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Factors associated with condom use in young people – A population-based survey

Fatores associados ao uso de preservativo em jovens – inquérito de base populacional

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ABSTRACT: ***Introduction:*** This study aimed to identify the factors associated with condom use in the last sexual intercourse. ***Methods:*** A population-based survey with young people aged 15-24, in the city of São Paulo, which collected sociodemographic data referring to knowledge about sex and sexual behavior. ***Results:*** Among 821 sexually active young people interviewed in the last year, condom use in their last sexual intercourse was positively associated with: 1) not being married; 2) use of condom at sexual onset; and 3) receiving free condoms; additionally, among men: 4) casual partners in the previous year; and 5) partner of the same sex; and, among women: 6) sexual onset after the age of 15. Having been tested for HIV was a negative association among women. Condoms are widely acknowledged, and there is a pattern of use for the first and last sexual intercourse. Access to free condoms is an important factor for use, and people use condoms according to standards that configure risk management. ***Conclusions:*** The strategy of primary prevention with the use of condoms is not yet exhausted. Based on this study, the city of São Paulo takes prevention as a public policy and allocates large condoms dispensers in 26 urban bus terminals, where 6 million people circulate daily. In 2016, 75,546,720 free condoms were distributed, 30% in bus terminals alone.

Keywords: Condoms. Sexual behavior. Safe sex. Disease prevention. Adolescent. AIDS serodiagnosis.

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RESUMO: ***Introdução:*** O objetivo do estudo foi identificar os fatores associados ao uso de preservativo na última relação sexual. ***Métodos:*** Inquérito de base populacional com jovens de 15 a 24 anos, residentes no município de São Paulo (MSP), que obteve informações sociodemográficas sobre conhecimentos e comportamentos sexuais por meio de questionário. ***Resultados:*** Entre os 821 jovens sexualmente ativos no último ano, o uso do preservativo na última relação foi positivamente associado a: 1) não ter sido casado; 2) uso de preservativo na primeira relação sexual; e 3) receber preservativos gratuitos; adicionalmente, em homens: 4) parceiro casual no último ano; e 5) parceiro do mesmo sexo; e em mulheres: 6) *debut* sexual após os 15 anos. Ter realizado teste anti-HIV mostrou associação negativa entre as mulheres. O preservativo é amplamente reconhecido; há um padrão de uso na primeira e na última relação sexual; o acesso ao preservativo gratuito é um importante fator para o seu uso pelos jovens; e as pessoas usam preservativo de acordo com padrões que configuram gestão de risco. ***Conclusões:*** A estratégia de prevenção primária com preservativos não está esgotada. A partir deste estudo, a cidade de São Paulo adotou a prevenção como política pública e alocou grandes dispensadores de preservativos nos 26 terminais de ônibus urbanos, por onde circulam 6 milhões de pessoas diariamente. Em 2016 foram distribuídos 75.546.720 preservativos gratuitos, entre os quais 30% apenas nos terminais de ônibus.

Palavras-chave: Preservativos. Comportamento sexual. Sexo seguro. Prevenção de doenças. Adolescente. Sorodiagnóstico da AIDS.

INTRODUCTION

In Brazil, human immunodeficiency virus (HIV) infection is still a challenge regardless of more than 30 years since the beginning of the epidemic. In the last 10 years, there has been a 2% increase in the national detection rate of acquired immunodeficiency syndrome (AIDS). In the State of São Paulo, there was a 42% decline in AIDS between 1998 ($35.1/10^5$) and 2010 ($20.2/10^5$), with 2,748 new cases reported in the city of São Paulo in 2014[1].

In São Paulo, the AIDS epidemic has been regressing, except among young men aged 15-29 years, the population with the most relevant increase in the detection rate of AIDS, especially among 20-24 year-olds (98.6%) from 2006 to 2015. Among males, the proportion of cases reported in men who have sex with men (MSM)[2] upsurges.

National data show that 94% of individuals know that condoms are the best way to avoid HIV transmission, but only 39.1% of this population reported using condoms in their last sexual intercourse. Access to condoms at health services was reported by 28.3% of the population, and 47.3% did not have access to it[3].

Strategies for the prevention of HIV infection and other sexually transmitted infections (STIs) are still largely based on condom use, despite the current availability of other technologies, such as post-exposure prophylaxis (PEP) and sexual pre-exposure (PrEP), the latter not yet offered by the public health network in Brazil, in addition to circumcision, little used in our country[4]. Additionally, in the absence of condoms, the use of lubricants is suggested in the practice of anal sex along with non-ejaculation, both risk-management strategies[4].

The prevention of HIV transmission among young people is a strategy to control the HIV / AIDS epidemics in Sao Paulo. In this context, knowing the factors associated with the use of condoms in sexual intercourse is relevant for the construction of public health policies.

Few studies have been conducted on Brazil in search of factors associated with use of condoms among the groups in which the epidemic is concentrated, such as MSM, sex workers, people who use drugs, transgender population, and adolescents, as reported by Dourado et al. in a review[5].

The Youth Statute addressed young people rights that must be ensured and promoted by the government, including sexual and reproductive rights[6].

The aim of this study was to identify factors associated with condom use in the last sexual intercourse among residents of Sao Paulo aged 15 to 24 years.

METHODS

Cross-sectional study integrating the Survey of Knowledge, Attitudes and Practices in of Residents of the Municipality of São Paulo (PCAP-MSP), conducted between November 2013 and January 2014.

The prevalence of 20% of regular condom use with fixed partner estimated by the PCAP-MSP[7], was used in sample calculation, with a 95% confidence interval (95%CI), sample design effect of 1.8 and error of 0.05.

The minimum sample size was 443 interviews for each domain with addition of 20%, referring to the acceptable statistical value for sample loss, so the number of 530 interviews for domains sex and age was obtained. The domains chosen for sample planning were: region of residence, sex and age. The sample was stratified per each of the five administrative regions of the municipality (Mid-West, Southeast, South, East and North) and by age groups: 15 to 24 years, 25 to 34 years, 35 to 49 years and 50 to 64 years. The primary sampling units (PSUs) were the 80 census tracts sorted by region and systematically drawn. Only one resident aged 15-64 was interviewed in each household. The selection of households and resident to be interviewed was made in quotas, composed of three variables: sex, age group and marital status. A total of 4,318 individuals living in the urban region of Sao Paulo were interviewed, which represents 96% of the census tracts in the municipality[8]. The mean of losses and refusals per census tract was 17%, and these were replaced with visits to new households in order to reach 100% of estimated quotas.

The data were obtained after a questionnaire was applied to participants using tablets, being part of questions made by the interviewer and part fulfilled by interviewees, when addressing sexual behavior and drug use, to guarantee privacy for questions considered embarrassing. For those who could not read, an audio with questions was made available.

The dependent variable was "condom use at your last sexual intercourse" for young people aged 15 to 24 who had had sexual intercourse over the last year. Independent variables were: gender; age; schooling; race / skin color; religion; economic classification based on criterion by the Brazilian Association of Research Companies (ABEP)[9]; age at first intercourse; use of condom

at first sexual intercourse; same-sex intercourse at some point in life; fixed sexual partner over the last year; casual sex over the last year; use of alcohol and/or drugs; access to free condoms; performance of HIV test; history of STIs; and knowledge about HIV infection and AIDS.

STATISTICAL ANALYSES

The variables were described as absolute and relative frequency, with mean and standard deviation (SD) for continuous variables. The Shapiro-Wilk normality test was applied. In order to analyze the associated factors, the Poisson model with robust error variance was used, once this was a cross-sectional study with prevalence of outcome above 10%.

The independent variables with p-value <0.20 in the bivariate analysis were added to the multiple model, and those with $p<0.05$ or adjusted to other variables by at least 10% were maintained. Variables were input to the multiple model in increasing order, that is, from the lowest to the highest p value.

ETHICAL ASPECTS

The research was approved by the Research Ethics Committee of the Municipal Health Secretariat (opinion nº 340776) and carried out in accordance with the ethical standards of the National Health Council (CNS), Resolution 466/12 (National Commission on Ethics in Research/CNS).

All the interviewees signed the informed consent form and data non-disclosure was guaranteed.

RESULTS

SAMPLE DESCRIPTION

In sample of PCAP-MSP, of 4,318 respondents, 94.0% (4,057) had already started sexual life, among which 86.3% (3,500) reported sexual intercourse in the last year. Among 1,084 young people aged 15-24 years, 79.5% (862) had had sexual intercourse in their lifetime and were included in the study. The analysis of factors associated with the use of condom in the last sexual intercourse was conducted with 821 young people (95.2%) who reported having an active sexual life in the last year.

Among 862 young people who had started sexual life, the mean age was 20.8 years (SD = 2.71); most participants were married or lived with a partner and had finished high school; about 50% declared themselves as white-skinned; more than half belonged to economic class C; and 43.6% had no religion (Table 1). Among 862 subjects, 60.7% reported

using a condom at first sexual intercourse, with men starting sexual activity at a median age of 15 (8-23) years and women at 16 (10 - 23) years ($p < 0.001$).

Among 821 young people who reported having sex in the last year, 52.4% had used a condom in the last intercourse, with no statistically significant difference between men and women.

Table 1. Sociodemographic characteristics of young people aged 15 to 24 who had sexual life started. São Paulo, 2014.

Variables	n	%	95%CI
Gender			
Female	445	51.6	(49.9 – 53.3)
Male	417	48.4	(46.7 – 50.0)
Marital status			
Never been married	306	35.5	(33.4 – 37.6)
Married or living with partner	532	61.7	(59.6 – 63.7)
Lived with a partner before/separated	24	2.8	(1.8 – 4.2)
Schooling			
Primary school (incomplete or complete)	203	23.6	(19.2 – 28.6)
High school (incomplete or complete)	513	59.5	(54.6 – 64.2)
Higher education (incomplete or complete)	146	16.9	(12.3 – 22.8)
Religion			
Catholic	285	33.1	(29.9 – 36.2)
Protestant	168	19.5	(16.8 – 22.1)
Other	33	3.8	(2.5 – 5.1)
No religion	376	43.6	(40.3 – 46.9)
Ethnicity			
White	434	50.4	(45.2 – 55.4)
Black	136	15.8	(12.8 – 19.2)
Brown	257	29.8	(25.7 – 34.2)
Yellow/indigenous/other	35	4.1	(2.5 – 6.4)
Economic classification			
A/B	367	42.6	(36.6 – 48.7)
C	448	52.0	(46.4 – 57.4)
D/E	47	5.5	(3.6 – 8.1)

n: number; %: percentage; 95%CI: 95% confidence interval.

FACTORS ASSOCIATED WITH USE OF CONDOM IN THE LAST SEXUAL INTERCOURSE AMONG YOUNG WOMEN

In the bivariate analysis, the variables positively associated with condom use in the last sexual intercourse were: not being married before; use of condom at first sexual intercourse; and casual sexual partner in the last year. On the other hand, age, fixed partner in the last year and being tested for HIV were negatively associated with condom use in last sexual intercourse (Table 2).

The multiple analysis showed association of the following variables with use of condom in the last sexual intercourse: not being married before; use of condom at first sexual intercourse; first sexual intercourse after the age of 15; getting condoms for free. The HIV test in lifetime and/or in the last year was negatively associated. The variables that did not adjust to other variables and lost statistical significance were removed from the final model (Table 2).

FACTORS ASSOCIATED WITH USE OF CONDOM IN THE LAST SEXUAL INTERCOURSE AMONG YOUNG MEN

In the bivariate analysis, a positive association with the use of condoms at the last sexual intercourse was found for the following variables: never being married or being separated; having used a condom at first sexual intercourse; casual sexual intercourse in the last year; having sex with a person of the same sex; getting free condoms; current or past alcohol use; and being tested for HIV in the last year. Having a fixed partner in the last year, first sexual intercourse after 15 years had a negative association with the outcome (Table 3).

The multiple analysis showed association of the following characteristics with use of condom in the last sexual intercourse: being single; use of condom at first sexual intercourse; casual sex partner in the last year; having sex with a person of the same sex; and getting condoms for free. Age had was negatively associated, that is, younger people used more condoms. The other variables lost their statistical significance and did not adjust to other variables, so they were excluded from the final model (Table 3).

DISCUSSION

We found a low frequency of condom use among young people both in the first and last sexual intercourse, with no difference between men and women, despite the high degree of knowledge about the importance of condom use for the prevention of STIs and HIV[10], a finding that is similar to other studies' with representative samples[11,12]. The antagonism between knowledge and practice leads us to think about the motivation for condom use, which seems to not be based on knowledge only[11,12].

Table 2. Ratio of gross and adjusted prevalence of factors associated with condom use in the last sexual intercourse among women aged 15 to 24 years. São Paulo, 2014.

Variables	Bivariate		Multiple	
	PR_g	95%CI	PR_a	95%CI
Age*	0.95	(0.92 – 0.98)		
Marital status				
Never been married	1		1	
Married or living with partner	1.84	(1.52 – 2.23)	1.61	(1.26 – 2.05)
Lived with a partner before/separated	0.89	(0.41 – 1.95)	0.86	(0.40 – 1.83)
Economic classification				
A/B	1			
C	0.81	(0.66 – 1.00)		
D/E	1.08	(0.70 – 1.65)		
Ethnicity				
White	1			
Black	1.27	(0.98 – 1.65)		
Brown	0.86	(0.66 – 1.11)		
Yellow/indigenous/other	0.87	(0.50 – 1.49)		
Use of condom at first sexual intercourse				
No	1		1	
Yes	1.58	(1.25 – .00)	1.54	(1.24 – 1.92)
Fix partner in the last year				
No	1			
Yes	0.59	(0.48 – 0.72)		
Casual sex in the last year				
No	1			
Yes, up to 5	1.92	(1.58 – 2.33)		
Yes, more than 5	1.50	(1.13 – 1.99)		
Age of first sexual intercourse (years)				
≤ 15	1			
> 15	1.20	(0.95 – 1.52)	1.25	(1.02 – 1.54)

Continue...

Table 2. Continuation.

Variables	Bivariate		Multiple	
	PR_g	95%CI	PR_a	95%CI
Knowledge about HIV/AIDS				
Sexual intercourse with loyal partner avoids infection				
Yes	1			
No/does not know	0.77	(0.58 – 1.00)		
AIDS is a chronic disease				
Yes	1			
No	0.82	(0.61 – 1.1)		
Access to free condom				
No	1		1	
Yes	1.23	(0.96 – 1.57)	1.37	(1.12 – 1.68)
Has used cocaine				
No	1			
Yes, but not lately	0.50	(0.22 – 1.12)		
Yes and currently uses	0.95	(0.23 – 3.96)		
HIV test in lifetime				
No	1		1	
Yes, but not in the last year	0.65	(0.46 – 0.92)	0.72	(0.53 – 0.97)
Yes, in the last year	0.74	(0.54 –1.02)	0.69	(0.51 – 0.92)

*Variable age entered as continuous; PRg: gross prevalence ratio; PRa: adjusted prevalence ratio; 95%CI: 95% confidence interval.

In our study, not being married before, use of condoms at first intercourse, and having access to free condoms were positively associated with their use in the last sexual intercourse for both males and females.

Among the difficulties related to condom use reported by young people we have: reduction of sexual pleasure, trust in partner and not having a condom at the moment of sexual intercourse[13].

The reasons reported for not using a condom are in agreement with other Brazilian studies, including the use among young people who were never married[14,15]. One can hypothesize about the relationship of trust or lack of it between sexual partners for the decision to use a condom, which is directly related to marital status.

Table 3. Ratio of gross and adjusted prevalence of factors associated with condom use in the last sexual intercourse among men aged 15 to 24 years. São Paulo, 2014.

Variables	Bivariate		Multiple	
	PR_g	95%CI	PR_a	95%CI
Age*	0.91	(0.87 – 0.94)	0.96	(0.92 – 0.99)
Marital status				
Never been married	1		1	
Married or living with partner	2.03	(1.62 – 2.54)	1.41	(1.11 – 1.79)
Lived with a partner before/separated	1.72	(1.03 – 2.85)	1.44	(0.89 – 2.34)
Use of condom at first sexual intercourse				
No	1		1	
Yes	1.38	(1.10 – 1.72)	1.23	(1.00 – 1.51)
Fix partner in the last year				
No	1		**	**
Yes	0.74	(0.59 –0.92)	**	**
Casual sex in the last year				
No	1		1	
Yes, up to 5	2.12	(1.71 – 2.63)	1.57	(1.24 – 1.98)
Yes, more than 5	1.81	(1.43 – 2.28)	1.40	(1.12 – 1.75)
Age of first sexual intercourse (years)				
≤ 15	1		**	**
> 15	0.73	(0.58 – 0.92)	**	**
More than one sexual partner in life				
No	1		**	**
Yes	0.81	(0.63 – 1.04)	**	**
Sexual intercourse with person of the same sex in lifetime				
No	1		1	
Yes	1.66	(1.38 – 1.99)	1.23	(1.00 – 1.51)
Knowledge about HIV/AIDS				
Sexual intercourse with loyal partner avoids infection				
Yes	1		**	**
No/does not know	1.44	(1.22 – 1.68)	**	**

Continue...

Table 3. Continuation.

Variables	Bivariate		Multiple	
	PR_g	95%CI	PR_a	95%CI
Access to free condom				
No	1		1	
Yes	1.59	(1.32 – 1.90)	1.39	(1.17 – 1.67)
Has used cocaine				
No	1		**	**
Yes, but not lately	1.23	(0.92 – 1.63)	**	**
Yes and currently uses	1.03	(0.71 – 1.49)	**	**
Has used/uses alcohol				
No	1		**	**
Yes, but not lately	1.41	(1.02 – 1.96)	**	**
Yes and currently uses	1.44	(1.07 – 1.94)	**	**
HIV test in lifetime				
No	1		**	**
Yes, but not in the last year	0.98	(0.62 – 1.54)	**	**
Yes, in the last year	1.39	(1.05 – 1.83)	**	**

*Variable age entered as continuous; **variables removed from the model, without statistical significance and not adjusted to the others; PRg: gross prevalence ratio; PRa: adjusted prevalence ratio; 95%CI: 95% confidence interval.

Ferreira[16] reported a higher proportion of condom use among unmarried young people, just like a study conducted in Tanzania with women aged 15-49, which showed that condom use in the last sexual intercourse was more common among single women[17]. However, this association may be deemed from specific social and cultural contexts, since a study conducted in China with young male students reported condom use as associated with stable sexual partners[18].

The present study did not investigate whether the last sexual intercourse of the interviewees was with a casual or stable partner, but more common condom use among young single people suggests that the perception of risk may be related to the type of partnership[19].

The association between condom use in the last sexual intercourse and its use at first intercourse between men and women corroborates the results of a study conducted in three Brazilian capitals with young men between 18 and 24 years of age, and another conducted in South Africa with young heterosexuals in the same age group[21]. This association suggests the incorporation of condom use as a habit and autonomy in decision-making regarding condoms. In Brazil, this is a result of the investment in information to society for decades.

Among variables associated with use of condom in the last sexual intercourse among young people, the most relevant for the development and planning of public policies is free access to condoms. It is not a trivial task to evaluate the role of free condoms in coping with HIV other STIs epidemics, since this measure is usually accompanied by other actions with the same purpose. However, several studies associate the availability of free condoms with reduction of HIV and STIs[23,24], and there is evidence that free condoms are widely used[25]. Particularly among MSM, a study conducted in China found that no access to free condoms and lubricants was associated with unprotected anal sex[26].

These findings reflect the importance of public policies aimed at raising awareness and allowing access to condoms among adolescents and young people at the beginning of their sexual lives.

In addition to these common variables for both sexes, we found different associations between men and women in the present study. Among women, starting sexual activity after 15 years was associated with use of condom at the last sexual intercourse. Brazilian studies have reported that the age of first sexual intercourse has been decreasing and that these usually occur without the use of condoms[27,28]. This association points to the discussion on gender and empowerment at sexual intercourse before 15 years of age. Usually, these relationships occur with older men and, sometimes, in a non-consensual manner, which makes it difficult to negotiate condom use and can increase the frequency of unprotected sex[29].

Our study also showed that married women reported less use of condoms. Likewise, Ribeiro et al.[30] concluded that young women tend to not use condoms in monogamous and stable relationships because of the trust they build in their partners. Amaro et al.[31] have reported that, even if they imagine that their stable sexual partners have other partners, they face difficulties in negotiating the use of condoms. A study conducted in Africa with women highly exposed to HIV showed that the ability and courage to negotiate the use of condoms were associated with protected sexual relations[32].

Among women, we found a negative association between condom use at the last sexual intercourse and HIV test. It can be speculated that tests were possibly performed based on perceived risk by women who had unprotected sex. In a study with Latin-American women, the factors associated with HIV testing were: poor quality of romantic relationships and awareness of the partner's HIV serological status, while perception of low risk was a factor associated with not taking the test[33]. In addition, this palces HIV testing as a risk management strategy in the absence of condoms, according to studies conducted in Canada[34] and in Rwanda, Africa[35].

Among men, our study showed that casual sex and intercourse with other men were associated with condom use at the last sexual intercourse. The AIDS epidemic in Brazil and in São Paulo targets key populations, including MSM. These findings suggest knowledge about the conditions associated with HIV transmission and STI and the adoption of a risk management strategy as prevention by MSM.

The association of casual sex with the use of condoms corroborates the findings of a study with young adults in Africa[21]. Furthermore, a study on the use of condoms among MSM

in the United States reported that getting and using condoms for free was more common among black men with more sexual partners and by those who had been recently tested[36].

One of the limitations of this study was data collection from surveys based on intimate-life behaviors of people, which may be susceptible to memory bias, as well as possible adaptations of answers to socially and politically accepted ones. However, this is a population-based study with a sample representing the population of Sao Paulo municipality, which allows populational inference of results.

Thus, this type of study can provide public policy makers, managers, health professionals, universities and the general public with up-to-date information on the frequency and factors associated with use of condoms by the young population within the municipality.

CONCLUSIONS

Condoms are a widely recognized primary prevention tool for STIs and AIDS. Young people reported using it in their last sexual intercourse as a risk management strategy, according to the situation. Among married people or individuals living with a partner, protected intercourse was less common, and condoms were reported being used more often in casual and homosexual sex by men; on the other hand, the HIV test has probably been used as a compensation for unprotected sex among women.

A behavioral pattern of association between the first and last protected sexual intercourse is outlined for both men and women. Among women, late sexual initiation has also been associated with protected sex in the last sexual intercourse. Finally, for protected sex, the importance of access to free condoms was confirmed for both sexes.

In Brazil, the distribution of condoms has become a policy of prevention carried out consistently in all government spheres. Condoms are made available at primary health care units and specialty centers, as well as at some non-governmental organizations (NGOs). However, in Sao Paulo, only 21% of the population received condoms for free[10]. At health facilities, the most obvious barriers are operating hours and limited quantity supplied.

This PCAP-MSP pointed out that condoms need to be available without limits, 24 hours a day, including weekends and holidays.

In this context, the Municipal Program for STD/AIDS adopted the prevention strategy as a public policy and implemented it through by placing large condoms dispensers, with about 15 thousand units each, on the streets, outside health units and in the 26 terminals of urban buses, where about 6 million people circulate daily.

The response to this public policy has been extraordinary, with an increase of more than 100% in the number of condoms delivered. In 2016, 75,546,720 free condoms were distributed in the municipality of Sao Paulo, being 30% only at bus terminals.

Conclusion is that condoms are still an important prevention strategy and far from being exhausted. After all, having a condom allows people to use it or not; not having one leaves no choice but not using any.

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