

## ORIGINAL ARTICLE

## Perceptions and knowledge of medical students about HIV and AIDS

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## ABSTRACT

**Background and Objectives:** The degree of information is not restricted to informative and opportunity issues of knowledge, but also to the development of a conscious individual perception for the adoption of preventive practices. This study aimed to assess the perception and knowledge of medical students about HIV and AIDS. **Methods:** This is a cross-sectional, observational, and unicentric study, through the application of a structured questionnaire and two referring to the attitude towards HIV and the individual risk perception and knowledge on modes of transmission. Student's and Pearson's Chi-Square Tests were applied, with  $p < 0.05$ . Two hundred twenty-three medical students from the first to eighth semesters participated. **Results:** Most university students reported having compassion (90.58%) and no blame (97.31%) for HIV. However, 69.06% did not feel prepared to treat these patients. Moreover, 76.68% reported not having a risk of contracting HIV, a fact of concern for the inherent risk of the profession. Of the 20 questions on knowledge on modes of transmission, the degree of accuracy ranged from 18.2 and 19.4 points. Prevalence (85.2%), prejudice (75.78%), and condom (72.65%) were the main symbolic values associated with HIV. **Conclusion:** Students presented ethical and humanistic attitudes towards patients with HIV and a high degree of knowledge about the modes of transmission of HIV. Regarding risk perception, there is need for a more focused approach in the Public Health, Infectology, and Immunology disciplines.

**KEYWORDS:** Perception. Knowledge. Acquired Immunodeficiency Syndrome. HIV.

## INTRODUCTION

The Acquired Immunodeficiency Syndrome (AIDS) is a challenge for the health and socio-political sectors. It has deep implications in biopsychosocial aspects, being intrinsically related to economic and cultural factors. It is characterized as a destabilizing phenomenon and

a great misfortune for human history, presenting itself as a serious worldwide public health problem and in a continuous expansion.<sup>1-3</sup>

In 1981, the U.S. Center for Disease Control officially recognized AIDS as a new disease, not yet classified, with a likely infectious and transmissible etiology. In 1984, this infectious agent and its consequences were accepted by the entire scientific community. In the following year, the first HIV detection tests were commercialized.<sup>4-6</sup>

Nationally, in 1982, the first confirmed cases of AIDS emerged in the state of São Paulo, and from the free and universal Antiretroviral Therapy (AVT) access policy of the Brazilian Health System (*Sistema Único de Saúde*, abbreviated SUS), nearly the 90s, morbidity and mortality rates decreased concomitantly with the increase in life expectancy of these patients.<sup>7</sup>

However, looking at the national trend of evolution of cases, it was found that, according to the Department of STD/HIV and Viral Hepatitis of the Ministry of Health of Brazil, the Northern and Northeast regions have an indication of recurrent increase in mortality, while the Southeast has decreasing indicators.<sup>8</sup> Therefore, socioeconomic aspects, especially related to the issue of perception and attitudes towards HIV, stand out as influencers, although isolated knowledge is not enough to adopt a behavior protector.<sup>1,9</sup>

In view of this reality, it is clear that the degree of information is not restricted to informational issues and the opportunity for knowledge, but also to the development of an individual perception for the adoption of preventive practices in view of the various transmission routes of the virus.<sup>9,10</sup> This fact can be hindered by the difficulty of accessing systematic and clear information in health centers, as well as by the proximity to infected people, drug use and exposure to violence.<sup>11</sup>

In the meantime, there is an affective dimension associated with AIDS, favoring the development of symbolic values, such as fear, suffering, prejudice, and death. Faced with this, it is clear that the notion of “risk group” can become distorted - even among health professionals - leading to stigmatization of patients and avoidance of preventive measures, given that many of them think they are not at risk of HIV.<sup>3</sup> Therefore, individual, cognitive, behavioral and social vulnerabilities are installed.<sup>9,12</sup>

Still in the health sphere, there is a lack of professional preparation in the face of patients with this condition.<sup>3</sup> This fact indicates the need for constant professional training to adapt knowledge to the different faces of the epidemic, as well as the formation of a doctor-patient bond with their own health care system. Based on this, the inexistence of a curriculum based on the biopsychosocial aspects of HIV, in addition to the predominance of hostile mentalities, negative perceptions and stigmatization of this condition, generates obstacles to

comprehensive, dignified and respectful care for these patients - who face the physical consequences of the disease and social prejudice.<sup>12,13</sup>

Analyzing the relevance of professional training to deal with HIV-positive patients, as well as the vulnerability to which they are exposed, the present research aimed to determine the perception of medical students about the care of patients with HIV / AIDS. Perception of care will directly influence the doctor's attitude towards patients, addressing ethical and moral aspects inherent to medical practice and humanized health care.

In view of the complexity of the topic, as well as the need for medical training based on ethical and moral precepts, greater academic and professional attention is needed with regard to the development of studies on how medical students understand this condition, as well as the forms of approach, attitude and perception towards HIV-positive patients. Therefore, based on the expansion of knowledge and the effectiveness of this study, interest in the topic is justified, as results may contribute to the improvement of academic training, doctor-patient relationship and patient care. This study aimed to assess the perception and knowledge of medical students about HIV and AIDS.

## **METHODS**

This is a cross-sectional, observational and unicentric study, involving 223 medical students enrolled from the 1<sup>st</sup> to 8<sup>th</sup> semester of the course. The research protocol corresponded to a structured and self-administered questionnaire, containing 9 multiple-choice questions. It presents sociodemographic variables of sample description, such as age, sex, color/race, religion, and semester. Furthermore, school education site, guidance on HIV transmission and prevention methods, feeling of preparedness to care for a patient with HIV and the main symbolic values attributed to this condition (prevention, prejudice, condoms, fear, suffering, carelessness, sadness, irresponsibility, and death) were verified.

In addition, two questionnaires were applied regarding the attitude towards AIDS and the individual/risk perception and knowledge on the modes of transmission of HIV, which are adapted and validated.<sup>9</sup>

The statistical analysis methodology was used to describe and synthesize the collected data, enabling its presentation in different forms, which favors the quality of the interpretations. Data were organized in contingency tables "1 x c", based on absolute and relative frequencies and using Pearson's Non-Parametric Chi-Square Test for independence and trend among nominal variables. Pearson's Chi-Square Test for association was calculated to verify the

relationship among the epidemiological profile variables, with a significance level below 0.05. In addition, T-Student Test was used for the correlation and comparison of data.

Consequently, the collected data were tabulated, interpreted, processed and analyzed by using descriptive and inferential statistics, adopting a confidence level of  $p < 0.05$  to verify the significant statistic. They were registered and organized in the software Microsoft Office Word 2010, Microsoft Office Excel 2010, Microsoft Office Power Point 2010. For data analysis, computing resources were used through processing in the Microsoft Excel system and using the Statistic Package for Social Sciences (SPSS), version 24.0.

The research was approved by the Research Ethics Committee of the *Universidade Estadual do Pará*, Brazil (REC-UEPA). It had approval number 2,528,056, CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) number 83174417.1.0000.5174, and was approved on March 6<sup>th</sup>, 2018.

## RESULTS

Among the 223 students who participated in this research, 123 (55.2%) are female and 100 (44.8%) are male. The predominant age group was 17 to 21 years (69.5%), ranging from 17 years to 47 years. A total of 108 (48.4%) students declared themselves to be mixed-race (48.4%), and 215 (96.4%) reported being single (Table 1).

**Table 1:** Sociodemographic profile of medical students, Pará- 2018

Description	n	%	P value *
<b>Age group</b>			
17-21	155	69.5	
22-26	59	26.5	
27-31	6	2.7	<0.0001
32-36	2	0.9	
42-47	1	0.4	
<b>Which color/race do you consider yourself to be?</b>			
Mixed-race	108	48.4	
White	92	41.3	<0.0001
Black	19	8.5	
Yellow	4	1.8	
<b>What is your marital status?</b>			
Single	215	96.4	<0.0001
Married	5	2.2	

Description	n	%	P value *	
Common-law marriage	3	1.3		
<b>What is your gender?</b>				
Female	123	55.2	0.124	
Male	100	44.8		
<b>What is your religion?</b>				
Agnosticism	15	6.7	<0.0001	
Atheism	9	4.0		
Buddhism	4	1.8		
Catholicism	121	54.3		
Deism	2	0.9		
Spiritism	14	6.3		
Protestantism	34	15.2		
Judaism	2	0.9		
Without religion	20	9.0		
Spaghetianism	1	0.4		
<sup>1</sup> <i>Umbanda</i>	1	0.4		
<b>What is your semester at UEPA*?</b>				
First	25	11.2		0.320
Second	25	11.2		
Third	26	11.7		
Fourth	41	18.4		
Fifth	31	13.9		
Sixth	25	11.2		
Seventh	25	11.2		
Eighth	25	11.2		

UEPA: Pará State University \* Pearson's Chi-Square Test for independence (p value <0.05).

<sup>1</sup>Translator Note: *Umbanda* is a Brazilian religion that blends African religions with Catholicism, Spiritism, and considerable indigenous lore.

H1: There is a significant dependency relationship between the variables and the observed frequency (p <0.05).

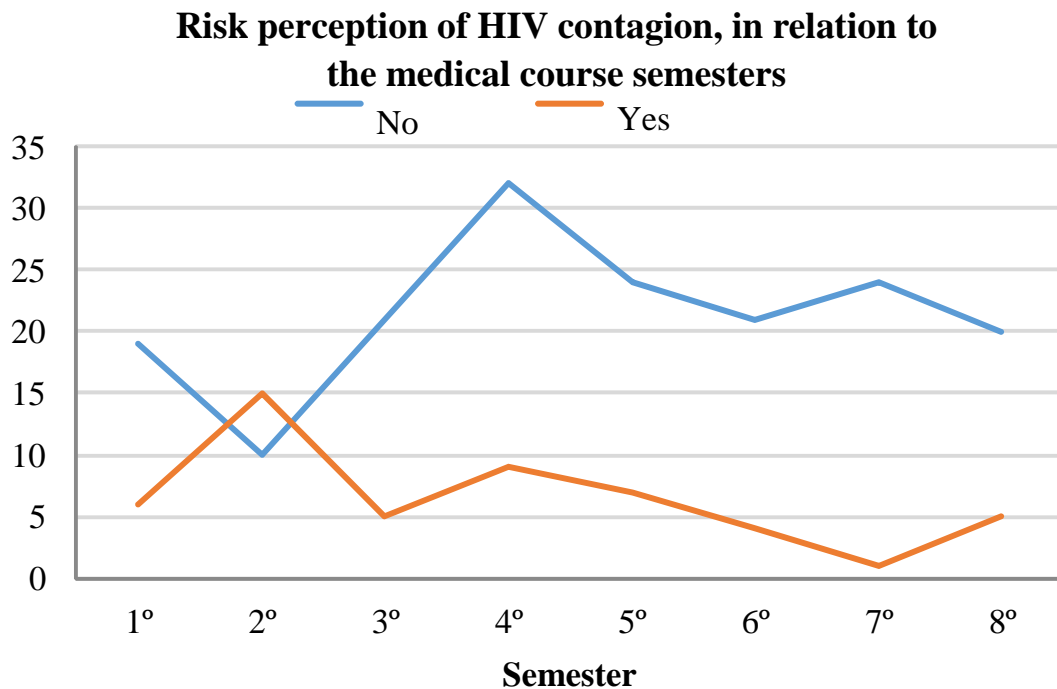
With regard to issues related to attitude and risk perception towards AIDS and the individual (Table 2), it was identified that 174 university students (78.03%) would have no problem working with a HIV-positive partner. Two hundred two would not be afraid to work with someone who had HIV (90.58%). One hundred eighty would not mind working with HIV patients (80.72%). Furthermore, 93.72% (209) of the students stated that they know how to protect themselves against the virus in question, although 74.89% (167) stated that they did not have the necessary training to attend a person with such condition.

**Table 2:** Distribution of medical students at the *Universidade Estadual do Estado do Pará*, according to the issue “Attitude towards HIV and the individual/risk perception”, in 2018.

Attitude towards AIDS and the individual/risk perception	Answer				P value *
	Yes		No		
	n	%	n	%	
1 <sup>st</sup> I am not at risk of AIDS	52	23.32	171	76.68	<0.0001
2 <sup>nd</sup> I think they are worrying about AIDS more than they should	5	2.24	218	97.76	<0.0001
3 <sup>rd</sup> I believe in the government information provided about AIDS	184	82.51	39	17.49	<0.0001
4 <sup>th</sup> I wouldn't mind having a professional relationship with someone who lives with someone with AIDS	174	78.03	49	21.97	<0.0001
5 <sup>th</sup> I'm afraid of being at risk of AIDS at work	116	52.02	107	47.98	0.547
6 <sup>th</sup> I know how to protect myself from HIV	209	93.72	14	6.28	<0.0001
7 <sup>th</sup> I believe that AIDS is a punishment	2	0.90	221	99.10	<0.0001
8 <sup>th</sup> I would be afraid to work with someone who has HIV	21	9.42	202	90.58	<0.0001
9 <sup>th</sup> I'm not worried about being at risk of HIV	51	22.87	172	77.13	<0.0001
10 <sup>th</sup> Anyone with AIDS should be placed in an isolated place	1	0.45	222	99.55	<0.0001
11 <sup>th</sup> If I had a choice, I would prefer not to work with HIV	43	19.28	180	80.72	<0.0001
12 <sup>th</sup> Only those who are promiscuous and drug users contract HIV	4	1.79	219	98.21	<0.0001
13 <sup>th</sup> I feel morally offended by people with AIDS	3	1.35	220	98.65	<0.0001
14 <sup>th</sup> I have professional training necessary to provide care to a person with HIV	56	25.11	167	74.89	<0.0001
15 <sup>th</sup> Government institutions are not reporting everything they know about AIDS	100	44.84	123	55.16	0.124
16 <sup>th</sup> I feel compassion for people with AIDS	202	90.58	21	9.42	<0.0001
17 <sup>th</sup> I think HIV patients deserve to be sick	1	0.45	222	99.55	<0.0001
18 <sup>th</sup> I think people with AIDS don't deserve to be treated with compassion	6	2.69	217	97.31	<0.0001
19 <sup>th</sup> The HIV virus was created in the laboratory to exterminate homosexuals	3	1.35	220	98.65	<0.0001

\* Pearson's Chi-Square Test for independence (p value <0.05).

H1: There is a significant dependency relationship between the variables and the observed frequency (p <0.05).



Regarding risk perception, about 171 students (76.68%) stated they were not at risk of HIV, especially among students in more advanced semesters (Figure 1).

It is also worth mentioning that prevention (190; 85.2%), prejudice (169; 75.78%), and condoms (162; 72.65%) were the main symbolic values associated with AIDS/HIV. They were followed by fear (48.43%), suffering (43.50%), carelessness (39.01%), sadness (28.25%), irresponsibility (20.18%), and death (19.73%) (Table 3).

As for the mode of contagion of HIV, of the 20 questions related to the knowledge on the modes of transmission of HIV, the average of correct answers ranged from 18 to 20 points. There was no significant difference among the groups studied ( $p < 0.05$ ).

It was also found that 220 respondents (98.65%) answered that attending the same university as someone who is HIV positive, shaking hands, touching and kissing the face are unlikely to transmit the virus. A total of 219 (98.21%) participants reported that sharing needles with injecting drug users, having sexual intercourse with multiple partners (219; 98.21%), anal (219; 98.21%) and vaginal (216; 96.86%), with a carrier without a condom are likely situations of transmission (Table 3).

However, the two questions, which presented the highest level of error among students, were related to public toilet use (82.06%) and kissing on the lips of patients (88.34%) (Table 3). It is evident that the only question where the results were not statistically significant, addressed blood donation as a means of contagion, where 98 (43.95%) said it was likely, while 125 (56.05%) said it was unlikely (Table 3).

**Table 3:** Assessment of the distribution of medical students at the *Universidade Estadual do Pará*, according to knowledge about the modes of transmission of HIV, in 2018

Means of transmission	Likely		Unlikely		P value *
	n	%	n	%	
1° Shaking hands, touching and kissing the face of a person who has HIV	3	1.35	220	98.65	<0.0001
2° Attending university with a student who has HIV	3	1.35	220	98.65	<0.0001
3° Living near a hospital or shelter for people living with HIV / AIDS	8	3.59	215	96.41	<0.0001
4° Working with a person who has HIV	9	4.04	214	95.96	<0.0001
5° Sharing plates, forks and glasses with a person who has HIV	23	10.31	200	89.69	<0.0001
6° Being hit by coughing or sneezing by a person who has HIV	13	5.83	210	94.17	<0.0001
7° Using public restrooms	40	17.94	183	82.06	<0.0001
8° Being bitten by insects	12	5.38	211	94.62	<0.0001
9° Having hair or nails cut by a person who has HIV	22	9.87	201	90.13	<0.0001
10° Kissing a person with HIV	26	11.66	197	88.34	<0.0001
11° Having contact with the sweat of a person who has HIV	8	3.59	215	96.41	<0.0001
12° Donating blood	98	43.95	125	56.05	0.071
13° Being born to a mother who has HIV	215	96.41	8	3.59	<0.0001
14° Having contact with the tears of a person who has HIV	6	2.69	217	97.31	<0.0001
15° Receiving a contaminated blood transfusion	220	98.65	3	1.35	<0.0001
16° Sharing needles with injecting drug users	219	98.21	4	1.79	<0.0001
17° Having sex with sex workers without using a condom	221	99.10	2	0.90	<0.0001
18° Having multiple sexual partners and not using a condom	219	98.21	4	1.79	<0.0001
19° Having vaginal sexual intercourse with a person who has HIV without using a condom	216	96.86	7	3.14	<0.0001
20° Having anal sex with a person who has HIV without using a condom	219	98.21	4	1.79	<0.0001

\*Pearson's Chi-Square Test for independence (p value <0.05).

**H1: There is a significant dependency relationship between the variables and the observed frequency (p <0.05).**

When analyzing issues related to school education and receiving guidance on methods of preventing HIV contagion, it was found that 203 students (91.03%) answered "yes", regardless of whether the school is public (22.87%) or private (60.54%), referring to a level of significance lower than 0.001 (Table 4). In contrast, 126 students (56.5%) were not instructed on the theme by their parents or guardians (Table 4). In addition, the internet (103; 46.19%) and study books (100; 44.84%) predominated as a source of knowledge about HIV and AIDS (Table 4).

Regarding academic education, 69.61% of university students stated that they had received guidance on the prevention of contagion and transmission modes, 151 (67.71%) of



them know services that take care of people with venereal diseases. However, 151 students (67.7%;  $p < 0.001$ ), do not feel prepared to assist a person with AIDS (Table 4), a fact that decreases with the progress of the semesters.

**Table 4:** Characterization of medical students, according to school and academic background, guidelines regarding transmission and prevention methods, in addition to preparation for care for people with AIDS/HIV, in 2018

	n	%	P value *
<b>I relate AIDS to the following symbolic values:</b>			
Prevention	190	85.20	
Preconception	169	75.78	
Condom	162	72.65	
Fear	108	48.43	<0.0001
Suffering	97	43.50	
Carelessness	87	39.01	
Sadness	63	28.25	
Irresponsability	45	20.18	0.255
Death	44	19.73	
<b>School</b>			
<b>During your school life you studied at:</b>			
Both	37	16.59	<0.0001**
Private school	135	60.54	*
Public school	51	22.87	
<b>In college, did you have stories about care and treatment for people with AIDS?</b>			
Yes	120	53.81	
No	103	46.19	0.255
<b>In college, did you receive guidance on methods of transmission and prevention of HIV / AIDS?</b>			
Yes	155	69.51	<0.0001
No	68	30.49	
<b>At school, did you receive guidance on methods of HIV / AIDS transmission and prevention?</b>			
Yes	203	91.03	<0.0001
No	20	8.97	
<b>Did your parents and family always talk about AIDS and advise you to prevent infection?</b>			
Yes	97	43.50	<0.0001
No	126	56.50	
<b>Do you know any health service that takes care of people with venereal diseases</b>			
Yes	151	67.71	<0.0001
No	72	32.29	
<b>Do you feel prepared to assist a person with AIDS?</b>			
Yes	69	30.94	<0.0001
No	154	69.06	
<b>Their main source of knowledge about HIV and AIDS is:</b>			
Internet	103	46.19	
Study books	100	44.84	
School/College	10	4.48	
Family	3	1.35	
Scientific papers/Texts	2	0.90	
Television	1	0.45	
Academic league	1	0.45	
MIFLI	1	0.45	
CAB	1	0.45	
General media	1	0.45	

\*Pearson's Chi-Square Test for independence ( $p$  value <0.05).

H1: There is a significant dependency relationship between the variables and the observed frequency ( $p < 0.05$ ).

## DISCUSSION

In view of the results obtained regarding attitudes towards people with AIDS, it was found that most students reported a respectful and accepting behavior.<sup>15</sup> In this context, the low number of university students with feelings of aversion or detachment in relation to their seropositive colleagues it may be related to the biological knowledge of the human condition itself, through the understanding and proximity to the intrinsic biopsychosocial aspects, mainly with regard to the rights to education and work of people with HIV and AIDS.<sup>15,16</sup>

Furthermore, most students considered that patients “do not deserve to be sick” and that they feel “compassion for people with AIDS”, expressing empathy and respect. These questions infer non-blame for the referred situation, as well as the negation of the individual subjective affective dimension, replacing it with the consideration of the individual’s social, cultural and economic factors - contrary to what was highlighted in another research.<sup>16</sup>

Regarding symbolic values, prevention, prejudice and condoms were found to be the main ones highlighted by undergraduates. Given this, there is still a great divergence in the current scientific literature on the knowledge and prejudice associated with HIV and AIDS, emphasizing that most of the participants did not present prejudiced behaviors, but referred to prejudice as an expressive symbolic value related to such condition.<sup>15,17</sup> Thus, its influence in the current socio-cultural context is notorious, increasing stigmatization and the chances of prevention for a large part of the population.<sup>3</sup> In fact, the psychic and emotional factors have a strong relationship with the health-disease, so that stigma and prejudice become as harmful as the action of HIV on the human body.<sup>16</sup>

There is a need to expand researches on the risk of HIV contagion and the vulnerability of the population in general, in order to expose the “risk groups” and the misconceptions regarding perception and attitudes before this reality. These actions would prevent the spread of erroneous information by health professionals. Most patients seek knowledge among doctors, nurses, social workers, and could guarantee the development of prevention and health promotion strategies more geared to the needs of the target group target studied, besides of follow-up and clarification of doubts.<sup>11</sup>

Collaborating with this argument, the Ministry of Health (MoH), through Ordinance 151/09, considered “the need to create alternatives for expanding access to the diagnosis of HIV infection, in compliance with the principles of equity and integrality of assistance, as well as the universality of access to health services of SUS”. For this purpose, correct information and preventive measures must be propagated to citizens.<sup>14, 20</sup>

For questions regarding the modes of transmission of the virus, it was found that medical students had a level of correctness ranging from 18.2 to 19.4 points, that is, an excellent level of knowledge. This situation can be justified by the fact that most of them have received guidance on care, means of contagion and treatment since school life, which made it possible - after entering university - to combine past information and new medical notions. Such results corroborate with the researches developed, where the media, the internet and the information provided by family members were the first sources of understanding on the subject by medical students before entering college.<sup>19</sup> Furthermore, advertising campaigns can be highlighted, and media influence as a tool for the dissemination of truthful information, and health services can take advantage of this medium to help raise public awareness.<sup>15, 21</sup>

Vaginal and anal sex and with multiple partners without using a condom, receiving contaminated blood transfusions, sharing needles with injecting drug users are highly likely means of contagion, recognized by approximately 96.41% of the interviewees. However, a high number of incorrect answers was identified regarding transmission through blood donation and “being born to a mother who has HIV”, a fact similar to that found in other studies.<sup>3,15, 22</sup>

The high rate (96.41%) of students reporting that being the child of a mother with HIV is likely to be transmitted should be analyzed carefully.<sup>3,15,21</sup> In Brazil, about 80% of infections in children are due to vertical transmission (VT), whether in the intrauterine period, in the intrapartum (at birth) or postpartum (in breastfeeding). In these cases, most mothers are unaware of positive serology, have not been subjected to HIV research tests, have not undergone adequate prenatal care or have no access to therapeutic prophylaxis. This reality is seen in developing countries, mainly. If the pregnant woman and her child have access to ARV - developed since the 1990s - the chances of HIV transmission are less than 1%. Therefore, VT is likely in cases of non-performance of therapy, while it is unlikely with adherence to ARV drugs, a situation that guarantees the right to maternity.<sup>2, 23</sup>

Blood donation still generates great doubts about the chances of contamination of several diseases, mainly in relation to HIV. This fact is extremely concerning, since it can generate resistance to donations in blood centers and in campaigns to raise awareness of their importance in saving lives. In addition, the strict protocol followed by blood collection centers should be considered, aiming at nullifying the chances of contamination, such as the recruitment of voluntary donors and with low risk of infection; conducting HIV tests (such as the ELISA test) and other blood-borne infections; training health professionals and regular supply of the necessary equipment for collection. There is also an anti-HIV test, which is extremely important

to identify this condition early and avoid situations of risk to patients as donors. Therefore, it is a highly praised method, with efficiency and without negative stigmas.<sup>3,15,22</sup>

Despite the students having a high degree of knowledge about HIV and AIDS, most of them (69.06%;  $p < 0.001$ ) declared that they were not prepared to attend a HIV-positive patient, which can be justified by the high need for biopsychosocial skills for its performance. Thus, the importance of a curriculum that is more focused on the psychic and emotional aspects of HIV is emphasized, in order to ensure professional practice and skills based on trust, security, respect and empathy at the time of service.<sup>12</sup> It should be emphasized that the chronic aspect of HIV demands a great responsibility for health professionals, needing mastery in communication to guarantee adherence to treatment, to allow the continuity of the exercise of citizenship and a great doctor-patient relationship.<sup>12,18,19,24</sup>

Therefore, it was observed that the subjective dimension of attitudes and risk perception must always be related to technical and scientific knowledge, in order to train professionals to assist, guide, and care for all patients who seek care in health care units.<sup>18</sup> Therefore, unethical and non-humanized situations can be avoided and real medicine can be carried out.

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Alyne Condurú dos Santos Cunha and Murilo Eduardo Soares Ribeiro contributed to the conception, design of the article, data analysis and writing of the article, in addition to the critical review of the content;

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Cláudia Marques Santa Rosa Malcher and Monaliza dos Santos Pessoa contributed to the planning and design of the article, review and final approval of the article;

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.