

ROMANIAN DENTAL STUDENT'S KNOWLEDGE TOWARD HIV/AIDS INFECTION

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ABSTRACT

The **aim** of the present study was to evaluate the knowledge of the students attending the Faculty of Dental Medicine in Iasi regarding the HIV/AIDS infection. **Material and method:** The cross-sectional study included 124 students from the 4th and 6th years who filled in a specially designed questionnaire consisting of 20 questions on two aspects: the first one refers to HIV transmission pathways and the risk of transmission in the dental office, and the second one refers to the oral lesions associated with this disease. The **results** demonstrate that some of the issues are correctly assimilated by the students of both years of study, as more than 80% of them marked the correct answer (concerning blood, sexual, maternal-fetal transmission routes, as well as the association between fungal infections, Kaposi's sarcoma and AIDS). However, there were questions with a very low correct response rate (below 50%), concerning the transmission via the saliva or via the contact of infected blood with the nasal, oral or ophthalmic mucosa, as well as the herpetic and cytomegalovirus-associated infections as oral lesions manifest in the HIV infected patient. Surprisingly, only 29.5% of the interviewed subjects knew the post-exposure prophylaxis method. In **conclusion**, the study underlines the need of introducing new programs and lectures on this topic, with an accent on the practical aspects specific to the dental office activity.

Key words: HIV/AIDS, dental students, knowledge, Iasi

INTRODUCTION

HIV infection is a major public health issue and the global impact remains very important. In 2016, the World Health Organization estimated a number of 36.7 million infected people, of which 2.1 million children under 15 (1,2).

In Romania, on average between 720 and 850 new cases of HIV infection per year are registered among 25- to 30-year-olds, with 692 cases in 2017, according to "Professor Dr. Matei Bals" Institute of Infectious Diseases in Bucharest (3).

Oral manifestations are frequently encountered in HIV-infected persons and hence the need for the dentists to know the most important oral signs of this infection. Early diagnosis of oral lesions, which can be the first indicator of HIV infection, plays an important role in recognizing the patients who are not known to be infected. At the same time, the occurrence of oral manifestations may indicate a dramatic decrease in patient's immunity or a significant increase in viral load, which are certain signs of an advanced infection (4,5).

Today, although more than 30 years have passed since the discovery of HIV, there are still many patients who become diagnosed only in the last phase of the infection, meaning AIDS. This finding can be explained not only by the patients' lack of knowledge, but especially by the ignorance of the doctors about the first symptoms of the disease. In addition, the fear of treating some patients is still an important subject and the doctors refusing to treat these patients under various unjustified reasons are not few (6, 7, 8).

In this sense, the aim of the present study is to assess the knowledge of the students in the final years of the Faculty of Dental Medicine in Iasi regarding the ways of transmission, the possibilities of preventing the infection transmission in the dental office and the oral manifestations of the HIV / AIDS infection.

MATERIAL AND METHODS

The study cross-sectional was conducted in 2017 on 124 students attending years 4th (68.55%) and 6th

(56.45%) of the Faculty of Dental Medicine in Iasi, 60 males (48%) and 64 females (52%).

For the study, a questionnaire was developed, consisting of 20 questions that highlight aspects related to two major aspects: the first one concerned the ways of transmission, the risk of infection in the dental office, and the second one focused on the knowledge about HIV/AIDS related illnesses and the procedure for accidental exposure to infected fluids. The possible answers were: yes, no, I do not know. Questionnaire response rate was 98% (124/126).

Data were analyzed with the SPSS 18.0 system for Windows (SPSS Inc. Chicago, IL, USA). Differences between groups were assessed by the Pearson chi-square test at the 0.05 level.

RESULTS

Student's responses on transmission pathways are presented in Table 1, separately on years of study.

The students' answers to the 10 questions highlight the following aspects:

- blood, maternal-fetal and sexual transmission are known by more than 90% of the students (questions 1,2,3);

- 88.1% of them are aware about the cross-infection risk (question 4) and 94.9% consider that there is a risk of contamination of medical staff (question 9);

- for 72% of students, transmission is not possible through integral teguments; no differences were found between the two groups: 71.7% for 4th year and 72.3% for 6th year, respectively (question 5);

- regarding other means of transmission, the situation is as follows: 27.3% of subjects agree that HIV is not transmitted by saliva (question 6), and

44% of them know that the infection can be transmitted by the contact of nasal, oral and ophthalmic mucosa with infected blood (question 7);

Table 1. Knowledge of potential routes of transmission

Potential routes of transmission	Answers			Correct answers according to the year of study	
	Yes (%)	No (%)	Don't know (%)	4 th year (%)	6 th year (%)
1. Blood transmission	99.6	0.4	-	98.7	98.3
2. Maternal-fetal transmission	95	3	2	95.2	94.9
3. Sexual transmission	100	-	-	100	100
4. Cross-infection in the dental office	88.1	4.3	7.6	87.7	88
5. Transmission through integral teguments	5	72	23	71.7	72.3
6. Saliva transmission	49	27.3	23.7	28.1	26.5
7. Transmission by contact of infected blood with nasal, oral or ophthalmic mucosa	44	20.2	35.8	43.9	44.1
8. Transmission by mosquito bites, use of public toilets and swimming pools	25.3	52.5	22.2	52.1	51.9
9. The risk of infection of medical staff in the dental office	94.9	2	3.1	94.4	94.5
10. Knowledge about post-exposure prophylaxis	29.5	70.3	0.2	21.6	27.9

- only 52.5% of the students knew that the virus was not transmitted through mosquito bites, the use of public toilets and swimming pools (question 8) ;

- a very high percentage of students (70.3%) do not know what the procedure is in case of accidental exposure to infected fluids.

Another issue addressed in the questionnaire was related to the students' knowledge of related oral lesions; the answers are presented in Table 2.

Students' responses concerning the oral manifestations in HIV-infected patients (Table 2) showed that more than 80% of them were aware of the risk of developing

associated infections such as *oral candidiasis* and *oral Kaposi's sarcoma*, and half of them -of *leukoplakia* lesions (questions 1,2,3). In contrast, only 12.7% of students (12.7% of the 4th year students and 14.9% of the 6th year, respectively) declared as associated infection the *Cytomegalovirus* infection.

Statistically significant differences ($p < 0.05$) between the answers given by the students of the 4th year and those of the 6th year were reported in questions 4, 5, 6 and 9; a higher percentage of the 6th year students than those of the 4th year proved

Table 2. Knowledge of oral lesions associated with HIV/AIDS

Oral lesions associated with HIV	Correct answers according to the year of study		p value
	4 th year (%)	6 th year (%)	
1. Oral candidiasis	88.5	89.1	0.733
2. Oral Kaposi's sarcoma	85.9	89.7	0.598
3. Oral leukoplakia	50.2	51.9	0.539
4. Herpes Simplex	22.1	43.2	0.03*
5. Herpes Zoster	25.7	42.6	0.04*
6. Gingivitis	31.4	58.1	0.03*
7. ANUG	21.7	25.9	0.854
8. Cytomegalovirus	12.7	14.9	0.664
9. Major aphthous	43.1	78.4	0.02*
10. Xerostomia	54.7	60.1	0.267

* $p < 0.05$

knowledge of other oral manifestations such as those determined by Herpes Simplex, Herpes Zoster, as well as gingivitis and mouth sores.

DISCUSSIONS

The answers given by students to the first questions that highlight the transmission pathway knowledge show that some knowledge of HIV transmission pathways is correctly assimilated, while other is either incorrect or still confused. A

high percentage of students, over 75%, have correct knowledge of blood, sexual and maternal-fetal way of transmission.

Regarding saliva as a mean of HIV transmission, 49% of students consider this a way of transmitting HIV. Data from the literature show that, although the saliva contains HIV, the virus is present in very small amounts, which is insufficient to transmit HIV infection (9, 10). In a similar study conducted in 2015 in Iraq, only 1.4% of students responded that saliva is a way of transmitting HIV infection (11). Similarly, it was observed that only 52.5% of students know that mosquito bites, the use of public toilets and public baths is not a way of transmitting the infection. In a study conducted in Sri Lanka and Kuwait, Arjuna N.B. Ellepola finds statistically significant differences between the two student groups, 88.1% of Sri Lankan students and 36.4% of Kuwait students who agree that these are not ways of transmitting the HIV virus (12).

Another question that shows a lack of knowledge in this field refers to the transmission by contact of infected blood with the nasal, oral or ophthalmic mucosa: 44% of students from the Faculty of Dental Medicine in Iasi are convinced that there is this risk of transmission, while 20.2% consider the opposite and 35.8% do not know the answer.

Another negative aspect refers to the knowledge about the procedure in case of accidental exposure to infected fluids, which only 29.5% of the students know, with no differences between the study years (21.6% for the 4th and 27.9% for the 6th year, respectively). The results of the

study underline the need of introducing in the university curricula new lectures emphasizing the practical aspects, very important, which the future specialists can face in the activity in the dental office.

The second part of the questionnaire aimed at assessing the knowledge about oral lesions associated with HIV infection.

Although no oral HIV-induced lesion has so far been reported, there is a wide variety of opportunistic infections with oral manifestations, caused by fungi, bacteria and other viruses. In severely immunocompromised patients, neoplasms may also occur (13).

Fungal infections are common in HIV-positive patients and they are signs of immunosuppression; the most common oral fungal infections observed in HIV-infected patients during primary infection or during AIDS are produced by *Candida* species, especially *Candida albicans*. Malignancies located in the maxillo-facial area, associated with HIV/AIDS infection, are Kaposi's sarcoma and non-Hodgkin's malignant lymphoma. Kaposi's sarcoma may be the main symptom of AIDS and therefore the dentist has the responsibility and obligation to identify the HIV-infected patient (14). In our study, we found that over 80% of students, both those in 4th year and those in 6th year, are familiar with the existence of these oral lesions. These results are similar to those of the study by Oliveira in Brazil, who found a percentage of 92.5% for Kaposi's sarcoma and 90.3% for oral candidiasis (15). In our study we also identified inaccurate responses, these being related to Cytomegalic virus infections, 14.9% correct responses for 6th year students, and periodontal

manifestations in HIV infection, such as gingivitis (58.1% for 6th year and 31.4 % for 4th year, respectively) and especially ANUG (21.7% for 4th year and 25.9% for 6th year, respectively). Compared with other studies, Aggarwal in India found a percentage of 93.8% of students who knew the association between HIV infection and ANUG (16).

Statistically significant differences ($p < 0.05$) were observed between the responses of students in the two years of study, on herpes infections: the percentage of students with correct answers is higher in 6th year than in 4th year. However, the percentage of those in 6th year does not exceed 40%, unlike the study by Rui Li in

China, who found 80% correct answers for Herpes simplex and 77.8% for Herpes Zoster (17).

CONCLUSIONS

This study highlights both the favorable aspects and the deficiencies that the students of the Faculty of Dental Medicine in Iasi have on the ways of transmission and the oral manifestations occurring in HIV/AIDS infected patients. This study, although having limitations on the reduced number of students who completed the questionnaire, has the merit of highlighting the existing gaps in the university curricula, requiring a review and emphasis on the practical side that the students will face in their future job.

REFERENCES

1. World Health Organization. The Global HIV/AIDS Epidemic, available at:
2. <https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics>, 2017, accessed 8 May 2018.
3. UNAIDS. Global AIDS update 2016. UNAIDS, 2016.
4. Institute of Infectious Diseases „Professor Dr. Matei Bals”. Evolutia infectiei HIV/SIDA in Romania la 31 decembrie 2017, Available at: http://cnlas.ro/com_jce/date-statistice.html, Accessed 4 may 2018.
5. Sharma G, Oberoi SS and Vohra P, Nagpal A. Oral manifestations of HIV / AIDS in Asia: Systematic review and future research guidelines. *Journal of Clinical and Experimental Dentistry*, 2015; 7(3):e419-27.
6. Hirata CHW. Oral manifestations in AIDS. *Brazilian Journal of Otorhinolaryngology*, 2015;81:120-3.
7. Iacob M.C. Apecte teoretice și practice privind discriminarea persoanelor infectate HIV/SIDA, *Analele științifice ale universității „A.I. Cuza” Iași, Tomul LIII, Științe Juridice*, 2007, 175-198.
8. Murariu A, Hanganu C, Families influences on adolescent’s oral health behaviour and sugar consumption, *Revista de cercetare si interventie sociala*, 2013, vol. 41, pp. 60-74.
9. Bobu L., Murariu A., Edlibi al Hage Walid, Iordache C., Oral and food hygiene habits of schoolchildren in Iasi, Romania, *Romanian Journal of Oral Rehabilitation*; 2017, 9(4): 51-57. HIV Transmission, Centers for Disease Control & Prevention, 2015, available at: <http://www.cdc.gov/hiv/basics/transmission.html>, accessed: 2 August 2018.
10. The Center for HIV Law and Policy, Routes, Risks and Realities of HIV Transmission and Care Current Scientific Knowledge and Medical Treatment, available: <https://www.hivlawandpolicy.org/sites/default/files/Routes%20Risks%20Realities.pdf>, accessed 2 August 2018.

11. Ammar N. Hamid Albujeer, Ahmad Reza Shamshiri, Abbas Taher. HIV/AIDS awareness among Iraqi medical and dental students, *Journal of International Society of Preventive and Community Dentistry*, 2015, nr 5, 272-376.
12. Arjuna N.B., Ellepola, Devipriya B. Sundaram, Sumedha Jayathilake, Bobby K. Joseph and Prem N. Sharma, Knowledge and attitudes about HIV/AIDS of dental students from Kuwait and Sri Lanka, *Journal of Dental Education*, 2011, 75 (4) 574-581.
13. Jabra-Rizk MA. Oral candidiasis: An opportunistic infection of AIDS. *Journal of AIDS and Clinical Research*, 2014, 5:i101 doi:10.4172/2155-6113.1000i101.
14. Hoffmann C, Sabranski M, Esser S. HIV-Associated Kaposi's Sarcoma, *Oncology Research and Treatment*, 2017;40:94-98.
15. E. R. Oliveira, S. Narendran, A. Falcão. Brazilian dental students' knowledge and attitudes towards HIV infection, *AIDS Care*, 2002, 14:4, 569-576.
16. Aggarwal A, Panat S.R. Knowledge, attitude, and behavior in managing patients with HIV/AIDS among a group of Indian dental student, *Journal of Dental Education*, 2013, 77 (9), 1209–1217.
17. Rui L.I., Wenhong D., Wei H., Yiming L. Chinese dental students' knowledge and attitudes toward HIV/AIDS, *Journal of Dental Sciences*, 2016, 11, 72-78.