.6	56.0	29.1	16.3	54.6
Mukono	45.0	32.9	22.1	58.1	29.2	12.7
Alcohol					**	
No	42.4	28.7	28.8	47.4	20.0	32.5
Yes	24.7	29.4	45.9	38.0	34.0	28.0
In School				**		
No	32.3	30.1	37.6	27.3	32.0	40.7
Yes	39.3	27.9	32.8	63.7	14.4	21.9
Education						
None/ry	27.5	25.7	46.8	28.4	24.9	46.7
Secondary	39.9	30.5	29.6	58.1	22.2	19.6
Age at first sex						
<15	17.8	35.2	46.9	35.6	17.8	46.7
15-24	44.1	26.1	29.7	50.0	26.3	23.7

* p<0.05 ** p<0.01 *** p<0.001

Discussion

This study has established that factors associated with condom use are residence in Mukono, higher age at first sex, higher level of education, being in an established relationship with the partner and studying in private schools. However, not all these factors were significant at both first and latest sex. Condom use at both first and latest was correlated with residence in Mukono and being female.

Higher reported level of condom use at first sex among females than males has been reported in other research[17]. In this study, the difference was greater in Mukono than in Kabale. One explanation could be the age difference with sexual partner and kind of partner. In Mukono, females were more likely to have had first sex within an established relationship and with older partners, both of which were associated with condom use.

Higher level of condom use at both first and latest sex in Mukono than Kabale is a reflection of gaps in access and use of condoms between peri-urban and rural areas of the country.

Increase in condom use with age at first sex is not surprising as it is in agreement with previous findings[18] but it is not clear why this was not significant among females.

The relationship between level of education and condom use at first sex is also supported by other research findings[18], although it was only significant among females. This is consistent with previous findings in Uganda[19] and Ghana [20]. Being in school was only significant among females at both first and latest sex. This needs further research.

A higher level of condom use among those who studied in private schools compared to public schools may be explained by different approaches to health education but more research is needed to explain the difference.

Higher likelihood of condom use at both first and latest sex among those in an established relationship compared to those in casual relationships is both consistent and inconsistent with other studies. In some studies, condom use at first sex was strongly associated with established relationship[21] while in others it was strongly associated with casual relationship[22]. Some researchers have reported that young people were more likely to use condoms at latest sex in casual than in steady partnerships[23][. A study in Zimbabwe found that, among males, the likelihood of condom use at last sex with a casual partner was nearly the same as that with a steady partner [24]. Further research may investigate the role of use of other contraceptive methods on condom use.

Results of association of inconsistency of condom use at first and latest sex events with alcohol consumption are similar to findings from other research [25]. Loss of self-control resulting from alcohol consumption is a factor in non-use of condoms at one of the events.

Differences in factors that correlated with condom use at first and latest sex were also highlighted in a similar study in the United States[26].

Conclusion

Factors that influence condom use at first sex are not necessarily the same for latest sex and vice-versa. Programmes meant to improve condom use need to consider these differences and give priority to rural areas and young people with minimal or no education.

More research is needed to investigate the dynamics of condom use at first and latest sex especially as they relate to rural and urban settings. Cohort studies are recommended to minimise memory failure and allow adjustment for independent factors that change over time.

Limitations

Investigators recognise limitations of memory lapses and change of predisposing factors to condom use with time. It is difficult to recall events at first sex and factors such as listening to radio may have changed over time.

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