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KNOWLEDGE OF YOUNG MEN ABOUT HIV INFECTION AND ASSOCIATED FACTORS

CONHECIMENTO DE HOMENS JOVENS SOBRE INFECÇÃO PELO HIV E FATORES ASSOCIADOS

CONOCIMIENTO DE LOS HOMBRES JÓVENES SOBRE LA INFECCIÓN POR EL VIH Y LOS FACTORES ASOCIADOS

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Objective: To analyze the knowledge of young men about HIV infection and associated sociodemographic and sexuality factors. Method: This is an epidemiological, analytical, and cross-sectional survey, conducted with 189 men, young university students from the Northeast of Brazil, through structured and self-applied questionnaires. The data were analyzed in the Software SPSS version 21.0, through descriptive and univariate analysis based on Pearson's Chi-square tests or Fisher's exact test. Results: it was evidenced deficient knowledge on ways of HIV transmission and prevention, associated to sociodemographic factors - race, monthly income range, conjugal status and religion - and the history of sexually transmitted infections (p-value < 0.05), beyond the non-recognition of their own vulnerability to the sexual transmission of the infection. Conclusion: these results can instrumentalize new public policies and strategies of health professionals directed to young men, aiming at reducing their vulnerability to HIV and their morbimortality.

Descriptors: Acquired Immunodeficiency Syndrome. HIV. Knowledge. Sexually Transmitted Diseases. Disease Prevention. Men.

Objetivo: analisar o conhecimento de homens jovens sobre a infecção pelo HIV e fatores sociodemográficos e relativos à sexualidade associados. Método: trata-se de pesquisa epidemiológica, analítica e transversal, realizada com 189 homens, jovens universitários do Nordeste Brasileiro, mediante questionários estruturados e autoaplicados. Os dados foram analisados no Software SPSS versão 21.0, por meio de análise descritiva e univariada com base nos testes Qui-quadrado de Pearson ou teste exato de Fisher. Resultados: evidenciou-se conhecimento deficiente sobre formas de transmissão e de prevenção do HIV, associados a fatores sociodemográficos – raça, faixa de renda mensal, situação conjugal e religião – e ao histórico de infecções sexualmente transmissíveis (valor-p < 0,05), além do não reconhecimento de sua própria vulnerabilidade à transmissão sexual da infecção. Conclusão: esses resultados

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podem instrumentalizar novas políticas públicas e estratégias dos profissionais de saúde direcionadas aos homens jovens, visando à diminuição de sua vulnerabilidade ao HIV e sua morbimortalidade.

Descritores: Síndrome de Imunodeficiência Adquirida. HIV. Conhecimento. Doenças Sexualmente Transmissíveis. Prevenção de Doenças. Homens.

Objetivo: analizar el conocimiento de los hombres jóvenes sobre la infección del VIH y los factores sociodemográficos y de sexualidad asociados. Método: Se trata de una investigación epidemiológica, analítica y transversal, llevada a cabo con 189 hombres, jóvenes universitarios del Nordeste brasileño, a través de cuestionarios estructurados y autoaplicados. Los datos fueron analizados en el software SPSS versión 21.0 por medio de un análisis descriptivo y univariado basado en el Chi-cuadrado de Pearson o la prueba exacta de Fisher. Resultados: Se evidenció un conocimiento deficiente de las formas de transmisión y prevención del VIH, asociadas a factores sociodemográficos -raza, rango de ingresos mensuales, estado civil y religión- y la historia de las infecciones de transmisión sexual (valor p < 0,05), así como la falta de reconocimiento de su propia vulnerabilidad a la transmisión sexual de la infección. Conclusión: Estos resultados pueden instrumentalizar nuevas políticas públicas y estrategias de los profesionales de la salud dirigidas a los hombres jóvenes para reducir su vulnerabilidad al VIH y su morbilidad y mortalidad.

Descriptores: Síndrome de Inmunodeficiencia Adquirida. VIH. Conocimiento. Enfermedades de transmisión sexual. Prevención de enfermedades. Hombres.

Introduction

Infection with the human immunodeficiency virus (HIV) is characterized as a pandemic, which needs the mobilization and cooperation of various sectors, including non-governmental organizations, civil society and the government of nations, in order to make it feasible to extinguish of contemporaneity and the future. Despite the efforts being made to fight infection, according to the World Health Organization (WHO), in 2019, about 38 million people were living with HIV and there were 690 thousand deaths due to acquired immunodeficiency syndrome (AIDS)[1-2].

In Brazil, from 2007 to June 2019, 300,496 cases of HIV infection were reported, 69.0% of which were in men. From 2007 to 2019, it was registered 52,065 cases of HIV in men, aged 15 to 24 years old. It is worth mentioning the increase in the detection rate among young men aged 15 to 19 years and 20 to 24 years old, which were 62.2% and 94.6%, respectively, in the years 2008 and 2018[3].

The guidelines for facing the HIV epidemic in Brazil comprise three main pillars of conduct, which are: epidemiological surveillance, prevention and assistance. Among the milestones of Brazilian public policies are prevention strategies, such as: combined prevention, prevention of vertical transmission, male and female condom supply, and diagnostic support, through the Testing and Counseling Centers[4].

Among the effective HIV infection prevention strategies that constitute combined prevention are the use of Treatment as Prevention (TasP), which consists of the immediate initiation of antiretroviral therapy for all people living with HIV (PLWHA), regardless of CD4+ T lymphocyte count, Post Exposure Prophylaxis (PEP), Preexposure Prophylaxis (PrEP) and voluntary male medical circumcision in places in Africa that have high prevalence of infection[5]. PEP uses antiretrovirals (ARV) as a prophylaxis measure, avoiding the multiplication and dissemination of the virus in the body. If an individual has contact with fluids that bring risks of HIV contamination, they may use PEP within 72 hours after exposure. PrEP prophylaxis covers the use of ARVs in people who have not yet been infected with HIV, but who have high exposure or vulnerability to this virus, and aims to decrease new cases[3,6].

However, HIV prevention does not depend exclusively on pandemic control policies and strategies. Access to information is paramount to raise awareness on the modes of transmission and prevention of infection. However, it cannot be excluded that relationships between socio cultural, economic, gender, religion and political situations interfere in this knowledge, prevention practices and safe sexual behavior[7-8]. Awareness of these interactions, of sexual behavior, and of

the level of knowledge of men, the ones most affected by the pandemic, is essential for planning and implementing policies and programs aimed at preventing new cases of HIV infection[9].

Despite the increase in the number of cases among women in Brazil, the reality is still the high incidence of infected men when compared to women, including an increase in the incidence among young men[3]. These data point to important gender differences, and studies show that young Brazilians are more likely to present risky sexual behaviors than women of the same age group. In addition to the difficulties men have in accessing HIV prevention methods and testing, which is not routinely offered in health services, as occurs with women in prenatal care, for example, it is highlighted the historical existence of patterns and aspects related to hegemonic masculinity that influence men's non-adoption of prevention practices and daily experience of unprotected sexual relations, driven by the feeling of invulnerability to HIV[8,10].

Therefore, given the various contexts of vulnerability to HIV infection and low adherence to HIV prevention practices among young men, the following questions have arisen: Do young men know how to transmit and prevent HIV infection? What sociodemographic and sexuality-related factors of young men are associated with their knowledge on HIV/AIDS?

It is important to underline that the results of this research will contribute to the planning of new public policies and strategies to face the HIV epidemic among young men and may lead prevention actions implemented by health services and professionals in general, especially those of Nursing, mostly when dealing with men with hegemonic ideologies so rooted in a sexist culture.

The objective of this research was to analyze the knowledge of young men about HIV infection and associated sociodemographic and sexuality factors.

Method

This study is part of a broad research project entitled "Sexuality, knowledge and prevention of HIV infection from the perspective of young men", linked to the Institutional Program for Scientific Initiation Volunteers. It is an epidemiological, cross-sectional and analytical research.

It took place in the city of Cuité, Paraíba, belonging to the Brazilian Northeast. The research scenario was the Education and Health Center (CES) of the *Universidade Federal de Campina Grande* (UFCG). Since students who are part of the Health Academic Unit and the Nursing Academic Unit have differentiated access to health information, including on HIV/AIDS, it was considered for this study the students enrolled in Courses on Biological Sciences, Chemistry, Physics and Mathematics.

The population of this study was formed by 309 male students, active in the referred courses of the CES/UFCG. For the sample calculation, it was considered the confidence interval (CI) of 95%, the proportion of the population of 50%, the maximum allowed error of 5%, and the probability of sample loss of 10%, obtaining a sample of 189 participants. As inclusion criteria, it was adopted: male students, aged 18 to 24 years, who are active in their courses during the data collection period. It was excluded from the survey those students who were on health leave or who had been absent for another reason during the data collection period.

The data collection instrument was a questionnaire prepared by the research team, containing dichotomous, categorical and Likert scale questions, totaling 71 questions, divided into four domains: A. Sociodemographic information of the participant; B. Knowledge on HIV and forms of prevention; C. HIV infection prevention practices; and D. Sexuality. To construct the manuscript, variables from parts A, B and D of the questionnaire were used. Domain B issues were based on the Research of knowledge, attitudes and practices in the Brazilian population related to HIV infection and other sexually transmitted infections (STIs), carried out by the Ministry of Health[7]. The data were collected from November 2018 to April 2019, after due approval by the Research Ethics Committee of the *Hospital Universitário Alcides Carneiro* (HUAC). The questionnaires were generally self-applied in classroom environments, after permission from the professor responsible for the class, or

in the university common spaces that provided privacy to the participant, such as the applied computer lab and the library of the center, after agreement in the collaboration of the research through written consent. The questionnaire was self-applied and at no time did the team interfere with the participant's responses. No doubts were taken that could interfere with the participants' critical sense and lead to bias in the survey.

The database was validated by double typing. The comparison of the databases was made by the SPSS Software, version 21.0, and later corrected the discrepancies of the information, by reconsulting the questionnaires.

For this study, the following exposure variables were selected - among the sociodemographic variables: age, race, marital status, belief, income bracket and affective-sexual orientation - and, among the sexuality variables: the dialogue with parents about sexuality, the relationship with casual partners in the last 12 months, the recognition of one's own vulnerability to sexual transmission of HIV and the history of STI.

The outcome variables used in statistical tests were: belief in virus transmission by insect bite; belief in virus transmission by cutlery, cups and meals; belief in risk of virus transmission decreased by having fixed partnership; assertion that a person can have HIV and not have AIDS; and concept of immunological window. These variables were selected for univariate analysis, since their descriptive data evidenced fragilities in the knowledge of participants in the study on HIV/AIDS.

The data were stored and analyzed in SPSS Software, version 21.0. Initially, the descriptive analysis of the variables was carried out and, to describe the data, frequency distribution tables and graphics were used. In the univariate analysis, to evaluate the factors associated with the knowledge of ways of HIV transmission and prevention, Pearson's Chi-square tests or Fisher's exact test were used in the analysis of categorical variables. In all analyses, the confidence intervals had a confidence level of 95% and the value of $p < 0.05$ decided to reject the null hypothesis in the statistical tests used in this work. Finally, the results were discussed, in accordance with the pertinent literature.

To comply with the National Health Council Resolution n. 466/2012, the project was submitted to the Committee on Ethics in Research, selected by the National Committee on Ethics in Research, of *Plataforma Brasil*, and approved by Opinion n. 2,839,681, of the CEP of *Hospital Universitário Alcides Carneiro*. The actions of the participants in this research were supported by the Free and Informed Consent Term, which guaranteed the anonymity of the participants, as stated in the mentioned resolution.

Results

The research participants were characterized in relation to the sociodemographic variables and the variables on sexuality. All participants of the study stated to be male and are in the age range of 18 to 24 years, and 92 (48.8%) are under 21 years old. Regarding race or color, 124 (65.6%) of the young people investigated declared themselves brown. In addition, 166 (87.8%) of the total participants are single and 169 (89.4%) answered that they are heterosexual. It is highlighted the low socioeconomic condition of the majority of the participants, because 164 (86.8%) referred to the income bracket of until two minimum wages.

Among the variables on sexuality, it was observed that 119 (63.0%) of the participants did not talk about sexuality and STI prevention with their parents or guardians. Regarding the recognition of their own vulnerability to sexual transmission of HIV, 103 (54.6%) of the men investigated do not believe they can become infected with the virus; among the reasons, it is worth mentioning the trust in the partnership and having a fixed partner. When asked if they had sex with casual partners in the past 12 months and if they had sex with fixed partners in the past 12 months, 67 (35.4%) and 23 (12.2%) of men answered yes, respectively. In addition, 4 (2.1%) of the participants reported a history of STIs and 13 (6.9%) have had same-sex relationships.

Table 1 presents the variables for evaluating the knowledge of the research participants, with their respective frequency distributions. Statements were made about knowledge about HIV, and the participating men were able to agree, disagree, declare not to know, or refuse to respond. Some data demonstrated weaknesses in knowledge, making them vulnerable to HIV infection.

Table 1 – Frequency distribution of knowledge evaluation variables on the Human Immunodeficiency Virus. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (continued)

Variables	n	%
Reducing the risk of HIV transmission if a person has sex only with one faithful partner		
Yes	129	68.3
No	40	21.2
Does not know or has refused to answer	20	10.6
A healthy looking person may be infected with HIV		
Yes	168	88.9
No	4	2.1
Does not know or has refused to answer	17	9.0
Using condoms is the best way to prevent sexual transmission of HIV		
Yes	183	96.8
No	4	2.1
Does not know	2	1.1
A pregnant woman who has HIV and receives a specific treatment during pregnancy, at the time of delivery decreases the risk of passing the AIDS virus to her child		
Yes	123	65.1
No	15	7.9
Does not know	50	26.5
A person can have HIV and not have AIDS		
Yes	73	38.6
No	52	27.5
Does not know	64	33.9
Every person who has HIV has symptoms of illness		
Yes	23	12.2
No	101	53.4
Does not know or has refused to answer	63	33.3
A person with AIDS can be cured		
Yes	9	4.8
No	138	73.0
Does not know	42	22.2
Definition of immunological window		
Never heard of it.	120	63.5
It is a symptom of AIDS	5	2.6
It is the time the person is already with the HIV virus, but the test is still negative	32	16.9
It is the time the person is already with the HIV virus, but still do not have AIDS	32	16.9
Anyone who does not use a condom is in risk of getting HIV/AIDS		
Yes	176	93.1
No	12	6.3
Does not know	1	0.5

Table 1 – Frequency distribution of knowledge evaluation variables on the Human Immunodeficiency Virus. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (conclusion)

Variables	n	%
All it takes is one condom-free sex relation for someone to get HIV		
Yes	125	66.1
No	33	17.5
Does not know or has refused to answer	31	16.4
Knowledge of Antiretroviral Prophylaxis Post-Exposure Risk for HIV Infection		
Yes	12	6.3
No	175	92.6
Refused to answer	2	1.1
Pre-Exposure Prophylaxis Knowledge		
Yes	11	5.8
No	176	93.1
Refused to answer	2	1.1

Source: Create by the authors.

Most of the participants reported that having sex only with one faithful partner decreases the risk of HIV transmission, which was pointed out by 129 (68.3%) of them, and 116 (61.4%) of the young men surveyed do not know or believe that a person can have HIV and not have AIDS. In addition, 175 (92.6%) and 176 (93.1%) of study participants, respectively, denied having knowledge about post- and pre-exposure antiretroviral prophylaxis, and 120 (63.5%) never heard of the concept of immunologic window. When asked if a person who has unprotected sex only once would have the possibility of becoming infected with the virus, 125 (66.1%) of the participants answered yes.

Research participants were also questioned about the ways of HIV transmission. A high percentage of men presented adequate knowledge about the correct forms of HIV transmission, answering "yes" to the transmission of the virus through anal sex without condom (79.9%), vaginal intercourse without condom (94.7%), and sharing of syringes and needles (94.7%). On the other hand, data showed fragilities in the knowledge of part of the interviewees, since transmission of the virus through sharing of cutlery, glasses and meal, by contact with saliva of people with AIDS, by use of public toilet and by insect bite had 14.3%, 23.3%, 13.2% and 15.3% of "yes" answers, respectively. Despite not being high percentages of errors in the responses, it should be highlighted that all participants in the survey are young university students.

After the descriptive analysis of the data, a univariate analysis was carried out to verify the sociodemographic and sexual related variables of the participants and their association with the knowledge about the HIV infection.

Table 2 shows sociodemographic variables and their association with knowledge of erroneous forms of HIV transmission. It was selected the variables that expressed fragilities in the knowledge on the modes of virus transmission, "the transmission of the virus by insect bite" and "the transmission of the virus through the sharing of glasses, cutlery and meal".

Table 2 – Sociodemographic factors and association with knowledge of erroneous forms of HIV transmission. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189)

Variable	V1. Virus transmission by insect bite			V2. Virus transmission through cutlery, glasses and meals			p-Value
	Yes	No	Does Not Know	Yes	No	Does Not Know	
Age range							
18 to 20 years old	16 (17.2%)	54 (58.1%)	23 (24.7%)	11 (11.8%)	60 (64.5%)	22 (23.7%)	V1* (0.730)
21 to 22 years old	7 (11.1%)	43 (68.3%)	13 (20.6%)	11 (17.5%)	46 (73.0%)	6 (9.5%)	V2* (0.217)
23 to 24 years old	5 (16.1)	18 (58.1%)	8 (25.8%)	5 (16.1%)	21 (67.7%)	5 (16.1%)	
Race/Color							
White	5 (12.2%)	27 (65.9%)	9 (22.0%)	14 (34.1%)	21 (51.2%)	6 (14.6%)	V1* (0.684)
Black	2 (9.5%)	16 (76.2%)	3 (14.3%)	1 (4.8%)	18 (85.7%)	2 (9.5%)	V2* (0.003)
Brown	22 (17.7%)	73 (59.9%)	29 (23.4%)	12 (9.7%)	90 (72.6%)	22 (17.7%)	
Conjugal situation							
Single	25 (15,1%)	99 (59.6%)	42 (25.3%)	26 (15.7%)	110 (66.3%)	30 (18.1%)	V1* (0.565)
Married/ Stable Union	1 (9,1%)	9 (81.8%)	1 (9.1%)	1 (9.1%)	10 (90.9%)	-	V2* (0.347)
Other	-	6 (85.7%)	1 (14.3%)	-	5 (71.4%)	2 (28.6%)	
Religion							
No religion	8 (20.0%)	22 (55.0%)	10 (25.0%)	5 (12.5%)	29 (72.5%)	6 (15.0%)	V1* (0.824)
Catholic	11 (11.7%)	60 (63.8%)	23 (24.5%)	14 (14.9%)	64 (68.1%)	16 (17.0%)	V2* (0.985)
Evangelical	6 (16.7%)	23 (63.9%)	7 (19.4%)	5 (13.9%)	23 (63.9%)	8 (22.2%)	
Other	4 (21.1%)	11 (57.9%)	4 (21.1%)	3 (15.8%)	13 (68.4%)	3 (15.8%)	
Affective--sexual orientation							
Heterosexual	27 (16.0%)	99 (58.6%)	43 (25.4%)	25 (14.8%)	113 (66.9%)	31 (18.3%)	V1* (0.095)
Homosexual	1 (8.3%)	11 (91.7%)	-	1 (8.3%)	9 (75.0%)	2 (16.7%)	V2* (0.921)
Bisexual	-	4 (100.0%)	-	1 (25.0%)	3 (75.0%)	-	
Income Range							
No income up to 1 MW	16 (17.4%)	60 (65.2%)	16 (17.4%)	12 (13.0%)	67 (72.8%)	13 (14.1%)	V1* (0.005)
More than 1 to 2 MW	9 (12.5%)	37 (51.4%)	26 (36.1%)	11 (15.3%)	46 (63.9%)	15 (20.8%)	V2* (0.477)
More than 2 to 5 MW	1 (5.3%)	17 (89.5%)	1 (5.3%)	3 (15.8%)	13 (68.4%)	3 (15.8%)	
More than 5 WM	-	-	1 (100.0%)	-	-	1 (100.0%)	

Source: Created by the authors.

Note:

*Fisher's exact test.

Legend: MW= minimum wage.

According to the results presented in Table 2, among the sociodemographic factors evaluated in the univariate analysis, there was a significant association with knowledge of erroneous forms of HIV transmission (p-value < 0.05) to the variables race and income range.

Regarding the association between race and the erroneous knowledge about the transmission of the virus by means of cutlery, glasses and meals, white men (48.7%) did not know how to answer or answered more erroneously than men of other races. As for the association between the income range and the erroneous knowledge about the virus transmission through insect bite, the low income men, until 2 minimum wages (83.4%), answered more incorrectly, when compared to the men with income above 2 minimum wages.

Table 3 points out sociodemographic variables and their association with two statements related to the transmission of HIV infection.

Table 3 – Sociodemographic factors and association with statements that transmission of the virus decreases because of having faithful fixed partnership and that a person can have HIV and not have AIDS. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (continued)

Variable	V1. The risk of virus transmission is decreased by having a faithful fixed partnership			V2. A person can have HIV and not have AIDS			p-Value
	Yes	No	Does Not Know	Yes	No	Does Not Know	
Age range							
18 to 20 years old	65 (70.7%)	18 (19.6%)	9 (9.8%)	28(30.1%)	30 (32.3%)	35 (37.6%)	V1** (0.687)
21 to 22 years old	44 (71.0%)	14 (22.6%)	4 (6.5%)	28(44.4%)	13 (20.6%)	22 (34.9%)	V2* (0.072)
23 to 24 years old	18 (60.0%)	8 (26.7%)	4 (13.3%)	17(54.8%)	8 (25.8%)	6 (19.4%)	
Race/Color							
White	35 (85.4%)	4 (9.8%)	2 (4.9%)	15(36.6%)	12 (29.3%)	14 (34.1%)	V1** (0.129)
Black	13 (65.0%)	6 (30.0%)	1 (5.0%)	8 (38.1%)	9 (42.9%)	4 (19.0%)	V2* (0.365)
Brown	80 (65.6%)	28 (23.0%)	14(11.5%)	50(40.3%)	29 (23.4%)	45 (36.3%)	
Conjugal situation							
Single	119 (73.0%)	30 (18.4%)	14 (8.6%)	60(36.1%)	49 (29.5%)	57 (34.3%)	V1* (0,011)
Married/ Stable Union	7 (63.6%)	3 (27.3%)	1 (9.1%)	7 (63.6%)	2 (18.2%)	2 (18.2%)	V2** (0.197)
Other	1 (14.3%)	4 (57.1%)	2 (28.6%)	4 (57.1%)	-	3 (42.9%)	
Religion							
No religion	30 (75.0%)	8 (20.0%)	2 (5.0%)	23(57.5%)	6 (15.0%)	11 (27.5%)	V1** (0.066)
Catholic	60 (65.2%)	18 (19.6%)	14(15.2%)	35(37.2%)	25 (26.6%)	34 (36.2%)	V2* (0.017)
Evangelical	28 (80.0%)	6 (17.1%)	1 (2.9%)	11(30.6%)	16 (44.4%)	9 (25.0%)	
Other	11 (57.9%)	8 (42.1%)	-	4 (21.1%)	5 (26.3%)	10 (52.6%)	

Table 3 – Sociodemographic factors and association with statements that transmission of the virus decreases because of having faithful fixed partnership and that a person can have HIV and not have AIDS. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (conclusion)

Variable	V1. The risk of virus transmission is decreased by having a faithful fixed partnership			V2. A person can have HIV and not have AIDS			p-Value
	Yes	No	Does Not Know	Yes	No	Does Not Know	
Affective-sexual orientation							
Heterosexual	119 (71.3%)	33 (19.8%)	15 (9.0%)	61(36.1%)	48 (28.4%)	60 (35.5%)	V1** (0.152)
Homosexual	5 (41.7%)	6 (50.0%)	1 (8.3%)	8 (66.7%)	2 (16.7%)	2 (16.7%)	V2** (0.331)
Bisexual	3 (75.0%)	1 (25.0%)	-	2 (50.0%)	1 (25.0%)	1 (25.0%)	
Income Range							
No income up to 1 MW	60 (66.7%)	19 (21.1%)	11(12.2%)	32(34.8%)	26 (28.3%)	34 (37.0%)	V1** (0.567)
More than 1 to 2 MW	52 (72.2%)	17 (23.6%)	3 (4.2%)	26(36.1%)	20 (27.8%)	26 (36.1%)	V2** (0.261)
More than 2 to 5 MW	15 (78.9%)	3 (15.8%)	1 (5.3%)	12(63.2%)	4 (21.1%)	3 (15.8%)	
More than 5 WM	1 (100.0%)	-	-	1(100.0%)	-	-	

Source: Created by the authors.

Notes:

* Chi-square test.
** Fisher's exact test.

Legend: MW = minimum wage.

According to the results presented in Table 3, among the sociodemographic factors assessed in the univariate analysis, the variables conjugal status and religion had significant association with statements that the risk of virus transmission decreases with faithful fixed partnership and that a person can have HIV and not have AIDS (p-value < 0.05).

Regarding the conjugal status of the study participants associated with the statement that the risks of virus transmission decreases due to having a faithful fixed partnership, single men (73.0%) were the ones who agreed more with this statement when compared to married men, in a stable union or with another conjugal situation. It should be emphasized that the practice of sexual relations with a fixed partnership that is faithful will only represent a significant decrease in the risk of HIV transmission if there is knowledge of the serological status of the partner, and confirmed the absence of infection, which also does not dispense with the use of condoms.

Concerning the association between religion and correct knowledge that a person can have HIV and not have AIDS, men who declared themselves without religion (57.5%) answered more correctly, agreeing with the affirmative. In contrast, only 37.2% of Catholic men and 30.6% of Evangelical men agreed with this affirmation.

It was also carried out the crossing of sociodemographic variables (age, race, conjugal situation, religion, income range and affective-sexual orientation) with the knowledge of the immunological window concept, but there was no significant association (p-value > 0.05).

Table 4 shows the crossing of sexuality variables with the statement that there is a decreased risk of HIV transmission due to having a faithful fixed partnership.

Table 4 – Variables on sexuality and its association with the statement that the risk of transmission of the virus decreases due to having a faithful fixed partnership. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189)

Variable	The risk of transmission of the virus decreases due to having a faithful fixed partnership			
	Yes	No	Does Not Know	P-Value
Dialogue with parents about sexuality				
Yes	45 (69.2%)	11 (16.9%)	9 (13.8%)	0.279*
No	83 (71.6%)	25 (21.6%)	8 (6.9%)	
Relation with casual partners in the last 12 months				
Yes	48 (71.6%)	14 (20.9%)	5 (7.5%)	0.790**
No	64 (71.9%)	17 (19.1%)	8 (9.0%)	
Refused to answer	14 (60.9%)	6 (26.1%)	3 (13.0%)	
Recognition of vulnerability to sexual transmission of HIV				
Yes	51 (65.4%)	19 (24.4%)	8 (10.3%)	0.632*
No	74 (72.5%)	20 (19.6%)	8 (7.8%)	
History of Sexually Transmitted Infections				
Yes	-	4 (100.0%)	-	0.021**
No	105 (69.1%)	33 (21.7%)	14 (9.2%)	
Ignored	4 (80.0%)	1 (20.0%)	-	

Source: Created by the authors.

Notes:

* Chi-square test.
** Fisher's exact test.

According to the results presented in Table 4, among the factors of sexuality of these men, the history variable of STI was significantly associated with the affirmative on the decrease of risk of HIV transmission because of having a faithful fixed partnership (p-value < 0.05). People who stated they had no history of STI (78.3%) agreed more with the statement than those who had some STI during their lives.

Table 5 shows variables on sexuality and its association with the knowledge of the immunological window concept.

Table 5 – Variables on sexuality and its association with the knowledge of the immunological window concept. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (continued)

Variable	Never heard of it	Wrong Answer	Right answer	Wrong Answer	p-Value
Dialogue with parents about sexuality					
Yes	42 (64.6%)	2 (3.1%)	8 (12.3%)	13 (20.0%)	0.685*
No	75 (63.0%)	3 (2.5%)	22(18.5%)	19 (16.0%)	
Relation with casual partners in the last 12 months					
Yes	40 (59.7%)	1 (1.5%)	15(22.4%)	11 (16.4%)	0.280*
No	64 (69.6%)	4 (4.3%)	9 (9.8%)	15 (16.3%)	
Refused to answer	13 (56.5%)	-	5 (21.7%)	5 (21.7%)	

Table 5 – Variables on sexuality and its association with the knowledge of the immunological window concept. Cuité, Paraíba, Brazil – nov. 2018- apr. 2019. (N = 189) (conclusion)

Variable	Never heard of it	Wrong Answer	Right answer	Wrong Answer	p-Value
Recognition of vulnerability to sexual transmission of HIV					
Yes	42 (53.2%)	2 (2.5%)	18(22.8%)	17 (21.5%)	0.036*
No	75 (72.8%)	3 (2.9%)	12(11.7%)	13 (12.6%)	
History of Sexually Transmitted Infection					
Yes	3 (75.0%)	-	-	1 (25.0%)	1.000*
No	97 (63.0%)	3 (1.9%)	27(17.5%)	27 (17.5%)	
Ignored	3 (60.0%)	-	1 (20.0%)	1 (20.0%)	

Source: Created by the authors.

Note:

* Fisher's exact test.

Among the factors related to the sexuality of these men, there was a significant association with knowledge about the immunological window concept (p-value < 0.05), the variable recognition of vulnerability to sexual transmission of HIV.

People who do not recognize their own vulnerability are more ignorant of the immunological window concept (72.8%) and they have mentioned more wrong answers (15.5%) than those who recognize their vulnerability.

Discussion

The low socioeconomic status of men, evidenced by low family income, a result found in this study, may be an obstacle to obtain information on the HIV/AIDS issue, as well as hinder access to health services and, consequently, to the HIV prevention measures[9].

The impact of this condition was demonstrated in this research by the association between low monthly family income and erroneous knowledge of the transmission of the virus by insect bite. The association between low socioeconomic condition and deficient knowledge about the forms of HIV transmission was also identified in a research of knowledge, attitudes and practices in the Brazilian population[7].

Other fragilities in men's knowledge on the ways of HIV transmission, besides the erroneous knowledge on the transmission of the virus by insect bite, were demonstrated by wrong answers from the participants, in which they agreed that the virus can also be transmitted by sharing glasses, cutlery and meals, by using public toilets and by contact with saliva of people with AIDS. The perpetuation of these false beliefs in the population, including among young people, was also verified in other researches[8,11].

Despite the broad dissemination of information on HIV/AIDS nowadays, the present study observes fragilities in the knowledge on some prevention methods, such as pre- and post-exposure prophylaxis. A literature review study[12] identified that only 3% of respondents have knowledge on PrEP. This knowledge deficit is a barrier to the adoption of this type of prevention measure, accentuating men's vulnerability to HIV and impacting the Brazilian morbimortality rates of men of fertile age, which has brought great burden to public health.

In addition to the above, it was revealed the lack of knowledge of most men about the immunological window concept, associated with the non-recognition of their own vulnerability to the sexual transmission of the virus. This knowledge deficit was also observed in another survey of young university students in Rio de Janeiro[13], in which only the minority of those interviewed responded correctly to the immunological window concept, that would be

the time it takes the body to produce antibodies, detectable in the anti-HIV test. The ignorance of this concept, associated with the denial of one's own vulnerability to HIV sexual transmission, can favor the decision not to use condoms with partners who are tested negatively.

The lack of perception by most young men of their own vulnerability to HIV infection was remarkable in this survey. The main consequence was the non-use of primary and secondary prevention actions, such as the non-use of condoms in sexual relations, and the lack of periodic HIV testing. In turn, not doing the anti-HIV test in due time may contribute to a late diagnosis of the infection[14]. The lack of recognition of one's own vulnerability and the absence of the use of barrier methods in sexual relations, such as condoms, may be related to patterns of hegemonic masculinity, which are still present in most Brazilian men, especially in the Northeastern region, the host region of this study.

A study developed with heterosexual men living with HIV highlighted the invisibility of heterosexual men in the AIDS epidemic, pointing out its serious consequences, such as high incidence of cases and late diagnosis of infection in this public. This is due to patterns of hegemonic masculinity that naturalize the conception that virile men are invulnerable to illness, leading them not to adopt preventive measures, and also because these men do not identify themselves with the classic risk groups of AIDS (homosexuals and injecting drug users) at the beginning of the pandemic, which remains strong in the social imagination, despite the advances in the four decades of facing the disease[10].

Literature points out that HIV/AIDS stereotypes have decreased significantly in the last years, but old stereotypes of AIDS still remain, according to which the people who are more vulnerable to infection are those who have abusive use of injectable drugs, who usually have sex with multiple partners and/or with people of the same sex[14].

Another weakness pointed out in this survey was that, although most men stated that they spent their adolescence in a family context, the minority stated that they had some kind of dialogue with their guardians about sexuality and/or STI prevention. The source of information for these young people was mostly obtained through the Internet, school/teacher or television, health services or through dialogue with friends. A study conducted in Brazil[8] also identified that the main sources of information on sexuality are friends. This is a situation that can worsen the vulnerability of these young people to HIV, since the family should be the basis of trust, becoming a privileged context for the first orientations on the risks of infection, ways of preventing HIV and other STIs, on sex and its respective sexual orientations[15-16].

As for the knowledge of HIV prevention forms, most men responded correctly, which shows potentialities in the knowledge of these young people, pointing out as forms of prevention, the use of condoms in all sexual relations, the non-sharing of syringes and needles, HIV antiretroviral treatment in pregnant women, among others. This was also evidenced in a study with young university students in Rio de Janeiro[13].

The greatest fragility of this knowledge was the belief in the fidelity of the fixed partner as a form of prevention, without considering the need to know the serological status of the partner and to use condoms even in stable relationships, which was associated with the conjugal situation and the history of absence of STI. This association may be related to the increased perception of vulnerability to HIV among those who have had STIs acquired in fixed partnership relationships. As a consequence of this fragility, resistance to using condoms in stable relationships[8] is indicated due to trust in the partnership, which makes these men vulnerable. Thus, men who have had an STI seem to recognize more their vulnerability to HIV infection, favoring the adoption of prevention measures.

HIV/AIDS is still seen by many as "street disease" or "prostitutes' disease"; therefore, based on this belief, those with some kind of fixed partnership would become free of the

risk of virus contamination and would not need to use condoms with their stable, "home", partnerships[17]. Such a way of thinking may favor risky sexual behavior – not using a condom – of people in stable relationships, making them vulnerable to HIV infection[18].

Therefore, it is relevant that health and nursing professionals know the socio-cultural and individual factors, such as those related to gender and other sociodemographic factors, sexual practices and individual behaviors of men, which make them vulnerable and influence their knowledge about HIV infection and its forms of prevention. This knowledge and differentiated look of professionals on the various social determinants of the disease may underlie their interventions in preventing new cases of HIV in the community, in an articulated and coordinated manner with other sectors of society, besides the health sector[19].

Conclusion

The findings of this research pointed to the deficit in young men's knowledge about HIV infection and its forms of prevention, considering their diverse contexts and the aspects that make them vulnerable. Among the results, the following are highlighted as fragilities: lack of dialogue on sexuality and prevention of STI/HIV/AIDS with parents or guardians; non-recognition of one's own vulnerability to sexual transmission of HIV; belief in the fidelity of affective-sexual partnership as a form of HIV prevention; knowledge deficit on pre- and post-exposure prophylaxis, on the concept of immunological window, as well as on the ways of transmission of the virus, which makes men more vulnerable to HIV/AIDS.

It is emphasized that dissemination of information on HIV/AIDS is not enough, because the fragilities in the knowledge of youth, evidenced in this study, are loaded with psychosocial elements, which translate into mistaken beliefs, hegemonic masculinity patterns and permanence of "old" AIDS stereotypes, reflected in the absence of perception of their own vulnerability to HIV, making it imperative to address these issues in educational and health services, especially in Primary Health Care, because it is close to the life context of these men. This lack of perception was sometimes associated with some knowledge deficit, sometimes as a consequence of the lack of adequate knowledge about the infection. In both situations, it is structural that young men remain vulnerable to HIV infection.

The scenario on the knowledge of young men presented in this study is still little explored in Brazil. Thus, further research on their knowledge, beliefs and taboos will enable the empowerment of health professionals, especially those in Nursing, who stand out in initiatives on population health education, health promotion and prevention of diseases and illnesses. In addition, these results may instrumentalize public policies and direct new strategies that may actually impact the lives of young men and decrease their vulnerability to HIV infection.

It is noteworthy that other studies with qualitative approaches should be carried out, since this study does not exhaust the discussion of the issue in the context of the young male population, since the problem is complex and requires a wide and comprehensive research.

Collaborations:

1 – conception, design, analysis and interpretation of data: Layla Caroline Lino da Silva, Luana Carla Santana Ribeiro and Maria Gleuza Malzac do Carmo Santos;

2 – writing of the article and relevant critical review of the intellectual content: Layla Caroline Lino da Silva, Luana Carla Santana Ribeiro, Jocelly de Araújo Ferreira, Magaly Suênya de Almeida Pinto Abrantes and Danilo Erivelton Medeiros Dias;

3 – final approval of the version to be published: Layla Caroline Lino da Silva and Luana Carla Santana Ribeiro.

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