ID Design Press, Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences. 2019 Apr 30; 7(8):1396-1400.
https://doi.org/10.3889/oamjms.2019.266
eISSN: 1857-9655
Public Health

The Link Between HIV Knowledge and Prophylaxis to Health Professionals

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Citation: Cake A, Mihani J, Stroni G, Stroni R, Avdaj A. The Link Between HIV Knowledge and Prophylaxis to Health Professionals. Open Access Maced J Med Sci. 2019 Apr 30; 7(8):1396-1400. https://doi.org/10.3889/oamjms.2019.266

Keywords: HIV transmission; Health professionals; Albania

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Received: 13-Feb-2019; **Revised:** 03-Apr-2019; **Accepted:** 04-Apr-2019; **Online first:** 29-Apr-2019

Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

Abstract

BACKGROUND: Healthcare workers have a high risk of professional exposure, especially in developing countries.

AIM: This paper aims to determine whether there is a link between knowledge and HIV prophylaxis on HIV prevention in Albanian healthcare system employees.

MATERIAL AND METHODS: This study was attended by professionals of the Albanian health care system who also attended second cycle studies at the Faculty of Medical Sciences (FMS) at the University of Medicine, Tirana. The study was conducted through a standard questionnaire with 24 questions, previously created by the Vojvodina Institute of Public Health in Serbia.

RESULTS: A group of 219 respondents participated in the study, of which 83.3% were women and 16.7% males. The risk of HIV transmission from syringe injection is > 75%, for 55.9% of the respondents. This result is statistically significant compared to other categories ($p < 0.01$). There is an increase in awareness of the use of gloves before manipulation and use of syringes, with increased work experience ($p = 0.01$). The use of specific containers for the elimination of syringes after manipulation is a more common practice by the most experienced professionals at work and results in a significant change ($p = 0.02$).

CONCLUSION: This study showed that there is not enough information from health professionals about potentially infectious fluids for HIV transmission. Younger professionals are less informed about HIV transmission and prophylaxis. These data indicate that there is a need for deepening of university curricula about the risks and exposure to biologically infectious fluids.

Introduction

During their daily professional practice, health professionals should avoid exposure to blood and other biological fluids containing viruses. This is a primary way to prevent the transmission of the immunodeficiency virus acquired (HIV) to health services [1]. Numerous studies have been carried out to determine what are the obstacles faced by health care professionals with regards to monitoring HIV patients. Some of these obstacles included: lack of knowledge about potentially infectious fluids, HIV virus carriers, negative feelings of professionals and response to HIV-infected patients, refusal or discrimination against these patients [2], [3], [4], [5], [6], [7], [8]. A study in nurses in Turkey has identified high-level negative attitudes and fears of HIV infection as a reason why they do not want to take care of HIV-infected patients [9]. Likewise, other studies have shown that there are barriers to healthcare systems in developing countries regarding medical care for HIV patients. Such practices are discriminatory and constitute a violation of the patient's right to medical care [10], [11], [12], [13], [14], [15], [16], [17].

This study aims to determine whether the

knowledge of Albanian healthcare professionals regarding HIV is at the right level. It also tries to determine whether there is a link between the level of knowledge and practical measures for the prophylaxis of HIV transmission to this category of professionals exposed to the virus, in their daily professional practice.

Material and Method

A cross-sectional study was conducted attended by Albanian healthcare professionals who also attend second cycle studies at the Faculty of Technical Medical Sciences (FSHMT) at the University of Medicine, Tirana, in March 2014. The study was conducted through a standard questionnaire with 24 questions, previously created by the Vojvodina Public Health Institute in Serbia [18].

The survey was voluntary and anonymous for students of the following branches: Nursing, Nursing-Midwife, Midwife and Laboratory Technician. The questionnaire was divided into three annexes: A-demographic and general data of respondents; B-specific questions regarding the ways of exposure to and transmission of HIV; C-Preventive measures against exposure. The information was recorded in the preformatted information collection database.

The data were analysed with the statistical package for Social Sciences (SPSS) version 20. To test the distribution of continuous variables, the Kolmogorov-Smirnov test was used. Descriptive statistics of continuous variables summarised as an average, and the standard deviation was presented. Categorical variables were presented as absolute frequencies and percentages. Chi-square and Fisher's exact tests were used to comparing the proportions between categorical variables and Pearson correlation to assess the relationship between work experience and the risk of HIV infection. The statistical tests were two-sided. Statistical significance was defined for $p \leq 0.05$.

Results

The study included 219 students practising the profession, of whom 83.3% were females and 16.7% males. The average age of the participants in the study was 30.5 ± 9.5 years. About the work profile, the nursing profession prevailed in most cases, 88.5%, followed by laboratory technicians (5.5%) and midwife professionals (4.6%).

Table 1: Job profile of participants in the survey

Work Profile	N	%
Nurse	193	88.5
Nurse – Midwife	2	0.9
Midwife	10	4.6
Student	1	0.5
Laboratory Technician	12	5.5

Participants with ≤ 5 working years prevail in the study with statistically significant changes as compared to the other categories ($p < 0.01$).

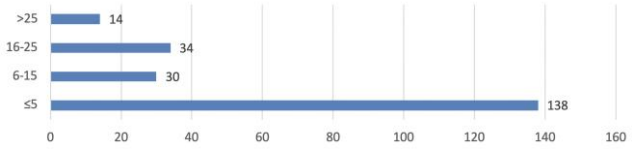

Figure 1: Categorization of respondents based on years of work

Most of the participants (55.9%) referred that transmission of the virus from an HIV-infected patient to a healthcare professional during a syringe injection accident was > 75%, with a significant change as compared to the other categories ($p < 0.01$). Whereas the remainder of the participants referred that the risk was: ≤ 25% (31.3%); 26-50% (7.1%); 51-75% (5.7%).

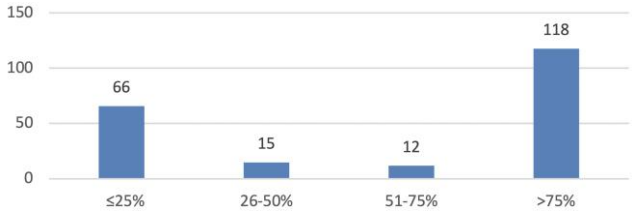

Figure 2: Number of respondents who answered the question: "To what extent can the virus of an HIV-infected patient be transmitted to a health professional during a syringe injection accident?"

Respondents were asked about which of the body fluids, besides blood can be considered as "more dangerous" for HIV transmission, they responded as per the following table.

Table 2: Number and percentage of respondents who determined biological fluids as dangerous for HIV transmission

Dangerous fluids	N	%
Breast milk	127	58.8
Saliva	55	25.5
Cerebrospinal fluid	44	20.4
Peritoneal fluid	20	9.3
Synovial fluid	15	6.9
Urine	11	5.1
Vomiting	10	4.6
Pleural fluid	4	1.9
Faeces	1	0.5
All together	7	3.2

In total, most participants referred as dangerous the breast milk (58.8%), saliva (25.5%) and cerebrospinal fluid (20.4%), with significant changes in other categories ($p < 0.01$).

Respondents were also asked about the implementation of procedures for HIV prophylaxis. Most participants correctly apply the procedures. This is also expressed as a sensible statistical significance

versus those who do not apply prophylactic measures. The exception is the use of protective glasses during manipulations with biological body fluids where most of the personnel (70%) refer not to use them.

Table 3: Prophylaxis measures

Procedures	Yes		No		P
	N	%	N	%	
Do you put the syringe cap back after its use?	171	85.9	28	14.1	< 0.01
Do you wear gloves before manipulating and using syringes?	167	83.5	33	16.5	< 0.01
Do you have plastic containers for throwing used syringes?	160	81.2	37	18.8	< 0.01
Do you use protective glasses during manipulation with body biological fluids?	54	30.0	126	70.0	< 0.01
If an injury has occurred to you, have you undergone examinations?	119	62.3	72	37.7	< 0.01
In the event of an accident, have you reported the case?	147	76.6	45	23.4	< 0.01

The implementation of prophylaxis procedures is related in some respects to the years of work of professionals. There is an increasing trend in wearing gloves before manipulation and use of syringes with increased work experience of the health professional (p = 0.01). Also, with increased work experience, there is a significant change in throwing used syringes in specific plastic containers (p = 0.02). Other procedures are not related to work experience.

Table 4: Procedures by years of work

Procedures		≤5y	6-15y	16-25y	> 25y	P
		n (%)	n (%)	n (%)	n (%)	
Do you put the syringe cap back after its use?	No	17 (12.3)	3 (10.0)	4 (11.8)	4 (28.6)	0.2
	Yes	107 (77.5)	27 (90.0)	27 (79.4)	7 (50.0)	
Do you wear gloves before manipulating and using syringes?	No	19 (13.8)	3 (10.0)	11 (32.4)	0	0.01
	Yes	104 (75.4)	26 (86.7)	21 (61.8)	13 (92.9)	
Do you have plastic containers for throwing used syringes?	No	31 (22.5)	1 (3.3)	4 (11.8)	1 (7.1)	0.02
	Yes	90 (65.2)	29 (96.7)	26 (76.5)	12 (85.7)	
Do you use protective glasses during manipulation with biological body fluids?	No	81 (58.7)	14 (46.7)	19 (55.9)	9 (64.3)	0.8
	Yes	31 (22.5)	12 (40.0)	9 (26.5)	2 (14.3)	
If an injury has occurred to you, have you undergone examinations?	No	43 (31.2)	9 (30.0)	11 (32.4)	7 (50.0)	0.6
	Yes	72 (52.2)	20 (66.7)	20 (58.8)	6 (42.9)	
In the event of an accident, have you reported the case?	No	24 (17.4)	5 (16.7)	10 (29.4)	5 (35.7)	0.3
	Yes	92 (66.7)	24 (80.0)	21 (61.8)	8 (57.1)	

Respondents were also asked about: "What are the first two actions to be done after syringe injection?" There is no significant difference between work experience and the first two actions to be done after syringe injection (p = 0.2.)

Table 5: What are the first two actions to be done after syringe injection?

	≤ 5y	6-15y	16-25y	> 25y
	n (%)	n (%)	n (%)	n (%)
Blood tests	4 (2.9)	2 (6.7)	4 (11.8)	1 (7.1)
Disinfection	63 (45.7)	14 (46.7)	23 (67.6)	12 (85.7)
Extrusion	19 (13.8)	12 (40.0)	19 (55.9)	4 (28.6)
Medication	6 (4.3)	2 (6.7)	0	1 (7.1)
You need to find the veins	1 (0.7)	0	0	0
Isolation	3 (2.2)	0	0	0
Contact with the doctor	6 (4.3)	0	1 (2.9)	0
Washing	15 (10.9)	0	4 (11.8)	4 (28.6)
Massage	2 (1.4)	0	0	0
Elisa test	0	0	0	2 (14.3)

Asked about how soon after syringe injection, with a high risk of transmission, should post-exposure prophylaxis (PPE) be initiated, respondents responded depending on years of work experience as shown in Table 6.

Table 6: How soon after syringe injection, with a high risk of transmission, should post-exposure prophylaxis (PPE) be initiated?

	≤ 5y	6-15y	16-25y	> 25y
	n (%)	n (%)	n (%)	n (%)
Urgent	62 (44.9)	16 (53.3)	20 (58.8)	5 (35.7)
5-30min	1 (0.7)	0	0	0
19 hours	1 (0.7)	0	0	0
24 first hours	5 (3.6)	1 (3.3)	2 (5.9)	0
Within 48 hours	0	0	2	2 (14.3)
After 72 hours	1 (0.7)	0	0	0
1-week	1 (0.7)	0	0	0
1-2 weeks	0	0	2 (5.9)	1 (7.1)
1-months	0	0	1 (2.9)	0
3 weeks-6 months	0	0	2 (5.9)	0
After 6 months	1 (0.7)	0	0	0
After doctor's diagnosis	0	1 (3.3)	0	1 (7.1)
After a long time	0	1 (3.3)	0	0
After HIV positive test	5 (3.6)	1 (3.3)	0	0
According to doctor prescription	0	0	1 (2.9)	0

In this case, it seems that there is enough knowledge about the time of PEP. There is no significant change according to work experience about the initiation of post-exposure prophylaxis (p = 0.1). It seems that even the staff with fewer years of work have a comparable knowledge with the experienced one.

Discussion

This study measured the knowledge of health professionals (HPs), who simultaneously attend their second cycle studies at the FSHMT, regarding prophylaxis, transmission ways, and post-exposure prophylaxis of HIV. Of the 219 health professionals surveyed, most were females, of the nursing profession and with less than five years of work experience. 55.9% of the respondents reported that transmission of the virus from an HIV-infected patient during a syringe injection accident to a health professional was > 75%. However, in prior studies of health professionals, the average HIV transmission risk after percutaneous exposure to HIV-infected blood is estimated to be approximately 0.3% (95% confidence interval [CI] = 0.2% to 0.5%) [19]. Regarding which of the body's fluids, besides the blood could be considered as "the most dangerous" for the transmission of HIV, they referred as dangerous fluids the breast milk (58.8%), saliva (25.5%) and cerebrospinal fluid (20.4%), Previous studies have determined that cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids are considered potentially infectious. However, the risk of HIV transmission from these fluids is unknown, and the potential risk to HPs from occupational exposure has not been assessed by epidemiological studies in healthcare facilities. Faeces, nasal secretions, saliva,

sweat, tears, urine, breast milk and vomiting are not considered potentially infectious if they do not contain blood. The risk of HIV transmission from these fluids and materials is extremely low [20], [21]. The answers to these two questions were used as indicators of knowledge on HIV transmission and showed insufficient knowledge of the respondents regarding the way the virus was transmitted. However, HP respondents reported the correct implementation of prophylaxis procedures. With the increase of the work experience of HPs, a growing trend of wearing gloves before manipulation and use of syringes and throwing of used syringes in specific plastic containers is noted. In many studies, various authors have determined that the implementation of some of these measures reduces the risk of HIV infection [22], [23]. In relation to the PEP, the two most important actions to be done according to the respondents are disinfection and extrusion and that they should be done as soon as possible. The interval within which the PPE should be started for optimal efficacy is not known, but animal studies have shown the importance of initiating PEP soon after exposure [24], [25], [26].

It has been 25 years since the diagnosis of the first HIV/AIDS case in Albania. Existing data from the studies conducted show that Albania does not have a generalised epidemic where Prevalence is P = 0.02 and Incidence I = 0.003. However, it has been noted a high incidence in recent years [27]. Despite the low number over the years, the increase in recent years has to be appreciated and for this reason, the awareness of the population, and in particular of the HPs, should be increased. A previous study conducted to HPs at the Mother Teresa University Hospital (QSUT), Tirana, Albania where the number of respondents was 443 in different job positions, concluded that the average occupational accidents rate in QSUT was 2,71, while in the European Union (EU) was 0.3 [28]. Also, there is no database in Albania to track professionals exposed to HIV-infected blood, to produce results regarding the development or not of HIV.

Despite the ongoing policies of the Ministry of Education and the Ministry of Health to improve university curricula and continuing education programs, there is a great need for new strategies to improve knowledge of the way HIV is transmitted and measures to be protected from potentially dangerous fluids as well, and PEP. The WHO states that blood infections among health care professionals appear in the form of professional exposure caused by percutaneous infections with 1000 HIV infections each year [29]. The current gravity of this problem is underestimated due to lack of information, underdeveloped monitoring systems or lack of data on the frequency of injuries in the HPs that work outside state public health institutions (long-term care, private offices and home health care). Similar studies have shown that there is a large number of HPs at risk of infection by HIV carriers. Thus these should be developed and evaluated with professionalism [30], [31], [32], [33].

References

1. Alert NI. Preventing needlestick injuries in health care settings. DHHS (NIOSH) Publication. 1999:2000-108.

2. Critchley SE, Srivastava PU, Campbell SR, Cardo DM, NaSH Surveillance Group. Postexposure prophylaxis use among healthcare workers who were exposed to HIV-negative source persons [Abstract P-S2-64]. In: Program and Abstracts of the 4th Decennial International Conference on Nosocomial and Healthcare-Associated Infections. Atlanta, GA: CDC in conjunction ëith the 10th Annual Meeting of SHEA, 2000:126.

3. CDC. Hepatitis B virus: a comprehensive strategy for eliminating transmission in the United States through universal childhood vaccination: recommendations of the Immunization Practices Advisory Committee (ACIP). MMËR. 1991; 40(No. RR-13).

4. CDC. Recommendations for the prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR. 1998; 47(No. RR-19).

5. CDC. Management of possible sexual, injecting-drug--use, or other nonoccupational exposure to HIV, including considerations related to antiretroviral therapy: Public Health Service statement. MMWR. 1998; 47(no. RR-17).

6. CDC. Recommendations of the U.S. Public Health Service Task Force on the use of zidovudine to reduce perinatal transmission of human immunodeficiency virus. MMËR. 1994; 43(No. RR-11).

7. CDC. Recommendations for prevention of HIV transmission in health-care settings. MMËR. 1987; 36(Suppl no. 2S).

8. CDC. Update: universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings. MMWR. 1988; 37:377-82; 387-8.

9. Bektaş HA, Kulakaç Ö. Knowledge and attitudes of nursing students toward patients living with HIV/AIDS (PLHIV): A Turkish perspective. AIDS care. 2007; 19(7):888-94. https://doi.org/10.1080/09540120701203352 PMid:17712692

10. Malawi Network of People Living with HIV and AIDS (MANET+). The People Living with HIV Stigma Index. 2012. [Last accessed on 2016 Oct 06]. Available from:http://www.stigmaindex.org/sites/default/files/newsattachments/Malawi .

11. Dlamini PS, Kohi TW, Uys LR, Phetlhu RD, Chirwa ML, Naidoo JR, et al. Verbal and physical abuse and neglect as manifestations of HIV/AIDS stigma in five African countries. Public Health Nurs. 2007; 24:389-99. https://doi.org/10.1111/j.1525-1446.2007.00649.x PMid:17714223

12. Kamen C, Arganbright J, Kienitz E, Weller M, Khaylis A, Shenkman T, et al. HIV-related stigma: Implications for symptoms of anxiety and depression among Malawian women. Afr J AIDS Res. 2015; 14:67-73. https://doi.org/10.2989/16085906.2015.1016987 PMid:25920985 PMCid:PMC4416225

13. MacPherson P, Webb EL, Choko AT, Desmond N, Chavula K, Napierala Mavedzenge S, et al. Stigmatising attitudes among people offered home-based HIV testing and counselling in Blantyre, Malawi: Construction and analysis of a stigma scale. PLoS One. 2011; 6:e26814. https://doi.org/10.1371/journal.pone.0026814

14. Holzemer WL, Uys LR, Chirwa ML, Greeff M, Makoae LN, Kohi TW, et al. Validation of the HIV/AIDS stigma instrument - PLWA (HASI-P) AIDS Care. 2007; 19:1002-12. https://doi.org/10.1080/09540120701245999

15. Donahue MC, Dube Q, Dow A, Umar E, Van Rie A. They have already thrown away their chicken: Barriers affecting participation by HIV-infected women in care and treatment programs for their infants in Blantyre, Malawi. AIDS Care. 2012; 24:1233-9. https://doi.org/10.1080/09540121.2012.656570 PMid:22348314 PMCid:PMC3395765

16. Earnshaw VA, Chaudoir SR. From conceptualizing to measuring HIV stigma: A review of HIV stigma mechanism measures. AIDS Behav. 2009; 13:1160-77. https://doi.org/10.1007/s10461-009-9593-3 PMid:19636699 PMCid:PMC4511707

17. Choy KK, Rene TJ, Khan SA. Beliefs and attitudes of medical students from public and private universities in Malaysia towards individuals with HIV/AIDS. The Scientific World Journal. 2013; 2013. https://doi.org/10.1155/2013/462826

18. Gajić Z, Rajčević S, Đurić P, Ilić S, Dugandžija T. Knowledge and Attitudes of Health Care Workers from the Primary Health Centre in Inđija, Serbia on Professional Exposures to Blood-borne Infections. Archives of Industrial Hygiene and Toxicology. 2013; 64(1):145-51. https://doi.org/10.2478/10004-1254-64-2013-2268 PMid:23585167

19. Bell DM. Occupational risk of human immunodeficiency virus infection in healthcare workers: an overview. Am J Med. 1997; 102(Suppl 5B):9-15. https://doi.org/10.1016/S0002-9343(97)89441-7

20. Richman KM, Rickman LS. The potential for transmission of human immunodeficiency virus through human bites. J Acquir Immune Defic Syndr. 1993; 6:402--6.

21. Vidmar L, Poljak M, Tomazic J, Seme K, Klavs I. Transmission of HIV-1 by human bite. Lancet .1996; 347:1762--3. https://doi.org/10.1016/S0140-6736(96)90838-7

22. Edmond M, Khakoo R, McTaggart B, Solomon R. Effect of bedside needle disposal units on needle recapping frequency and needlestick injury. Infect Control Hosp Epidemiol. 1988; 9:114-6. https://doi.org/10.2307/30144164 PMid:3351268

23. Makofsky D, Cone JE. Installing needle disposal boxes closer to the bedside reduce needle recapping rates in hospitals unit. Infect Control Hosp Epidemiol. 1993; 11:140-4. https://doi.org/10.2307/30148477

24. McCLURE HM, Anderson DC, Ansari AA, Fultz PN, Klumpp SA, Schinazi RF. Nonhuman Primate Models for Evaluation of AIDS Therapy. Ann N Y Acad Sci. 1990; 616:287-98. https://doi.org/10.1111/j.1749-6632.1990.tb17849.x PMid:2127664

25. Böttiger D, Johansson N-G, Samuelsson B, et al. Prevention of simian immunodeficiency virus, SIVsm, or HIV-2 infection in cynomolgus monkeys by pre- and postexposure administration of BEA-005. AIDS. 1997; 11:157-62. https://doi.org/10.1097/00002030-199702000-00004 PMid:9030361

26. Martin LN, Murphey-Corb M, Soike KF, Davison-Fairburn B, Baskin GB. Effects of initiation of 3'-azido,3'-deoxythymidine (zidovudine) treatment at different times after infection of rhesus monkeys with simian immunodeficiency virus. J Infect Dis. 1993; 168:825--35. https://doi.org/10.1093/infdis/168.4.825

27. HIV/AIDS in Albania. Institute of Public Health, 2013.

28. TAI-ALB-04: Tirana University Hospital Center (QSUT) Albania's Reform Program - Second Phase Evaluation (IPF TA) Western Balkans, EuropeAid / 128073 / C / SER / MULTI fast on the spot.

29. Pruss-Ustun A, Rapiti E, Hutin Y. Sharps Injuries: Global Burden of Disease from Sharps Injuries to Healthcare Workers. WHO Environmental Burden of Disease Series No. 3. Geneva: World Health Organization, 2003.

30. Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut". Percepcija rizika, stavova i znanja zdravstvenih radnika Srbije iz oblasti HIV-a I AIDS-a. II deo [Risk Perception, Attitudes and Knowledge of Serbian Health Workers from the Field of HIV and AIDS, in Serbian]. Beograd: IZJZS, 2006.

31. Anđelković V, Opačić G, Petrović N, Krtinić G, Jevtović Đ, Despotović M. Znanje, stavovi i ponašanje zdravstvenih radnika u oblasti HIV-a [Knowledge, Attitudes and Behaviour of Health Workers in the Field of HIV, in Serbian]. Beograd: Ministarstvo zdravlja Republije Srbije, 2010.

32. Hesse J, Adu-Aryee N, Entsua-Mensah K, Wu L. Knowledge, attitude and practice universal basic precautions by medical personnel in a teaching hospital. Ghana Med J. 2006; 40:61-4. https://doi.org/10.4314/gmj.v40i2.36019 PMid:17299568 PMCid:PMC1790843

33. Hentgen V, Jaureguiberry S, Ramiliarisoa A, Andrianantoandro V, Belec M. Knowledge, attitude and practices of health personnel with regard to HIV/AIDS in Tamatave (Madagascar). Bull Soc Pathol Exot. 2002; 95(2):103-8.

34. Maupome G, Acosta-Gio E, Borges-Yanez SA, Diez-de- Bonilla FJ. Survey on attitudes toward HIV-infected individuals and infection control practices among dentists in Mexico City. Am J Infect Control. 2000; 28:21-4. https://doi.org/10.1016/S0196-6553(00)90007-5