Prevalence of condom use and associated factors in a sample of university students in southern Brazil

Prevalência e fatores associados ao uso de preservativos masculinos entre universitários no Sul do Brasil

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Abstract

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This article focuses on the frequency of condom use and associated factors in university students, based on a cross-sectional study of 633 students in 2006. Associations were investigated using a logistic regression model with 5% significance. Condom use prevalence was 60%. Having candidiasis was a protective factor for condom use in both sexual initiation (OR = 0.49; 95%CI: 0.31-0.79) and the most recent sexual intercourse (OR = 0.39; 95%CI: 0.24-0.65). Condom use was associated with single marital status (OR = 2.89; 95%CI: 1.60-5.23) and having a sex partner froim the health field (OR = 0.50; 95%CI: 0.34-0.75). Condom use was high in all sexual relations in this sample of university students. Single marital status and having a sex partner from a health-related course were positively associated with condom use in the most recent intercourse. Self-reported genital candidiasis was protective for condom use during early sexual activity and in the most recent sexual relation. Belonging to the health field did not show a significant impact on the use of male condoms.

Candidiasis; Condoms; Sex Behavior

Introduction

Sexually transmitted diseases (STDs) are highly prevalent in the world, constituting a major public health problem [1]. STDs greatly increase the risk of HIV transmission. AIDS is one of the world's most destructive epidemics, having taken 3.1 million lives in 2005, including 570 thousand children [2].

In Brazil, according to the National AIDS Bulletin, from 1980 to June 2007 a total of 474,273 AIDS cases were reported in the country: 289,074 in the Southeast, 89,250 in the South, 53,089 in the Northeast, 26,757 in the Central-West, and 16,103 in the North. In Brazil as a whole and in the South, Southeast, and Central-West, AIDS incidence tends to stabilize, while there is an upward trend in the North and Northeast. According to the World Health Organization (WHO), Brazil has a concentrated epidemic, with an HIV prevalence rate of 0.6% in the population from 15 to 49 years of age [3].

STDs are more common in adolescents and youth, who display a higher prevalence of risk behaviors such as early sexual initiation, multiple partners, unprotected sex, and alcohol and illicit drug use [4].

Correct condom use in all sexual relations has proven effective against STD/AIDS. Some factors influence male condom use, based on which a descriptive cross-sectional study was proposed to identify the frequency of male condom use

(or lack thereof) and associated factors in undergraduate medical and biology students as compared to other undergraduates.

Methods

The research project was reviewed and approved by the Institutional Review Board of Universidade do Extremo Sul Catarinense (UNESC), in Criciúma, Santa Catarina State, Brazil, filed under protocol number 384/2006.

An observational cross-sectional study was performed with students from UNESC, located in the city of Criciúma, Santa Catarina State. According to the student body list for the second semester of 2005 at the Criciúma campus of UNESC, based on data from the Student Affairs Office (CENTAC), the university had a total of 32 undergraduate courses, with 8,287 students enrolled, distributed in the following fields: health and life sciences, engineering and technology, and applied social sciences.

According to the Brazilian National Research Council (CNPq), Physical Education, Nursing, Pharmacy, Physical Therapy, Medicine, and Nutrition are classified as Health Sciences courses, Biology is classified under Life Sciences, and Psychology is classified under the Human Sciences. However, we chose to include Biology and Psychology in the health field, with the understanding that these courses include extensive health-related material. Therefore, the current study defined the following as health-related courses: Biology, Physical Education, Nursing, Pharmacy, Medicine, Nutrition, Psychology, and Physical Therapy, totaling 2,587 undergraduate students. Non-health-related courses totaled 5,700 students. The sample size to test the hypothesis of a difference in population proportions [5], considering a 5% significance level, 80% test power, and prevalence of 0.55 and 0.45 for students from health-related versus non-health-related courses was 352 students for each group. Students in the sample were selected proportionally to the number of students in each course. In the process of selecting students from each class to participate in the study, the sampling step was determined, i.e., the number k of elements in each collection. The process began, using the official UNESC enrollment list, by picking the first element among the first k; next, we skipped k elements in order to pick the second element, and so on until collecting the last element in the sample. Sexually uninitiated university students were excluded from the sample. Data collection used a self-applied, individual, anonymous questionnaire, consisting of structured questions on the study's target

variables. The questionnaire included written instructions that if by chance the respondents were sexually uninitiated, they did not need to answer the questions, but that in order to preserve their anonymity they should only turn the questionnaire in at the end of the session, together with all the other respondents.

The dependent (outcome) variables were: condom use during the first and most recent sexual relations. This approach attempted to prevent a recall bias, a strategy similar to that adopted by the Multi-Center Study on Youth, Sexuality, and Reproduction in Brazil, or the so-called GRAVAD Survey [6]. The independent variables were dichotomized as shown in Table 1.

Data analysis used SPSS version 12 (SPSS Inc., Chicago, USA). First, each variable was analyzed individually to verify its behavior. Qualitative variables were analyzed with a frequency table and quantitative variables with descriptive measurement.

In the crude analysis, each factor was evaluated in relation to the outcome variable, using the chi-square test and univariate logistic regression. In the adjusted analysis, multiple logistic regression was used to control for possible confounders.

All factors with $p < 0.25$ in the univariate analysis were candidates for entering the model, according to the methodology of Hosmer & Lemeshow [7]. Factors with $p < 0.05$ (Wald test) remained in the final logistic regression model. During the model's construction process, the importance of each component was also verified by the goodness-of-fit test. The magnitudes of associations between the dependent variable and the factors were estimated using odds ratios (OR), with a 95% confidence interval (95%CI).

Results

As shown in Table 1, mean age of the total sample population was 23.6 ± 9 years (mean ± SD), and females comprised 63.3% of the sample. Of the students who were interviewed, 60.5% were from non-health-related courses. Only 13.8% of the students were in a stable union, i.e., were married or had been cohabiting for more than two years, reporting only one partner in the last six months, and 11.6% reported having at least one child. The majority (62.7%) reported having their first sexual relations at 17 years of age or earlier, while 25.4% reported sexual initiation after entering the university. Only 3.4% reported alcohol and/or drug use before their first sexual relations.

Of the students interviewed, 77.7% reported having no partner or only one partner at the time

of the interview, and 11.6% responded that the partner belonged to the health field. Some 15.2% had consumed alcohol and/or drugs in association with their most recent sexual intercourse. Of the UNESC undergraduate courses, 55.4% provided information on STD prevention. Some 54.8% of the respondents reported not being influenced by government campaigns to promote condom use. Genital candidiasis was reported by 17.3% of the study population, followed by gonorrhea (0.6%). Other reported STDs included: syphilis (3 respondents), genital warts (2), genital herpes (1), and HIV (1).

Most (60%) of the interviewees reported using condoms in all their sexual relations.

As shown in Table 2, condom use prevalence was high in both the first and most recent sexual relations (71.4% and 61.4%, respectively).

As shown in Table 3, the factor significantly associated with condom use in the first sexual relation was genital candidiasis. Students that reported having candidiasis, predominantly females (95.7%), were more likely to have used condoms in their first sexual relations (OR = 0.49; 95%CI: 0.31-0.79). Single marital status (neither married nor cohabiting) was significantly associated with condom use in the most recent sexual intercourse (OR = 2.89; 95%CI: 1.60-5.23), as compared to married students (including stable unions). Having candidiasis was protective for condom use (OR = 0.39; 95%CI: 0.24-0.65), as was having a current partner from the health field (OR = 0.50; 95%CI: 0.34-0.75). However, belonging to the health field oneself was not significantly associated with condom use in the most recent sexual intercourse. Table 4 shows the above-mentioned results.

Discussion

The study's limitations include possible response biases, such as self-censorship and possibly overestimated condom use. We attempted to minimize these biases by applying the questionnaire with caution and anonymity, allowing interviewees to opt out. Selection bias was minimized, since the sample was random and stratified by course, and when one student refused to respond, the next student on the enrollment list was invited to participate.

Overall prevalence of condom use in all sexual relations in this sample of undergraduate students was 60%. Possible explanations are the high educational level, prevalence of single students, and advent of HIV/AIDS. In the literature, condom use is also higher among single individuals and those with more schooling [6,8,9,10,11].

Table 1

Characteristics of a sample of university undergraduate students. Criciúma, Santa Catarina State, Brazil, 2006.

Variable	n	%
Age (mean ± SD)	23.6 ± 9.0	
Gender		
Male	229	35.9
Female	404	63.3
Marital status		
Married/stable union	87	13.8
Single (not married or in stable union)	543	86.2
Courses area		
Health	252	39.5
Non-health	386	60.5
Children		
Yes	72	11.6
No	548	88.4
Sexual initiation		
≤ 17	400	62.7
≥ 18	238	37.3
Sexual initiation since undergraduate enrollment		
Yes	159	25.4
No	468	74.5
Alcohol or drug use in first sexual relation		
Yes	22	3.4
No	616	96.6
Number of sex partners in last 6 months		
0-1	496	77.7
≥ 2	142	22.3
Current partner from health field		
Yes	72	11.6
No	548	88.4
Candidiasis		
Yes	95	17.3
No	455	82.7
Condom use		
Always	370	60.0
Never, sometimes	247	40.0
Learned about STD prevention in undergraduate course		
Yes	345	55.4
No	278	44.6
Reports some STD		
Yes	41	7.6
No	495	92.3
Alcohol or drug use in last sexual relation		
Yes	95	15.2
No	528	84.8
Influenced by government condom campaigns		
Yes	280	45.2
No	339	54.8
Condom use in last sexual relation		
Health-related courses	148	59.2
Other courses	233	60.4
Condom use in first sexual relation		
Health-related courses	183	74.1
Other courses	256	68.4

Table 2

Distribution of dependent variables for condom use in first and most recent sexual relations among university students. Criciúma, Santa Catarina State, Brazil, 2006.

Variable	n	%
Condom use in first sexual relation		
Yes	439	71.4
No	176	28.0
Condom use in most recent sexual relation		
Yes	381	61.4
No	240	38.6

Table 3

Adjusted multiple logistic regression for variables associated with condom use in sexual initiation among undergraduate university students. Criciúma, Santa Catarina State, Brazil, 2006.

Variable	Adjusted OR	95%CI
Sexual initiation since undergraduate enrollment		
No	1.01	0.99-1.045
Yes (reference)	1.00	-
Self-reported candidiasis		
Yes	049	0.31-0.79
No (reference)	1.00	-

Table 4

Adjusted multiple logistic regression for variables associated with condom use in most recent sexual relation among undergraduate university students. Criciúma, Santa Catarina State, Brazil, 2006.

Variable	Adjusted OR	95%CI
Marital status		
Single	2.89	1.60-5.32
Married (or in stable union)	1.00	-
Self-reported candidiasis		
Yes	0.39	0.24-0.65
No	1.00	-
Children		
Yes	0.60	0.30-1.20
No	1.00	-
Current partner from health field		
Yes	0.50	0.34-0.75
No	1.00	-
Course/Area		
Health	1.15	0.78-1.69
Non-health	1.00	-

Findings from a survey by the Brazilian Ministry of Health in 2000 differed from ours in relation to condom use prevalence in all sexual relations. Only 23.9% of the sexually active population reported using condoms in all sexual relations [12]. However, we infer that condom use has increased over the years due to greater knowledge of STD transmission and prevention, especially concerning HIV, and increased knowledge of contraceptive methods.

Our study did not show any statistically significant result in terms of whether the students were enrolled in health-related versus non-health-related courses and condom use in all sexual relations (OR = 1.25; 95%CI: 0.78-1.69). This finding could refute the hypothesis that students in health-related courses know more about STDs and would thus know how to prevent them, or it could also mean that students from health-related fields select their partners differently from the average population and that this acts as a form of presumed prevention, despite not using condoms more than the other university students. Prevalence of condom use in the overall sample was 71.4% in the first sexual intercourse and 61.4% in the most recent. Since condom use thus declined by 10%, some explanations might be suggested: the first partner becomes a steady partner, use of other contraceptive methods, alcohol use before sexual relations, not having a condom available at the time of intercourse, and others. According to a Brazilian youth survey (19-24 years), condoms are used in 80% of relations with casual partners and 49% with steady partners [9]. Another Brazilian survey showed similar findings to ours: 57.3% of youth (15-24 years) used condoms in their last intercourse, 58.5% always used condoms with casual partners, and 38.8% used them with their steady partners [13].

A study of adolescents in three Brazilian State capitals showed that the factors associated with condom use in the most recent intercourse were: having more schooling than one's mother, late sexual initiation, stable partner, and condom use in first sexual intercourse [6]. While in our study the significant factors were single marital status, self-reported candidiasis, and partner enrolled in a health-related course, we did not investigate maternal schooling, nor did we find any association between age at sexual initiation and condom use.

According to another study of adolescents in the city of São Paulo, factors associated with condom use in all sexual relations were male gender plus lower socioeconomic status [14]. This finding, which contradicts various studies, may mean that adolescent girls have little power to negoti-

ate condom use with their partners and thus use other contraceptive methods, or there may have been an interpretation bias, given that condoms are a contraceptive method used by males, and higher class youth may be using a more effective method to protect against pregnancy, since they have more access to modern contraceptive methods.

In a study of males, factors associated with condom use were: having a steady female partner and greater HIV risk perception [15]. According to a survey of women, condom use in the most recent sexual relation was positively associated with younger age, more schooling, non-white color, single marital status, and more sex partners in the previous three months [6].

According to our findings, genital candidiasis was protective for condom use in the first and most recent sexual relations, thus positively influencing the use of male condoms. A study by Cordeiro et al. [16] in 2003 found the opposite, i.e., condom use as a risk for developing recurrent vulvovaginitis (OR = 2.62; 95%CI: 0.58-11.89), supposing that the lubricant or latex could cause allergic reactions.

Concluding, our study showed that single marital status and having a partner from the health field were protective factors for condom use in the most recent sexual intercourse. Genital candidiasis had a positive influence on condom use in both the first and most recent sexual relations. Given that candidiasis was reported almost exclusively by women, and since female students comprised the majority of the sample, one could speculate that the female interviewees play an important decision-making role in condom use, whether to protect themselves or their partners. On the other hand, we cannot infer whether this finding is true for asymptomatic women, and one cannot rule out the possibility of the male partner himself demanding condom use when he is aware that his partner has candidiasis.

Only 55.4% of the sample had received orientation on STDs and condom use in their undergraduate courses. Neither enrollment in a health-related course nor the Ministry of Health campaigns showed any significant impact on condom use in this sample of university students.

It is hoped that the data provided here will help orient future campaigns by the Ministry of Health and encourage universities to include STD education and prevention in all their courses.

Resumo

Este estudo verificou a freqüência e fatores associados ao uso de preservativos em universitários, por meio de estudo transversal com 633 estudantes, em 2006. Para avaliar associação foi utilizado o modelo de regressão logística em nível de 5% de significância. A prevalência do uso de preservativos foi de 60%. Ter candidíase foi um fator de proteção tanto para uso de preservativos na primeira (OR = 0,49; IC95%: 0,31-0,79) quanto na última relação sexual (OR = 0,39; IC95%: 0,24-0,65). O uso de preservativos na última relação sexual foi associado à relação marital não-estável (OR = 2,89; IC95%: 1,60-5,23) e parceiro(a) pertencer à área da saúde (OR = 0,50; IC95%: 0,34-0,75). Concluindo, a freqüência do uso de preservativos, em todas as relações sexuais, entre os estudantes universitários é alta. A relação marital não-estável e possuir parceiro do curso da área da saúde relacionaram-se positivamente ao uso de preservativos durante a última relação sexual. Relato de ter candidíase genital demonstrou proteção para uso de preservativos no início da atividade sexual e na última relação sexual. Pertencer à área da saúde não influenciou significativamente o uso de preservativos masculinos.

Candidíase; Preservativos; Comportamento Sexual

Contributors

L. C. Costa participated in the literature review, data collection, and discussion of the article's results. M. I. Rosa contributed with the supervision, statistical analysis, and discussion of the study. I. D. E. Battistti collaborated in the field research, statistical analysis, and writing of the manuscript.

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