DENTAL PATIENTS’ KNOWLEDGE AND AWARENESS ABOUT TRANSMISSION WAYS OF ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

Kazanılmış İmmun Yetmezlik Sendromunun (AIDS) Bulaşım yolları Hakkında Diş Hekimliği Hastalarının Bilgi ve Farkındalıkları

Fatih CABBAR1, Berkay Tolga SÜER2, Gonca Duygu ÇAPAR3, Hazar YILDIZ1, Ceyda ÖZÇAKIR TOMRUK4

Received: 05/11/2015
Accepted: 09/12/2015

ABSTRACT

Purpose: The aim of this study was to evaluate the patients’ attitude, knowledge and awareness about HIV/AIDS. And secondary aim was to assess the need for further education about HIV/AIDS.

Materials and Methods: A questionnaire of 39 items was used to evaluate the patients’ knowledge. 301 patients were included (mean age 37.12 ± 7.85 years, 41.5% male, 58.5% female) in the study. Results were calculated by Students t-test, Chi-square test, Fisher’s exact test.

Results: Most of the patients had accurate knowledge about transmission ways, however transmission through breastfeeding (31.6%), public restrooms (44.9%), and insects and mosquitoes bite (47.2%) were less recognized. Saliva (32.2%), urine (36.9%), tears (58.5%), breast milk (30.6%), feces (36.9%) and cerebrospinal fluid (7.3%) were less recognized body fluids. Generally university and postgraduate educated patients had more accurate knowledge than other groups. 63.1% of patients thought that they need further education about HIV/AIDS.

Conclusion: The results of this study showed that the knowledge level about HIV/AIDS was almost agreeable. However, the patients had deficiencies with respect to their knowledge. Therefore the authors of this study believe that there must be education programs related to HIV/AIDS.

Keywords: HIV; AIDS; knowledge; awareness; questionnaire

ÖZ

Amaç: Bu çalışmanın amacı HIV/AIDS konusunda hastaların tutum, bilgi ve farkındalık seviyelerinin belirlenmesidir. Çalışmamızda aynı zamanda hastaların HIV/AIDS konusunda daha fazla eğitim ihtiyaç duyanların tespiti amaçlanmıştır.

Gereç ve Yöntem: 301 hastanın (ortalama yaş: 37.12 ± 7.85 yıld, %41.5 erkek ve %58.5 kadın) dahil edildiği bu çalışmada, hastaların bilgi ve farkındalığını değerlendirerek amacı ile, 39 maddeden oluşan bir anket kullanılmıştır. Çalışmanın sonuçlarının istatistiksel değerlendirilmesinde Student T-test, Ki kare test ve Fisher’s Exact testi kullanılmıştır.

Bulgular: Hastaların büyük çoğunluğunu HIV/AIDS’in bulaşma yollarında bilgi sahibi olduğu tespit edilmiştir. Parazitler ve böcek ve sivrisinek sıçraması (47.8%) gibi bulaşma yollarının hastalar tarafından daha az bilindiği tespit edilmiştir. Ancak, genelde üniversite ve lisansüstü eğitimli hastaların diğer gruplara göre daha doğru bilgi sahibi olduğu tespit edildi. Çalışmanın %63.1’i HIV/AIDS hakkında daha fazla eğitim ihtiyaç duyanların olduğunu bildirdi.

Sonuç: Bu çalışmanın sonuçları HIV/AIDS konusunda hastaların kabul edilir seviyede bilgi sahibi olduğunu göstermektedir. Hastaların %63.1’i’ni HIV/AIDS hakkında daha fazla eğitim ihtiyaç duyanlarını göstermektedir. Sonuç olarak, HIV/AIDS ile ilgili daha etkin eğitim programları oluşturulmasına yönelik gerekli bir d Yaşamın gerçekleşmesini sağlar. Bu çalışmanın sonuçları HIV/AIDS konusunda daha fazla eğitim ihtiyaç duyanların olduğunu göstermektedir.
Knowledge and awareness about AIDS

Introduction

Acquired Immune Deficiency Syndrome (AIDS) is one of the most challenging health problems that humanity has ever encountered and it develops by infection with human deficiency virus (HIV). The first deaths from HIV were reported in the early 1980s and there is no known cure is reported still (1). World Health Organization (WHO) declared that there were 35.3 million AIDS patient all over the world at 2012 (2). Saharan Africa, the global epicenter of the HIV/AIDS pandemic, still is home over two-thirds of HIV infected people, with high prevalence among adult ages 15-49 (2). It is estimated that number of patients with HIV/AIDS will increase enduringly because of adolescents taking high potential risk. At present, more than half of the new cases of HIV/AIDS infection in the world affect young people aged between 15 and 24 years, with an estimated 11.8 million people affected (3). Because HIV can be easily spread via direct contact with blood, the risk of being infected is very high in dental practice. In 1998, WHO declared that dentists should treat HIV/AIDS positive patients and to refuse of dental care of HIV/AIDS patient is unethical and also unacceptable for a dentist or a dental student (4). Knowledge about the course of a disease, its oral manifestation and way of transmission might influence the patients’ attitudes and willingness to be treated by HIV positive dentists. The aim of this study was to evaluate the patients’ attitude, knowledge and awareness about HIV/AIDS. And secondary aim was to assess the need for further education about HIV/AIDS.

Materials and Methods

Patients who were willing to participate to the study at the Department of Oral and Maxillofacial Surgery of Yeditepe University Faculty of Dentistry between January 2014 and January 2015 were included into this study. A standardized questionnaire with 39 questions about HIV/AIDS was developed by the authors to evaluate the patients’ level of knowledge (24 questions), sources of information (10 questions), patients’ attitude (2 questions) and need for further education (3 questions). Demographic data such as age, gender, marital status, level of education and economic conditions were also included. Monthly income of patients was divided into groups such as, low income (less than 1000 TL), moderate income (1000-2000 TL) and high income (more than 2000 TL). The level of knowledge questions has 3 answers as true, false and I don’t know. The question at the first part of level of knowledge section was is it true or false that transmission of HIV/AIDS can be by 1) transfusions of infected blood or blood clotting factors, 2) with mosquitoes or insects, 3) HIV/AIDS positive women to fetus, 4) breast-feeding, 5) shaking hands or hugging, 6) sharing of towel, glass, fork, knife and etc., 7) sharp instrument injury, sharing needles and/or syringes (primarily for drug injection) with someone who is infected, 8) dental equipment, 9) barber equipment, 10) unsafe sexual interaction, 11) public restrooms, 12) being in the same room with HIV/AIDS positive patient, 13) being in the same pool, Turkish bath or sauna with HIV/AIDS positive patient and 14) by sneezing or coughing, are considered as possible transmission routes. The second section of level of knowledge questions was is it true or false that HIV/AIDS can be transmitted by body fluids such as 1) Blood, 2) Saliva, 3) Urine, 4) Tear, 5) Sweat, 6) Semen, 7) Breast Milk, 8) Vaginal secretions, 9) Feces and 10) Cerebrospinal fluid. Sources of HIV/AIDS related information were evaluated using a question, “Where do you get information about HIV/AIDS? Answers were 1) media, 2) TV, 3) newspaper, 4) magazine, 5) radio, 6) student courses, 7) friends, 8) family/relatives, 9) brochures, 10) seminar. Two questions were focused on the attitudes of patients. The questions were ‘if you are a HIV/AIDS positive patient do you share it with your dentist’ and ‘do you still wanted to be treated with a HIV/AIDS positive dentist’. These were yes or no questions. The necessity for further education of the patients was evaluated by 3 questions. 1) Do you think your knowledge about HIV/AIDS is enough? 2) Do you think you got enough education about HIV/AIDS? 3) Do you want further education about HIV/AIDS? These were also yes or no questions.

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics 22 program (IBM SPSS, Turkey). Apart from descriptive statistical methods (mean, standard deviation and percentages), Chi square test and Continuity (Yates) Correction were used for the comparison of qualitative data. The level of significance was set at P values smaller than .05.
Results

A total of 301 patients (mean age years 37.12 ±7.85, 125 (41.5%) male and 176 (58.5%) female) participated in the study. The marital status, education and monthly income of the patients are listed in Table 1.

Table 1. Demographic data of the patients.

| Marital Status       | n  | %   |
|----------------------|----|-----|
| Single               | 121| 40.2|
| Married              | 180| 59.8|

| Education            | n  | %   |
|----------------------|----|-----|
| Elementary           | 66 | 21.9|
| Highschool           | 94 | 31.2|
| University           | 111| 36.9|
| Postgraduate         | 30 | 9.9 |

| Monthly Income       | n  | %   |
|----------------------|----|-----|
| 0-1000 TL            | 76 | 25.2|
| 1000-2000 TL         | 103| 34.2|
| >2000 TL             | 122| 40.5|

Most of the patients had accurate knowledge about transmission of HIV/AIDS through transfusions of infected blood or blood clotting factors (88.4%), shaking hands or hugging (78.1%), transmission by sharp instrument injury, sharing needles and/or syringes (86.7%), transmission by unsafe sexual intercourse (92.7), being in the same room with HIV/ AIDS positive patient (75.4%), by dental instrument (64.1%). However transmission through breastfeeding (31.6%), insects and mosquitos bite (47.2%) and public restrooms (44.9%) were less recognized (Table 2). While the knowledge of women were significantly higher for the transmission through dental equipment, the knowledge of men for the transmission through coughing and sneezing were significantly higher than women (p<0.05). There was no significant difference observed for the rest of the transmission ways. While there was no significant difference observed between education levels for answering correctly to mosquito and insect bite and breastfeeding (p>0.05), for the latter questions the university and postgraduate educated patients has significantly more correct answers than elementary school and high school graduates (p<0.05).

Answering correctly for transmission through shaking hands or hugging, being in the same pool, Turkish bath or sauna with HIV/AIDS positive patient and by sneezing or coughing were significantly lower for elementary school graduates than high school graduates (p<0.05).

Table 2. Responses of dental patients to questions about transmission routes of HIV/AIDS.

|                        | n  | %   |
|------------------------|----|-----|
| Transfusions of infected blood or blood clotting factors |    |     |
| True                   | 266| 88.4|
| False                  | 6  | 2.0 |
| I don’t know           | 29 | 9.6 |

| With mosquitoes or insects |    |     |
| True                      | 75 | 24.9|
| False                     | 142| 47.2|
| I don’t know              | 84 | 27.9|

| HIV/AIDS positive women to fetus |    |     |
| True                      | 167| 55.5|
| False                     | 31 | 10.3|
| I don’t know              | 103| 34.2|

| Breast-feeding |    |     |
| True          | 95 | 31.6|
| False         | 91 | 30.2|
| I don’t know  | 115| 38.2|

| Shaking hands or hugging |    |     |
| True                    | 19 | 6.3 |
| False                   | 235| 78.1|
| I don’t know            | 47 | 15.6|

| Sharing of towel, glass, fork, knife and etc. |    |     |
| True                        | 71 | 23.6|
| False                       | 165| 54.8|
| I don’t know                | 65 | 21.6|

| Sharp instrument injury, sharing needles and/or syringes (primarily for drug injection) with someone who is infected |    |     |
| True                                          | 261| 86.7|
| False                                         | 13 | 4.3 |
| I don’t know                                  | 27 | 9.0 |

| Dental equipment |    |     |
| True             | 193| 64.1|
| False            | 35 | 11.6|
| I don’t know     | 73 | 24.3|

| Barber equipment |    |     |
| True             | 161| 53.5|
| False            | 72 | 23.9|
| I don’t know     | 68 | 22.6|

| Unsafe sexual interaction |    |     |
| False                     | 4  | 1.3 |
| I don’t know              | 18 | 6.0 |

| Public restrooms         |    |     |
| True                     | 64 | 21.3|
| False                    | 135| 44.9|
| I don’t know             | 102| 33.9|

| Being in the same room with HIV/AIDS positive patient |    |     |
| True                                            | 21 | 7.0 |
| False                                           | 227| 75.4|
| I don’t know                                    | 53 | 17.6|

| Being in the same pool, Turkish bath or sauna with HIV/AIDS positive patient |    |     |
| True                                         | 51 | 16.9|
| False                                        | 154| 51.2|
| I don’t know                                 | 96 | 31.9|

| By sneezing or coughing |    |     |
| True                   | 46 | 15.3|
| False                  | 179| 59.5|
| I don’t know           | 76 | 25.2|
Patients who had high and moderate income gave significantly more correct answers for blood or blood clotting factors, hugging and handshaking, sharp instrument injury, sharing needles and/or syringes and dental equipment (p<0.05). Patients who had high income gave significantly more correct answers for barber equipment, being in the same room with HIV/AIDS positive patient, being in the same pool, Turkish bath or sauna with HIV/AIDS positive patient, coughing and sneezing (p<0.05). Patients who had high income gave significantly more correct answers for barber equipment, being in the same pool, Turkish bath or sauna with HIV/AIDS positive patient, coughing and sneezing (p<0.05). Patients who had high income gave significantly more correct answers for barber equipment (p<0.05). There wasn’t any statistically significant difference observed for breastfeeding (p>0.05).

Most of the patients answered correctly blood (89.4%), semen (72.8%) and vaginal fluid (71.1%) as body fluid that may transmit HIV/AIDS. However correct answers for saliva were 32.2%, urine 36.9%, tears 58.5%, sweat 54.5%, breast milk 30.6%, feces 36.9% and only 7.3% for cerebrospinal fluid (Table 3). For the body fluids, male participants gave significantly more correct answers for feces (p<0.05). But there were no significant difference observed between women and men for body fluids. While there was no significant difference observed between education levels for answering correctly to breast milk, semen and vaginal secretions as body fluid for HIV/AIDS transmission (p>0.05), for the latter questions except cerebrospinal fluid the university and postgraduate educated patients had significantly more correct answers than elementary school and high school graduates (p<0.05). Answering correctly for transmission fluid as tears, sweat and feces were significantly lower for elementary school graduates than high school graduates (p<0.05).

For cerebrospinal fluid high school graduates answers were found significantly less correct than elementary graduates (p=0.005). Patients who has high and moderate income gave significantly more correct answers for blood, urine, tears and semen as a body fluid containing HIV than patients who has low income (p<0.05). Patients who had high income gave significantly more correct answers for sweat than other patients (p<0.05). Patients who had high income gave significantly more correct answers for saliva as a body fluid containing HIV/AIDS than patients who has low income (p<0.05). There were no statistically difference observed for breastfeeding, vaginal fluid, cerebrospinal fluid and feces between groups (p>0.05).

Table 3. Responses of dental patients to questions about body fluids that carry HIV.

| Body Fluid  | True  | False | I don’t know |
|------------|-------|-------|--------------|
| Blood      | 269   | 3     | 29           |
| Saliva     | 75    | 97    | 129          |
| Urine      | 55    | 111   | 135          |
| Tears      | 14    | 176   | 111          |
| Sweat      | 16    | 164   | 121          |
| Breast-milk| 92    | 85    | 124          |
| Semen      | 219   | 14    | 68           |
| Vaginal fluid | 214   | 18    | 69           |
| Cerebrospinal fluid | 22    | 38    | 241          |
| Feces      | 19    | 111   | 171          |

Most common sources of information were seminar and symposiums (81.1%), family (79.7%), radio (78.7%), student classes (77.4), friends (67.8%), and brochure (64.5%). Only TV was significantly higher for men than women as a source of information (p<0.05). Elementary and high school graduates used
media as a source of information significantly more than university and postgraduate educated patients (p=0.001). Elementary school graduates used magazines as a source of information significantly more than other patients (p=0.024). Elementary and high school graduates used student classes as a source of information significantly more than university (p=0.005).

Elementary school graduates used brochures as a source of information significantly more than high school, university and postgraduate patients (p=0.001), and high school graduates used brochures as a source of information significantly more than university and postgraduate patients (p=0.001). There wasn’t any statistically significant difference observed between other parameters and education levels. Patients who had low and moderate income answered media and newspaper as a source of information significantly more than patients who had high income (p<0.05). Patients who had low income answered TV as a source of information significantly more than patients who has high income (p<0.05). There was no significant difference observed for the rest of sources of information between groups (p>0.05). While 93.7% of the patients shared their status of being HIV/AIDS with dentists, only 62.8% accepted to be treated by a HIV/AIDS positive dentist (Table 4). Male patients had significantly more tolerance for HIV/AIDS positive dentist than female patients (p=0.021).

University graduates accepted to be treated by a HIV/AIDS positive dentist significantly more than other education levels (p<0.05). High school graduates accepted to be treated by a HIV/AIDS positive dentist significantly more than elementary school graduates (p=0.021). Patients who had high income gave yes answer to ‘if you are a HIV/AIDS positive patient do you share it with your dentist’ than other groups (p<0.05).

Most of the patients (71.4%) thought that their knowledge was not enough and 75.4% of them thought that their education level about HIV/AIDS was not enough. 63.1% of patients thought that they need further education about HIV/AIDS (Table 5, Table 6). Male patients were significantly more confident about their knowledge about HIV/AIDS than female patients (p=0.034). Significantly more of high school graduates thought they do not need further education than other education levels (p<0.05). There was no statistically difference observed between the income groups for further education questions (p>0.05).

Table 4. Responses of dental patients to questions about their attitudes toward HIV/AIDS.

| n  | %  |
|----|----|
| If you are a HIV/AIDS positive patient do you share it with your dentist | 282 | 93.7 |
| Do you still wanted to be treated with a HIV/AIDS positive dentist | 189 | 62.8 |

Discussion

Although the number of HIV/AIDS patients increases day-by-day, people with HIV/AIDS are now living longer than before due to advances in treatment of HIV/AIDS infection (5, 6). When developing HIV/AIDS prevention interventions and clinical strategies, it is imperative to assess knowledge and knowledge change related to HIV/AIDS and HIV/AIDS risk-related behaviors, and as such, knowledge measures are used extensively (7). Dental patients should improve their knowledge about the disease course due to risk of transmission through dental equipment.

The study population consisted of patients presented to university dental clinics. We also aimed to determine the need for additional education about HIV/AIDS. Female predominance observed in the present study was similar to the findings stated by others (8, 9).
Knowledge and awareness about AIDS

Table 6. Relation of patient’ attitudes and further education questions with education status of the patients

| Education Status | Elementary | Highschool | University | Postgraduate | p     |
|------------------|------------|------------|------------|--------------|-------|
| If you are a HIV/AIDS positive patient do you share it with your dentist? | 60 (%90,9) | 86 (%91,5) | 106 (%95,5) | 30 (%100) | 0,234 |
| Do you still wanted to be treated with a HIV/AIDS positive dentist? | 33 (%50) | 64 (%68,1) | 78 (%70,3) | 14 (%46,7) | 0,008** |
| Do you think your knowledge about HIV/AIDS is enough? | 11 (%16,7) | 24 (%25,5) | 28 (%25,2) | 12 (%40) | 0,108 |
| Do you think you got enough education about HIV/AIDS? | 9 (%13,6) | 22 (%23,4) | 24 (%21,6) | 9 (%30) | 0,269 |
| Do you want further education about HIV/AIDS? | 38 (%57,6) | 51 (%54,3) | 78 (%70,3) | 23 (%76,7) | 0,031* |

Preconception on HIV/AIDS causes a serious barrier to effectively fight with the HIV/AIDS. There are various reasons for this preconception but the most important could be inexact information about the transmission routes of HIV/AIDS (10). Patients are at risk because of contamination with blood and saliva while having dental treatments. Therefore they should have sufficient information about HIV/AIDS, barrier techniques, sterilization procedures and cross-infections. The results of this study showed that although most of the patients had accurate knowledge about transmission ways of HIV/AIDS, breastfeeding, insect and mosquito bite and public restrooms are less recognized. The findings of this study showed that the patients thought direct contact with blood, semen and vaginal fluid to be more infective than saliva. 24.9% of the patients thought that saliva could be a body fluid for spread of the HIV/AIDS, which is consistent with the findings of other studies (8, 10, 11).

But the transmission through saliva in the dental environment has not yet been declared (11, 12). Similar studies demonstrated that inhalation of aerosol containing saliva and blood to be less infective than direct contact with blood and saliva of HIV/AIDS positive patients (13, 14). Moreover, in another study, compared dental students’ knowledge of two different universities, revealed that transmission of HIV/AIDS by blood or saliva contaminated hand pieces were less recognized (14). Although it cannot be completely ignored, this may be explained with the reports that shows HIV/AIDS transmission through this way are uncommon (11) The most of the patients had adequate knowledge of transmission through blood or blood clotting factors (88.4%). According to our data for most of the transmission ways and body fluids that carry HIV/AIDS, university and postgraduate educated patients had significantly more accurate knowledge than other patients. There was also a tendency with the increase of monthly income and accuracy of the questions. But it is most likely a result of education levels. Because, generally the education level increase, the income increase. The present findings suggested that as the level of educational year increased, knowledge about oral manifestations of HIV/AIDS increased as well.

In a study by Günbatan et al. (10) main sources of information were students’ courses (76.9%), media (72%) and TV (58.4%), respectively. In the present study the most popular information sources were seminar and symposiums (81.1%), family (79.7%), radio (78.7%) and students’ courses (77.4%), TV and media were only 26.9% and 50.8% respectively. In a study conducted by Ajavi and Ajavi, the main sources of information were health workers and textbooks, whereas in another study by Grover, electronic media was the main resource (8, 13).

For high school and elementary school graduates high percentage of media, magazine and brochures as resources of information does not mean to be improved their knowledge while the quality of sources is questionable. Interestingly TV is the main source of information for men, while opposite was expected. While most of the patients (93.7%) would share their status of being HIV/AIDS with dentists, only (62.8%) wouldn’t mind to be treated by a HIV/AIDS positive dentist. This is probably because of the fear of getting infected. One of the most important reasons for fear in oral health care for patients was...
the overrating of transmission risk of HIV/AIDS infection (15). Believing that mosquito/insect biting, bathing in public bathhouse, eating with HIV/AIDS infectors can get HIV/AIDS infection make some of the floating population discriminate to HIV/AIDS patients and fear about HIV/AIDS (16). These fears may cause a resistance to handle the treatment from HIV/AIDS positive dentist (17). Studies have shown that adequate knowledge and positive attitude are the major criteria for handling HIV/AIDS positive people and as the knowledge increases the willingness to treat and to be treated by HIV/AIDS patients increase (4, 5, 17).

**Conclusion**

In our study while university graduates are significantly wouldn’t mind HIV/AIDS positive dentist, as a controversy, only 46.7% of the highest level of education group as postgraduate educated patients accepted to be treated by a HIV/AIDS positive dentist. But 76.7% of them requested more education about HIV/AIDS, which was the highest percentage between the education levels. This is most likely to be due to the selected patients lack of knowledge about HIV/AIDS than education status. Although it is not significant, the high-income group has also the highest percentage for sharing HIV/AIDS with dentist and accepts dental treatment from a HIV/AIDS positive dentist.

In the present study, 71.4% of the participants confirmed that their knowledge and about HIV/AIDS was not enough and 63.1% need further education. Patients’ lack of knowledge about management of HIV/AIDS would have led to decrease self-confidence towards HIV/AIDS dentist. The results of this study showed that the knowledge level about HIV/AIDS was almost agreeable. However, the patients had deficiencies with respect to their knowledge concerning some crucial parts of the control and prevention of HIV/AIDS infection. It is necessary that patients be well informed about these infectious diseases and should develop necessary safe practical skills and positive attitude towards HIV/AIDS positive people.

Moreover, our findings suggested that there must be education programs related to HIV/AIDS, which are carefully reviewed and improved for community to improve their awareness to prevent injuries and to assess the knowledge of universal precaution and risk perception about these infections.

**Source of funding**

None declared

**Conflict of interest**

None declared

**References**

1. Green, C.J., 2007. HIV infection and AIDS, In: Monahan, F.D., Sands, J.K., Neighbors, M., Marek, J.F., Green, C.J. (Eds.), Phipps’ Medical–Surgical Nursing: Health and Illness Perspectives, 8th ed. Mosby, St. Louis, Missouri, USA.
2. UNAIDS report on the global AIDS epidemic, 2013. At: http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/epidemiology/2013/gr2013/UNAIDS_Global_Report_2013_en.pdf
3. UNICEF–UNAIDS. Young people and HIV/AIDS. Opportunity in crisis. 2002, 51.
4. Oliveira ER, Narendran S, Falcao A. Brazilian dental students’ knowledge and attitudes towards HIV infection. AIDS Care 2002;14(4):569-576.
5. Aggarwal A, Panat SR. Knowledge, attitude, and behavior in managing patients with HIV/AIDS among a group of indian dental students. J Dent Educ 2013;77(9):1209-1217.
6. Cohen LA, Romberg E, Grace EG, Barnes DM. Attitudes of advanced dental education students toward individuals with AIDS. J Dent Educ 2005;69(8):896-900.
7. Fisher JD, Fisher WA. Changing AIDS-risk behavior. Psychol Bull 1992;111(3):455-474.
8. Grover N, Prakash A, Singh S, Singh N, Singh P, Nazeer J. Attitude and knowledge of dental students of national capital region regarding HIV and AIDS. J Oral Maxillofac Pathol 2014;18(1):9-13.
9. Sadeghi M, Hakimi H. Iranian dental students’ knowledge of and attitudes towards HIV/AIDS patients. J Dent Educ 2009;73(6):740-745.
10. Günbatan M TB, Özçakır Tomruk C, Duygu G. HIV/AIDS awareness, knowledge and attitudes of dental students in yeditepe university. Oral Disease 2014;20:13.
11. AS. A. Knowledge and attitude of male dental students toward HIV/AIDS in king khalid university, saudi arabia. . International Journal of Public Health and Epidemiology 2012;1(1):1-9.
12. Borsum KM, Gjermo PE. Relationship between
knowledge and attitudes regarding HIV/AIDS among dental school employees and students. Eur J Dent Educ 2004;8(3):105-110.

13. Ajayi YO, Ajayi EO. Dental students’ knowledge of human immunodeficiency virus. J Dent 2008;36(5):374-378.

14. Ellepola AN, Sundaram DB, Jayathilake S, Joseph BK, Sharma PN. Knowledge and attitudes about HIV/AIDS of dental students from kuwait and sri lanka. J Dent Educ 2011;75(4):574-581.

15. Hu SW, Lai HR, Liao PH. Comparing dental students’ knowledge of and attitudes toward hepatitis b virus-, hepatitis c virus-, and HIV-infected patients in taiwan. AIDS Patient Care STDS 2004;18(10):587-593.

16. Zhou JF SX, Mantell J, Ru XM, Wen Y. AIDS-related knowledge attitudes and behavior survey among the migrant population in china. J Reprod Contracep 2007;18(2):155-162.

17. Erasmus S, Luiters S, Brijlal P. Oral hygiene and dental student’s knowledge, attitude and behaviour in managing HIV/AIDS patients. Int J Dent Hyg 2005;3(4):213-217.

Corresponding Author: Berkay Tolga SUER
Department of Oral Implantology
Gulhane Military Medical Academy (GATA)
Haydarpasa Teaching Hospital
34668-Üsküdar-İstanbul/ TURKEY
Phone: +90 216 542 20 20
e-mail: btsuer@gata.edu.tr, berkaysuer@hotmail.com