

COLLEGE STUDENTS AND HIV INFECTION: A STUDY OF SEXUAL BEHAVIOR AND VULNERABILITIES¹

ESTUDANTES UNIVERSITÁRIOS E A INFECÇÃO PELO HIV: UM ESTUDO SOBRE COMPORTAMENTO SEXUAL E VULNERABILIDADES

RODOLFO SILVA BERTOLI², CARLOS EDSON SCHEIDMANTEL³, NEWTON SERGIO DE-CARVALHO⁴

ABSTRACT

Introduction: Adolescence is marked by emotional, social and physical changes. In this stage of development, vulnerable individuals tend to engage in risk behaviors related to the use of alcohol and drugs as well as unprotected sex. **Objective:** To evaluate the attitude of university students with regard to sexually transmitted infections (STIs) and the influence of the university environment in this behavior. **Methods:** Standardized questionnaires were applied anonymously in classrooms by a trained team. The first group of respondents was made up of freshmen (first year college students) while the second group was composed of seniors (fourth year students) from 11 of the areas of the Universidade Federal do Paraná (UFPR). From a total of 1,459 respondents, 1,350 were included. The questionnaire applied was based on the Pesquisa de Conhecimentos, Atitudes e Práticas na População Brasileira de 15 a 64 anos (PCAP - Survey of Knowledge, Attitudes and Practices among the Brazilian Population aged from 15 to 64 years) of 2008, conducted by the STI, AIDS and Viral Hepatitis Sector of the Health Surveillance Department of the Ministry of Health (MOH). The questionnaire was modified and adapted to the survey on vulnerability to AIDS/HIV infection, STIs, and unplanned pregnancy among UFPR students. **Results:** Of the 1,350 students covered, 1,070 (79.2%) had already had sexual intercourse at least once in their lives (74.9% of freshmen and 86.8% of seniors). 76.3% of female respondents and 82.7% of males had already started their sexual life. Out of the the 507 freshmen who had vaginal sex, 42.0% did not wear a condom, compared to 56.7% of 363 seniors ($p<0.0001$). Similar results are observed in relation to oral sex, where 94.9% of senior students wore condoms less often than freshmen (88.6%) ($p=0.0021$). A total of 273 people answered to both questions about HIV testing and unprotected vaginal sex in the past 12 months. Out of the 163 students who did not wear condoms, 55.2% undertook an HIV test in the period analyzed. On the other hand, only 41.8% of the 110 students who wore condoms during that period took HIV tests ($p=0.0359$). **Conclusion:** High-risk sexual behavior and poor risk assessment mark the profile of students participating in this study. The young people exposed are not aware of their real vulnerability. The university does not act as a protective factor for these students. For adolescents, many other factors surpass the risk of acquiring an STD. The university can and should contribute more effectively in raising awareness and promoting the health of their students.

Keywords: STI; AIDS; vulnerability; students; adolescents.

RESUMO

Introdução: Transformações emocionais, sociais e físicas marcam a adolescência. Nessa fase do desenvolvimento, o indivíduo mais vulnerável tende a se envolver em comportamentos de risco relacionados ao uso de álcool e drogas assim como em situações de sexo sem proteção. **Objetivo:** Avaliar as atitudes dos universitários em relação às doenças sexualmente transmissíveis (DST) e a influência da universidade nesse comportamento. **Métodos:** Questionários padronizados foram aplicados de forma anônima por uma equipe treinada, nas salas de aula, direcionados para: um primeiro grupo formado de calouros (alunos do primeiro ano de faculdade) e um segundo grupo formado de veteranos (alunos do quarto ano de faculdade) de 11 setores que compõem a Universidade Federal do Paraná (UFPR), sendo que o cálculo amostral definiu um total de 1.459 estudantes, sendo incluídos 1.350. Esse questionário foi baseado na Pesquisa de Conhecimentos, Atitudes e Práticas na População Brasileira de 15 a 64 anos (PCAP) de 2008, realizado pelo Ministério da Saúde (MS), Secretaria de Vigilância em Saúde Departamento de DST, Aids e Hepatites Virais. O questionário foi modificado e adaptado para a pesquisa sobre Vulnerabilidades às DST, infecção pelo HIV/Aids e gravidez não planejada entre estudantes universitários da UFPR. **Resultados:** Dos 1.350 estudantes abordados, 1.070 (79,2%) já tiveram relação sexual alguma vez na vida (74,9% dos calouros e 86,8% dos veteranos). Em relação ao gênero, 76,3% das mulheres e 82,7% dos homens já haviam iniciado a vida sexual. Dos 507 calouros que fizeram sexo vaginal, 42,0% não usaram camisinha, contra 56,7% dos 363 veteranos ($p<0,0001$). Cenário semelhante observa-se em relação ao sexo oral, sendo novamente os veteranos os que fizeram menor uso de proteção em relação aos calouros, 94,9 *versus* 88,6% ($p=0,0021$). O total de 273 pessoas respondeu ambas as questões sobre testagem para o HIV e sobre a prática de sexo vaginal desprotegido nos últimos 12 meses. Dos 163 universitários que não utilizaram preservativo, 55,2% fizeram a testagem no período. Por outro lado, dos 110 que utilizaram preservativo naquele período, apenas 41,8% testaram-se para o HIV ($p=0,0359$). **Conclusão:** Comportamento sexual de risco e deficiente autopercepção de vulnerabilidade marcam o perfil dos universitários participantes deste estudo. Os jovens expostos não têm consciência da sua real vulnerabilidade. A universidade não atua como fator protetor para esses estudantes. Para os adolescentes, há muitos fatores que se sobrepõem ao risco de adquirir uma DST. A universidade pode e deve contribuir de maneira mais efetiva na conscientização e na promoção da saúde de seus estudantes.

Palavras-chave: DST; AIDS; vulnerabilidade; estudantes; adolescentes.

INTRODUCTION

Part of adolescence and early adulthood occurs within the university environment, a place for intellectual growth and

responsible in large part for students' personal development. This period is characterized by emotional, social and physical changes that may expose young people to emotional and health risks. During this period of development, young people tend to engage in risk behaviors, such as the use of alcohol and drugs as well as unprotected sexual relations⁽¹⁾. Students are exposed to new experiences, friendships and challenges; they seek identity, group belonging and adherence to standards. It is therefore a moment of great vulnerability.

Studies show that, despite media outreach and information, adolescents and young people still have doubts about how to prevent transmission of HIV and other sexually transmitted infections (STIs),

¹Study conducted at the Department of Obstetrics and Gynecology at the Universidade Federal do Paraná.

²Medicine Graduate, Universidade Federal do Paraná (UFPR) - Curitiba (PR), Brazil

³Department of Obstetrics and Gynecology, UFPR - Curitiba (PR), Brazil

⁴Full Professor, Gynecology and Obstetrics Department, Infectious Disease in G&O Sector, Clinics Hospital University Federal of Parana (UFPR) - Curitiba (PR), Brazil

showing resistance to condom use, thus increasing their vulnerability and the incidence of such diseases⁽²⁾.

In addition, alcohol use reduces decision-making ability and decreases the chances of rejection for unwanted sexual activities, which may lead to pregnancy and transmission of STIs/HIV and multiple sexual partners⁽³⁾. In Latin America, there are approximately 1.4 million cases of HIV infection, over half of which are in Brazil⁽⁴⁾ and stem from casual sex⁽⁵⁾. Among young people (aged 13 to 19 years), the number of AIDS cases is higher in females than in males, in contrast with the gender distribution for other age groups.

The latest Ministry of Health STI and AIDS epidemiological newsletter highlights that the increase of AIDS incidence among young people (15 to 24) is still a major concern and that counteractions should be intensified⁽⁶⁾.

OBJECTIVE

To evaluate the attitude of university students with regard to sexually transmitted infections (STIs) and the influence of the university environment in this behavior. These attitudes and behaviors were assessed by comparing responses of two groups of college students: group 1 (G1) was composed of freshmen (students of the 1st and 2nd semesters) while group 2 (G2) was composed of veterans (students of the 7th and 8th semesters).

METHODS

A cross-sectional study was carried out with data from a questionnaire based on the 2008 "Pesquisa de Conhecimentos, Atitudes e Práticas na População Brasileira de 15 a 64 anos" (PCAP - Survey of Knowledge, Attitudes and Practices among the Brazilian Population aged from 15 to 64 years) conducted by the STI, AIDS and Viral Hepatitis Sector of the Health Surveillance Department of the Ministry of Health (MOH). The questionnaire was modified and adapted to the survey on vulnerability to AIDS/HIV infection, STIs, and unplanned pregnancy among UFPR students. The material used in the study was prepared by two professors of medicine at UFPR, one of them a sexologist and the other a gynecologist specialized in female infections.

The sample size comprised 1,459 students from 11 of the sectors that make up the university, 913 of which were freshmen (1st and 2nd semesters) and 546 seniors (7th and 8th semesters). 10 questionnaires were not applied due to student absence at the time of the survey. 94 were discarded because they were answered by students outside the groups specified (e.g. sophomores). 4 other questionnaires were disqualified due to missing pages and 1 was incomplete. This resulted in 1,350 valid questionnaires for inclusion in the study: 859 freshmen and 491 seniors. This sample size allowed for an inference with a margin of error of 2.39% for the UFPR student population and 7% for each of the 11 sectors surveyed. The confidence level was set at 95%.

The anonymous standardized questionnaires were applied in classrooms by a trained team on both freshmen and senior students. Survey participants responded to questions about sexual behavior, including questions about use of condoms in sexual relations,

which were used to determine the actual vulnerability to STIs. Students also responded on their self perception of vulnerability, sorting their chances of acquiring an STI at that moment in life as none, low, moderate or high. On average, students took 25 minutes to answer the questionnaire. The training of the team of student volunteers who applied the questionnaires was divided in four stages, in a theoretical-practical course named "Training for conduction of scientific research survey," in which the students came into contact with the goals of the project, received instruction concerning data collection, simulated application of questionnaires in groups of two and finally performed a pre-test, with critical evaluation of the survey itself. Volunteers also received instructions on Best Practices in Clinical Research and Ethics in Research.

The protocol was reviewed and approved by the Ethics Committee of the Hospital de Clínicas of UFPR (CEP/HC), under protocol number 2645.252/2011-11, with the requirement that participants answered anonymously and were allowed to leave questions blank, to refuse to participate or to stop participation at any time.

Response data was assembled in Microsoft Excel 2013 and processed with the software GraphPad Prism version 7.0 for OSX (GraphPad Software), with an estimated confidence interval of 95%. To investigate the association between categorical variables, Fisher or χ^2 tests were used, with a statistical significance level set at under 0.05.

RESULTS

620 (46%) of the 1,350 students included in the study were male and 730 (54%), female. The average respondent age was 21.42 years (± 4.75 years). Specifically, the average was 20.55 years for freshmen (G1) and 22.92 for seniors (G2).

1,070 (79.2%) of them had already had sexual intercourse at least once in their lives (74.9% of G1 and 86.8% of G2). With regard to their sexual orientation, 59 (4.4%) of students were bisexual, 1,234 (91.4%) were heterosexual and 54 (4%) were homosexual. Three students chose not to answer that question. 88.1% of bisexuals, 79% of heterosexual and 92.6% of homosexuals had already started their sexual life. 974 (72.1%) students, 67.5% of which belonged to G1 and 80.1% to G2, had at least one sexual intercourse in the past 12 months. 76.3% of girls and 82.7% of boys had already had sexual intercourse at least once.

797 (59.0%) of students declared to have performed oral sex, while 870 (64.5%) performed vaginal sex and 310 (23.0%) performed anal sex. 727 (91.2%) of students who performed oral sex did not wear protection. 417 (47.9%) of the 870 respondents who had performed vaginal sex and 190 (61.3%) of the 310 who had performed anal sex also did not make use of protective methods during sexual intercourse.

There was no significant difference in the use of protection in oral sex, namely, 92.5% of women and 89.8% of men did not wear any protection for this practice. In both vaginal and anal sex, women declared to make use of condoms less often than men. While 53.3% of females had had unprotected vaginal sex and 68.1% had had unprotected anal sex, these figures were lower for men: 41.3% for vaginal sex and 55.8% for anal sex.

There were no differences over condom use in anal sex between the two groups (G1 and G2, $p=0.34$). However, 42.0% of the 507 freshmen who had had vaginal sex did so without protection, in contrast with 56.7% of 363 seniors ($p<0.0001$). A similar scenario is observed in relation to oral sex, where once again seniors were seen to make use of protection less often if compared to freshmen: 94.9 (G2) vs. 88.6% (G1) ($p=0.0021$). The percentages of condom use among different sexual practices for both freshmen and seniors can be observed in **Chart 1**.

A total of 273 people answered to both questions about HIV testing and unprotected vaginal sex in the past 12 months. Out of the 163 students who did not wear condoms, 55.2% undertook an HIV test in the period analyzed. On the other hand, only 41.8% of the 110 students who wore condoms during that period took HIV tests ($p=0.0359$).

There was no association between perceived and real vulnerability, when comparing responses related to unprotected oral ($p=0.8452$), vaginal ($p=0.1203$), and anal sex ($p=0.5411$) (**Table 1**). This dissociation between unsafe sexual practices and self perception of vulnerability can be observed in **Chart 2**.

When comparing the data related to the self perception of vulnerability and HIV testing (**Chart 3**), we can see that there is no difference in test taking behavior between those who believe to be in great/moderate vulnerability (46.3% took the test) and those who perceive to have little to no vulnerability (47.8% took the HIV test).

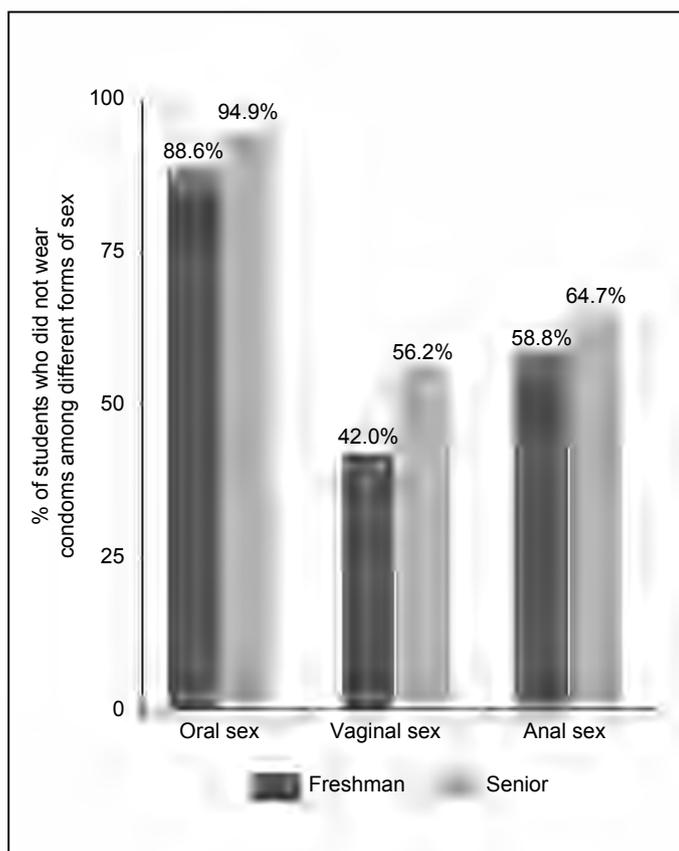


Chart 1 – Percentage of condom use among different forms of sex between freshmen and seniors.

Another aspect analyzed was the relationship between the type of relationship (fixed partner or casual relationship) and condom use (**Chart 4**). In all three different forms of sex addressed in research (anal, vaginal and oral), the use of condoms was lower among people engaged in stable relationships ($p<0.0001$).

DISCUSSION

The spread of HIV has become a serious public health concern and should be taken into account by adolescents, for it is at this stage that potentially hazardous sexual behaviors start to take place^(6,7).

Unprotected sex is not an issue only among Brazilian adolescents. Data from a survey conducted yearly by the USA *National Survey on Youth Risk Behavior* showed less alarming, but no less worrying figures. Data from the period between 1991 and 2011 indicated that condom use among sexually active students increased from 46.2% in 1991 to 60.2% in 2011 for both genders. However, 40.0% of adolescents (males and females) were still involved in unprotected sexual relations⁽⁸⁾. A similar scenario is observed with the population of this study, in which the rate of condom use during vaginal sex was of 52.1%, i.e., 47.9% of students still engage in unprotected vaginal sexual intercourse. The situation was even more worrying in relation to anal and oral sex, where the lack of barrier methods was declared by 61.3 and 91.0% of respondents.

Dahl⁽⁹⁾ noted that, during puberty, changes in the neuronal system, responsible for emotions and motivations, facilitate an increase of risk behaviors. At this stage, adolescents are seeking new experiences that generate pleasure, but the sense of omnipotence may cause a lack of awareness of the consequences of the actions undertaken. There was a positive association between unprotected vaginal sex and HIV testing: 55.2% of students who had had unprotected sex took an HIV test, while only 41.8% of those who wore a condom took HIV tests.

However, despite this significant relationship between unprotected vaginal sex and HIV testing, it was observed that students are unable to assess their actual vulnerability. The self perception of vulnerability was not consistent with the risk behavior in all three forms of sex analyzed. In addition, there was no significant difference in HIV testing behavior among the groups that considered themselves under great/moderate vulnerability and those who believed to be under little to no vulnerability to this infection.

A study conducted by Sanchez et al.⁽¹⁰⁾ showed that young females are more likely than young males to perform unprotected sex, a result that may explain the higher proportion of female adolescents infected with HIV if compared to males of the same age⁽⁶⁾. Among the undergraduates participating in the survey, there was no significant difference between genders over the use of protection during oral sex. On the other hand, women surveyed made use of condoms during vaginal and anal sex less often if compared to men.

According to Johnston et al.⁽⁷⁾, young females are more engaged in monogamous relationships and feel more secure about the risks connected with STIs/AIDS. However, another hypothesis suggests

that infatuation and alcohol or drug use may blind young females to the risks of unprotected sex, even when they are aware of the possibility of contracting HIV⁽¹¹⁾. The fact is that, in all three sex practices evaluated in the present study, people involved in steady relationships made use of condoms less often than those who engaged in casual relationships, making steady relationships a risk factor for the practice of unprotected sex and possible STI infections.

Love does not always appear to be directly related to the perception of risk. However, along with steady dating, love presented itself as a form of justification for unprotected sex, being related to the underestimation of the risk posed by partners. It was observed that stable relationships are a factor that increase vulnerability to HIV, as partners' mutual confidence is used as a justification for risk behavior, such as the lack of condom use⁽¹²⁾. Trust in the partner is used by adolescents as an ersatz for barrier methods⁽¹³⁾.

The survey made it clear that seniors tend to take higher risks in sexual behavior if compared to freshmen, engaging in unprotected

vaginal and oral sex more frequently. There is a clear dissociation between academic knowledge and self-care in relation to sexual health, which reinforces the idea that students need education and prevention programs in the context of health education. Specific actions should focus on improving adolescents' decision-making skills by including techniques to promote safer sexual behaviors among young females. However, according to a recent systematic review⁽¹⁴⁾, aimed at evaluating approaches for reducing risk behaviors associated with drug use and unprotected sex, interventions that spanned multiple risk areas (individual sphere as well as family, school and community environments) and protective factors against risk behaviors were more promising than programs that addressed only one domain (i.e. either school, or family or individual).

This research is relatively exempt of biases, as it was performed with great methodological rigor and assessed a uniform population of 11 sectors of a university that comprises approximately 38,000 students. In addition, the voluntary staff underwent rigorous training through instruction regarding all details involved

Table 1 – actual vulnerability and self-perception of vulnerability in relation to high-risk sexual behavior among students of the Universidade Federal do Paraná.

Perception Of Vulnerability	Anal Sex		Vaginal sex		Oral Sex	
	Protected	Unprotected	Protected	Unprotected	Protected	Unprotected
Great/Moderated	23 (42.6%)	31 (57.4%)	40 (44.5%)	50 (55.6%)	7 (7.4%)	87 (92.6%)
Low/no	96 (38.0%)	157 (62.0%)	413 (53.2%)	364 (46.8%)	62 (8.9%)	637 (91.1%)
P-value	0.5411		0.1203		0.8452	

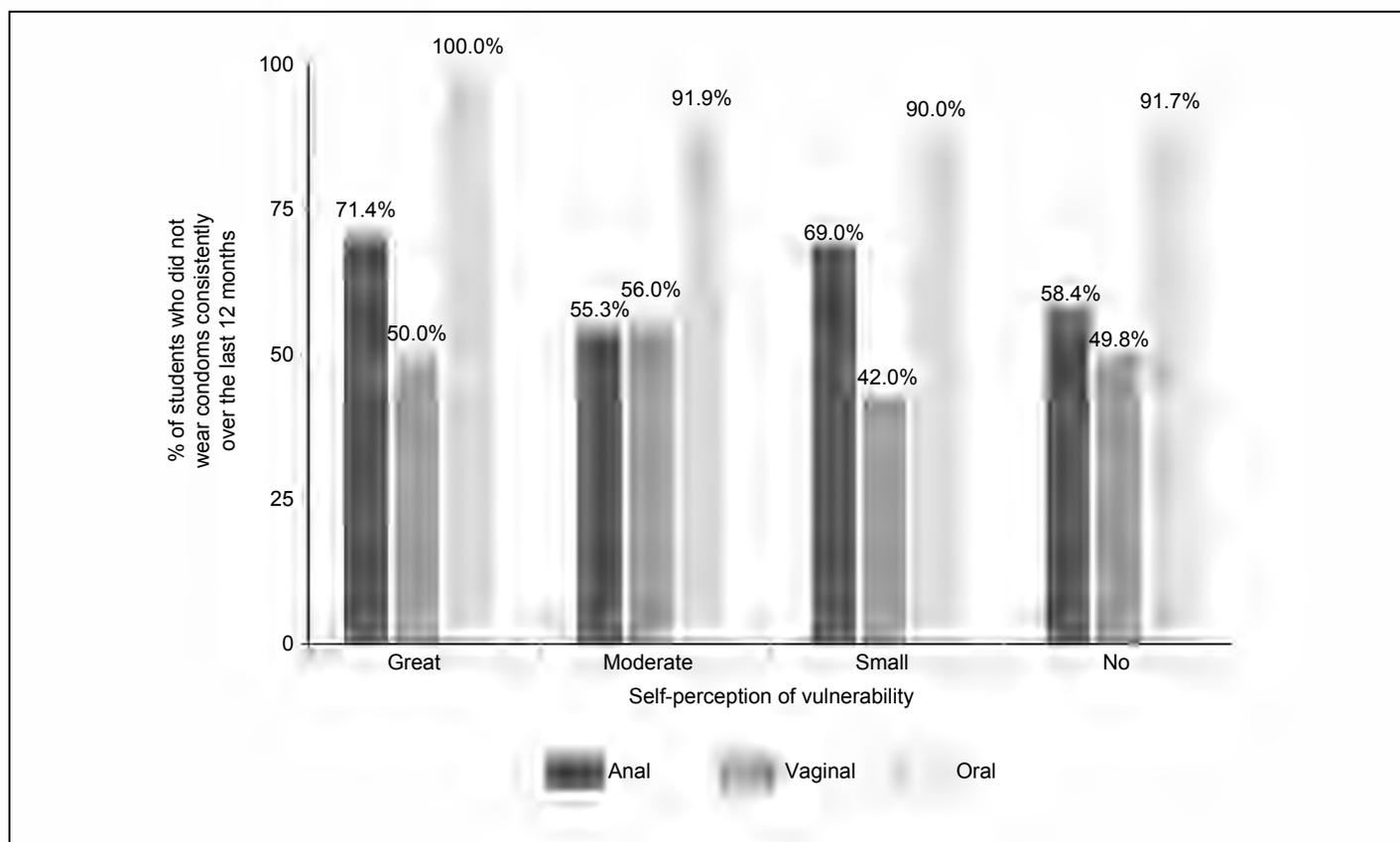


Chart 2 – Self-perception of vulnerability and inconsistent use of condoms in different forms of sex in the last 12 months.

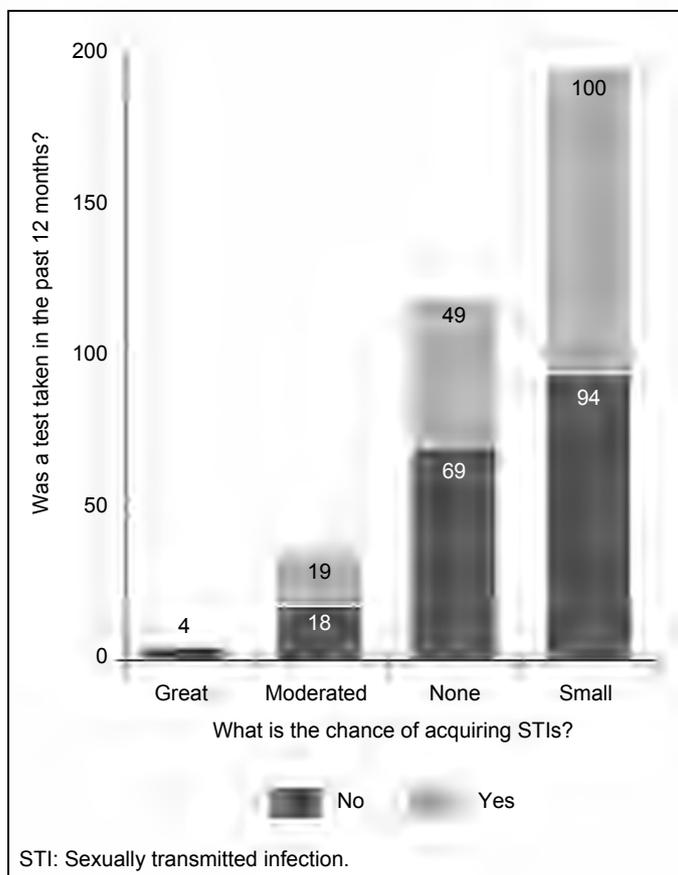


Chart 3 – Self-perception of vulnerability and testing.

in the development of survey-based research. There was also careful organization and collaboration of the university administration and each schools, in order to allow for a smooth and adequate conduction of the survey, averting most of the confounding factors that may arise at the time of filling (i.e. rooms were provided to ensure the secrecy and individuality, with adequate time, without prejudice to academic activities). The questionnaire had already been validated in other situations and, above all, it had the endorsement of the STI, AIDS and Viral Hepatitis Sector of the Ministry of Health. Although research with extensive questionnaires may elicit distorted answers (due to exhaustion during the survey), this bias was diluted by the size and homogeneity of the sample, in addition to the standardization on how to complete the form.

Finally, the vulnerability of university students in relation to STIs became clear, whether they are freshmen or seniors. The university, considered a temple of knowledge, does not act as a protective factor in this matter. The need for actions and programs focused on sexual education and self care within the academic environment becomes evident, as it may help preventing diseases and promoting healthy practices. This awareness of students' lack of attention to health led to the creation of an extra-curricular project named "Projeto Universitário Saudável" (or "Healthy Student Project"). This project was conceived by professors of the Department of Obstetrics and Gynecology of the UFPR and was undertaken with the help of medical students of the same institution. Its actions, aimed at all

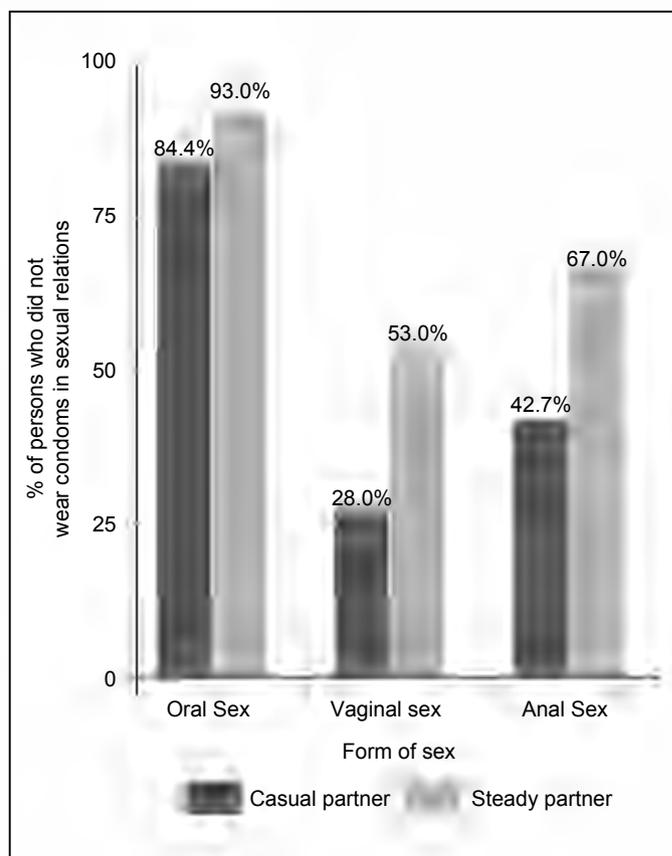


Chart 4 – Type of relationship and lack of condom use by form of sex.

UFPR students, make use of peer-education methods and attempt to promote UFPR students' health by preventing STI/AIDS and unplanned pregnancy by encouraging students to adopt behaviors that prioritize self care.

CONCLUSION

High-risk sexual behavior and poor perception of vulnerability marked the profile of students participating in this study. The young men and women demonstrated a lack of awareness of their real vulnerability. The university has not been shown to act as a source of protective factors against the main sexually transmitted infections. Among adolescents, there are many factors that surpass the risk of acquiring an STI. The university can and should contribute more effectively in raising awareness and promoting students' health.

Conflict of interests

The authors declare no conflict of interest.

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Address for correspondence:**NEWTON SERGIO DE CARVALHO**

Rua General Carneiro, 181

Alto da Glória

Curitiba (PR), Brasil.

CEP: 80060-900

Tel.: +55 (41) 3360-1865, ramal: 6176; +55 (41) 3360-1800, ramal: 6161

Fax: +55 (41) 3360-1865

E-mail: newtonsd@gmail.com

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