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Correlates of condom use among sexually experienced secondary school male students in Nairobi, Kenya

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Abstract

This study aimed to examine perceptual factors associated with condom use, and the relationship between condom use and the timing of sexual debut, among male secondary-school students in Nairobi, Kenya. Data are from the TeenWeb study, a school-based project that used the World Wide Web to assess the health needs of secondary-school students, and tested the web's utility as a teaching and research modality. Analyses are based on 214 sexually experienced males aged 14 to 20 years who completed web-based questionnaires about their sexual attitudes and behaviour. Results indicate that students did not see themselves as susceptible to HIV/AIDS and believed condom effectiveness in preventing HIV to be low. Consequently, only a marginal association was found between agreeing that buying condoms is embarrassing and condom use at first sexual intercourse. However, contrary to expectation, agreeing that condoms often break (almost half of participants) was associated with a higher likelihood of condom use at first sex. Each year of delay in sexual debut increased the likelihood of using a condom at first sex by 1.44 times. In turn, having used a condom at first sex increased the likelihood of using one at the most recent sex by 4.81 times, and elevated general condom use (“most or all the time”) by 8.76 times. Interventions to increase awareness about the role of condoms in preventing HIV, delay sexual initiation, and teach proper condom use among secondary-school students in Nairobi are needed.

Keywords

Adolescents; *HIV/STDs*; *condom use*; *Kenya*; *Africa*; *Internet*

INTRODUCTION

According to UNAIDS estimates, today some 38.6 million people worldwide live with HIV/AIDS. With less than 10 percent of the world population, sub-Saharan Africa is the home of two-thirds of people living with HIV worldwide. Here, more than elsewhere, young people between the ages of 15 and 24 are the most threatened, accounting for 62% of people living with HIV/AIDS (UNAIDS, 2006). Kenya, with an HIV prevalence of 6.7% (MEASURE DHS

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+, 2003), has one of the highest HIV infection rates in the world. Today in Kenya, the HIV epidemic is at the beginning of its third and perhaps most critical stage, which involves spread of the virus to and among youth. It is estimated that, at the present time, youth under 20 years of age account for 40% of new infections among males and 60% of new infections among females (Toroitich-Ruto, 1997). Heterosexual contact is the primary mode of HIV transmission in Kenya (National AIDS and STDs Control Programme, 2001). Sexual risk factors include having multiple, concurrent sex partners and being infected with other sexually transmitted diseases (STDs). However, consistent use of condoms, irrespective of other risky sexual behaviour, has been demonstrated to be an effective means of preventing the acquisition and transmission of HIV and other STDs (Davis & Weller, 1999; Pinkerton & Abramson, 1997; Weller & Davis, 2002).

The vulnerability of Kenyan youth to HIV infection necessitates the development of interventions that reduce sexual risk behaviour. To develop such interventions, knowledge of factors that lead to sexual risk taking is indispensable. Multiple studies from sub-Saharan Africa have analysed factors associated with condom use. Two studies of 15–24 year olds, one based on a representative sample of young people in urban Cameroon and another on a community-based sample of 601 young males in rural Ghana, found a strong positive association between perception of personal risk of HIV and a high level of condom use (Adih & Alexander, 1999; Meekers & Klein, 2002). In addition, findings from Kenya's 1998 Demographic Health Survey (DSH) showed a strong association between personal perception of HIV risk and risky sexual behaviour. Men who perceived their risk as high were less likely to report risky behaviour such as not using condoms with casual sex partners or having multiple sex partners. However, the association was weak among 15–19 year olds (Akwara, Madise & Hinde, 2003).

Believing that condom use can protect against HIV and STDs, and a sense of self-efficacy about condom use, have also been reported to be associated with increased use. For example, findings from a study of males and females attending secondary schools and colleges in Tanzania showed that the belief that condoms prevent HIV infection was associated with high reported use of condoms (Maswanya *et al.*, 1999). In the studies of young urban Cameroonians and rural Ghanaians described earlier, the authors also reported an association between high levels of condom use and perceived ability to negotiate and use condoms (Adih & Alexander, 1999; Meekers & Klein, 2002). Similar findings were reported by Taffa et al. in a sample of in and out of school youth (males and females) aged 15–24 years in Addis Ababa, Ethiopia (Taffa, Klepp, Sundby & Bjune, 2002). Perceived barriers to condom access and use have also been associated with level of use. In a survey of 223 patients at six governmental and private clinics in Kisumu, Kenya, perceived barriers were the only components of an evaluation of the Health Belief Model (HBM) that were significantly associated with condom use. Greater perceived barriers were associated with less condom use (Volk & Koopman, 2001).

In addition to perceptions, socio-demographic factors have been associated with levels of condom use. Results from surveys of representative samples of males and females ages 15–49 years in four African cities (Yaoundé, Cameroon; Cotonou, Benin; Ndola, Zambia; and Kisumu, Kenya) indicated that greater education and single marital status are associated with more consistent condom use (Lagarde *et al.*, 2001). Later sexual debut and having only one sex partner have also been associated with increased use (Lugoe, Klepp & Skutle, 1996; Volk & Koopman, 2001).

Most studies to date have used the large age interval of 15–24 years to define adolescence, and usually do not consider boys and girls separately. Because associations between risk and protective factors and condom use are likely to vary by age, gender, community, and other characteristics, substantial heterogeneity in factors affecting condom use may be obscured.

In this study we examine perceptual factors that may be associated with condom use, as well as the relationship between condom use and the timing of sexual debut, among sexually experienced urban adolescent male students in Nairobi, Kenya. There were not enough sexually experienced females to permit analysis; however some studies suggest that Kenyan males' attitudes may have more bearing on couples' condom behaviour than women's. We control for multiple socio-demographic characteristics. We hypothesised that students who perceived themselves to be at greater HIV risk, perceived condoms to be effective in preventing HIV/AIDS, and perceived fewer barriers to condom use, would be more likely to use condoms. We also expected, based on existing literature, that students who transitioned to first sex at a later age would be more likely to use condoms and to use them consistently.

METHODS

This is a cross sectional analysis of data from the Nairobi, Kenya site of the TeenWeb study. TeenWeb is a longitudinal school-based feasibility study conducted in Kenya and in Brazil that seeks to understand better the social, educational and sexual health needs of urban secondary school students, and to test the utility of the World Wide Web as a teaching and research modality. In Nairobi, three large public schools – a boys' school, a girls' school, and a mixed-sex school were randomly assigned to the “Web” (experimental) group. Two additional schools were randomly selected to be control schools – a boys' and a girls' school. The need for a control group was to allow stronger statements about whether web students' changes in reproductive-health attitudes over time were attributable to exposure to the educational web pages or to other unmeasured factors. All students in the selected schools were included in the study. A total of 1024 students entered the study as participants in the web group and an additional 496 students entered the study as participants in the control group. Students in the two groups did not differ in their socioeconomic characteristics (Mitchell, Halpern, Farhat, Kamathi & Steibelt, 2004).

In the selection of those schools, a comprehensive public school sampling frame, with the goal of randomly selecting from among strata of non-denominational, large schools that included substantial proportions of low-income students and a mix of males and females, was constructed. In Nairobi, this essentially means using day schools instead of boarding schools. In addition, because of the non-random distribution of Internet access in Nairobi and the need to install high speed Internet leased lines in the three experimental schools, the sampling frame was reduced to 13 out of 19 neighbourhoods, most of which tended to be higher income. However, we were still able to recruit a large public school within the Kibera slum (Africa's largest slum). More details on the design and implementation of TeenWeb in Nairobi and Brazil can be found at the TeenWeb website (http://www.cpc.unc.edu/projects/teenweb/), and in a publication by Halpern, Mitchell, Farhat and Bardsley (2008).

Data collection extended across two school years (April 2002 to September 2003). Students in all schools first completed a self-administered paper module (Module #1) tapping socio-demographic information and baseline knowledge and attitudes related to condoms, HIV testing, emergency contraception, and Kenyan abortion law. In addition to this first paper module, students in the three experimental schools completed five modules using the web. Students in control schools completed a second (and final) paper module at the end of the study, at about the same time that web students were completing their final web-based module (Module #6). The final paper (control) and web modules repeated questions related to knowledge and attitudes about condoms, HIV testing, emergency contraception, and abortion legislation, to examine changes over time in knowledge and attitudes. Questions about students' own sexual behaviour were included only in Module #4 of the web questionnaire.

Web students completed one web-based module approximately every six to eight weeks, and in return, had access to the Internet for at least 30 minutes after completing each module. When a student finished a web module, he or she was automatically forwarded to the project's educational pages, which included age-appropriate health information developed for African youth, that was tied to the topics addressed in the questionnaire module (e.g., what is emergency contraception). Students could choose to access this information and/or other web sites not related to TeenWeb. Privacy screens were constructed around each computer. Responses to web-based questionnaires were encrypted and transmitted directly to a secure SQL server at the Carolina Population Center at the University of North Carolina at Chapel Hill. The research team in Chapel Hill who received students' individual responses to questionnaires did not have access to their identification information (which was kept in Nairobi) beside their ID number. Students who reported specific experiences (e.g., sexual violence) were directed to community resources for those experiences. Only students with written parental consent responded to questions regarding their own behaviour. The Kenya Ministry of Education and the University of North Carolina School of Public Health Institutional Review Board for the Protection of Human Subjects (IRB) approved the study design and all protocols.

Respondents and sample

Of the 1024 students enrolled in the web group, 783 (76%) completed Module #4. Of those, 239 (31%) reported to be sexually experienced, only 24 (10%) of whom were female. Because questions about students' own behaviour were only included in Module #4 of the web questionnaire, only sexually experienced participants could report on their condom use, and there was a small number of sexually experienced girls, the present analysis was limited to 214 sexually experienced males in Web schools who had complete data for analysis variables.

Measures

All survey questions included “don't know” and “refuse to answer” options, which were recoded to missing in the analysis.

Dependent variables – Condom use

Condom use at first sex: This was derived from the question “The first (or only) time you had sex, did you use a condom?” The response options were “yes” or “no.”

Condom use at most recent sex: This was derived from the question “Did you use a condom the most recent time you had sex?” with “yes” or “no” response options. This question was asked only of respondents who reported having sex more than once.

Consistent condom use (most or all of the time): This measure was derived from the question “Thinking of all the times you have had sexual intercourse, about what proportion of the time have you used a condom?” The response options were: “none of the time, some of the time, half the time, most of the time, and all of the time.” Those who chose “most of the time” or “all of the time” were coded as the index category in the analysis and other answers were coded referent category. This question was asked only of respondents who reported having sex more than once.

Independent variables

Perceived susceptibility to HIV: This was measured with the question “Imagine that sometime soon you had sexual intercourse with someone just once, without using any protection. What is the chance that you would get the HIV virus?” Response choices were “I'm sure this would not happen,” “this probably would not happen,” “there is about a 50–50 chance this would happen,” “this would probably happen,” and “I'm sure this would happen.”

Respondents who thought their chances of getting the virus were greater than 50–50 were coded as the index category.

Perceived prevalence of HIV: This variable was measured with the question "Is HIV/AIDS a problem in Nairobi?" The response options included "not a problem at all," "somewhat of a problem," "it is a problem," and "it is a very serious problem." Answers of "it is a problem" and "it is a very serious problem" were coded as the index category.

Perceived effectiveness of condoms: This was constructed from two questions, each considered separately: "Condoms are useful to prevent pregnancy" and "Condoms are useful to prevent infections like HIV." Response options were strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree. Agree and strongly agree were coded as the index category.

Perceived barriers to condom use: These measures were based on degree of agreement with the following statements: "Condoms are too expensive to buy," "condoms often break," "condoms are difficult to use," "talking about condom is embarrassing," and "buying condoms is embarrassing." The response options were the same as for "Perceived effectiveness" and were coded in the same manner. Items are considered separately in analyses.

Socio-demographic variables—Socio-demographic variables included age, marital status, form (grade) in school, religion, and socioeconomic status. Age was self-reported by respondents in years. Marital status was dichotomised as single (index category) and married or cohabiting. Grade was grouped in two categories: forms 1 and 2 (9^{th} and 10^{th} grade) as the referent category and forms 3 and 4 (11^{th} and 12^{th} grade) as the index category. Religion was also dichotomised as Christian (index category) and other. Socioeconomic status (SES) was measured by a simple count of the following 21 household assets: lantern or tin candle, electricity, running water, indoor bathroom, refrigerator, gas or electric stove, metal or wooden bed, sofa, bicycle, car (motor vehicle), motorcycle, new (current) newspapers, old newspapers, dictionary, radio, television, telephone (land line), cell (mobile) phone, stereo (record, CD, or tape player), computer, and access to internet. Respondents were grouped in three categories of roughly similar size: low SES (0 – 7 assets count), middle SES (8 – 14 assets count), and High SES (referent category) (15 – 21 assets). The use of a proxy measure for SES, an unweighted commodity scale, is a simple technique that captures relative wealth well (Bollen, Glanville & Stecklov, 2001).

Sexual timing and experience—Age at first sex was self-reported by respondents in years.

Lifetime number of sex partners was also considered in the analysis. Respondents were grouped in two categories: those who reported one partner were coded as the index category.

In analyses of condom use at most recent sex and consistent condom use, condom use at first sex was included as a predictor. These analyses were limited only to students who reported having had sex more than once.

Analysis strategy—Data were analysed using SAS (SAS Institute, Cary, NC, USA). Crude associations between condom use variables and the explanatory factors were examined using Mantel-Haenszel chi-square. Unadjusted odd ratios (OR) from Mantel-Haenszel estimator (for categorical factors) or from simple logistic regression (for continuous variables: age and age at first sex) were used to measure the strength of the associations. To estimate the adjusted OR, all the perceptual factors plus age and age x perceptual factors interaction terms were entered in a first model to evaluate possible interactions. Significant interaction terms were retained and entered in a general model with all the predictor and the socio-demographic variables. The

sequence of covariate removal from the model was determined by likelihood ratio testing to ensure that the covariate that contributed the least to the fit of the model would be removed first. Socio-demographic variables were forced to remain in the final model as controls. The significance level for all statistical tests was 5% or otherwise specified.

RESULTS

Descriptive analysis

At study entry, the median age of participants was 17 years [Interquartile range (IQR): 16 to 17]. Half of the students were sexually experienced by the age of 14 (IQR: 10 to 16) years (see Table 1). No form 1 students appeared in the analysis sample of sexually experienced males; 45.3% were in form 2 (see Table 1). About two thirds were single. Most were Christian (86.4%) and 27.9% were in the high SES category. The percentages of participants who reported having used a condom at their first vaginal sex, at their most recent sex, and "most or all the time" were 30.1%, 51.2% and 33.5%, respectively.

Perception of personal susceptibility to HIV was quite low. Only one participant in ten perceived the risk of acquiring HIV infection from one unprotected sexual encounter as greater than 50%, although about six in ten students perceived HIV as a problem in Nairobi. Furthermore, the perceived effectiveness of using condoms to prevent HIV was also relatively low. Only 39.7% of these sexually experienced students agreed that condoms can help prevent HIV, compared to 77.9% who agreed they can help prevent pregnancy. Relatively few participants agreed that condoms are difficult to use, are expensive to use, or are embarrassing to talk about. However, one-third of students felt that buying condoms is embarrassing and almost half agreed that condoms often break.

Factors associated with condom use—None of the perceptual factors examined was statistically associated with condom use in bivariate analysis (see Table 2). However, later sexual debut was significantly associated with higher odds of condom use at first sex and at most recent sex: OR = 1.33 (95% confidence interval [95%CI] 1.18 – 1.51) and 1.15 (95%CI 1.05 – 1.25), respectively. In turn, using a condom at first sex was statistically associated with use at most recent sex [OR = 7.93 (95%CI 3.22 – 19.53)], and with consistent condom use [OR = 8.82 (95%CI 3.91 – 19.92)]. Reporting only one sexual partner during their lifetime and Christian religion were also associated with condom use at most recent sex [OR = 4.36 (95% CI 1.38 – 13.85) and 2.92 (95%CI 1.05 – 3.57), respectively]. Unmarried males were 2.16 (95%CI 1.07 – 4.38) times more likely to report having used a condom at first sex.

After adjusting for socio-demographic variables, only agreeing that condoms often break and that buying condoms is embarrassing were statistically associated with condom use at first sex (see Table 3). Participants who agreed that buying condoms is embarrassing were 0.30 (95% CI 0.09 – 0.94) times less likely to report having used a condom at first sex. However, contrary to our hypothesis, participants who agreed that condoms often break were 3.41 (95%CI 1.25 – 9.30) times more likely to report the use of a condom at their first intercourse experience. The associations between these perceptions and condom use did not vary by age. In addition to perceptions that buying condoms is embarrassing and about condom breakage, age at first sex remained statistically associated with condom use at first sex. Each year of delay in sexual debut increased the odds of using a condom at first sex by 1.44 (95%CI 1.17 – 1.77) times. Perceptions about condoms were not associated with consistent condom use or their use at most recent sex. However, having used a condom at first vaginal sex increased the odds of using condoms at most recent sex by 4.81 (95%CI 1.47 – 15.77) times and increased the odds of using condoms "most or all the time" by 8.76 (95%CI 2.64 – 29.07).

DISCUSSION

We examined multiple factors related to perceived HIV susceptibility and condom use in sexually experienced adolescent males. Although the majority of students perceived HIV/AIDS to be a problem in Nairobi, they did not perceive themselves as particularly susceptible. In addition, relatively few agreed that condoms are effective in preventing HIV. This perception is likely to be key to the general absence of associations between condom use and perceived susceptibility to HIV/AIDS in this sample. The absence of an association is contrary to previous studies from sub-Saharan Africa (Adih & Alexander, 1999; Akwara *et al.*, 2003; Maswanya *et al.*, 1999; Meekers & Klein, 2002).

The Health Belief Model proposes that an individual will take preventive action if he or she regards him or herself as susceptible to a condition such as HIV/AIDS, believes that a course of action available to him/her (i.e., condom use) would be beneficial in reducing his or her susceptibility, and if he/she believes that the anticipated barriers to taking the action are outweighed by the benefits (Rosentock, 1990). Although most of our in-school population did not generally perceive themselves as vulnerable and did not perceive condom use as an effective preventive action, we did find that those who perceived that buying condoms is embarrassing were less likely to report having used one during their first sexual intercourse.

Despite the negative view of condom effectiveness in HIV prevention, 30% of our sample reported using a condom at first vaginal sex, 51% at most recent sex, and 34% reported condom use most or all the time. The level of condom use at most recent sex was relatively high compared to the 40% figure reported by the last Kenyan DHS for the same age group (MEASURE DHS+, 2003). This is probably partly a function of sampling differences. The DHS included a nationally representative sample, and 60% of adolescent boys under the age of 20 in Kenya are either in primary school or not in school at all (Lagarde *et al*, 2001; MEASURE DHS+, 2003). Our secondary school sample is therefore not typical of Kenyan adolescents regarding education.

Some associations in these analyses were unanticipated. For example, almost half of our participants agreed that condoms often break, yet those who agreed condoms break were more likely to have used condoms at first sex. Given the relatively young age of our participants at first sex, we speculate that many of the students who used a condom on that first occasion did not know how to use it properly, and may have been more likely to experience condom breakage. Thus, experience may be driving the perception rather than the reverse.

Being older at first sex was strongly associated with the use of a condom at first sex. In turn, the use of a condom at first sex was significantly correlated with condom use at most recent sex and on a consistent basis thereafter. This pattern is consistent with findings documented in other studies (WHO, 2000), and underscores the potential health benefits of delaying sexual transition.

Possible biases might have affected the results of this study. First, all measures were self-reported. Thus, responses may have been biased by recall errors or intentional misreporting of behaviour. However, the privacy conditions around the study and the use of web-based questionnaires should have minimised purposeful misreporting. Second, although health content available on the project's web page prior to Module #4 did not specifically address condom use, it is possible that access to general health information on the TeenWeb website before completing Module #4 questions on sexual behaviour contributed to the relatively high level of condom use at most recent sex. However, this seems unlikely, given that perceived susceptibility to HIV and perceived effectiveness of using condoms to prevent HIV were consistently low, despite exposure to educational content. In general, the relationship between most of the perceptual factors examined and condom use was in the direction hypothesised.

But the associated confidence intervals were relatively wider, suggesting the need for a larger study.

In conclusion, the 2005–2015 Kenyan national plan of action for adolescent reproductive health and policy (National Coordinating Agency for Population and Development, 2005) has little focus on condom use. However, present findings emphasise the need for interventions to increase awareness about the role of condoms in preventing HIV/AIDS among adolescents in Nairobi, and the need to reach them with health education messages before they become sexually experienced. Findings also stress the importance of encouraging adolescents to delay their sexual debut.

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Table 1

Characteristics of sexually experienced secondary-school adolescent male students who participated in the TeenWeb survey in Nairobi, Kenya

Characteristic	Number*	Percentage
Grade level		
Form 1 & 2	96/212	45.3
Forms 3 & 4	116/212	54.7
Marital status		
Single	142/214	66.4
Other	72/214	33.6
Religion		
Christian	171/198	86.4
Other	27/198	13.6
Socioeconomic status		
Low	52/197	26.4
Middle	90/197	45.7
High	55/197	27.9
Condom use		
Used condom first vaginal sex	59/196	30.1
Used condom most recent sex	86/168	51.2
Use condom most or all the time	63/188	33.5
Lifetime number of sex partners		
2 or more	134/187	71.7
Perceived susceptibility to HIV		
Chance of getting HIV = 50% or less	176/201	87.6
Chance of getting HIV > 50%	25/201	12.4
Perceived prevalence of HIV		
HIV is a problem in Nairobi	122/208	58.6
Perceived benefits of using condoms		
Condoms prevent HIV	85/214	39.7
Condoms prevent pregnancy	166/213	77.9
Perceived barriers to condom use		
Condoms often break	99/213	46.5
Condoms difficult to use	27/213	12.7
Condoms too expensive	19/214	8.9
Talking about condoms is embarrassing	34/213	16.0
Buying condoms is embarrassing	54/165	32.7
Age in years, Mean (SE)	16.86	(1.06)
Age in years at first sex, Mean (SE)	12.55	(3.88)

Abbreviation: SE = standard error

* Denominators may vary due to missing values,

Table 2

Unadjusted Odds Ratios (OR) of condom use among sexually experienced secondary school adolescent male students who participated in the TeenWeb survey in Nairobi, Kenya

	Condom use at first Sex	Condom use at the most recent sex†	Condom use most or all the time†
	OR (95%CI) n =196	OR (95%CI) n =168	OR (95%CI) n = 188
Age (years)	1.16 (0.86, 1.56)	0.92 (0.66, 1.27)	1.00 (0.71, 1.40)
Age at first sex (years)	1.33 (1.18, 1.51)*	1.15 (1.05, 1.25)*	1.08 (1.00, 1.20)
Number of lifetime sex partners (1 vs >2)	1.87 (0.94, 3.70)	4.36 (1.38, 13.85)*	1.55 (0.59, 4.07)
Perceived susceptibility to HIV	1.38 (0.57, 3.38)	0.91 (0.35, 2.33)	1.56 (0.60, 2.57)
Perceived HIV prevalence in Nairobi	1.23 (0.61, 2.48)	1.4 (0.72, 2.70)	1.3 (0.65, 2.59)
Perceived benefits of using condoms			
Condoms prevent pregnancy	0.95 (0.45, 1.99)	1.24 (0.56, 2.75)	0.8 (0.35, 1.83)
Condoms prevent HIV	1.58 (0.85, 2.93)	1.29 (0.67, 2.47)	1.68 (0.85, 3.34)
Perceived barriers to using condoms			
Condoms are difficult to use	0.61 (0.21, 1.72)	0.43 (0.16, 1.16)	0.9 (0.34, 2.42)
Condoms often break	1.76 (0.95, 3.26)	1.24 (0.65, 2.36)	0.99 (0.50, 1.96)
Condoms are expensive	0.69 (0.22, 2.22)	0.89 (0.27, 2.89)	0.84 (0.24, 2.92)
Talking about condoms is embarrassing	0.57 (0.23, 1.40)	0.54 (0.22, 1.29)	0.61 (0.24, 1.57)
Buying condoms is embarrassing	0.64 (0.30, 1.36)	0.63 (0.29, 1.40)	0.63 (0.28, 1.46)
Use a condom at first vaginal sex	-	7.93 (3.22, 19.53)**	8.82 (3.91, 19.92)**
Socio-demographic factors			
Grade (forms 3 & 4 versus form 2)	1.56 (0.83, 1.29)	1.22 (0.63, 2.34)	1.14 (0.57, 2.26)
Low SES (vs high SES)	0.45 (0.19, 1.09)	0.61 (0.26, 1.43)	0.56 (0.24, 1.30)
Middle SES (vs high SES)	0.67 (0.30, 1.51)	0.46 (0.20, 1.04)	0.72 (0.32, 1.65)
Marital status (single versus other)	2.16 (1.07, 4.38)*	1.8 (0.91, 3.57)	1.61 (0.76, 3.40)
Religion (Christian versus other)	1.81 (0.64, 5.12)	2.92 (1.05, 3.57)*	1.84 (0.63, 5.43)

Abbreviation: OR = Odds Ratio, CI = Confidence interval, SES = socio-economic status,

* statistically significant at $p < 0.05$

** statistically significant at $p < 0.01$

† Only participants who have reported having had sex more than once were included in these two models.

Table 3

Adjusted Odds Ratios (OR) for condom use among sexually experienced secondary school adolescent male students who participated in the TeenWeb survey in Nairobi, Kenya

	Condom use at first sex	Condom use at most recent sex‡	Condom use most or all the time‡
	OR (95%CI) (n =196)	**OR 95%CI (n =168)**	**OR (95%CI) (n =188)**
Age (years)	1.11 (0.67, 1.85)	0.64 (0.36, 1.15)	1.09 (0.59, 1.99)
Grade (forms 3 & 4 vs form 2)	1.12 (0.38, 3.33)	2.01 (0.58, 6.94)	0.80 (0.22, 2.98)
Religion (Christian vs others)	0.81 (0.18, 3.77)	3.53 (0.77, 16.23)	2.41 (0.44, 13.10)
Low SES (vs high)	0.39 (0.10, 1.49)	0.69 (0.16, 2.98)	0.49 (0.10, 2.30)
Middle SES (vs high)	0.59 (0.18, 1.90)	0.87 (0.24, 3.10)	0.44 (0.12, 1.67)
Marital status (Single vs married/cohabiting)	1.14 (0.35, 3.75)	1.18 (0.36, 3.83)	0.80 (0.21, 3.05)
Condoms often break†	3.41 (1.25, 9.30)*	-	-
Buying condoms is embarrassing†	0.30 (0.09, 0.94)*	-	-
Age at first sex (years)†	1.44 (1.17, 1.77)**	-	-
Use a condom at first sex	-	4.81 (1.47, 15.77)**	8.76 (2.64, 29.07)**

Abbreviation: CI = confidence interval, OR = Odds Ratio, SES = socio-economic status.

*statistically significant at $p < 0.05$

**statistically significant at $p < 0.01$

†Variables not retained in the final model for condom use at the most recent sex and condom use most or all the time (see methods)

‡Only participants who reported having had sex more than once were included in these two models.