

Knowledge, risk perception and attitudes of Dentistry students with regard to HIV/AIDS

Conhecimento, percepção de risco e atitudes de acadêmicos de Odontologia sobre HIV/AIDS

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ABSTRACT

Objective

To assess the knowledge, perception of risk and attitudes of Dentistry students regarding HIV/AIDS.

Methods

A descriptive, observational, cross-sectional study was performed by applying a questionnaire containing 33 objective questions to students enrolled in the Dentistry course at Southwest Bahia State University, between the second and final years.

Results

The response rate was 74%, with an average overall score of 64.1% for the knowledge variable, considered to be good. The average overall score for risk perception was 61.7% (considered inadequate), borne out by a significant rate of accidents involving sharps (25%). An average overall score of 54.3% revealed negative attitudes, showing that some students feel apprehensive and unprepared to treat HIV+ patients.

Conclusion

In view of the fact that the attitude and risk perception variables studied showed results that fall short of expectations, even with a knowledge variable considered to be good, a greater articulation between theory and practice is suggested.

Indexing terms: HIV infections. Knowledge. Students, Dental.

RESUMO

Objetivo

Avaliar o conhecimento, percepção de risco e atitudes dos acadêmicos de um curso de graduação em Odontologia sobre HIV/AIDS.

Métodos

Foi realizado estudo descritivo observacional transversal, aplicando-se questionário com 33 questões objetivas aos alunos do segundo ao último ano do curso de Odontologia da Universidade Estadual do Sudoeste da Bahia.

Resultados

A taxa de resposta foi de 74%, com escore médio geral de 64,1% para a variável conhecimento, sendo considerado bom conhecimento. O escore médio geral de percepção de risco foi de 61,7% (percepção de risco inadequada), confirmado por considerável índice de acidentes com perfurocortantes (25%). O escore médio geral de 54,3% revelou atitude negativa, mostrando que alguns acadêmicos se sentem receosos e despreparados para atender um paciente HIV+.

Conclusão

Tendo em vista que as variáveis estudadas, atitudes e percepção de risco, evidenciaram resultados aquém do esperado, mesmo com um conhecimento considerado bom, sugere-se maior articulação entre teoria e prática.

Termos de indexação: Infecções por HIV. Conhecimento. Estudantes de odontologia;

INTRODUCTION

Faced with the high number of patients with HIV/AIDS, it has become necessary to adapt the attitudes of health professionals and students to reality¹⁻⁵. From 2012 to mid-2013, 35.3 million people worldwide were reported to be living with AIDS⁶, 718,000 alone in

Brazil. The highest detection rates were found in Brazil's Southern region, with a rate of 30.9 cases per 100,000 people; the lowest rates were found in the Northeastern region, with a rate of 14.8 cases per 100,000 people. However, in the last 10 years, there has been a 2% increase in Brazil's detection rate, with a 62.6% increase in the Northeastern region⁷.

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Controlling infectious diseases is an aspect that deserves close attention in dentistry, due to both the environment in which a dental surgeon works (the oral environment, with its numerous microorganisms) and to the wide range of sharp instruments and invasive procedures, exposing the dentist to various infectious/contagious diseases, such as AIDS and Hepatitis B and C, depending on factors including depth of the cut, the volume of potentially infectious fluid on dental instruments and the patient's viral load during seroconversion⁸⁻¹³.

Therefore it is essential to seek and constantly update knowledge on occupational diseases to which the dental professional may be exposed, routes of infection, modes of transmission, bio-security standards, sterilization and disinfection of the materials used, proper disposal of waste, respect for the environment and on post-exposure measures. In this way, a professional will be able to protect him/herself and his/her entire team, as well as the patients themselves¹⁴⁻¹⁵. Of equal importance is knowledge concerning the main oral manifestations of HIV-infected patients. Dental professionals have an important role in the early detection of the disease as these manifestations may be its first symptoms^{3,16}.

However, due to a lack of adequate knowledge, dental surgeons are routinely influenced by fear, prejudice, confusion and ambivalence concerning the proper conduct with regard to HIV+ patients and previous experiences with AIDS patients. Their fear may stem from having lost other patients to the disease, thus denying care to or referring HIV+ patients, transgressing the ethical principles that govern the profession^{3,15,17-18}.

It is during graduation course that students should acquire knowledge about HIV/AIDS and other infectious diseases and make a habit of adopting biosecurity measures in order to be aware of the best course of action to take after exposure to possible pathogens^{2,4,19}, thereby developing an understanding that all knowledge acquired will have repercussions on their attitudes and behavior in their daily professional practice of dentistry⁴. Therefore, it is important to study the current situation of university students and future professionals, in order to influence subsequent students and raise awareness in current students. The main objective of this study is to assess the levels of knowledge, risk perception and attitudes in Dentistry students at Southwest Bahia State University.

METHODS

This descriptive, observational, cross-sectional study was conducted among undergraduate dental students between December 2013 and March 2014, after approval by the institution's Research Ethics Committee (REC), under protocol 451.195. The data collection tool used was a structured questionnaire with 33 objective questions, which were formulated after reflecting on other similar-themed articles. The study made use of convenience samples, comprising students from the fourth semester (second year) up to the tenth semester (final year), when students are constantly involved with patient care and the dental clinic.

The questionnaire was divided into five parts:

1. demographic factors, including gender, semester (course year) and age;
2. seven questions involving attitudes with regard to the treatment of HIV+ patients, the legal and psychological aspects involved in treating these patients and compliance in treating them. Answers were assessed using a three-point Likert scale (agree, neutral and disagree) and given respective scores from 2 to 0 for attitudes which a professional should have, or, conversely, from 0 to 2 for negative attitudes. Values above 75%, between 50% and 75%, and below 50% were considered positive, indifferent/neutral and negative, respectively. The highest scores suggest attitudes that a professional should have in his/her clinical routine, the maximum value being 14 (7 x 2). Low scores may indicate intolerance and lack of theoretical/practical preparation when treating patients infected with the virus;
3. Fourteen questions regarding the epidemiology of sharps injuries and the post-accident measures to be taken;
4. Ten questions regarding students' risk perception concerning patient care, bio-security and prevention of cross infection. Answers to each item were similarly assessed using the three-point Likert scale. Higher scores indicate that the student has good perception with regard to the risks involved when treating any patient, whether infected with HIV or not, the maximum score being 20 (10 x 2). Lower scores suggest poor perception

- regarding these aspects, increasing the risk of occupational infections;
5. Six questions about the students' views regarding the academic knowledge they have acquired on aspects such as virology, use of Personal Protection Equipament, sterilization, AIDS, among others. This part also includes a question about the main cell types affected by the AIDS virus and a further 24 questions that assess the students' knowledge of the main clinical signs exhibited by HIV+ patients, routes of infection, preventive measures, treatment and oral manifestations. Answers on the knowledge that students obtained during the course were assessed using two options for each of the 24 questions mentioned, "correct" and "incorrect". Correct answers, whether true (16 questions) or false (8 questions) received a score of 2 points, with incorrect answers scoring 0 points. A student's total score is made up of the sum of the points assigned to each answer and may therefore vary between 0% (no correct answers) and 100% (all correct answers: $24 \times 2 = 48$). High scores suggest that students have sought and obtained knowledge about AIDS and all the aspects relating to its development. Low scores, on the other hand, reveal students with insufficient knowledge, who are insufficiently prepared to recognize and treat infected patients. Scores lower than 25%, between 25% and 50%, between 50% and 75%, and higher than 75% indicate what is considered to be weak, moderate, good and excellent knowledge, respectively.

RESULTS

Of the 135 students enrolled between the fourth and tenth semesters, 100 (74.07%) returned the questionnaires properly completed. The sample consisted mainly of female students (60%) with an average age of 22.9 years.

In relation to the attitude variable (Table 1), the overall percentage obtained, by means of the Likert scale, was 54.3%, considered negative, with differences between semesters, revealing higher scores for less advanced semesters, such as the fourth (57.1%). Regarding the question "Should there be some kind of specialized course

on theoretical and practical knowledge regarding care of HIV+ patients?", results were very low, with only 17% disagreeing with the statement.

Regarding the percentage of injuries to students, 25% reported having suffered injuries with sharps, with more occurrences in the final semesters: 36.4% in the seventh and 35.7% in the tenth, though not the ninth semester, in which no participating students reported having suffered injury. As for the causes of accidents and the subsequent measures taken, the highest respective percentages indicated improper handling of sharps (52%) and washing the area with soap and water (92%).

As for the students' risk perception variable (Table 2), the overall percentage was obtained in the same way as for the attitude variable, namely 61.7%, considered negative, with differences between semesters. The highest percentages were found in the more advanced semesters, with 68.9% for the eighth and 66.4% for the tenth semester. 81% of the students agreed with the statement "I consider all patients to be potentially infectious".

With regard to the students' self-assessments about the academic knowledge they had acquired, the "use of PPE" proposal showed the highest percentage for the "adequate" option, at 96%. In contrast, "measures to be taken after a sharps injury" showed the lowest percentage, 46%. As for the question concerning the main cell types affected with the occurrence of AIDS, 64% of the students checked T-lymphocytes, however 25% of the students from the ninth semester and 21.4% from the tenth did not know the correct answer.

In relation to the variable measuring the students' knowledge about AIDS patients (Table 3), the overall percentage was obtained from the sum of correct answers, 64.1%, considered good. There were differences between semesters, with higher scores found in the more advanced ones. The ninth and tenth semesters showed scores of 67.4% and 66.7%, respectively, with the lowest score, 51.8%, being found in the fourth semester. Regarding the clinical signs that can alert a dental surgeon as to a patient infected with HIV, the item with the lowest score was "sore throat", with 35% in agreement. As for the routes of infection in which HIV can be isolated, the highest percentage found was for "blood" (97%). With regard to general knowledge about HIV/AIDS, only 9% of students disagree with the statement "I must heighten caution with cross-infection control measures when treating AIDS patients". On the other hand, in relation to oral manifestations in HIV+ patients, only 32% agreed that "an increase in the prevalence of tooth decay occurs".

Table 1. Students' attitudes towards HIV+ patients. Jequié (BA), 2014.

Questions	Fourth semester (%)			Fifth semester (%)			Sixth semester (%)			Seventh semester (%)			Eighth semester (%)			Ninth semester (%)			Tenth semester (%)			Total (%)		
	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
Would you treat an HIV+ patient?	100	0.0	0.0	100	0.0	0.0	92.3	7.7	0.0	72.7	27.3	0.0	88.9	11.1	0.0	66.7	25.0	8.3	92.8	7.2	0.0	86.0	13.0	1.0
I am apprehensive about treating patients with HIV/AIDS	11.1	55.6	33.3	33.3	33.3	33.3	53.8	38.5	7.7	31.8	50.0	18.2	33.3	50.0	16.7	16.7	58.3	25.0	21.4	28.6	50.0	30.0	45.0	25.0
If I found out my patient was HIV+, I would cease treatment out of fear	0.0	22.2	77.8	0.0	16.7	83.3	15.4	15.4	69.2	18.2	27.3	54.5	5.6	50.0	44.4	8.3	25.0	66.7	7.1	7.1	85.7	9.0	25.0	66.0
I feel psychologically unprepared to treat patients with AIDS	22.2	22.2	55.6	16.6	41.7	41.7	30.8	23.1	46.1	18.2	45.4	36.4	16.7	50.0	33.3	25.0	16.7	58.3	7.1	35.7	57.1	19.0	36.0	45.0
My theoretical knowledge about AIDS is unsatisfactory, which is why I feel insecure about treating a patient with this condition	0.0	33.3	66.7	8.3	25.0	66.7	23.1	7.7	69.2	13.6	22.7	63.6	5.6	44.4	50.0	8.3	25.0	66.7	7.1	7.1	85.7	10.0	24.0	66.0
I have a professional obligation and moral responsibility to treat patients with AIDS	66.7	33.3	0.0	91.7	0.0	8.3	92.3	0.0	7.7	68.2	13.6	18.2	94.4	5.6	0.0	41.6	41.6	16.7	64.3	28.6	7.1	75.0	16.0	9.0
There should be some form of specialized course on the theoretical and practical knowledge regarding care of HIV+ patients	88.9	11.1	0.0	50.0	33.3	16.7	76.9	23.1	0.0	54.5	27.3	18.2	44.4	22.2	33.3	58.3	25.0	16.7	21.4	57.1	21.4	54.0	29.0	17.0

Note: A - agree; N - neutrae; D - disagree

Table 2. Risk perception in relation to patient care. Jequié (BA), 2014.

Questions	Fourth semester (%)			Fifth semester (%)			Sixth semester (%)			Seventh semester (%)			Eighth semester (%)			Ninth semester (%)			Tenth semester (%)			Total (%)		
	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D	A	N	D
I consider all patients to be potentially infectious	88.9	11.1	0.0	58.3	16.7	25.0	84.6	7.7	7.7	77.3	13.6	9.1	88.9	11.1	0.0	66.7	33.3	0.0	100	0.0	0.0	81.0	13.0	6.0
When using all types of PPE, I am safe enough to prevent infection	11.1	44.4	44.4	16.7	0.0	83.3	0.0	38.5	61.5	0.0	18.2	81.8	0.0	22.2	77.8	8.3	16.7	75.0	21.4	7.1	71.4	7.0	20.0	73.0
If I have AIDS, I must stop my professional activities	0.0	0.0	100	0.0	16.7	83.3	7.7	23.1	69.2	0.0	4.5	95.5	0.0	0.0	100	0.0	25.0	75.0	0.0	14.3	85.7	1.0	11.0	88.0
Currently, the methods used to sterilize and disinfect instruments used on HIV+ patients are completely efficient	44.4	44.4	11.1	66.7	25.0	8.3	53.8	38.5	7.7	36.4	40.9	22.7	83.3	5.6	11.1	75.0	25.0	0.0	57.1	28.6	14.3	59.0	29.0	12.0
My routine procedures expose me to a significant risk of infection	66.7	33.3	0.0	83.3	8.3	8.3	76.9	23.1	0.0	77.3	18.2	4.5	61.1	11.1	27.8	58.3	25.0	16.7	57.1	21.4	21.4	69.0	19.0	12.0
I am obliged to take an HIV test once a year	55.6	44.4	0.0	58.3	41.7	0.0	69.2	23.1	7.7	50.0	36.4	13.6	61.1	33.3	5.6	41.7	41.7	16.6	14.3	50.0	35.7	50.0	38.0	12.0
After graduation, I will be sufficiently competent to treat AIDS patients	55.6	33.3	11.1	58.3	16.7	25.0	30.7	38.5	30.7	27.2	36.4	36.4	50.0	38.9	11.1	16.6	41.7	41.7	57.1	21.4	21.4	41.0	33.0	26.0
HIV vaccines are extremely effective	0.0	33.3	66.7	0.0	8.3	91.7	7.7	33.3	69.2	0.0	18.2	81.8	0.0	16.7	83.3	0.0	8.3	91.7	0.0	28.6	71.4	1.0	19.0	80.0
I can safely treat HIV+ patients	55.6	33.3	11.1	66.7	33.3	0.0	53.8	38.5	7.7	77.3	18.2	4.5	94.4	5.6	0.0	75.0	25.0	0.0	71.4	28.6	0.0	73.0	24.0	3.0
I would not allow an HIV+ dentist to treat me	0.0	55.6	44.4	8.3	58.3	33.3	7.7	53.8	38.5	9.1	59.1	31.8	11.1	44.4	44.4	25.0	33.3	41.7	7.1	35.7	57.1	10.0	49.0	41.0

Note: A - agree; N - neutrae; D - disagree

Table 3. Knowledge about patients infected with HIV. Jequié (BA), 2014.

	Total (%)	
	Correct	Incorrect
<i>Clinical signs</i>		
Sore throat	35.0	65.0
Increase in body mass	85.0	15.0
Chronic fever	62.0	38.0
Generalized lymphadenopathy	74.0	26.0
Mucosal erythema and focal ulcerations	78.0	22.0
Oral candidiasis, shingles and/or hairy leukoplakia	82.0	18.0
<i>Routes of infection in which the virus can be isolated</i>		
	Correct	Incorrect
Saliva	69.0	31.0
Urine	66.0	34.0
Tears	77.0	23.0
Blood	97.0	3.0
Semen	92.0	8.0
Genital secretions	93.0	7.0
Breast milk	80.0	20.0
Injectable drugs	83.0	17.0
<i>General knowledge</i>		
	Correct	Incorrect
Control measures against Hepatitis B infection also provide protection against HIV/AIDS transmission.	62.0	38.0
I must heighten caution with cross-infection measures when treating AIDS patients.	9.0	91.0
Antiretroviral therapy completely cures an HIV+ individual.	80.0	20.0
Can I treat HIV/AIDS with antiviral drugs?	61.0	39.0
HIV carriers must be treated in specialized service.	37.0	63.0
<i>Oral manifestations</i>		
	Correct	Incorrect
Oral candidiasis and hairy leukoplakia are bad prognostic markers.	57.0	43.0
Angular cheilitis is a form of manifestation of Candida infection.	44.0	56.0
Linear gingival erythema is a distinctive periodontal manifestation of the disease.	35.0	65.0
An increase in the prevalence of tooth decay occurs.	32.0	68.0
Kaposi's sarcoma is one of the neoplasms strongly associated with the disease.	49.0	51.0

DISCUSSION

The knowledge a student acquires in his/her academic field can make him/her a professional who is conscious of his/her attitudes and who has greater awareness of the risks involved within the workplace. During the graduation course, teachers should encourage them to seek the most up-to-date knowledge possible on the infectious diseases to which a dental surgeon may be exposed. Furthermore, students should be psychologically prepared for treating people with infectious diseases and be stimulated to seek self confidence in any kind of treatment, treating all patients with respect.

As far as the findings related to the attitude variable are concerned, students showed negative attitudes. Other studies demonstrated the same results for both working professionals and students, who demonstrate fear and negative tendencies toward HIV+ patients, as well as occasional discrimination^{3-5,8-11,14-15,17-18,20}. What attracts particular attention in the findings of this study is the fact that students in semesters that have had little contact with the dental clinic, showed less apprehensive or fearful attitudes regarding the treatment of infected patients compared to students in more advanced semesters, of whom greater psychological preparation would be expected due to their greater practical experience. This

same fact is reported in some studies^{4,17} but differs from others¹⁸. The majority would treat patients infected with AIDS, however almost all of the students agreed that there should be some kind of specialized course on theoretical and practical knowledge regarding care of HIV+ patients. It is the responsibility of the university to transmit this kind of knowledge during routine clinical procedures, without requiring a separate course to this end.

Also, 25% of students reported suffering sharps injuries, the majority of them belonging to more advanced semesters, which is to be expected due to the higher number of practices. However, it would be unexpected based on the degree of preparedness of these students, as the major reasons for these accidents were the improper handling of instruments, the washing of materials in incorrect attire and haste in performing the treatment. This was also shown in the research conducted by Lima et al.², the only difference being the percentage of occupational accidents affecting dental students (59.5%). Likewise, other studies showed higher percentages^{9,15,21}, however yet others showed results inferior to those of the present study^{8,13}, with sharps injuries being the biggest culprits in occupational accidents in dentistry. As for post-accident measures, it may be inferred from this study that students have not been properly instructed or do not seek to apply the knowledge they have acquired, as only 12% filled in the biological accident notification forms and only 16% asked for the source-patient's serology. Other studies in the literature also revealed poor adherence to post-exposure protocols and unsatisfactory knowledge in this regard^{2,9,10,21-22}.

As for the risk perception variable, students also maintained a negative position. However, the more advanced semesters, as might be presumed, showed better risk perception than those less advanced, as students in the latter stages are just beginning to form their perceptions of risk. The same result has been described in other studies^{2,9-11,14-15,21-22}. In contrast, research performed by Jafari et al.²³ demonstrated that students in the final years of an Iranian university's dentistry course showed good risk perception regarding the prevention and transmission of HIV due to their constant contact with sick patients, since these students helped out in a care center for patients with diseases. These findings in Iran show the important need for continued education throughout a student's clinical training, thus preparing them to practice the profession.

The students' self-assessments regarding the academic knowledge they had acquired suggest that the majority believe they possess adequate knowledge

concerning cross infections and the use of PPE. However, a large portion of the sample opted for heightened caution when treating HIV+ patients, which was contradictory, as the majority of students answered that they consider all patients to be potentially infectious. As for the use of PPE, the majority of students reported having suffered injuries when washing instruments due to their being incorrectly attired. Students assessed themselves negatively as to knowledge of virology, aspects related to HIV/AIDS and measures to be taken after sharps injuries.

A correlation was found between what they thought about the academic knowledge they had acquired in respect of these three items and what they chose as correct in the survey questions. Many students revealed that they did not know the main cell type affected by HIV, that sore throat associated with other factors is a clinical sign of possible infection, that urine and saliva are not usual routes of infection in which the virus can be isolated and that an increase in the prevalence of tooth decay does indeed occur. Analyzing all the variations of the knowledge variable, most students demonstrated having a good knowledge of the aspects that involve HIV/AIDS, as observed in other studies^{5,19-20}. The more advanced semesters scored better, corroborating the findings of Brailo et al.¹⁸, in which, although general knowledge in all semesters was considered low, there was more progression in the final semesters. In the present study, this fact can be considered a positive factor, since a progression in the acquisition of knowledge over the semesters was found, even though the results, albeit considered good, were considered insufficient in preparing a professional for his/her work routine.

With regard to the relationship between knowledge and attitudes, studies similar to the present one can be found in which, although students exhibit a level of knowledge considered to be good, their attitudes and perceptions of risk do not bear this out, suggesting flaws in the relationship between theory and practice^{5,20}. On the other hand, several studies report knowledge of HIV/AIDS by students and dental surgeons as being unsatisfactory or poor^{3,9-12,15,18,22-24}.

We propose further research, in other institutions, on the same topics as the present study, in order to assess the knowledge acquired by students and whether it is enough to provide an awareness that can generate attitudes of ethical and legal responsibility, as well as improvements in the academic curriculum, which may include approaches involving precautionary standards, cross infections and

doctor-patient relationships in all matters associated with the clinic, demanding from students greater interrelation between theory and practice.

CONCLUSION

It may be concluded, with the completion of this study, that students do not harbour positive attitudes toward the care of patients with HIV/AIDS, which reveals a potential lack of preparation in the relationships between doctors and HIV+ patients. Risk perception is poor, which may possibly lead to a higher rate of sharps injuries, and students' knowledge on aspects involving HIV/AIDS is insufficient throughout the course. Thus, we propose that higher education institutions take the initiative to train professionals to be more aware of their ethical and legal responsibilities and obtain greater

practical knowledge concerning infection control and post-exposure prevention.

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Collaborators

VCS MAGALHÃES participated in study design, data collection, analysis and writing of the manuscript. DL OLIVEIRA participated in the conception of the study design and writing the manuscript. FO PRADO was responsible for supervision and coordination of concept and study design, data collection and analysis, writing and editing of the paper.

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