Knowledge, income and prevention practices about HIV/AIDS among university students

Conhecimento, renda e práticas de prevenção acerca do HIV/AIDS entre estudantes universitários

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ABSTRACT

This study aimed to verify whether university students have knowledge about the ways of HIV/AIDS transmission and the adoption of prevention practices and if there is an association with income. The survey included 682 students, who answered a questionnaire. Ten questions about the ways of transmission, the number of correct answers and the possible association with family income were analyzed. In the sample, women and income below five minimum wages predominated. Six hundred and eight students (89%) answered eight or more questions about the ways in which the virus was transmitted. Those with a family income of less than five minimum wages had a higher percentage of correct answers in all questions about transmission. The majority has good knowledge regarding transmission, but does not use condoms in all sexual relations, and there is greater knowledge among students with lower income.

Keywords: Young adult. Knowledge. HIV. Income. Transmission of infectious disease.

RESUMO

Este estudo objetivou verificar se os estudantes universitários têm conhecimento sobre as formas de transmissão do HIV/AIDS e a adoção de práticas de prevenção e se há associação com a renda. A pesquisa contou com 682 estudantes, que responderam a um questionário. Foram analisadas dez questões a respeito das formas de transmissão, o número de acertos e a possível associação com a renda familiar. Na amostra, predominaram as mulheres e a renda inferior a cinco salários mínimos. Seiscentos e oito estudantes (89%) acertaram oito ou mais perguntas acerca das formas de transmissão do vírus. Aqueles com renda familiar menor que cinco salários mínimos apresentaram uma porcentagem maior de acertos em todas as questões sobre a transmissão. Concluiu-se que a maioria tem bom conhecimento em relação à transmissão, porém não utiliza preservativo em todas as relações sexuais, e há maior conhecimento entre estudantes de menor renda.

Palavras-chave: Adulto jovem. Conhecimento. HIV. Renda. Transmissão de doença infecciosa.

INTRODUCTION

Despite advances in knowledge and prevention of HIV/AIDS (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome) and the reduction in the number of new cases in many countries, the growth of infection in other places and in certain age groups highlights the great challenge that is the control of the HIV/AIDS pandemic in the world[1]. The living and health conditions, social determinants and the vulnerability of different population groups to illness - and to infectious diseases in particular - reinforce the need to combat poverty and inequality as the main way to promote health in society.

In 2018, 61% of the 5,000 new daily HIV infections occurred in sub-Saharan Africa, the region with the highest percentage of the population living below the poverty line in the world[1,2]. Until that year, according to the Report of the Joint United Nations Programme on HIV/AIDS (UNAIDS), there were, on average, 37.9 million people living with HIV in the world, of which 54% were on the African continent, the most affected by the pandemic[1]. In total they were, on average, 1.7 million new cases in 2018, and of these, 1.6 million among individuals aged 15 and over[1].

Latin America has about two million people living with AIDS[3]. Between 2010 and 2018, there was a 7% increase in new HIV infections[1]; however, excluding Brazil, there was a 5% reduction[1]. Some countries, such as Colombia and Ecuador, observed a decline in incidence - 22% and 12%, respectively -, while in Brazil, there was an increase of 21% [3].

In general, the infection detection rate has been decreasing in the country since 2012, decreasing from 21.4 to 17.8/100,000 inhabitants in 2018, that is, a reduction of 16.8% [4]. In 2018, 43,941 new cases of HIV were detected in the country[4]. Among men, there was an increase in this rate in the last ten years (2008 to 2018), highlighting the increase of 62.2% in the age group of 15 to 19 years, and 94.6% between 20 and 24 years old[4]. A survey conducted in several Brazilian capitals found a high prevalence of HIV infection among MSM (Men who have Sex with Men), in which the age group under 25 predominated[5]. In the female population, what was seen was a drop in the detection rate, in the last ten years (2008-2018), in all age groups, with a decrease of 51.2% (25 to 29 years) and 53.2% (30 to 34 years)[4].

The prevention of HIV infection has complex and multifaceted aspects. Cultural, affective and behavioral factors - such as, for example, excessive trust in the partner - can influence the adoption of preventive measures, as well as socioeconomic aspects, education and income[6-9]. Some studies suggest an association of infection due to HIV/AIDS and socioeconomic factors, such as low education, lower income, worse housing conditions and greater difficulties in access and care in

health centers.[9-14]. As for age and gender, considering the 300,496 cases of HIV infection reported in Brazil between 2007 and 2019, 52.7% were between 20 and 34 years old and 69% were men[4].

The expansion of knowledge about HIV and its ways of transmission is one of the measures that can contribute to the expansion of prevention[15]. A study of more than four thousand people showed that less than a quarter of MSM (23.7%) has high level of knowledge about HIV/AIDS[15]. However, considering the relationship between knowledge and prevention, some authors have demonstrated that, even among young people well informed about HIV, condom use is not a routine[16,17].

In addition to information campaigns, the literature discusses the need to establish new forms of communication that can encourage the adoption of safer sexual behavior[15]. The motivation for using preventive measures can also reflect the self-perception of vulnerability. Researchers revealed that women between 15 and 49 years of age did not correctly identify their level of risk, considering it to be too low for a sexually transmitted infection[18].

The rise in the number of HIV infection cases among young people in Brazil is a major challenge. It is important to expand research, talk about vulnerability, spread knowledge, encourage different prevention measures and seek public policies that are effective in combating the virus. In this context, the objective of the present study was to verify whether university students have knowledge about the ways of HIV/AIDS transmission, the adoption of prevention practices and if there is an association of family income, knowledge about the ways of transmission of infection and use of prevention practices.

METHODOLOGY

This was an observational, cross-sectional study, that integrates a research project about the conceptions and practices of health and disease among university students. In this stage, we investigated the students' knowledge about the ways of HIV/AIDS transmission, the adoption of prevention practices and the association of knowledge, prevention practices and family income, among students of an undergraduate course in Health at a public higher education institution in the state of Bahia.

All students enrolled in the program between 2016 and 2019 were considered eligible for the study, through the National High School Examination (Enem), who attended the first two weeks of class, that is, newcomers to the university, and who agreed to participate in the study and signed the Informed Consent Form (ICF). The sample was consecutive and for convenience.

The main instrument applied was a questionnaire prepared by the Ministry of Health to evaluate Sexually Transmitted Infections (IST) and AIDS prevention programs, containing 50 questions.[19] The questions analyzed referred to the ways of

HIV/AIDS transmission and behavioral aspects related to the adoption of HIV prevention practices through condom use and diagnostic testing. In addition to this instrument, questions were added regarding the participants' sociodemographic characteristics, such as age, gender and family income. There were no questions to identify the students.

Participants were 720 students who took part in the application stage of the instrument, signed the informed consent form and responded to the data collection instrument. After reading the questionnaires, it was found that 22 students did not inform the family income and 16 did not answer about the ways of HIV transmission, which is why they were excluded from the sample. Therefore, the universe analyzed was composed of 682 people.

In order to examine the students' knowledge about the ways of HIV/AIDS transmission, the ten questions on the topic contained in the questionnaire were analyzed. There were two possible answers on the instrument - yes (Y) or no (N) - and it was studied whether they were correct or not, then determining the number of correct answers (0-10). To check the association of knowledge and family income, the participants were subdivided into two groups in relation to the number of correct answers: Group 1 brought together those who presented between 4 and 9 correct answers, and Group 2, those who answered all ten questions correctly.

In order to study the adoption of practices related to prevention, three questions were considered about carrying out the HIV diagnostic test and two regarding the use of condoms during sexual intercourse. In the case of the latter two, 495 students were considered to report that they had already started their sexual life (74% sample).

The variables considered for sociodemographic characterization were age, sex, marital status, sexual orientation and family income. In the data collection instrument, family income was subdivided into five ranges, considering the minimum wage (MW). For the analysis of the association of knowledge, prevention practices and family income, students were subdivided into two groups in relation to family income: Group A represents those with an income of up to five MW, and Group B, those with an income greater than five MW.

Statistical analysis was applied using the EPI-INFO 2005 software. Descriptive measures were taken, using the frequencies and averages, regarding the characteristics of the sample, the answers about the ways of HIV/AIDS transmission and prevention practices. For comparative analysis, studying the possible association of family income, knowledge about the ways of HIV/AIDS transmission and prevention practices, the Chi-Square Test was used, considering significant at $p \leq 0.05$. The STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) strategy for observational studies was taken

into account in the preparation of the manuscript[20].

The study was conducted according to the guidelines and regulatory standards for research involving human beings, among which Resolution 466/12[21] and was approved by the Research Ethics Committee of the institution where it was developed, through opinion 2.349.850/2017.

RESULTS

Among the 682 university students included in the sample, 68% were women, 82% declared as heterosexual and 94% were single. The mean age was 21.19 (± 4.95 years). The most frequent family income range in the sample (45%) was between two and four minimum wages (> 1 and <5 MW). The characteristics of the researched universe are detailed in Table 1.

Table 1. Characteristics of students included in the sample (n = 682*)

Characteristics studied	Number of students N(%)
Gender	
Male	216 (31.8%)
Female	463 (68.2%)
Age	
Mean age	21.19 years (±4.9%)
Marital status	
Single	632 (94.4%)
Married	19 (2.8%)
Other	19 (2.8%)
Sexual orientation	
Heterosexual	553 (82.4%)
Homosexual	51 (7.6%)
Bisexual	60 (8.9)
Other	07 (1.1%)
Family income	
≤ 1 minimum wage	119 (17.4%)
> 1 and< 5 minimum wage	305 (44.7%)
≥ 5 and ≤ 7 minimum wage	159 (23.3%)
>7 and ≤ 10 minimum wage	42 (6.2%)
> 10 minimum wage	57 (8.4%)

* Some students in the sample did not answer all questions.
Source: Research data

In relation to the ten questions about the ways of HIV/AIDS transmission, those with the greatest number of correct answers were: through sex without a condom,

contaminated blood, syringes and needles, corresponding to more than 99% correct answers. Most of the questions had a percentage higher than 90%, and the one with the least number of correct answers (61%) was the question about the possibility of transmission via breastfeeding (Table 2).

Regarding the questions that dealt with HIV/AIDS prevention practices,

among the 495 students who answered that they had already started their sexual life (74% sample), 342 (or 69.4%) used condoms during their first sexual intercourse. One hundred and forty-one participants (33.8%) reported that they had used it in all relationships in the last six months (Table 2).

Table 2. Responses of students when asked about ways of transmitting HIV/AIDS, conducting diagnostic testing and prevention using condoms

Questionnaire questions	Responses (N=682)*	
	Yes N(%)	No N(%)
Questions about ways of transmitting HIV/AIDS		
Sex without a condom	675 (99.1%)	06 (0.9%)
Cutlery, plates and glasses	57 (8.4%)	624 (91.6%)
Use the same bathroom	69 (10.2%)	609 (89.8%)
Mouth kiss	176 (26.3%)	494 (73.7%)
Pregnancy or childbirth	655 (96.3%)	25 (3.7%)
Breastfeeding	404 (60.8%)	260 (39.2%)
Insect bites	71 (11.1%)	567 (88.9%)
Contaminated blood	663 (99.3%)	05 (0.7%)
Syringes and/or needles	675 (99.3%)	05 (0.7%)
Playing with children who have the virus	16 (2.4%)	658 (97.6%)
Questions about HIV/AIDS testing and prevention		
Have been tested for HIV/AIDS	240 (35.3%)	439 (64.7%)
When he/she was tested, went to get the result**	230 (95.8%)	10 (4.2%)
Intends to have a diagnosis for HIV/AIDS in the future	526 (78.9%)	141 (21.1%)
Used a condom at first intercourse***	342 (69.4%)	151 (30.6%)
Used a condom in all sexual relations in the last six months***	141 (33.8%)	276 (66.2%)

*Some questions were not answered by all students in the sample.
**Question addressed to the 240 students who answered that they had already taken the diagnostic test.
***Question addressed to 495 students (74% sample) who had already started their sexual life.
Source: Research data

Highlighting the number of correct answers about HIV/AIDS transmission, none got three or less correct. More than

80% answered eight or more questions correctly, and 30% got them all right. The median number of correct answers was 9.

For the analysis of the association of knowledge and family income, participants were divided into two categories in relation to the number of correct answers: Group 1 (four to nine correct answers) and Group 2 (ten correct answers) (Table 3).

Table 3. Number of correct answers by students regarding the ten questions about the ways of HIV/AIDS transmission (n = 682)

Number of correct answers	Students who got this number of questions right N(%)
None, 1, 2 or 3*	0 (0%)
Group 1**	
4	05 (0.7%)
5	08 (1.2%)
6	14 (2.1%)
7	47 (6.8%)
8	132 (19.4%)
9	268 (39.3%)
Group 2***	
10	208 (30.5%)

*No student scored between zero and three questions.
**Group 1: 474 (69.5% sample) students who answered 4 to 9 out of a total of ten questions about ways of transmitting HIV/AIDS.
***Group 2: 208 (30.5% amostra) students who answered all 10 questions about ways of transmitting HIV/AIDS.
Source: Research data.

Family income, subdivided into five different income ranges, presented a median income range of less than five minimum wages. Two categories of income were created for analysis: group A, which brought together students with an income of less than five MW, and Group B, with an income equal to or greater than five MW. Analyzing the possible association of family income and the number of correct answers on the ways of HIV/AIDS transmission, it was found that there were significantly more students who answered all ten questions correctly among those who had a lower income than five MW, suggesting an inverse association of family income and knowledge about the ways of HIV/AIDS transmission (Table 4).

When studying the association of family income and the adoption of preventive measures through the use of condoms and performing a diagnostic test, there was no significant difference between the groups with the two different categories of family income (Table 4).

Table 4. Analysis of the association of knowledge on the ways of HIV/AIDS transmission and students' family income (groups A and B)

Family income (two categories)	Group A* (424 students) N(%)	Group B** (258 students) N(%)	p-value
Number of correct answers on the ten ways of transmission			
Group 1 (474 students who got 4-9 questions rightabout the ways of transmission)	284 (60%)	190 (40%)	0.03
Group 2 (208 who got all ten questions right about the ways of transmission)	140 (67%)	68 (33%)	
Affirmative answers (yes) on the adoption of prevention practices			
Have been tested for HIV/AIDS	144 (34%)	96 (37%)	0.19
Used a condom during their first sexual intercourse***	204 (68%)	138 (72%)	0.13
Used a condom in all sexual relations in the last six months***	89 (35%)	52 (32%)	0.25

*No student scored between zero and three questions.
*Group 1: 424 students with a family income of less than five MW.
**Group 2: 258 students with a family income greater than or equal to five MW.
***Question addressed to 495 students (74% sample) who had already started their sexual life.
Source: Research data.

DISCUSSION

Worldwide, HIV infection remains a current issue, which requires new strategies to face it. The research described here investigated knowledge about HIV with a sample of students who had just started university, and who were mostly women and singles. Participants declared as heterosexual and with a family income of less than five minimum wages. They demonstrated a good level of knowledge about the ways of transmission of the virus, getting most of the answers right, mainly about transmission through unsafe sex (without a condom), contaminated blood, syringes and needles.

A survey on HIV-related knowledge and practices carried out in 15 Brazilian states and the Federal District interviewed 1,208 young people between 18 and 29 years old, of whom 55% are women,

43.46% have completed high school and 62.4% have income from up to two minimum wages. The conclusion was that 40% participants did not consider condoms to be an effective method of prevention and 24% believed in the transmission of the virus through saliva[6]. The authors also revealed that 36.1% did not use condoms at the last sexual intercourse and that young people had a low perception of risk, pointing out low education as a significant factor for vulnerability. The least vulnerable were young people with complete high school[6].

In the present study, despite the good knowledge about most ways of transmission, some questions had a lower number of correct answers, such as the possibility of transmission of the virus through breastfeeding. Another study, also with university students, showed that the majority (97.3%) had knowledge about the

sexual transmission of HIV/AIDS, but only 28.8% knew about transmission via breast milk[22]. A study carried out with 200 students from public schools, between 13 and 19 years old, revealed that 95.5% answered correctly about sexual transmission, while only 26% knew about transmission through breastfeeding[17].

The low rates of correct responses regarding transmission through breast milk may be due to less information about this type of transmission in the media or even the lack of information on this specific topic[10]. This aspect points out that there is a need for greater dissemination of vertical HIV transmission among young people, in schools, in the media and in health programs. The inadequacy of preventive campaigns and the need to rethink ways of communicating about HIV/AIDS are discussed by different authors[10,15]. Other incorrect perceptions regarding different forms of transmission are present in the literature[6,22,23].

Considering the association of education, vulnerability and HIV prevention, the present study shows that, even among young people with higher education, condoms, as a preventive measure, are not used routinely. In this sample, all participants had completed high school and only about a third had used it in all intercourses in the past six months. In Brazil, 48.8% population aged 25 or over has at least completed high school (51% women and 46.3% men).[24] As for those between 18 and 24 years old, 32.4% attended school in 2019, and 21.4% in

higher education[24]. The non-routine use of condoms among young people makes them vulnerable to HIV and is an indicator that the Brazilian public policy to fight this virus has not managed to reach, with effectiveness, the desired result in relation to prevention and health promotion.

Other studies also demonstrated the vulnerability and low risk perception among young people at universities[22]. Studying the sexual profile of 371 university students, the authors found a majority of women (63.9%) and students who declared as heterosexual (82.7%)[22]. They found that most of them knew the sexual transmission of infections, however 36.9% used condoms, 36.4% used sometimes and 22.6% did not use - the main reason for this attitude was trust in the partner[22]. Most young people, in this and other studies, declared as heterosexual, which may be related to the stigmas and discrimination still present when addressing questions related to Sexually Transmitted Infections (STIs) in general and HIV/AIDS in particular[22,25,26].

As for conducting a diagnostic test for HIV, just over a third of the students in the present study had already taken the test - the majority went to look for the result. The small proportion of young university students who sought a diagnostic test may reflect the mistaken perception that they are at low risk, which may also be related to non-adherence, on an ongoing basis, to prevention practices. This behavior hinders the early detection of the virus in the body and contributes to the increase the viral load

among those infected, making them more vulnerable to opportunistic diseases. Furthermore, it is a sign that benefits of testing need to be better discussed among young people.

The literature points to low adherence to prevention, despite the epidemic numbers indicating high vulnerability in this population[6,10,22]. The self-perception of invulnerability may also be the explanation for about 20% participants in the present study claim that they do not intend to take the test in the future.

Global estimates suggest more vulnerable groups, such as sex workers, MSM, transgender people, injecting drug users and their partners[1]. In 12 Brazilian cities, a survey of 4,176 MSM revealed that 61.4% considered having no or low risk of HIV infection and 66.2% have had a diagnostic test at some time[15]. Still in this study, the global proportion of high level of knowledge about HIV/AIDS was 23.7%; important regional differences were detected, with 34.2% in the city of São Paulo, and 5.2% in Fortaleza[15]. The authors also concluded that there is a significant relationship between schooling at 12 or more years and high knowledge about the infection; finding no significant association with the economic class[15].

In the present study, among students with similar education, those with lower income had a higher proportion of correct answers to all ten questions about HIV transmission. However, the limit between the income categories was five minimum wages, which is higher than the per capita household income in the state in which the survey was conducted, which is R$ 912.81[27]. One possible explanation for the lower percentage of correct answers to all questions among higher-income young people would be the least perception of risk or a feeling of invulnerability. This aspect calls attention and demands new studies with more comprehensive young populations, in order to confirm this result and, in this case, to explore the reasons why this happens.

In Brazil, the literature shows the relationship between mortality from different causes and income, absolute or relative[28-30]. Therefore, groups with higher family income levels could self-perceive themselves as protected from STIs, in general, and from HIV, in particular, and thus do not seek more detailed information about their ways of transmission. The stigma that accompanies STIs can also influence the lesser search for information about these diseases. Stigmatizing and excluding attitudes towards HIV/AIDS are present in different spaces and groups, including among health professionals[25,31].

In general, in the country, families with the lowest income have less education, with a greater number of people who have not completed elementary school, which can make it difficult to analyze income and education separately[32]. Regional differences are also noticeable: per capita household income in the state of São Paulo was R$ 1,945.73 in 2019, while that of Maranhão reached R$ 635.59.27 Health

indicators also show these discrepancies: the infant mortality rate, in 2017, was 10.9 deaths for every thousand born in São Paulo, and 17.4 deaths for every thousand live births in Maranhão[33]. Regarding HIV, among the 43,941 cases of infection reported in 2018, the Southeast is the region with the highest percentage (37.7%), followed by the Northeast (24.6%).

In the present study, there was no significant association of family income and condom use, as a preventive practice, among university students. This suggests that such a practice may not depend on the level of income, since in Brazil this material is freely distributed in public health units. They are factors of another nature, therefore, that contribute to the use or not of condoms among university students.

Other authors also detected no significant relationship between income and knowledge and attitudes about STIs and HIV/AIDS[6]. A study carried out in a city in the interior of northeastern Brazil involving 3,482 participants aged over 18 concluded that people with higher income had lower adoption of condom use, which was attributed to trust in the partner[7]. The perception of low risk and vulnerability in individuals in affective relationships can influence the acceptance or not of preventive measures[14,18]. The reduction in mortality from HIV/AIDS is considered as one of the possible factors associated with poor adherence to prevention measures and low risk perception[1,4]. In Brazil, between 2014 and 2018, the mortality rate related to HIV/AIDS showed a reduction of 22.8% [4].

Multiple and varied factors can influence individual decision-making regarding disease prevention and health promotion measures. The challenge of expanding knowledge and encouraging the adoption of preventive measures, early diagnosis and treatment remains. In addition to the many aspects that influence sexual behavior, there is still little information on new forms of prevention and risk reduction[15]. The literature does not point to a direct association between knowledge and adherence to preventive measures for HIV, but it can contribute to progressive insertion of prevention and health promotion practices in society, as well as to combat stigmatizing attitudes[15,16,34,35].

The present study had a cross-sectional and observational methodology, with the limitations inherent to its design. One of these limitations is the use, as an instrument of data collection, of a semi-structured questionnaire, which did not delve into issues regarding the knowledge of the disease and did not detail aspects related to the motivation of young people to adopt or not prevention and health promotion practices.

Statistics point to an increase in the rate of HIV detection among Brazilian men in the last ten years[4]. Given the impact of HIV infection among young people, it is important to identify the knowledge gaps on the topic, since doubts remain, even among students who completed high school and entered universities, and seek new prevention strategies.

This study contributes to the reflections on the subject, indicating a direction in which it is necessary to expand and deepen the information about HIV/AIDS among young Brazilians, including those who have entered higher education. The research also corroborates that, in addition to knowledge, it is necessary to find new ways to articulate and motivate the adoption of preventive measures in this population group. The increase in the number of cases creates a demand for health services and systems, which could be mitigated with more effective strategies for prevention and health promotion.

CONCLUSION

The university students showed good knowledge about the ways of transmission of HIV/AIDS, low demand for diagnostic tests and little adherence to preventive measures with the use of condoms. Family income had no influence on the adoption of preventive measures through diagnostic tests or condom use. Among young people with the highest number of correct answers about HIV/AIDS transmission, there was a relatively lower proportion of students with high family income. In a sample with similar schooling, greater knowledge of all ways of transmission among young people with lower income, may suggest an inverse association of family income and risk perception.

Even knowledge about HIV transmission and high scholarity do not necessarily translate into preventive actions, it is necessary to develop new strategies to combat this pandemic. New studies need to be implemented in order to support new prevention programs.

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