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Eroding Gains in Safe Sex Behavior, HIV/AIDS Knowledge, and Risk Perceptions among Royal Thai Navy Conscripts after 28 Years of the AIDS Epidemic in Thailand

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Introduction

The rising level of HIV infection among sex workers in Thailand during 1988–1989 led to subsequent waves of the epidemic among male clients of sex workers, their wives and partners, and their children (1). In 1993, several important preventive measures were taken that have since been credited with helping to curb the epidemic. A massive public-information campaign on AIDS was launched. Anti-AIDS messages aired every hour on the country's 488 radio stations and 6 television networks, and every school was required to conduct AIDS education classes. The "100 percent condom program" was initiated to enforce consistent condom use in all commercial sex establishments. Condoms were distributed free to brothels, massage parlors, and sex workers, and clients were required to use them (2,3). Evidence suggests that these efforts had considerable success. Without these programs, it is estimated that Thailand's national HIV prevalence would be 10 times higher than it is currently (4). Among both female sex workers and the general population, the national trend for prevalence of HIV infection has been in continuous decline. From 1989 to 2006, HIV prevalence declined from 33.2% to 4.6% among female sex workers, and from 2.3% to 0.9% among pregnant women. Among military conscripts—who serve as an HIV sero-surveillance sentinel because they are a large group of young males from all over the country who often have contact with sex workers—HIV prevalence increased rapidly from 0.5% in 1989 to 4.0% in 1993, then declined to 1.9% in 1998 and reached a plateau of 0.5% in 2003 (5, 6).

These gains, however, are showing signs of diminishing at present. New infections among street-based and indirect sex workers, who work mainly in the entertainment/hospitality industry (e.g., bars, clubs, or massage parlors) and use sex work as a supplementary source of income, nearly doubled by 2008, compared with data for 2005 (7). HIV prevalence

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among men who have sex with men (MSM) rose from 17.3% in 2003 to 28.3% in 2005 and to 30.8% in 2007 (8, 9). Estimated HIV incidence among young MSM increased from 4.1% in 2003 to 6.4% in 2005 and to 7.7% in 2007 (8, 9). These high-risk groups are not the only ones experiencing a recent rise in HIV levels. Evidence suggests that Thailand's general population of adolescents and young adults—who make up around 15% of the population, or 9.5 million people (aged 15–24 years) (10)—are also at increased risk, possibly because most of them are too young to remember the early years of the epidemic or the prevention campaigns of the 1990s. A United Nations report revealed that in 2006, only 37.4% of Thai adolescents aged 15–24 years could both correctly identify ways of preventing sexual transmission of HIV and reject misconceptions about HIV transmission; more recently, this number had dropped below 30% (11). Data from the 2008 Behavioral Surveillance Survey (12) indicated that 50%–76% of male students, military recruits, and male factory workers used a condom every time they had sex with a sex worker. Only 36% of military recruits, 52% of male students, and 48% of female students had used a condom during their first sexual encounter, and 20%–40% of male and female students had used a condom during the last sexual contact with their girlfriend or boyfriend. This limited HIV-transmission knowledge and high level of unsafe sexual behavior may have contributed to making these young people a prominent high-risk group for HIV in Thailand. Between 2005 and 2009, HIV incidence among military recruits rose from 0.14% to 0.25% per year. Among women visiting antenatal clinics, incidence had also risen, from 0.05% per year in 2005 to 0.18% per year in 2008, and the increase was greatest among females younger than 20 years (7). In addition, a recent study showed that HIV/AIDS is again the largest single cause of disability-adjusted life years (DALY) among Thai males and females aged 15–44 years (13), as well as among orphans and HIV-positive infants. It has also resulted in a rise in the burden of health care expenditures for individuals, families, and the country.

The aforementioned recent research on Thai youth focused primarily on condom use, but studies of psychosocial and other factors associated with risk behaviors among youth during the last decade are missing. To help fill this gap, we conducted a study to explore actual and perceived HIV-transmission knowledge and risk, sexual behaviors and intentions, and their association with consistent condom use among Royal Thai Navy conscripts, who, given the country's mandatory service requirement, can be considered representative of all Thai men aged approximately 21 years.

Methods

Study setting and sample

The sample consisted of all 3299 conscripts recruited nationwide to the Royal Thai Navy Training Center in February–March 2010. Military service is compulsory at age 21, unless one is disqualified for medical reasons or deferred while completing university studies (14). The survey was administered to groups of 100–130 men at a time, during orientation sessions for new recruits. A member of the research team and the drillmasters explained the purpose of the study, its procedures, and the risks and benefits, including that no personally identifying information would be recorded and a recruit could refuse (further) participation if he ever felt uncomfortable about answering a question. Informed consent was obtained verbally—no one refused participation—and investigators asked participants to find a private location to complete the survey before questionnaires were distributed to them individually. The survey instrument was a self-administered, paper-and-pencil questionnaire designed to assess demographic characteristics, awareness and knowledge of HIV/AIDS, sexual behaviors, and measures adopted to prevent contracting STIs and HIV. Average time spent on responses was 30 minutes. The questionnaire was pretested among 30 naval recruits of the prior batch. The protocol for this study was reviewed and approved by the

ethics committees of the Naval Medical Department and Hua Chiew Chalermprakiet University.

Measures

Socio-demographic characteristics included age, education, marital status, occupation, province of birth, and province of current residence. The latter 2 variables were grouped into 4 geographical regions—North, Northeast, Central, and South—which are commonly used by the National Statistical Office and other government agencies. Early in the epidemic, prevalence was higher in the North region and the mostly tourism- and trade-oriented provinces in the upper Northeast, eastern seaboard, and Gulf of Thailand (in the Central region). Recent data, however, indicate similar levels of HIV prevalence in all 4 regions (around 0.5% among military recruits) (7).

Sexual behavior: Participants were asked about their first sexual experience (age, type of partner, condom use), lifetime types of sexual partners, condom use, and engagement in transactional sex. Questions about behavior in the last 3 months included condom use, having multiple sexual partners, and alcohol use prior to sex. The original response options of “never,” “sometimes,” and “always” were dichotomized as “never” vs. “at least sometimes.”

Consistent condom use was based on the item “How often do you use a condom when you have sexual intercourse?” The response option “always” was considered consistent condom use; “sometimes” and “never” were coded as inconsistent condom use.

Preferred sexual identity: Participants were asked “If you can select between male and female, what sex would you like to be?”

Penile modification, also called “genital beading” or “pearling,” was assessed dichotomously (yes/no). It refers to the practice of inserting beads (made of steel, plastic, glass, or rock) under the skin of the shaft of the penis, or splitting the glans penis. It is done primarily for physical stimulation for both the wearer and his sexual partner. The beads can be inserted by body piercers or clinic staff (where legal), using scalpels or piercing needles, but is often done by the men themselves, sometimes using sharpened toothbrushes or pens. The greatest risk is infection due to nonsterile conditions. It should be noted that removal of the beads is not covered by Thailand’s health insurance plan. Penile modification can be a barrier for condom use and sometimes causes condom breakage (15).

HIV/AIDS-related knowledge and awareness was assessed with 17 items to be answered with “yes,” “no,” or “don’t know.” Twelve of these items were related to HIV transmission. The latter included the 5 questions from UNGASS (16) (condom use and a monogamous relationship with an uninfected partner can prevent HIV, transmission is possible via mosquitoes and sharing a meal with a person who has HIV, a healthy-looking person can have HIV) as well as questions about other modes of transmission (e.g., breastfeeding, sharing needles) and casual-transmission misconceptions (e.g., sharing a toilet). The 12 items were combined into an HIV-knowledge index by adding the number of correctly answered items.

Perception of having appropriate HIV-prevention information was assessed with “Do you have appropriate information to protect yourself from HIV?” (yes/no).

Perceived risk of contracting HIV was also asked with a single item: “I am at risk for contracting HIV” (yes/no/unsure). Those who answered “yes” or “unsure” were considered to perceive themselves at risk.

Data analysis

Descriptive statistics consisted of frequency tabulations and calculation of the median knowledge score. Bivariate associations between consistent condom use and dichotomous variables were assessed via cross-tabulations and chi-square tests. The Mann-Whitney *U* test was used to assess differences in the knowledge scores of consistent and inconsistent condom users. Those variables associated with consistent condom use at $p < .10$ were subsequently included in a multiple logistic regression model, in 1 block. Resulting regression coefficients or omnibus tests (for multinomial variables) were all at least near marginally significant ($p \leq .12$), and no subsequent backward elimination of variables was applied. Adjusted odds ratios (AOR) and their 95% confidence intervals are reported for all independent variables in the logistic regression model. For the multinomial variables (age group [21, 22, ≥23 years] and residence [4 regions]), the most prevalent category for each (21 years and Central region, respectively) coincided with the category that had the lowest consistent condom use, so those categories were chosen as the reference groups for these variables. All analyses were done using STATA version 12 (Statacorp, College Station, Texas, USA). Significance levels reported are 2-sided, and *p* values less than .05 were considered significant.

Results

Demographics

Table 1 describes the socio-demographic characteristics of the respondents. Half of them were aged 21 years, 37% were 22 years, and the rest were 23–25 years. Though all naval conscripts are biologically male, 9% reported their preferred sexual identity was female. The majority (65%) of respondents were single. About half of them had completed secondary school; a quarter had received higher education. One-third (34%) were born in the Northeast region, and another 31% in the Central region. At the time of the study, 42% lived in the Central region, 27% in the Northeast, 22% in the South, and 10% in the North. One-third of participants reported that their occupation before being recruited was labor, 18% were white-collar employees, 17% worked in agriculture, and 14% were students.

HIV knowledge, perceptions, and sexual risk behaviors

As shown in Table 2, more than 9 out of 10 recruits reported ever having had sex. Almost half of the sexually experienced participants (44%) reported having their sexual debut before age 15, and only 44% used a condom during their first sex. Condom use at first sex varied by type of sex partner, as shown in Figure 1 ($\chi^2 = 41.14$, $df = 6$, $p < .001$). It was significantly higher than expected by chance with female sex workers and with stable male partners, and significantly lower among those with a female primary partner or a male casual partner. Nine percent of sexually experienced participants reported that their first sexual partner was male. Thirteen percent reported ever having engaged in homosexual behavior, and 5% stated that they had ever had anal sex with a man or transgender person without a condom. Forty-three percent reported visiting a female sex worker. Nine percent of all participants reported penile modification. Three-fourths of the participants believed that they possessed appropriate knowledge to prevent HIV. The median score on the HIV-knowledge index was 10 out of 12. Almost all participants (95%) believed that condom use can prevent HIV and STIs, but only 17% (502/2882) of sexually active participants who believed this reported using condoms consistently. One-third of all participants (34%) perceived that they were likely at risk for HIV infection, and 86% agreed that having multiple sexual partners is a risk factor for HIV. However, over half (53%) of sexually experienced participants reported having multiple sex partners in the past 3 months, and only 23% of these reported consistent condom use during that time.

Correlates of consistent condom use

Table 3 shows that region of residence, age, marital status, perceived HIV risk, having had a voluntary HIV test, having had sex with a man, having sold/traded sex, age at first sex, and using a condom at first sex were (marginally) significantly related to consistent condom use (all $p < .10$). Respondents from the Northeast region, those older than 22 years, single participants, those who did not perceive themselves to be at risk for HIV, those who had voluntarily gone for HIV testing, non-MSM, those who had never sold/traded sex, those who were at least 15 years old at the time of first sex, and those who used a condom during first sex were all more likely to report consistent condom use than their respective counterparts. Educational attainment, preferred sexual identity, objective and perceived HIV-transmission knowledge, penile modification, and having had sex with a female sex worker or a transgender person were not significantly related to consistent condom use in these bivariate analyses.

All variables associated with consistent condom use at $p < .10$ were included in a multiple logistic regression model for consistent condom use (see Table 4). Compared with respondents living in the Central region, those in the Northeast were 47% more likely to report consistent condom use (95% CI, 1.14–1.88). Those aged 23 years or older were also more likely to use condoms consistently (AOR 1.43, 95% CI, 1.05–1.93) than were younger men, but the overall effect of age was only marginally significant ($\chi^2 = 5.49$, $df = 2$, $p = .06$). Men in a primary romantic relationship were only half as likely as single men to report consistent condom use (AOR 0.47, 95% CI, 0.37–0.59), and MSM were also significantly less likely to use condoms (AOR 0.71, 95% CI, 0.51–0.99) than non-MSM. Those who had had a voluntary HIV test were more likely to report consistent condom use (AOR 1.24, 95% CI, 1.01–1.52) than untested men. Finally, those who reported using a condom at first sex were 4 times more likely to report current consistent condom use (AOR 4.29, 95% CI, 3.45–5.34) than men who reported that their first sex was unprotected.

Discussion

Results from our survey of Thai naval recruits showed multiple indicators of HIV risk in this population. Fewer than 1 in 5 of these young, sexually active men used condoms, and more than 2 in 5 reported having had sex with a female sex worker. Both results indicate riskier behavior than was found among male vocational school students a decade ago (17), although the proportion who had had commercial sex was consistent with those found in earlier studies among army recruits (12, 18). These findings suggest that unprotected sex among military recruits could result in increased HIV prevalence among youth unless prevention efforts are scaled up for this population. Finally, it is of concern that condom use during first sex was low whenever the partner was not a sex worker or stable male partner. This suggests that the men may not attribute any transmission risk to relationships with stable or casual girlfriends. Factors associated with consistent condom use in this sample included having undergone voluntary counseling and testing, non-MSM status, living in the Northeast region of the country, being single, and having used a condom during first sex. This last factor was also found to be independently associated with consistent condom use in the aforementioned vocational student study (17). Although the cross-sectional nature of our study prevents us from drawing conclusions about causal relationships, this finding suggests that it may be important to provide programs to teenaged boys and girls before they become sexually active, to help them establish a “condom habit.” The reason for higher condom-use rates among recruits from the Northeast region is not clear and needs to be explored in future research. It could be due to different patterns of sexual behaviors among youth in this region, compared with youth in other parts of the country. It could also be associated with exposure to the prevention programs conducted in this region.

There were several unexpected findings in this study, such as the finding that almost 1 in 10 men would prefer to be female if given the choice. While we did not ask if they would consider gender-reassignment surgery, this number was still higher than expected based on previous estimates of the number of male-to-female transgender persons in Thailand, which have ranged from 0.003% (19) to 0.6% (20). It is possible that our somewhat general question encouraged participants to state their ideal, rather than something they actually planned to act upon, since Thai social norms still largely reflect traditional gender roles. We also found more varieties of sexual risk taking than anticipated, including unprotected sex with other men, transgender partners, and transgender sex workers (5%). The 13% of recruits who reported having had sex with other males was more than twice the proportion reported in previous studies among army conscripts (7, 18) and at the high end of the 3.3%–16.0% range of estimates of MSM prevalence in Thailand generally (9). The high proportion of MSM activity, together with the finding that participants who reported same-sex behaviors were less likely to use condoms consistently, suggests that prevention programs targeting military recruits need to include information that focuses on the importance of protection during male-to-male sex. Finally, the prevalence of penile modification was also unexpectedly high, with 9% of the men in our sample reporting this behavior, compared with 0.5% of STI clinic attendees in Bangkok and 2.6% of rural adult men reported previously (15). This practice is likely to diminish the effectiveness of condoms, due to increased risk of breaking, and needs to be addressed explicitly in prevention programs targeting military recruits and other youths.

As with all studies, several limitations need to be kept in mind when interpreting the results. Already noted, this was a cross-sectional study, which prevents us from drawing conclusions about causal relationships. Because this was a self-administered survey, the results cannot be generalized to those who are illiterate; however, they are only a small subsample of young Thai males. Furthermore, although every effort was made to encourage honesty, it is possible that risk behaviors were underreported due to social-desirability bias. Also, our study included only male participants; future research needs to explore sexual risk-taking patterns and their correlates among young Thai females as well.

The results of the study have several prevention implications. It is clear that messages that have traditionally focused on sex with female sex workers among these young men now need to be broadened to include unpaid casual partners as well as sex with other males. Prevention efforts must also adjust for the likelihood that perceiving oneself to be at risk or having sufficient knowledge of HIV does not necessarily translate into safe-sex behaviors among young people—they still encounter considerable risk through inconsistent condom use with both female sex workers and with casual male and female partners. In addition, the study findings suggest that in order to be effective, future campaigns need to (1) promote condom use regardless of partner type, (2) pay specific attention to MSM relationships, (3) strengthen the quality of voluntary pre- and post-test counseling, and (4) promote condom use at first sex regardless of the type of sex partner.

To enhance the impact of such prevention programs among military recruits, it is important to create a supportive environment for safe sexual behavior. This might include building the capacity of drillmasters to become facilitators of sex education and counseling, integrating sex education into the routine training curriculum, and providing access to condoms by installing condom vending machines at the Training Centers. Investing prevention resources in this population would protect not only these young men of reproductive age but also their sex partners, spouses, and children.

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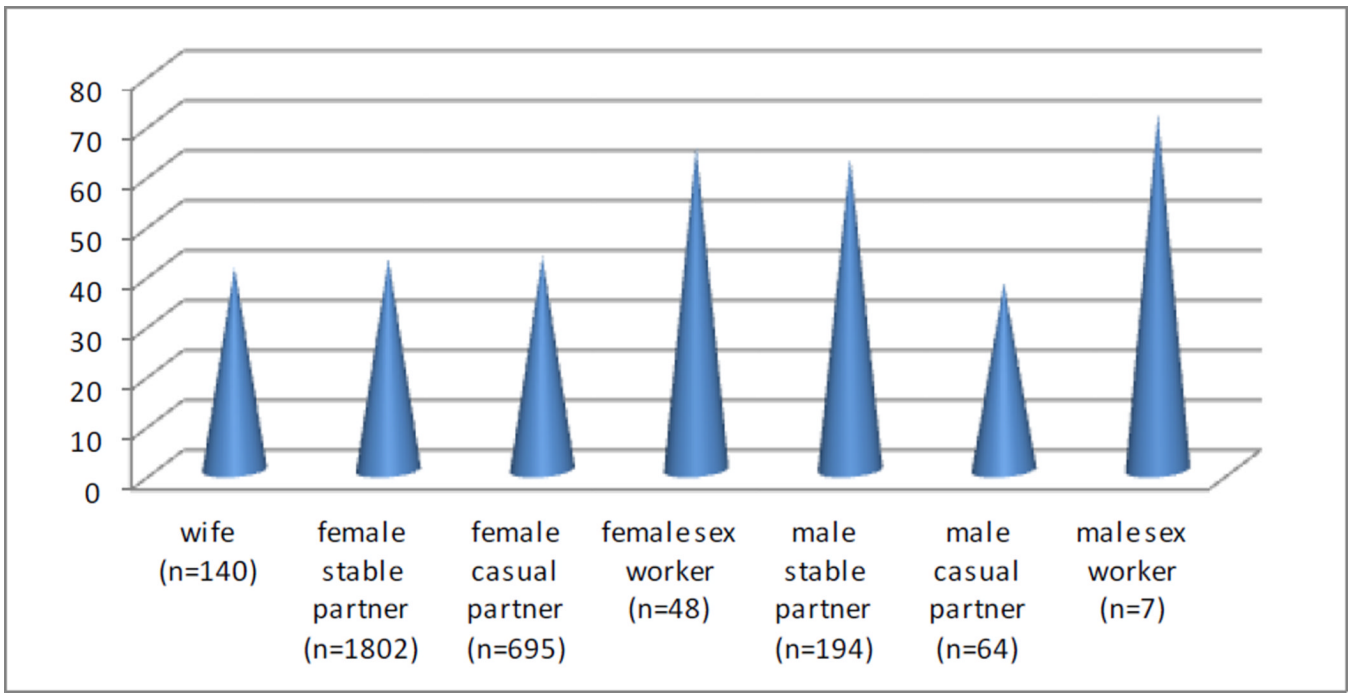

Figure 1.
Condom use at first sex, by partner type

Table 1

Demographic characteristics of 3299 naval recruits

Characteristic	Available sample[a]	n	(%)
Age (years)	3292		
21		1646	(49.9)
22		1207	(36.6)
≥23		439	(13.3)
Preferred sexual identity	3297		
male		3002	(91.1)
female		295	(8.9)
Marital status	3297		
single		2156	(65.4)
married/couple		1141	(34.6)
Education	3292		
primary: grades 1–8		759	(23.1)
secondary: grades 9–12		1720	(52.2)
higher education		813	(24.7)
Birthplace: region	3248		
Central		991	(30.5)
Northeast		1106	(34.1)
North		414	(12.7)
South		737	(22.7)
Current residence: region	3260		
Central		1357	(41.6)
Northeast		870	(26.7)
North		320	(9.8)
South		713	(21.9)
Occupation	3299		
labor		1071	(32.5)
white-collar employee		590	(17.9)
agriculture		553	(16.8)
student		448	(13.6)
business/vendor		296	(9.0)
jobless		211	(6.4)
other		130	(3.9)

[a] Available sample < 3299 due to missing data.

Table 2

HIV knowledge, perceptions, and sexual risk behaviors

	n[a]	(%)
Behavior:		
Ever went for voluntary HIV testing	1535/3299	(46.5)
Had penile modification	304/3299	(9.2)
Ever had sex	3004/3299	(91.1)
If yes (n =3004):		
Age at first sex < 15 years	1312/2997	(43.8)
Male partner at first sex	274/2980	(9.2)
Used condom at first sex	1312/2984	(44.0)
Consistent condom use	519/3004	(17.3)
Ever had sex with female sex worker	1266/2977	(42.5)
Ever had sex with male partner	397/2963	(13.4)
Ever had unsafe anal sex with male/transgender person	136/2927	(4.6)
Ever sold/traded sex	149/2952	(5.0)
Multiple partners in past 3 months	1586/3004	(52.7)
If yes: consistent condom use	360/1584	(22.7)
Knowledge:		
HIV-transmission knowledge score (0–12): median (range)	10	(0–12)
Condoms can prevent STIs and HIV	3146/3299	(95.4)
Having multiple sex partners = HIV risk	2835/3299	(85.9)
Perception: perceives self to …		
have appropriate information to prevent HIV	2490/3298	(75.5)
be at risk for HIV infection	1119/3299	(33.9)

[a]Denominator < 3299 (or < 3004 for sex-related behavior) due to missing data.

Table 3

Bivariate associations with consistent condom use (n = 3004)

	Available sample[a]	n	(%)	X^{2b}	*p*-value
Region of residence	2966			13.852	.003
Northeast	799	167	(20.9)		
North	304	53	(17.4)		
South	582	102	(17.5)		
Central	1281	187	(14.6)		
Age (years)	2999			10.912	.004
21	1525	248	(16.3)		
22	1090	180	(16.5)		
≥ 23	384	89	(23.2)		
Education	2997			2.534	.282
primary: grades 1–8	675	112	(16.6)		
secondary: grades 9–12	1577	263	(16.7)		
higher education	745	143	(19.2)		
Preferred sexual identity	3002			0.005	.946
male	2744	474	(17.3)		
female	258	45	(17.4)		
Marital status	3002			49.801	< .001
single	1894	398	(21.0)		
married/couple	1108	121	(10.9)		
Condoms can prevent STIs and HIV:	3004			0.994	.319
correct	2882	502	(17.4)		
incorrect	122	17	(13.9)		
Having multiple sex partners = HIV risk	3004			0.153	.696
correct	2612	454	(17.4)		
incorrect	392	65	(16.6)		
Self-perception of having appropriate information to prevent HIV	3003			0.720	.396
yes	2304	390	(16.9)		
no	699	128	(18.3)		

	Available sample[a]	n	(%)	X^{2b}	*p*-value
Self-perception of being at risk for HIV	3004			3.134	.077
yes/unsure	1009	157	(15.6)		
no	1995	362	(18.1)		
Ever had voluntary HIV testing	3004			4.212	.04
yes	1411	265	(18.8)		
no	1593	254	(15.9)		
Penile modification	3004			1.933	.164
yes	280	40	(14.3)		
no	2724	479	(17.6)		
Ever had sex with man	2963			3.105	.078
yes	397	56	(14.1)		
no	2566	454	(17.7)		
Ever had sex with female sex worker	2977			0.189	.664
yes	1266	215	(17.0)		
no	1711	301	(17.6)		
Ever had sex with transgender person	2982			0.912	.340
yes	263	40	(15.2)		
no	2719	477	(17.5)		
Ever sold/traded sex	2952			3.893	.048
yes	149	17	(11.4)		
no	2803	496	(17.7)		
Age at first sex (years)	2997			11.578	.001
< 15	1312	191	(14.6)		
≥ 15	1685	325	(19.3)		
Used condom at first sex	2984			208.388	< .001
yes	1312	376	(28.7)		
no	1672	142	(8.5)		

[a] Available sample < 3004 due to missing data.

[b] Degrees of freedom (*df*) = 1, except for region of residence: *df* = 3; for age, education: *df* = 2.

Table 4

Multivariate logistic regression of consistent condom use (n = 2879)

	Adjusted OR	95% CI
Region of residence	(X^2 = 9.79, *df* = 3, *p* = .02)[a]	
Northeast	1.47**	(1.14–1.88)
North	1.35	(0.94–1.93)
South	1.26	(0.95–1.67)
Central	(reference)	
Age	(X^2 =5.49, *df* = 2, *p*=.06)[a]	
21	(reference)	
22	1.14	(0.91–1.43)
≥ 23	1.43*	(1.05–1.93)
Married/couple	0.47***	(0.37–0.59)
Perceived to be at risk for HIV	0.84	(0.67–1.04)
Ever had voluntary HIV test	1.24*	(1.01–1.52)
Age at first sex ≥ 15	1.18	(0.96–1.46)
Condom used at first sex	4.29***	(3.45–5.34)
MSM	0.71*	(0.51–0.99)
Ever sold/traded sex	0.62	(0.35–1.12)

CI, confidence interval; OR, odds ratio.

[a]Wald test for overall effect of multinomial variable.

*$p < .05$;

**$p < .01$;

***$p < .001$