Knowledge About Spread of HIV Infection Among Dentists Employed in Private and State Practice

Seila Cilovic-Lagarija¹, Sanjin Musa¹, Suada Brankovic², Mediha Selimovic-Dragas³

Institute for public health of FB&H, Sarajevo, Bosnia and Herzegovina¹

University of Health Studies in Sarajevo, Sarajevo, Bosnia and Herzegovina²

Department of Pedodontics, School of Dental Medicine University of Sarajevo, Sarajevo, Bosnia and Herzegovina³

Corresponding author address: Seila Cilovic-Lagarija, DMD. Phone: +38761291022, Institute for public health FB&H, M. Tita 9. E-mail: seila.cilovic@gmail.com, s.cilovic@zzjzfbih.ba

ABSTRACT

Introduction: Lack of knowledge of how an infection is spread and how to control the infection in dental medicine indicates that there is possibility of more spreading and that dental medicine requires more education about this problem. **Material and methods:** Research conducted in period of May and July as a study of random selection from 271 workers in dental medicine from Canton Sarajevo: 147 dentists employed in public health care and 124 employed in private sector. **Results:** Results show that dentists employed in private sector have more knowledge about HIV infection spread than those employed in public sector of dental medicine ($t=-2,82$, $p=0,005$). Research have shown that dentists who have less then 10 years of experience know more about HIV spread than dentist with more work experience ($F=6,377$, $p=0,000$). **Conclusion:** We think that is essential to work on expending knowledge on blood transmitted pathogens with all medical workers and especially those that are most exposed like dentists.

Key words: HIV infection, dentists, knowledge about HIV.

1. INTRODUCTION

In the last decades of twentieth century, there have been new challenges in infectious diseases spread especially with new viral pathogens including human immunodeficiency virus (HIV). HIV did not just bring medical challenges it also produced social - economic and political challenges in most part because HIV in last 25 years from 60 million infected 25 million have died (1).

First known case of spread of unknown virus are connected to unusual cases of *Pneumocystis carinii* pneumonia, are described in newsletter of *Morbidity and Mortality Weekly Report*, Center for Disease Control (CDC), 1981. Patients were young homosexuals in Los Angeles (2).

Two month later CDC reported that there is more than 100 patients that were diagnosed with *Pneumocystis carinii* or *Kaposi's sarcoma* and all infected were homosexuals. From all the registered cases at that time half of them died. Until November 1982 almost 600 cases were reported to the CDC with mortality at 41 %. Persons that were diagnosed year earlier mortality were 60 %. In that period of time symptoms of this infections had a two names AID (*acquired immunodeficiency disease*) or GRID (*gay-related immunodeficiency*) (3).

HIV is spread through blood, sperm, vaginal secretions and breast milk (if it is consumed in large amounts) (4).

Virus transfer can go vertically and horizontally. HIV spread through blood, donated organs, semen, vaginal secretions and through intercourse represents horizontal way of spread while transfer of virus from infected mother to the child while pregnant or through breast milk represents vertical way of spread (5).

Mouth is part of the body where 40 conditions and lesions appear that are connected to HIV infection and it is well known that large part of infected show symptoms on the head or on the neck (6).

According to the Skitarelic research around 40-70 % HIV infected are admitted because head or neck pathological changes (7) because of this dentist have an important role in early detection of HIV infected persons (6).

Dental Medicine in lot of cases includes contact with patients' blood and saliva. Doctors and students of Dental Medicine can be exposed to many pathogenic microorganisms from blood or saliva like HIV, Hepatitis B (HBV) and Hepatitis C (HCV) (8).

Lack of knowledge of HIV infection spread frequently represents in change of dental care treatment and mostly it is connected to stigmatizing attitudes. This leads to fear of infection and denial of dental care treatment. Discrimination towards HIV/AIDS infected persons is old as illness itself. In every coun-

try and in every social environment where infections are detected for the first time individuals that are HIV positive or are just suspected of being HIV positive are subject to negative reactions. Even in the health care where they should get necessary treatment, relations towards them is pretty much negative. Discriminating actions are shown in not respecting patient doctor confidentiality, delayed treatment or denial of basic care and hygiene (9).

Previous research has shown lack of knowledge with dentist about infection transfer and oral manifestations of infection. Boras and his associates are indicating a low level of knowledge of dentists from Zagreb and Split about HIV infection. Only 40 % of surveyed dentists have known that HIV is the cause of AIDS and that hairy leukoplakia lesion is indicative for HIV. In the same research 49 % of dentists were positive that coming into contact with HIV infected person's saliva would give them a chance of getting infected. This all indicates a need for more education of dentists and future dentists in HIV infection (6).

Next question that emerges is that are dentists educated and are they willing to treat HIV infected people. Results of Bennett and associates research from 1995 shows that 71 % from 671 surveyed dentists did not want to treat HIV infected persons. Most disturbing information from this research was that some dentists agreed that these kind of patients should be treated at special clinics (10).

Low level of knowledge about HIV infection leads to stigmatization and discrimination of infected patients.

Stigma and discrimination can harm infected individuals and sometimes have even worse effects than HIV itself. It results in being rejected from spouse and family, social isolation, losing job and property, kicked off from the school, denial of medical care, lack of care and support and even violence towards infected persons (11).

It also causes damage to the public health in their inability to detect and contain the infection. Negative effects of stigma and discrimination prevent potentially infected persons to get tested or to admit that there is possibility for the infection, or to admit that there is someone in the family that is HIV positive, it prevents people to seek help, support or treatment. Stigma and discrimination results in that infected persons deceive other individuals, thus not getting necessary treatment and in that way directly influencing widening of this social gap. This kind of atmosphere prevents HIV infected persons to have family, get a job, education and in general it decreases quality of their lifestyle (12).

This study describes the knowledge of HIV transmission among dentists in the Canton Sarajevo in the public and private sector, and by the length of employment. This information will be helpful to develop the training material.

2. METHODOLOGY

Research conducted in period of May and July 2012 as a study of cross-sectional study from 271 workers in dental medicine from Canton Sarajevo: 147 dentists employed in public health care and 124 employed in private sector.

Research included workers that are employed in dental health care from private and from public sector of the employment in Canton Sarajevo.

For the needs of research selection of stratification groups have been made containing workers from all the branches of dental medicine from private and public employment.

Instruments that were used in this research were standard survey questionnaires, prescribed by World Health Organization (13), modified for the needs of the research. Participation of people that work in health services was voluntarily, while the procedure of this survey ensured anonymity of the participants (participants filled out survey independently, and survey did not contain questions with personal data).

One of the requirements of this research was to get consent from all health institutions where survey was conducted. During the process consent was required from each individual separately. While in the private sector survey was conducted with doctor's approval and consent.

After receiving questionnaires from workers that were working in this project respondents answered and returned back in unmarked envelope. Anonymity for the participants of this survey was guaranteed by the fact that survey did not contain any question about personal information. All the questionnaires were taken in by the same person.

3. STATISTICAL ANALYSIS OF DATA

Results are shown in tables and graphically, descriptive statistics analysis was used to describe samples (demographic and employment characteristic, contact with HIV positive persons and education in this area) of respondents. Calculation included frequencies and percentages, arithmetic mean and standard deviations. Difference between two surveyed groups was calculated with: student t test, fisher's method, analysis of variance (ANOVA) and post-hoc analysis using Bonferroni test ANOVA and with Chi-square test. For the data processing and calculation of confidence intervals there are 95% use of available formulas and statistical program R.

4. RESULTS

Sociodemographic characteristics of respondents

In survey there were 271 dental workers participated. Among the responders 28%(76) were males and 72%(195) were females.

More than half of dentist that participated is employed in public health sector 54,2%(147), while 45,8%(124) is private sector.

Knowledge of respondents about the ways of HIV infection spread

Ways of HIV infection spread	Number of respondents/overall sample	% of correct answers
Semen	221/271	81,5
Blood	263/271	97,0
Vaginal secretions	204/271	75,3
Breast milk	136/271	50,2
Other body fluids that contain blood	205/270	75,9
Saliva	51/271	18,8
Sweat	65/271	24,0
Tears	65/271	24,0

Table 1. Knowledge of respondents about how HIV transmission, distribution of correct answers

Percentage of correct answers in some question in ways of HIV spread shows variations in knowledge with dentists. Largest number of correct answers had a questions concerning spread through blood 97% and through semen 81.5%. Percentage of correct answers is quite lower concerning the other methods of spread. Percentage

Profession	Number of respondents	Average of correct answers	Standard Deviation	95% CI	
				Lower limit	Higher limit
Dentists in public sector	147	4,9	2,3	4,6	5,3
Dentists in private sector	124	5,7	1,8	5,3	5,98

Table 2. Average of correct answers about the ways of HIV infection spread in patients in the private and public sector. $t=-2,82$; $p=0,005$

length employment in dental health care	number of respondents	Average of correct answers	Standard Deviation	95% CI	
				Lower limit	Higher limit
≤10	177	5,7	2,1	5,3	5,98
11-20	39	4,6	1,9	3,9	5,2
21-30	36	4,8	1,7	4,2	5,3
≥31	17	4,1	2,4	2,8	5,3
In total	269	5,3	2,1	5,0	5,5

Table 3. Average of correct answers on the method of spread of HIV, according to the length employment.. $F=6,377$ $p=0,000$

Ways of HIV infection spread	Public sector %	Private sector %	Statistical significance
Semen	73,5(108)	91,1(113)	$p=0,001^*$
Blood	96,6(142)	97,6(121)	$p=0,878$
Vaginal secretions	68,0(100)	83,9(104)	$p=0,003^*$
Breast Milk	45,6(67)	55,6(69)	$p=0,000^*$
Other body fluids that contain blood	74,0(108)	78,2(97)	$p=0,001^*$
Saliva	14,3(21)	24,2(30)	$p=0,000^*$
Sweat	19,0(28)	29,8(37)	$p=0,000^*$
Tears	18,4(27)	30,6(38)	$p=0,000^*$

Table 4. The percentage of correct answers on the method of HIV spread in private / public sector

about HIV spread through tears was 24.0% and through breast milk 50.2% and through saliva 18.8% of correct answers (Table 1).

Results show that dentists employed in private sector have more knowledge about HIV infection spread than those employed in public sector of dental medicine ($t=-2,82$, $p=0,005$). Average of correct answers from dentists in private sector is 5,7 (SD 2,3), while average number of correct answers in public sector is 4,9 (SD 1,8).

Analysis of variance (ANOVA) and post-hoc analysis using Bonferonni test were used to determine average of correct answers according to their employment in dental health care. Research have shown that dentists that have less then 10 years of experience know more about HIV spread than dentist with more work experience ($F=6,377$, $p=0,000$).

Table 4. shows percentage of correct answers of dentist that work in public and private sector about HIV spread, differences in the answers were shown by chi square test. Better knowledge has been shown by dentists in private sector in compared to those that work in public sector. Conducting this research about spread of HIV infection it has showed us that most of the answers were connected to the most common way of spread by blood or semen, while lower percentage of correct answers was in connection with others ways of spread.

5. DISCUSSION

By comparing the results of this study with "Research of HIV stigma and discrimination in medical health care in private and

public sector" we can conclude that there are no big deviations with percentage of the correct answers and so our results concur with the results of the study. Biggest number of respondents (97.1%) indicates the correct answer of HIV spread by blood, through semen (81.5%), other body fluids that contain blood (81.3%) and lowest number of correct answers was given in question concerning the ways of spread by saliva (11.0%), breast milk (51.2%), tears (16.4%) and sweat (17.3%) (14).

In study Vucicevic-Boras and associates "Knowledge of dentists about HIV infection" participated 135 dentists from Zagreb and Split, average age of 37, results that reflect level of knowledge about HIV infection have shown that 36.6% dentists know that infection can be spread by semen. Correct answer about spread through saliva gave 48.8% dentist. Comparing this study with study done in Canton Sarajevo we can see that higher level of knowledge have shown dentists in our research (6).

Similar results were shown by a study done in Korea, its goal was to asses knowledge and position of dentist towards HIV. If we compare this research with our study we can see that answers about spread through blood, semen and vaginal secretions have no significant deviations, while dentists in Korea study answered more correct questions concerning the spread through saliva, urine and tears (15).

Study that was done in Singapore showed very similar results. Answers concerning spread by blood or sexual contact are very similar to our results, while half of the dentist answered that HIV can be spread by kiss and 25% answered that spread can come from coughing or sneezing from infected person (16).

Similar research was done were students participated (17,18,19) have showed that they have better knowledge about HIV infection spread than dentists.

This benefits the idea of constant education which is important during the period of learning. Of course any additional education after the college is beneficial and increases the knowledge and concerning this study specially knowledge about HIV infection and AIDS.

The results of our study showed the need for more education. Fact that dentist employed in private sector know more about HIV then those in public ($p=0,001$) and also that dentists with less then ten years work experience also know more about HIV infection gives us the clear picture how valuable education is in this matter.

6. CONCLUSION

Research results have shown the importance of continuing education with dentists in private and public sector. It is essential to work on expending knowledge on blood transmitted pathogens with all medical workers and especially those that are most exposed like dentists.

Conflict of interest: NONE DECLARED.

REFERENCES

1. Kolarić B. Epidemiologija HIV-infekcije. Medicus. 2009; 18(1): 73 – 79.
2. Centers for Disease Control and Prevention. Pneumocystis Pneumonia—Los Angeles. MMWR Morb Mortal Wkly Rep 1981;30(21):1-3 [cited 5.9.2012.g.]. Available at URL: http://www.cdc.gov/mmwr/preview/mmwrhtml/june_5.htm
3. Engel J. The Epidemic - A Global history of AIDS. Harper Collins e-books, 2007.

4. Krkić-Dautović S. i sur. Infektologija. Sarajevo/Tuzla: Medicinski fakultet/Asocijacija infektologa u Bosni i Hercegovini, 2011.
5. Ropac D. i sur. Epidemiologija zaraznih bolesti. edicinska naklada, Zagreb, 2003.
6. Vučićević-Boras V, Cekić-Arambašin A, Alajbeg I. Znanje stomatologa o HIV infekciji. *Acta Stomatol Croat.* 2001; 35(1): 9-13.
7. Skitarelic N. Kliničke manifestacije infekcije uzrokovane virusom humane imunodeficijencije (HIV) u otorinolaringologiji. *Med Jad.* 2006; 36(3-4): 105-112.
8. Brailo V, Pelivan I, Škaričić J, Vuletić M, Dulčić N, Cerjan-Letica G. Treating Patients with HIV and Hepatitis B and C Infections: Croatian Dental Students' Knowledge, Attitudes, and Risk Perceptions. *J Dent Educ.* 2011; 75: 1115-1126.
9. Foreman M, Lyra P, Breinbauer C. Understanding and responding to HIV/AIDS-related stigma and discrimination in the health sector. Pan American Health Organization, Washington, 2003.
10. Bennett ME, Weyant RJ, Wallisch JM, Green G. A national survey: dentists' attitudes toward the treatment of HIV-positive patients. *J Am Dent Assoc.* 1995; 126: 509-514.
11. UNAIDS. 26th Meeting of the UNAIDS Programme Coordinating Board. Non-discrimination in HIV responses. UNAIDS, 2010.
12. Aggleton P, Wood K, Malcolm A, Parker R. HIV – Related Stigma, Discrimination and Human Rights Violations. Case studies of successful programmes. Geneva: UNAIDS; 2005.
13. Obermeyer CM, Bott S, Carrieri P, Parsons M, Pulerwitz J, Rutenberg N, Sarna A. HIV testing, treatment and prevention: generic tools for operational research. World Health Organization, Geneva, 2009.
14. Bojanić J, Stojisavljević S, Jokić I, Imamović E, Šiljak S, Jandrić LJ. Istraživanje o HIV stigmati i diskriminaciji među zdravstvenim radnicima u javnom i privatnom zdravstvenom sektoru u BiH. Institut za javno zdravstvo RS, Banja Luka, 2011.
15. Park JC, Choi SH, Kim YT, Kim SJ, Kang HJ, Lee JH, Shin SC, Cha YJ. Knowledge and attitudes of Korean dentists towards human immunodeficiency virus/acquired immune deficiency syndrome. *J Periodontal Implant Sci.* 2011; 41(1): 3-9.
16. Bishop GD, Oh HM, Swee HY. Attitudes and beliefs of Singapore health care professionals concerning HIV/ AIDS. *Singapore Med J.* 2000; 41(2): 55-63.
17. Elwalid FN, Astrom AN, David J, Ali RW. HIV and AIDS related knowledge, sources of information, and reported need for further education among dental students in Sudan: a cross sectional study. *BMC Public Health.* 2008; 14(8): 286.
18. Sadeghi M, Hakimi H. Iranian Dental Students' Knowledge of and Attitudes Towards HIV/AIDS Patients. *Journal of Dental Education.* 2009; 73(6): 740-745.
19. Ellepola ANB, Biol FI, Sundaram DB, Jayathilake S, Joseph BK, Sharma PN. Knowledge and Attitudes About HIV/AIDS of Dental Students from Kuwait and Sri Lanka. *Journal of Dental Education.* 2011; 75(4): 574-581.