

# Condom Use and Its Consistency among Metropolitan High School Students in Croatia, 1997–2001: Has Anything Changed?

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## ABSTRACT

*Sexually active adolescents face serious health risks associated with unprotected sexual intercourse, such as HIV infection and other sexually transmitted diseases (STDs), as well as unwanted pregnancy. To assess protective behavior among urban adolescents in Croatia we surveyed over 4000 high-school students, 15–19 years of age, in two waves: 2070 in 1997 and 1972 in 2001. The survey was carried out in various types of secondary schools in the capital city. The analyses suggest statistically significant increase in HIV/AIDS related knowledge in the observed period. A slight but significant increase was also observed in the acceptance of condom use. Both changes were more substantial among female students. In regards to protective behavior, we found significant increase in condom use, as well as in its consistency. Still, a large proportion of students did not use condom at last sexual intercourse (40% in 2001). In addition to generational effect, number of sexual partners, sexual victimization and mother's education (only in the case of young women) were identified as correlates of condom use consistency. While mother's education had positive effect, having 4 or more partners and having survived sexual violence decreased the likelihood of consistent condom use. In conclusion, the authors discuss the relevance of systematic school-based prevention of sexual risk taking among Croatian adolescents.*

**Key words:** adolescents, sexual behavior, condom use

## Introduction

Sexually active adolescents face serious health risks associated with unprotected sexual intercourse including human immunodeficiency virus (HIV) infection and other sexually transmitted diseases (STDs) as well as unwanted pregnancy<sup>1</sup>.

Behaviors particularly relevant to STDs and HIV transmission are: early age of sexual debut, poor contraceptive/condom use, multiple sexual partners, certain sexual practices, and the use of substances such as alcohol and drugs. The behavioral risk factors for HIV in adolescents may operate directly, through sexual contact, or indirectly, by lowering the threshold of caution, which can happen with use of alcohol or drugs<sup>2–4</sup>.

An inadequate concern about the risk of STDs and HIV/AIDS is also important. Adolescents may not have sufficient cognitive skills to foresee risks in sexual rela-

tionships, and this may be compounded by unrealistic perceptions of themselves as relatively invulnerable<sup>5</sup>.

The number of sexually active adolescents has been steadily increasing over the last 30 years. According to research into the sexual behavior of adolescents in Croatia carried out from 1971 to the present, the proportion of adolescents who have sexual experience is increasing and the age of sexual debut has somewhat decreased<sup>6–9</sup>. In 1971, 16.0% of female students and 30.0 % of male students between the ages of 15–19 had sexual experience<sup>6</sup>.

In 1997, the proportion of Croatian urban adolescents with sexual experience increased to 24.3% of female students and 46.3% of male students of the same age<sup>8</sup>. In the younger age groups very few adolescents are sexually experienced (in the age group of 15 years 2.7% of female students and 5.6% of male students), but at the age of 19

years, 60.9% of females and 69.8% of males are sexually experienced<sup>8</sup>. Living with both parents, an indicator of family control, and attendance of grammar school, an indicator of the family socioeconomic status, lower the probability of sexual experience in Croatian urban adolescents<sup>10</sup>.

On average, young people in Croatia have their sexual debut at 17, but more than a third of sexually active adolescents have their sexual debut at the age of 15 or earlier<sup>8,9,10,11</sup>. The age at this point is important because the early sexual debut predicts the larger number of sexual partners, which is the factor of the increased risk of STDs, HIV/AIDS, and long-term consequences such as infertility, cervical cancer, as well as unwanted pregnancy.

Sexually experienced adolescent females report less sexual partners than their male peers though almost 40% of females at the age of 15 to 19 years and 65% of males of the same age have had two or more lifetime sexual partners. About 20% of adolescents (10% of female students and 27% of male students) have had 4 or more sexual partners<sup>8,9</sup>.

How common is unprotected sex among youth in Croatia? The recent surveys found that more than 50% of sexually experienced adolescents aged 15–19 were using condoms during their first experience of sexual intercourse. On the last sexual intercourse 48% of female students and 57% of male students were relying on condoms (the decade earlier the figures were 10% and 24% respectively)<sup>8,9,12</sup>.

Confirming the importance of the habitual character of contraceptive and condom use, the strongest predictor of the use of condoms and contraceptives among Croatian urban adolescents is contraceptive and condom use at the first sexual intercourse<sup>10,11</sup>. The surveys also found that younger generations are more likely than older generations to practice safer sex at first intercourse<sup>9,10</sup>.

However, increased awareness about various STDs including HIV/AIDS has changed attitudes toward condom use, as well as acceptance of condoms among Croatian youth. Also increased power of female adolescents and young women to demand condom use contributed to increased use of condoms<sup>11</sup>. STDs and AIDS are one of the reasons why the condom becomes much more popular contraception method than it has been ten or twenty years ago. Although the percent of adolescents not using contraception has decreased and the number of adolescents using condoms in sexual intercourses has increased, there is still a high percent of sexually active adolescents using no protection from STDs, HIV infection and unwanted pregnancy. This reflects the lack of sexual and health education in Croatian schools, availability of youth services for counseling on the reproductive health and contraceptive use as well as affordability of condoms and contraceptives for adolescents<sup>8,11,13</sup>.

The most effective prevention strategy for sexually active male adolescents is to use condoms consistently during sexual intercourse and for female adolescents to

insist that their male partners use condoms. While condoms prohibit the transmission of viral pathogens, including HIV, their effectiveness as a risk-reduction strategy is dependent on appropriate and consistent use.

While a large proportion of adolescents are aware of the effectiveness of condoms to prevent transmission of HIV, a substantially smaller proportion report actually using condoms during sexual intercourse or report using them consistently with each sexual encounter.

The identification of the determinants of adolescent sexual behavior and contraceptive and condom use is important in developing effective STDs and HIV/AIDS preventive interventions.

Given the urgency of the STDs and HIV/AIDS epidemic and its potential spread to younger populations, we must understand the extent and causes of risk behaviors in adolescents so that effective intervention programs can be developed<sup>14,15</sup>.

The sexual behavior among high school students in Zagreb, Croatia was investigated in 1997<sup>10</sup> and repeated in 2001. The present study examined the influence of demographic, behavioral, and psychosocial factors on the risk-taking sexual behavior and the characteristics of the condom use among sexually active urban adolescents, high school students in Croatian capital Zagreb.

In this report we used data from 1997 and 2001 school-based survey on sexual behavior of urban adolescents in Zagreb to examine differences in self-reported sexual and contraceptive behavior of sexually active high school students in grades 1<sup>st</sup> to 4<sup>th</sup>. We addressed whether the use of condoms among sexually active high school students has changed since 1997, and what are the factors (demographic, sociocultural, psychosocial, and behavioral) that affect consistency of condom use among sexually active male and female urban adolescents in Croatia.

Understanding the factors associated with consistency of condom use among adolescents is important in developing effective HIV/AIDS prevention interventions for young people in Croatia. The results should serve as the basis for development of appropriate HIV/AIDS prevention education for adolescents.

## Materials and Methods

### Sample

In 1997, we have surveyed 2070 and in 2001 1972 high school students between 15 and 19 years of age in grades 1<sup>st</sup> to 4<sup>th</sup>. In both waves we surveyed students in high schools of different profiles (technical schools, a police high school, medical (nurse) schools and grammar schools) all of them situated in Zagreb, Croatian capital city. The sociodemographic and sociosexual characteristics of the 1997 and 2001 samples are shown in Table 1.

The survey was carried out in the form of a self-administered anonymous questionnaire. Students were surveyed collectively in classroom groups, over a period of 45 minutes. The survey procedures were designed to

protect student's privacy and allow for anonymous participation. The questionnaire was administered in the classroom by trained high school teachers.

The questionnaire contained a total of 64 questions divided into 4 categories. In the first category, there were questions regarding sociodemographic characteristics of the sample. The second group consisted questions measuring students' knowledge of human reproduction, contraception, and STDs including HIV/AIDS. The third group of questions focused on sexual and contraceptive behavior. The final group of questions measured attitudes toward sexuality, gender roles, condoms and contraceptives, etc.

**TABLE 1**  
SOCIODEMOGRAPHIC AND SOCIOSEXUAL CHARACTERISTICS  
OF THE 1997 AND 2001 SAMPLES OF HIGH-SCHOOL STUDENTS  
FROM ZAGREB

	1997 (n = 2070)	2001 (n = 1972)
Age		
Mean	17.2	16.8
SD	1.4	1.1
	n (%)	
Sex		
female students	1236 (59.7)	1231 (62.5)
male students	834 (40.3)	741 (37.5)
	%	
Type of school attended		
technical school	18.4	15
police school	11.8	11.8
medical (nurse) school	22.2	23.2
grammar school	47.6	50

### Indicators

*Parents' education* was measured by two 3-point scales (mother's and father's education) ranging from (1) primary school to (3) college or university.

Indicator of *parental control* was obtained by categorizing respondents on the basis of family composition. Respondents living in intact families were coded 1, while those living with only one parent or without parents were coded 0.

*Frequency of contraceptive use* (»When you have sex, how often do you use a contraceptive device or method?«) was assessed by a 4-point scale ranging from (1) never to (4) always.

*Condom use consistency* is a construct based on condom use at the first and the most recent intercourse. Respondent who has used condoms (either he personally, or her partner) on both occasions was coded as a (more) consistent user. The indicator was further adjusted by excluding respondents who reported only one sexual partner, since the first intercourse – in the case of these respondents – could also be the last one. It should be

noted that our adjustment criterion is extremely restrictive since it assumes that none of the respondents reporting having only one sexual partner had more than one intercourse with their partner. As expected, the correlation between condom use consistency and the frequency of contraceptive use was moderately high ( $r=0.56$ ;  $p<0.001$ ).

Experience of *sexual victimization* was indicated by a positive response to the following question: »Have you ever experienced a forced/unwanted sexual intercourse?«

Index of *HIV/AIDS-related knowledge* is a cumulative score on seven variables. The questions/statements were: »Are sexually transmitted infections always followed by symptoms?«, »What is the most efficient protection against HIV/AIDS?«, »Is it possible to get AIDS if you had sex only once?«, »HIV can not be transmitted via...«, »HIV/AIDS and other STDs can be transmitted only by penile-vaginal sexual contact«, »HIV can not be transmitted by a person who has no symptoms of illness«, and »HIV/AIDS risk increases with number of sexual partners«. Responses were coded 0 (incorrect answer) and 1 (correct answer). Theoretical range of the index is 0–7.

Respondent's *attitude toward condom use* was assessed using the statement »It is necessary to use condom in every type of sexual contact (oral, anal or vaginal) in order to protect oneself from HIV/AIDS.« Answers were recorded on a 3-point scale: (1) agree, (2) don't know, (3) disagree. In multiple (logistic) regression analysis the variable was dichotomized into 0 – those who disagree or don't know and 1 = those who agree with the statement.

*Early sexual debut* is a dichotomous variable based on the respondent's age at first intercourse. Respondents who had first sexual intercourse at the age of 15 or younger were coded 1, while the others were coded 0. The cut-off point was determined on the basis of recent research pointing out that adolescents with coitarche at 14 or earlier experience significantly higher levels of sexual risk taking<sup>16</sup>. Since Croatian adolescents enter sexual relationships at least a year later than their peers in the EU and the US, we adjusted the cut-off point accordingly.

Due to bimodal distribution, responses regarding the *number of sexual (coital) partners* were collapsed into two categories: (0) 1–3 partners, (1) 4 or more partners.

### Statistical analysis

All the analyses were carried out using SPSS/PC version 11. T-tests and chi square tests were used to assess statistically significant differences between two measurements (1997–2001); multivariate analysis was carried out using logistic regression.

### Results

To uncover possible cultural and/or generational change in both dimensions, we have compared the results of the 1997 and 2001 survey waves. Here we present the most important findings.

As presented in Table 2, HIV/AIDS related knowledge has significantly increased, mostly among female students. On average, in 1997 the respondents answered correctly to almost 79% of the questions, while in 2001 the percentage rose to 82%. Obviously, the increase is not very impressive, but it is nevertheless important if we keep in mind that during the observed period no systematic efforts at sex education were undertaken in Croatian schools<sup>17</sup>.

Potential epidemiological benefit of the observed increase is supported by the finding that the attitude toward condom use has also changed. The acceptance of condom use has slightly (but significantly) increased. In comparison to the 1997 wave, the respondents in the 2001 survey were more likely to state the importance of condom use in all penetrative sexual activity. As expected, female students were more accepting of condom use at both times.

**TABLE 2**  
HIGH-SCHOOL STUDENTS' KNOWLEDGE ABOUT HIV/AIDS AND ATTITUDE TOWARD CONDOM USE, 1997–2001

	1997 (n = 1892)	2001 (n = 1844)
HIV/AIDS related knowledge**	Mean (SD)	
Female students	5.75 (1.15)	5.93 (1.11)
Male students	5.29 (1.32)	5.42 (1.29)
Total	5.57 (1.24)	5.74 (1.21)
	(n = 2069)	(n = 1971)
Positive attitude toward condom use <sup>a*</sup>	% (n)	
Female students	53.8 (665)	59.6 (734)
Male students	52.3 (436)	54.2 (401)
Total	53.2 (1101)	56.7 (1135)
	*p<0.05;	**p<0.001

Next, we analyzed students' sexual behavior and found no significant changes in age at coitarche. This suggests that a somewhat larger percentage of sexually experienced students in 1997 should be attributed to a higher average age in that sample. This is confirmed by the fact that the average number of sexual partners did not change from 1997 to 2001 (Table 3).

What did change, and in an encouraging direction, is the frequency of contraceptive use. However, the use of contraceptives is far from satisfactory: our findings point out that only half of the sexually active urban adolescents regularly (always) use some form of protection. In the context of HIV/AIDS prevention, an increase in contraceptive use can be misleading. To have a positive impact, the increase needs to include more frequent condom use. Table 4 provides relevant data.

According to our analyses, condom use among urban high-school students significantly increased in the period

**TABLE 3**  
SEXUAL EXPERIENCE, AGE AT COITARCHE, NUMBER OF SEXUAL PARTNERS, AND FREQUENCY OF CONTRACEPTIVE USE, 1997–2001

	1997	2001
	% (n)	
Sexual experience (all students)	33.1 (686)	31.7 (625)
Female students	24.3 (300)	25.8 (318)
Male students	46.3 (386)	41.5 (307)
	Mean /Median/ (SD) n	
Age at first intercourse	15.81 /16/ (1.16) 686	15.91 /16/ (1.19) 624
Number of coital partners	2.3 /2/ (1.62) 686	2.33 /2/ (1.67) 625
	Mean (SD) n	
Frequency of contraceptive use*	2.97 (1.07) 683	3.11 (1.06) 624
	*p<0.05	

**TABLE 4**  
CONDOM USE, AND CONDOM USE CONSISTENCY AMONG HIGH-SCHOOL STUDENTS, 1997–2001

	1997	2001
	% (n)	
Condom used at the first intercourse***	53.8 (686)	64.5 (625)
Condom used at the most recent intercourse*	53.5 (681)	59.4 (621)
Condom use consistency**	40.7 (686)	48.7 (625)
Adjusted measure of condom use consistency <sup>a*</sup>	35.5 (369)	44.7 (333)

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

<sup>a</sup> Only the respondents who reported two or more sexual partners

1997–2001, both at the time of coitarche and at the most recent intercourse. In 2001, about 60% of sexually active couples used a condom at their first or last intercourse. In both surveys, condoms were more often used at first than at last intercourse. Especially encouraging seems the reported increase in condom use consistency. Still, these findings have to be weighted against the fact that self-reported STDs infection rates did not significantly change from 1997 (9.5%) to 2001 (9.1%).

Finally, we wanted to examine possible correlates of condom use consistency. What were the factors that affected the change in condom use consistency in the 1997–2001 period? To answer these questions we have carried out a multiple logistic regression analysis presented in Table 5.

Generational effect, indicating substantial cultural change, was measured by entering survey year into regression equation. The effect proved statistically significant, pointing to certain unspecified changes in social and cultural environment in which adolescents actively participate using its elements (symbols and norms) in the process of constructing their own sexuality.

Additional correlates of condom use consistency were mother's education, knowledge about HIV/AIDS, number of sexual partners and sexual victimization. In comparison to having a highly educated mother (used as reference category), having a mother with secondary education decreased the likelihood of consistent use of condoms. Having 4 or more partners, being more knowledgeable about HIV/AIDS and being sexually victimized also decreased the likelihood of consistent condom use. The unexpected effect of HIV/AIDS knowledge was clarified in subsequent analyses (not shown here). When we controlled for gender, the association disappeared, pointing to the fact that female students (more knowledgeable of HIV/AIDS) reported significantly lower condom use consistency of their partners than the level that was self-reported by male students. The source of this discrepancy is unclear. One possibility is that young men, who are more directly expected to use condoms, were more likely to give socially desirable answers. It could also be that young women were referring only to their steady relationships, while young men were calculating »average consistency« taking into account sexual encounters with both casual and non-casual (steady) partners. Also, the effect of mother's education was shown to be significant only in the case of young women, confirming our previous analyses<sup>10</sup>.

## Discussion

According to mainly anecdotal evidence, HIV/AIDS is currently of only marginal concern to Croatian adolescents. To a large extent this is a consequence of a low and stable HIV/AIDS prevalence rate in the country<sup>15</sup> and particularly of a low number of HIV reported cases among adolescents. Such a situation is consistent with a low number of HIV-tested adolescents in our surveys. In 1997, 2.6% of the respondents reported being tested for HIV. In 2001 the figure rose by less than 1 percent (3.2%). However, a study pointed out a worrying potential for a rapid spread of HIV among needle-sharing youth in several Croatian cities<sup>18</sup>. Although current epidemiological data do not corroborate the existence of such a trend, encouraging consistent use of condoms among sexually active adolescents remains an important task.

Our findings indicate that in 2001 condom use at first and the most recent sexual intercourse among high-school students have increased in comparison to 1997. In the second wave of our study more than 64% of all sexually active students reported condom use at first sexual intercourse, and almost 60% of them used condoms at the most recent sexual intercourse. These findings are consistent with those of other studies<sup>19–23</sup>.

**TABLE 5**  
PSYCHOSOCIAL, AND SOCIOSEXUAL CORRELATES OF  
CONSISTENT CONDOM USE

	n = 1197	
	Odds ratio	95% CI
Wave (1 = 2001)	1.39**	1.07–1.76
Mother's education		
Primary	0.80	0.58–1.10
Secondary	0.63*	0.40–0.98
Tertiary	1	
Father's education		
Primary	1.39	0.82–2.38
Secondary	1.20	0.76–1.91
Tertiary	1	
HIV/AIDS related knowledge	0.86**	0.79–0.95
Attitude toward condom use	0.98	0.76–1.24
Early sexual debut	0.84	0.65–1.10
Number of sexual partners	0.63**	0.46–0.86
Sexual victimization	0.47**	0.27–0.80

\*p<0.05; \*\*p<0.01

How instructive is our analysis for the future interventions in that direction? There are two points that we would like to stress and briefly elaborate upon. The first, an optimistic one, is related to the presented descriptive analysis. The second and less optimistic point focuses on findings regarding the structure of condom use consistency.

As our analyses have consistently demonstrated, the 1997–2001 period is marked by a slight, but nevertheless statistically significant increase in condom use, as well as condom use consistency. Since the limitations of our study make impossible pinpointing the causes of this change, we can only speculate about its roots. In our opinion, the increase in condom use could be attributed to an increasingly more open and informative media discourse on adolescent sexuality, and partially, due to a reproductive health education program supported by UNICEF in a limited number of Zagreb secondary schools during the observed period. Our study was not designed to evaluate the impact of the program.

Of course, one would be ill-advised to conclude that present rates of condom use are satisfactory. According to our findings, over a third of sexually active respondents did not use a condom at their first *or* last intercourse. In 2001, 40% of respondents did not use condom at last intercourse. In that respect, there is clearly a role for comprehensive school-based sexual and reproductive health programs. Such educational efforts should, among other things, focus on empowering young women – who initially have a more favorable attitude to condom use – helping them to become more assertive and more skilled in negotiating condom use.

Despite the findings of increased use of contraceptive methods among sexually active students during the period 1997 to 2001, two findings of concern were revealed. Firstly, 3 in 10 sexually active students in 2001 were not

protected effectively against unwanted pregnancy or STDs at last sexual intercourse; 17.3% of them used no protection and 16.5% used either withdrawal or the so called natural methods. The second finding of concern was that many adolescent females, as they progressed from 1<sup>st</sup> to 4<sup>th</sup> grade, appeared to be replacing condoms with withdrawal as their partners' primary means of contraception, potentially increasing risk for HIV infection, STDs and unwanted pregnancy. The decline in condom use among sexually active females is consistent with the findings of other studies indicating that condom use generally decreases with adolescent relationship consolidation<sup>24,25</sup>. Number of partners seems to be another factor negatively affecting condom use consistency. As our analysis pointed out, having more lifetime partners is associated with reduced likelihood of condom use consistency, especially among young women<sup>26,27</sup>. This finding is especially alarming since, all things being equal, a history of multiple sexual partners constitutes a separate risk factor for HIV exposure above and beyond that degree of risk attributable to infrequent condom use alone.

In our earlier study<sup>10</sup> we determined the factors influencing condom use in urban adolescents. We confirmed positive association between condom and contraceptive use at first and most recent sexual intercourse<sup>11,28,29,30</sup>. Actually, the strongest predictor in our analysis of condom use at last sexual intercourse was shown to be condom use at first intercourse, suggesting habitual character of condom and contraceptive use in general in both genders. In the female subsample we found that mother's education, and positive attitudes toward condom use increased the likelihood of condom being used at the last intercourse, while the number of sexual partners and the length of intimate relationship decreased it. In the male subsample living with both parents and pro-condom attitudes were shown to have a positive effect on condom use.

The finding that condom use consistency is significantly less frequent among respondents reporting a high number of sexual partners (4 or more) needs to be placed in a proper epidemiological context. Although it is not always easy to separate the aspects of sexual freedom from those of sexual health, it is very important, in our opinion, to be extra cautious when discussing sexual risk factors and avoid moral statements – most often poorly informed and damaging. Consistently with other studies, we found that adolescents who report four and more lifetime partners were less likely to use condoms consistently<sup>19,26,31–33</sup>. Not using condoms and having multiple sexual partners are commonly overlapping behaviors among sexually active youth, and the combination of these activities compounds the risk of HIV transmission.

In order to contextualize the above discussion it is important to examine the dynamics of multiple sexual partnerships. In 1997 there were 19.8% of respondents reporting having 4 or more sexual partners. Four years later, the figure slightly increased (21.9%), but without reaching statistical significance. This is certainly good news. But why are some teenagers characterized by a substantially higher rate of sexual partner change? What

are the factors that can help us understand why some respondents have twice as many partners as average teenager? It could be that some adolescents are more interested in sex or more sexually »charged«. On the other hand, it could be that some adolescents are less able to manage others' sexual requests and pressures. Also, it could be that for some teenagers, more than others, sex represents an efficient way to build reputation among peers (or to attract the attention of adults), etc. Unfortunately, the limitations of the questionnaire used in the study preclude us from testing these hypotheses.

According to our analyses (not presented here), having 4 or more sexual partners is significantly correlated with gender – male students are more likely to have 4 or more partners – and sexual victimization. The odds of having 4 or more sexual partners is about 2.5 times greater among young men and women who reported being coerced into having sex, confirming similar findings of our earlier study<sup>10</sup>. Although in accordance with previous research linking sexual victimization with hypersexed behavior later in life<sup>34</sup>, the finding needs to be interpreted with caution. Since the questionnaire did not specify time when sexual abuse took place, having a larger number of sexual partners could be a consequence of sexual abuse, but also its cause (having multiple partners exposes one to a greater risk of sex abuse). Nonetheless, it seems that sexual victimization does play a negative role in making decisions about whether or not to use condoms. This could be based on low self-esteem, poor self-efficacy evaluation, and/or internalized sex-guilt – all of which are potential consequences of sex abuse<sup>35</sup>. Low self-esteem and poor self-efficacy result in the lack of persistency and power to negotiate condom use. Sex-guilt, on the other hand, lowers the probability of condom use systematically discouraging and undermining sexual activity planning. As already mentioned, findings from this and other studies suggest that coercive sexual experiences contribute to adolescent sexual risks and adverse outcomes by increasing the likelihood that the abused adolescents will have a greater number of sexual partners and earlier sexual intercourse, as well as by decreasing the odds that they will use condoms or other contraceptives<sup>36</sup>.

In 1997 mother's education was found to have a significant effect on condom use at the most recent intercourse reported by adolescent women<sup>10</sup>. Analyzing the pooled 1997 and 2001 data, we found that mother's education had a positive effect on condom use consistency reported by female students. What is the operational mechanism behind this gender specific finding? Most probably, mothers who are better educated are more likely to talk openly about sexuality with their daughters and are, thus, more effective in conveying important health messages.

Finally, HIV/AIDS related knowledge does not seem to play a clear role in condom use consistency. This is not surprising. A couple of earlier studies came to similar conclusion<sup>9,14</sup>, emphasizing that information-only approach to sex education is unable to induce behavioral

change<sup>37,38</sup>. In fact, in some cases it could have an adverse effect, increasing the level of sexual risk taking. One of the reasons for this is the fact that even if adolescents understand in abstract terms that condoms protect against STDs and HIV and believe that condoms should be used, they may not feel personally vulnerable to contracting diseases from their sex partners. Therefore, interventions should target perceptions of personal vulnerability as a way of increasing adolescents' motivation to use condoms<sup>39,40</sup>.

Several limitation of this study should be mentioned. Clearly, a cross-sectional study of young people precludes casual inferences, even if periodically repeated. An additional issue is the question of validity of self-reporting on sensitive topics in collective, classroom based, and surveying. Certainly, the pressure to provide socially desirable responses must be considered here. It is our belief, however, that this bias was effectively minimized by measures taken to assure respondents of anonymity and confidentiality of the information collected. Finally, a number of our instruments, especially the single item measure of the acceptance of condom use and the condom use consistency construct, are of limited reliability.

## Conclusion

School-based programs are logical venues to provide young people with preventive health education, which

should include helping the youth to identify their personal values, improve self-esteem and resist pressures to engage in risky sexual activities.

Comprehensive sex education, which includes skills building, necessary for adopting healthy patterns of behaviors (»healthy habits«), should start before young people become sexually active. Such education should not only be developmentally appropriate but should be carefully planned and executed in order to allow for diversity of values and beliefs of various subpopulations of adolescents. Last but not least, school-based sex education programs need to pay close attention to sexual abuse issues, both in terms of its prevention and its association with multidimensional health problems including high-risk behavior.

Well-designed and carefully monitored and evaluated prevention curricula based on social science theory and research can have a favorable impact on HIV/AIDS related knowledge, attitudes, beliefs and behaviors among high school students<sup>41</sup>. Substantial and long-lasting reductions in sexual risk behaviors may require a combination of comprehensive sex education, individual counseling, parental involvement and community involvement (access to needed social and reproductive health services). Recent initiative regarding experimental health education program for primary and secondary schools may prove to be a first systematic step in that direction in Croatia.

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## **UPORABA KONDOMA I NJEZINA KONZISTENCIJA MEĐU ZAGREBAČKIM SREDNJOŠKOLCIMA 1997.–2001. – IMA LI PROMJENA?**

### **S A Ž E T A K**

Seksualno aktivni adolescenti su izloženi različitim rizicima, poglavito neželjenoj trudnoći i spolno prenosivim zarazama, uključujući i HIV/AIDS. Kako bismo ispitali uporabu zaštite među mladima u Zagrebu, 1997. godine smo anketirali 2070 srednjoškolaca, a 2001. godine njih 1972. Istraživanje je obuhvatilo mlade u dobi između 15 i 19 godina, koji su pohađali različite vrste srednjih škola, od stručnih škola do gimnazija. Tijekom promatranog razdoblja uočen je porast razine informiranosti o HIV/AIDS-u te povećano prihvaćanje uporabe kondoma. Obje su promjene poglavito izražene u populaciji djevojaka. Kada je riječ o ponašanju, naši podatci ukazuju na značajan porast uporabe kondoma (pri prvom i posljednjem odnosu) te povećanu konzistenciju njihove uporabe. Ipak, značajan broj adolescenata, njih 40% u 2001. godini, nije koristio kondom pri posljednjem odnosu. Osim generacijskog efekta (povećana konzistencije u 2001., u odnosu na 1997. godinu), na konzistenciju uporabe kondoma utječe obrazovanje majke (isključivo kada je riječ o adolescenticama), broj seksualnih partnera i seksualna viktimizacija. Za razliku od majčinog obrazovanja, koje djeluje pozitivno, četiri ili više partnera te traumatično seksualno iskustvo (izloženost nasilju) smanjuju vjerojatnost konzistentne uporabe zaštite. Raspravljajući nalaze, autori u zaključku naglašavaju važnost sustavne prevencije rizičnog seksualnog ponašanja u hrvatskim školama.