

# Social-Cognitive Predictors of Consistent Condom Use Among Young People in Moscow

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**CONTEXT:** Russia is experiencing an explosive HIV epidemic, and young people aged 15–29 have the highest incidence of infection. Understanding factors associated with condom use in this age-group is important in developing effective prevention interventions.

**METHODS:** Telephone interviews were conducted with 1,203 Muscovites aged 15–29 in September 2002 to assess condom use, HIV knowledge and sexual behavior. Multivariate logistic regression was used to determine independent predictors of consistent condom use.

**RESULTS:** Forty-four percent of sexually experienced respondents reported using condoms consistently. In multivariate analysis, the likelihood of consistent use was elevated among single women and men (odds ratios, 1.8 and 2.6, respectively), those who considered condoms reliable protection against unwanted pregnancy (2.4 and 1.6) and those who believed that most of their peers use condoms (2.9 and 4.6). For women, having recently had multiple partners was associated with increased odds of consistent use, and consistent use declined with age.

**CONCLUSIONS:** Strategies to promote condom use should increase awareness about their effectiveness against not only unwanted pregnancies but also HIV and other STDs. Condoms should be recommended for married couples and people with one permanent partner as a contraceptive option as well as for disease prevention.

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Russia is experiencing an explosive HIV epidemic and has one of the fastest growing incidence rates in the world. According to the Russian Federal AIDS Center, the number of people infected with HIV increased from 1,080 at the end of 1995 to 274,197 by March 2004.<sup>1</sup> Most experts estimate that the actual number of HIV cases is 5–10 times the officially registered number, and that more than one million people are living with HIV infection in Russia. Young people aged 15–29 are the most affected group.<sup>2</sup>

Until recently, nearly all new HIV infections were related to injection-drug use, but this situation has changed. Between 1998 and 2004, the proportion of new infections that were related to injection-drug use declined from 93% to 56%; the proportion attributable to heterosexual transmission rose from 5% to 23%.<sup>3</sup> The changing pattern of the epidemic is also evidenced by the growing numbers of HIV infections among pregnant women and children, as well as by the increasing prevalence of STDs that can facilitate heterosexual transmission of HIV. The number of syphilis cases among females aged 10–14 in 1998 was 50 times that in 1990,<sup>4</sup> and in the Moscow region, the number of pregnant women with syphilis in 1997 was seven times that in 1993.<sup>5</sup> The number of children born to HIV-positive mothers is also increasing rapidly. Only 20 children had been born with HIV in Russia before 1997, but by March 2004, the total was 7,918.<sup>6</sup>

Condom use is an effective strategy for the prevention of heterosexual transmission of STDs, including HIV.<sup>7</sup> Condoms, when used correctly and consistently, can reduce the rate of

HIV transmission by 87%.<sup>8</sup> In Russia, however, fewer than half of sexually experienced people aged 15–25 ever use condoms; the proportion is only 29% among sexually experienced students and 6% among sexually experienced adults aged 15–55.<sup>9</sup> Use of contraceptive methods, including condoms, likewise is low, as the high rate of unintended pregnancies and accompanying high number of abortions among young women in Russia indicate. Almost three out of five pregnancies in Russia ended in abortion in 2002, and half of registered abortions were among women aged 20–30.<sup>10</sup> Overall, this suggests that unprotected sexual behavior is common in the general population. This is worrisome in light of the growing HIV epidemic.

Understanding factors associated with safer sexual practices and condom use among young people is important in developing effective interventions. In this article, we assess the factors associated with consistent condom use among young men and women in Moscow. We included in our analysis variables that have been shown to be important in predicting sexual behavior and that could affect condom use in sexually active populations.<sup>11</sup>

## METHODS

### Participants and Procedure

We used data from a September 2002 telephone survey conducted by the Validata research agency to obtain information about the coverage of a mass media campaign to promote safer sexual practices and to assess its impact on HIV knowledge, attitudes and practice among people aged 15–29. The media

campaign lasted six consecutive months and included 30-second TV clips and outdoor advertising, including posters, leaflets and flyers about safer sexual behavior. The survey was sponsored by the nonprofit international organization Médecins sans Frontières.

About 15,000 telephone numbers were randomly selected from the telephone registry and given to the interviewers. At each residence, the person aged 15–29 whose birthday was closest to the day of the interview was asked to participate in the survey. Nine percent of potential participants completed interviews. Most of the rest did not agree to participate (38% overall) or were not available at the selected telephone number after at least three calls (42%); 11% refused to participate. Prior to the interview, the purpose of the study was explained to potential participants, and verbal informed consent was obtained. Overall, 1,203 interviews were conducted—609 with women and 594 with men. Interviews, which lasted 15–20 minutes, were conducted in Russian by 40 trained interviewers (mainly females) with at least one year of interviewing experience. After the interviews, the data were analyzed using SPSS 11.0.

### Questionnaire

The questionnaire was originally developed in 1997 by the AIDS Foundation East-West, and was used in 1998 and 2000 surveys to evaluate the influence of media campaigns on young Muscovites' knowledge, attitudes and practices regarding safer sex. Prior to our survey, the questionnaire was pilot-tested, and appropriate changes were made to improve its content and the wording of the questions. The interviews consisted of 92 questions on demographic characteristics; knowledge about the media campaign, HIV and AIDS, and condom use; sexual behavior; risk perceptions; and attitudes toward condoms. Questions related to knowledge about the media campaign were not used in the analyses because all participants likely had been exposed to the campaign.

Knowledge about HIV and AIDS was assessed through four questions: three about modes of HIV transmission (e.g., "What do you think, is it possible to get HIV from an infected person through needle sharing?"), and one about condoms as a preventive method against HIV ("Do you think using condoms during sexual intercourse can prevent you from getting HIV?"). Each correct response was assigned one point, and a total score was computed for each participant. Respondents were considered to have high knowledge if their total score was four, moderate knowledge if it was three and low knowledge if it was less than three.

We also assessed levels of misconceptions about the transmission of HIV. Respondents were asked if the virus could be transmitted through a handshake, common dishes, a cough, sweat and toilet seats. Each incorrect response was assigned one point, and a total score was computed for each study participant. Respondents who gave no incorrect answers were regarded as having a low level of misconceptions, those who made up to three mistakes were regarded as having a moderate level of misconceptions and those who answered at least four questions incorrectly were regarded as having a high level of misconceptions.

To measure risk perceptions, we asked whether respondents think that they are at risk of getting STDs, getting HIV and being involved in an unwanted pregnancy if they have intercourse.

The section on sexual behavior and condom use included questions about whether the respondent was sexually experienced and the age at which he or she had first had sexual intercourse, number of sexual partners during the last month, condom use during the last six months, reasons for using or not using condoms, and attitudes toward condoms. Response options for number of partners were "none," "one" or "more than one." For condom use during the last six months, respondents indicated whether they "always," "sometimes," "rarely" or "never" used condoms. For reasons for using or not using condoms, we asked respondents to indicate whether each item on a list of seven possible answers applied (e.g., "I have a permanent partner"; "I do not have money to buy condoms"). Attitudes toward condoms were measured by whether respondents agreed or disagreed with six statements about condom use, norms and effectiveness (e.g., "I think condoms are reliable protection against [sexually transmitted infections]"; "I think that a majority of people of my age use condoms").

The main outcome variable was consistent condom use during the last six months. Participants indicating that they had always used condoms during that period were identified as consistent users, and all others were categorized as inconsistent users.

### Statistical Methods

The analyses included all respondents who answered yes to the question "Have you ever had sexual intercourse?" The frequency distribution of potential predictors of condom use was examined, and appropriate categories were created. Most predictors were coded as dichotomous variables. The prevalence of consistent condom use in each category of the predictor variables was determined; univariate associations between condom use and predictor variables were summarized by using odds ratios and corresponding 95% confidence intervals.

To adjust for multiple predictors simultaneously, we performed multivariate analyses using logistic regression models. Separate models were constructed for women and men. All variables that were significant in the univariate analyses and others that were thought to be important on the basis of previous reports were included in the logistic regression models. Stepwise procedures, using both forward selection and backward elimination procedures, were used to determine the final model. After the final model was obtained, potential confounding of variables that were not included was assessed by adding these variables to the model one at a time, and looking at the changes in estimates and standard errors of the other predictors. Changes of more than 10% in the estimated predictors indicated confounding. The fitness of the final model was assessed by using the Hosmer-Lemeshow test.<sup>12</sup>

## RESULTS

### Descriptive Data

Of the 1,203 young people who participated in the survey, 929 (77%) said they were sexually experienced and were included in the analysis. The sample included 455 women and

474 men. Respondents' mean age was 23.0 years (standard deviation, 3.9). The majority (66%) of these young people were married or living with a partner. On average, they had had 13.2 years of formal education (standard deviation, 2.2). Age at first sexual intercourse averaged 17.7 years (standard deviation, 1.9); it ranged from 12.0 (among eight participants) to 28.0 (one participant). Seven percent of women and 20% of men reported having had more than one partner in the last month.

Fifty-five percent of women and 26% of men in the sample had a high level of HIV knowledge. Levels of misconceptions were generally moderate (42% among women, 40% among men) or low (46% and 51%, respectively). Only 22% of female participants and 27% of males perceived themselves to be at risk of getting HIV through sexual intercourse.

Overall, 44% of respondents said that they had always used condoms during intercourse in the last six months, while 57% reported that they had never used condoms or used them rarely. Levels of consistent use were low both among married respondents (48% of women and 53% of men) and among their unmarried counterparts (29% and 27%, respectively). The proportion using condoms consistently was significantly higher among men than among women (48% vs. 39%;  $p < .05$ ).

Among inconsistent users, the most common reasons for not using condoms (Table 1) were having a permanent partner (37%), using other methods (30%) and feeling that condoms reduce pleasure during sex (28%). A substantial proportion of inconsistent users cited their partners' opposition to condom use (17%); only 1% reported that they did not have money to buy condoms. Significantly higher proportions of women than of men attributed their inconsistent use to having a permanent partner, using other contraceptive methods or having a partner who opposes condom use.

The most common reasons that consistent users gave for using condoms—cited by six in 10 overall—were to protect themselves against HIV, other STDs and unwanted pregnancy. However, greater proportions of men than of women cited disease prevention, whereas a greater proportion of women

**TABLE 1. Percentage of 15–29-year-olds reporting selected reasons for inconsistent condom use and for consistent condom use, by gender, Moscow, 2002**

Reason	Total	Women	Men
<b>Inconsistent use</b>	(N=451)	(N=239)	(N=212)
I have a permanent partner***	36.7	45.9	27.8
I use other methods to prevent unwanted pregnancy***	30.4	38.0	23.0
Condoms are uncomfortable and reduce pleasure	27.6	27.9	27.2
My partner is against using condoms***	16.7	22.4	11.2
I do not have money to buy condoms	0.8	0.7	0.8
<b>Consistent use</b>	(N=404)	(N=179)	(N=225)
I want to protect myself from sexually transmitted infections***	59.7	52.1	67.1
I want to protect myself from unwanted pregnancy***	58.6	63.5	53.8
I want to protect myself from HIV/AIDS***	58.0	50.1	65.6
Condoms prolong sexual intercourse	21.9	19.1	24.5
My partner likes them***	14.6	7.5	21.5

\*\*\*Gender differences significant at  $p < .001$ .

**TABLE 2. Percentage of 15–29-year-olds reporting consistent condom use, by selected characteristics, and odds ratios (and 95% confidence intervals) from univariate analysis assessing characteristics associated with consistent use, by gender**

Characteristic	Women		Men	
	%	Odds ratio	%	Odds ratio
<b>Age***</b>				
15–20	55.6	2.4 (1.4–4.1)	61.2	2.5 (1.5–4.2)
21–23	35.2	1.0 (0.6–1.9)	41.1	1.1 (0.7–1.9)
24–26	30.9	0.9 (0.5–1.5)	43.4	1.2 (0.7–2.1)
27–29 (ref)	34.3	1.0	38.5	1.0
<b>Marital status</b>				
Single	48.4	2.4 (1.6–3.5)	53.3	3.0 (1.9–4.9)
Married (ref)	28.5	1.0	27.4	1.0
<b>Level of HIV knowledge</b>				
High (ref)	40.6	1.0	39.2	1.0
Moderate	39.0	0.9 (0.6–1.4)	52.0	1.3 (0.7–2.2)
Low	35.0	0.8 (0.4–1.4)	45.0	1.7 (1.1–2.6)
<b>Level of HIV misconceptions</b>				
High (ref)	40.0	1.0	54.3	1.0
Moderate	40.6	1.0 (0.6–1.9)	49.7	0.7 (0.4–1.3)
Low	38.0	0.9 (0.5–1.7)	44.4	0.8 (0.4–1.6)
<b>Risk perceptions</b>				
At risk for STDs	42.1	1.2 (0.8–1.8)	50.3	1.2 (0.8–1.7)
At risk for HIV	44.1	1.3 (0.8–2.0)	50.0	1.2 (0.8–1.7)
At risk for unwanted pregnancy	37.2	0.8 (0.6–1.2)	51.2	1.3 (0.9–1.8)
No answer	30.2	0.7 (0.4–1.4)	41.5	1.3 (0.8–2.1)
<b>No. of sexual partners in past month</b>				
0	45.0	1.4 (0.7–2.7)	63.6	0.9 (0.5–1.4)
1 (ref)	37.4	1.0	44.8	1.0
>1	65.6	3.2 (1.5–6.9)	52.1	2.2 (1.1–4.2)
<b>Attitudes toward condoms</b>				
Condoms are reliable protection against HIV	41.3	1.3 (0.9–1.9)	51.4	1.7 (1.1–2.5)
Condoms are reliable protection against STDs	43.6	1.8 (1.2–2.7)	49.9	1.4 (0.9–2.1)
Condoms are reliable protection against unwanted pregnancy	48.0	2.4 (1.6–3.5)	52.2	1.5 (1.0–2.2)
Most of my peers use condoms	45.6	3.3 (2.0–5.4)	53.4	4.3 (2.5–7.5)

\*\*\* $p < .001$  for linear trend. Notes: ref=reference category. Characteristics for which no reference category is indicated were measured dichotomously.

than of men cited pregnancy prevention. Twenty-two percent of consistent users said they used the method because it prolonged sexual intercourse, and 15% said that their partners liked condoms; a higher proportion of men than of women reported this last reason.

**Predictors of Consistent Condom Use**

In the univariate analysis, consistent condom use decreased significantly with increasing age among both men and women (Table 2). Single respondents were more likely to use condoms consistently than were married respondents (odds ratio, 2.4 for women and 3.0 for men). Men with a low level of knowledge about HIV were more likely than those with a high level to use condoms consistently (1.7); level of knowledge was not significant for women, and misconceptions and risk perceptions were not associated with use among women or men. Participants who had had more than one partner in the past month

**TABLE 3. Odds ratios (and 95% confidence intervals) from logistic regression analysis assessing characteristics associated with consistent condom use, by gender**

Characteristic	Women	Men
<b>Age***</b>		
15–20	1.7 (0.9–3.3)	1.6 (0.9–2.8)
21–23	0.9 (0.5–1.8)	0.7 (0.4–1.3)
24–26	0.8 (0.5–1.5)	1.1 (0.6–2.0)
27–29	1.0	1.0
<b>Marital status</b>		
Single	1.8 (1.1–2.9)	2.6 (1.5–4.5)
Married (ref)	1.0	1.0
<b>Believe that condoms are reliable protection against unwanted pregnancy</b>		
Yes	2.4 (1.6–3.8)	1.6 (1.1–2.4)
No (ref)	1.0	1.0
<b>Think that most peers use condoms</b>		
Yes	2.9 (1.7–4.9)	4.6 (2.6–8.2)
No (ref)	1.0	1.0
<b>No. of sexual partners during last month</b>		
No answer	0.8 (0.4–1.6)	0.8 (0.5–1.3)
0	1.3 (0.7–2.8)	1.5 (0.7–3.0)
1 (ref)	1.0	1.0
>1	2.3 (1.0–5.3)	1.3 (0.8–2.1)

\*\*\* $p < .001$  for linear trend for women. Note: ref=reference category.

were significantly more likely than those who had had only one to use condoms consistently (3.2 for women and 2.2 for men). Both women and men who believed that most of their peers use condoms had elevated odds of being consistent users (3.3 and 4.3, respectively). Other condom attitudes—believing that condoms protect against HIV, other STDs or pregnancy—were associated with consistent use among females or males, but not both.

Five variables were significantly associated with consistent condom use in the multivariate analysis (Table 3). For both women and men, the likelihood of consistent use was elevated among respondents who were single (odds ratios, 1.8 and 2.6, respectively), those who believed that condoms offer reliable protection against unwanted pregnancy (2.4 and 1.6) and those who reported that most of their peers use condoms (2.9 and 4.6). Among women, consistent condom use decreased with increasing age, and having more than one sex partner in the last month was associated with an increased likelihood of consistent use.

## DISCUSSION

Consistent condom use was relatively low among the sexually experienced young people in our study. Among both women and men, only about half of surveyed unmarried respondents and fewer than a third of married respondents reported consistent use. We also observed significant differences in attitude toward condoms among women and men. A higher proportion of men than of women reported that they used condoms because their partners like to, while a significantly higher proportion of women than of men reported that they did not use condoms because their partners were against it. This suggests that educational programs aimed at developing negotiation skills among partners could increase condom use

among young people in this population. A number of studies throughout the world have shown that improved partner communication skills are important in increasing condom use.<sup>13</sup> Moreover, a far higher proportion of women than of men reported using condoms to protect themselves from unwanted pregnancies, and a higher proportion of men than of women reported using condoms to protect themselves from HIV or STDs. These findings highlight the importance of developing gender-specific condom promotion messages.

Perceived condom effectiveness against unwanted pregnancy was associated with consistent condom use among men and women in the multivariate analysis. This could mean that if other contraceptive options become readily available, use of condoms is likely to decrease in this population. Hence, education and promotional campaigns should emphasize the effectiveness of condoms both in preventing the spread of HIV and other STDs and in protecting against unwanted pregnancy.

Other predictors of consistent condom use in our study were marital status, age, number of partners (for women) and the belief that peers use condoms. These factors have been reported to influence sexual behaviors, including condom use, in many countries.<sup>14</sup> Married, older people are more likely to use other means of contraception and tend to have trusting relationships with their spouses. These factors may reduce the perceived need for condoms as a means of disease prevention. On the other hand, young people, who may have relatively unstable sexual relationships, may be more likely to use condoms consistently. Although monogamy and abstinence are important HIV prevention strategies, condom use remains an important approach for prevention of HIV and unwanted pregnancies among married couples and others in long-term partnerships. Thus, promotion of condoms as contraceptive methods or as dual protection against unwanted pregnancies and STDs may be an appropriate strategy among married people.<sup>15</sup>

The association between consistent condom use and belief that condoms are used by peers suggests that increasing the proportion of young people using condoms is likely to lead to higher condom use in this population. Promotional campaigns in the general population can increase overall condom use by making condoms more socially acceptable in the community. Another approach for promoting condoms, especially among young people, can be peer-based education. As indicated in many studies, peers play a very important role in behavioral change.<sup>16</sup>

In our study, the level of HIV knowledge, level of misconceptions about HIV and perceived risk of getting HIV through sexual intercourse were not significantly associated with consistent condom use in multivariate analysis. These findings are consistent with results from other studies.<sup>17</sup> Nevertheless, we cannot underestimate the importance of HIV education, which is essential for effecting behavioral change, reducing stigma regarding HIV and thus preventing new cases of infection.

## Limitations

When interpreting the results presented here, we have to take into account factors that might have influenced our findings. Because of the cross-sectional design of our study, the observed

associations may not be causal. Additionally, our findings are subject to potential selection bias: Women and men who refused to participate in the survey may have differed from respondents with respect to sexual behaviors, background characteristics and level of HIV knowledge. Furthermore, selection bias may be a potential problem because some households in Moscow do not have a telephone.

Information bias also may affect our results. Participants could have given socially acceptable answers in response to sensitive questions. The result could be, for example, an underestimation of the proportion who had had more than one partner. Similarly, to “satisfy” interviewers, respondents may have overreported consistent condom use.

Finally, our questionnaire may have omitted predictors of consistent condom use. For example, behavioral beliefs may influence sexual behavior and condom use among young people.<sup>18</sup> Studies need to be done to test these associations in the Russian context.

### Conclusion

Our findings have several implications for condom promotion programs in Moscow. First, it will be important to increase awareness about the effectiveness of condoms against both unwanted pregnancies and STDs, including HIV, in ongoing condom promotion activities. Second, gender-specific peer-based education and training in negotiation skills can be used to promote condoms among youth. It is also important to target young single men as the at-risk population group by emphasizing condom effectiveness against STDs, and by promoting a general healthy lifestyle. Third, condoms should be recommended for married couples and people with one permanent partner as a contraceptive option as well as for STD prevention. Policies need to be adjusted to implement this approach in local family planning clinics.

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