

Assessment of HIV/AIDS awareness among 500 patients referred to the Ankara University Faculty of Dentistry

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Objectives: To assess the knowledge of and attitudes to AIDS among patients referred to the Ankara University Faculty of Dentistry, Turkey. **Design:** A random sample of 500 patients participated and completed a questionnaire which comprised of six basic questions aimed at assessing the respondent's general knowledge and attitude towards AIDS. The questionnaire also collected demographic information about each patient, including age, gender and level of education. **Results:** Out of 500 respondents, 65 (13%) had been tested for HIV. The majority of respondents, 479 (95.8%) were aware that AIDS was a transmissible disease, and of these, 410 (85.6%) knew that semen and blood were modes of transmission. In addition, 451 (90.2%) respondents were in favour of requiring AIDS testing for all patients undergoing dental treatment. Educational level was found to be the main factor affecting the number of correct answers regarding transmission of the disease. **Conclusion:** The study highlighted dental patients' misconceptions, risk perceptions, and attitudes towards HIV/AIDS.

Key words: AIDS / HIV, modes of transmission, patient awareness.

Introduction

AIDS is the end stage of a protracted pathogenic process characterized by the progressive destruction of the immune system and its ability to control infections or proliferative malignant disorders (Schüpbach 1999). Human immunodeficiency viruses types 1 and 2 (HIV-1, HIV-2) are the causative agents of AIDS. HIV has been isolated from blood, semen, saliva, cerebrospinal fluid and breast milk and from major organs such as the brain. HIV is predominantly transmitted by unprotected sexual intercourse (particularly receptive anal intercourse and contact with multiple partners), congenitally from mother to child and by parenteral inoculation. Globally, the most frequent mode of transmission is the vaginal infection of women by unprotected sexual intercourse (Schüpbach 1999, <http://www.who.int/hiv/en>, Cleveland et al. 2002, Scully et al. 1993).

In the United States, individuals at risk of infection are primarily homosexual men, intravenous drug users, commercial sex workers in endemic areas and infants of HIV-positive mothers. The risk of HIV transmission to dental health-care workers is extremely low when proper dental management is practiced and universal precautions are taken. Although HIV has been identified in saliva, the levels appear to be low. The possibility of transmission on blood-borne infections from dental health-care workers to patients is very small (<http://www.who.int/hiv/en>, Cleveland et al. 2002, Scully et al. 1993). According to the World Health Organisation (WHO) 2007 December AIDS Epidemic Update/Global Summary, the total number of individuals worldwide infected with HIV was 33.2 million. Of these, 2.5 million were newly infected with the disease in 2007. The same

year, 2.1 million died as a result of AIDS http://data.unaids.org/pub/EPISlides/2007/2007_epiupdate_en.pdf). The AIDS pandemic poses an important challenge to developing countries in terms of both numbers of cases and economic and educational limitations. Up to 80% of individuals infected with HIV live in developing nations (Irigoyen et al. 1998). Sub-Saharan Africa remains the most seriously affected region (Fobil and Soyiri 2006), with AIDS remaining the leading cause of death in the region. In 2007, 76% of all deaths resulting from AIDS occurred in Sub-Saharan Africa (http://data.unaids.org/pub/EPISlides/2007/2007_epiupdate_en.pdf).

According to a February 2006 Turkish Health Ministry report, the first case of HIV infection in Turkey was reported in 1985, and a total of 1,922 cases had been identified by the end of (<http://www.aids.hacettepe.edu.tr> 2007). The rate of increase in the reported number of HIV/AIDS cases has been more or less constant over the last three years (about 190 new cases reported annually), with an estimated incidence of 3,700 in a population of over 70 million. However, due to problems related to the detection system and the health information network, official figures do not reflect the actual number of cases. Furthermore, inadequacies in the case reporting system hinder any epidemiological analysis of diagnosed cases (<http://www.aids.hacettepe.edu.tr> 2007, De Clercq 2007).

The aim of this study was to collect information about the knowledge of and attitudes to HIV/AIDS among patients at the Ankara University Faculty of Dentistry.

Methods

The study population comprised a random sample of 500 patients referred to the Ankara University Faculty of Dentistry's Department of Oral Diagnosis and Radi-

ology for dental treatment. The study was approved by the faculty's Ethical Committee, and all participants gave their written, informed consent. A pre-tested questionnaire was used to interview participants. The final version of the questionnaire collected demographic information (patient age, gender and educational level) and assessed the respondents' general knowledge and attitude towards AIDS through six questions, as follows:

- 1) Have you ever been tested for HIV?
 - 2) Is AIDS a transmissible disease?
 - 3) (asked only of those respondents who answered "yes" to Question 2) Which of the following are transmission modes of AIDS? (a. semen and blood, b. mother to infant, c. surgical procedures, d. dental procedures, e. transfusion of blood and blood products, f. homosexual/bisexual contact, g. heterosexual contact, h. shared toilets, i. social kissing). With the exception of "shared toilets" and "social kissing", all answer options were regarded as transmission modes.
 - 4) Which individuals do you think are at risk of contracting AIDS?
 - 5) Are you in favour of requiring HIV tests for all patients undergoing dental treatment?
 - 6) Can we give you an HIV test now?
- One of the authors (IC) asked the questions and filled in the forms according to the patients' responses. Data was collected over a 3-month period.

Statistical analysis was carried out using the software program SPSS 11.5. The Chi-Square Test was used to analyze data. A value of $p < 0.05$ was considered significant.

Results

Table 1 shows the distribution of the study population ($n=500$) by gender, age and level of education.

Out of 500 respondents, 65 (13%) had taken an HIV test and the remaining 435 (87%) had not. There was no significant difference in the number of correct answers concerning AIDS transmission modes between these two groups.

In total, 479 respondents (95.8%) were aware that AIDS was a transmissible disease. Of these, 410 (85.6%) were aware that semen and blood were modes of transmission. A significantly higher percentage of men than women ($p < 0.01$) were aware that blood and semen were AIDS transmission modes. In addition, when looked at by level of education, a significantly higher percentage of university and high school graduates than elementary school graduates were aware that blood and semen were AIDS transmission modes ($p < 0.01$). However, when looked at by age group, no significant difference was observed in the percentage of respondents aware that blood and semen were AIDS transmission modes ($p > 0.05$).

In total, 479 respondents (95.8%) were aware that AIDS was a transmissible disease (Table 2). Of these, 410 (85.6%) were aware that semen and blood were modes of transmission. A significantly higher percentage of men than women ($p < 0.01$) were aware that blood and semen were AIDS transmission modes (Table 2). In addition,

when looked at by level of education, a significantly higher percentage of university and high school graduates than elementary school graduates were aware that blood and semen were AIDS transmission modes ($p < 0.01$) (Table 4). However, when looked at by age group (Table 3), no significant difference was observed in the percentage of respondents aware that blood and semen were AIDS transmission modes ($p > 0.05$).

When looked at by age group, significant differences were found in the responses to four of the eight options listed as possible AIDS transmission modes, namely, mother to infant, surgical procedures, transfusion of blood and blood products and shared toilets. The number of correct responses regarding transmission from mother to infant was significantly higher among respondents aged 20-29 and 30-39 than among other age groups ($p < 0.05$) (Table 3); the number of correct responses regarding transmission from surgical procedures was significantly lower among respondents under age 20 ($p < 0.001$) (Table 3); the number of correct responses regarding transmission through transfusion of blood and blood products was also significantly lower among respondents under age 20 ($p < 0.01$); and the number of correct responses regarding transmission from shared toilets was significantly lower among respondents over age 50 ($p < 0.05$) (Table 3).

When looked at by education level, significant differences were found in responses regarding 6 of 8 AIDS transmission modes (Table 4). With the exception of "shared toilets," knowledge of transmission modes was statistically higher among university graduates when compared to those with lower levels of education (Table 4). The number of correct responses regarding transmission modes was also significantly higher among respondents who were high school graduates when compared to those who were only elementary school graduates.

Although 451 (90.2%) out of 500 patients were in favour of requiring HIV tests for all patients undergoing

Table 1. Distribution of study population ($n=500$) by gender, age and educational level.

	<i>n (%)</i>
<i>Gender</i>	
Male	205 (41.0)
Female	295 (59.0)
Total	500 (100.0)
<i>Age</i>	
20<	57 (11.4)
20-29	177 (35.4)
30-39	124 (24.8)
40-49	81 (16.2)
50>	61 (12.2)
Total	500 (100.0)
<i>Educational level</i>	
Elementary school	143 (28.6)
High school	187 (37.4)
University	170 (34)
Total	500 (100.0)

Table 2. Distribution of respondents' correct answers about modes of transmission of AIDS by gender (n=479).

<i>Modes of Transmission</i>	<i>Gender</i>		<i>Total (479) n Male + Female (%)</i>	
	<i>Male (n=197)</i>	<i>Female (n=282)</i>		
	<i>n (%)</i>	<i>n (%)</i>		
Semen and blood	179 (90.9)	231 (81.9)	410 (85.5)	p<0.01
Shared toilets	125 (63.5)	141 (50)	266 (55.5)	p<0.05
Social kissing	89 (45.2)	105 (37.2)	194 (40.5)	p>0.05
Mother to infant	164 (83.2)	246 (87.2)	410 (85.5)	p>0.05
Surgical procedures	160 (81.2)	233 (82.6)	393 (82.0)	p>0.05
Transfusion of blood and blood products	187 (94.9)	265 (94.3)	452 (94.3)	p>0.05
Dental procedures	136 (69.0)	202 (71.6)	338 (70.5)	p>0.05
Homosexual/bisexual contact	188 (95.4)	232 (82.3)	420 (87.6)	p<0.001
Heterosexual contact	192 (97.5)	269 (95.4)	461 (96.2)	p>0.05

Table 3. Distribution of respondents' correct answers about modes of transmission of AIDS by age (n=479).

<i>Modes of transmission</i>	<i>Age</i>					<i>Total (479)</i>	<i>p value</i>
	<i>20<</i>	<i>20-29</i>	<i>30-39</i>	<i>40-49</i>	<i>50></i>		
	<i>(n=52)</i>	<i>(n=172)</i>	<i>(n=121)</i>	<i>(n=78)</i>	<i>(n=56)</i>		
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	
Semen and blood	41 (78.8)	147(85.5)	105 (86.8)	68 (87.2%)	49 (87.5)	410(85.5)	p>0.05
Shared toilets	32 (61.5)	104 (60.5)	69 (57)	39 (50)	22 (39.3)	266 (55.5)	p<0.05
Social kissing	22 (42.3)	81 (47.1)	44 (36.4)	30 (38.5)	17 (30.4)	194 (40.5)	p>0.05
Mother to infant	41 (78.8)	153 (89)	107 (88.9)	64 (82.1)	45 (80.4)	410 (85.5)	p<0.05
Surgical Procedures	33 (63.5)	152 (88.4)	98 (81.0)	64 (82.1)	46 (82.1)	393 (82.0)	p<0.001
Dental Procedures	29 (55.8)	126 (73.3)	87 (71.9)	55 (70.5)	41 (73.2)	338 (70.5)	p>0.05
Transfusion of blood and blood products	44 (84.6)	167 (97.1)	118 (97.5)	71 (91.0)	52 (94.5)	452 (94.3)	p<0.01
Homosexual/bisexual contact	39 (75.0)	146 (84.9)	114 (94.2)	70 (89.7)	51 (91.1)	420 (87.6)	p>0.05
Heterosexual contact	50 (96.2)	164 (95.3)	121 (100)	73 (93.7)	53 (94.6)	461(96.2)	p>0.05

Table 4. Distribution of respondents' correct answers about modes of transmission of AIDS by educational levels (n=479).

<i>Modes of transmission</i>	<i>Education</i>			<i>Total (n=479)</i>	<i>p value</i>
	<i>Elementary school</i>	<i>High school</i>	<i>University</i>		
	<i>(n=128)</i>	<i>(n=185)</i>	<i>(n=166)</i>		
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	
Semen and blood	98 (76.6)	163 (88.1)	149 (89.8)	410 (85.5)	p<0.01
Shared toilets	39 (30.5)	121 (65.4)	106 (63.9)	266 (55.5)	p<0.001
Social kissing	34 (26.6)	83 (44.9)	77 (46.4)	194 (40.5)	p<0.01
Mother to infant	96 (75.0)	164 (88.6)	150 (90.4)	410 (85.5)	p<0.001
Surgical procedures	87 (68.0)	152 (82.2)	154 (92.8)	393 (82.0)	p<0.001
Dental procedures	77 (60.2)	127 (68.6)	134 (80.7)	338 (70.5)	P<0.01
Transfusion of blood and blood products	114 (89.9)	176 (95.1)	162 (97.6)	452 (94.3)	p<0.05
Homosexual/bisexual contact	105 (82.0)	161 (87.0)	154 (92.8)	420 (87.6)	p>0.05
Heterosexual contact	120 (93.8)	178 (96.2)	163 (98.2)	461 (96.2)	p>0.05

Table 5. Who do you think is at risk of AIDS?

<i>Answers</i>	<i>n (%)</i>
Homosexuals-bisexuals-people having anal intercourse etc	115 (23)
People indulging in sexually promiscuous relations	100 (20)
Sex workers and people who have sexual relations with them	62 (12.4)
People who do not use condoms	39 (7.8)
People having an IV transfusion	11 (2.2)
IV drug users	10 (2)
Foreigners	8 (1.6)
No idea	88 (17.6)
Other*	67 (13.4)
Total	500 (100)

(* : Health care workers, citizens of underdeveloped countries, people who do not give importance to hygiene, people having dental treatment, people having tattoos, etc.)

dental treatment, when asked if they would be willing to take an HIV test before dental treatment, only 79.2% of patients agreed to do so.

Discussion

The literature concerning HIV/AIDS awareness among patients is sparse. A literature search revealed no studies on AIDS awareness among patients requiring dental treatment; however, some studies have been conducted to evaluate HIV/AIDS awareness among selected target groups and among dentists.

In one local study, Yerdaw et al. (2002) assessed HIV/AIDS awareness among selected target groups in and around Addis Ababa, Ethiopia. Of the 2,278 individuals interviewed, 93.2% were aware of the reality of HIV/AIDS and 89.2% considered it to be a killer disease. Significant associations were found between knowledge of HIV/AIDS and target groups ($p<0.001$), age ($p<0.05$), sex ($p<0.05$) and educational level ($p<0.001$). These results are relatively compatible with our findings.

In the present study, the significant differences in responses found between males and females may be related to differences in educational levels between the randomly selected male and female patients. Whereas 41.5% of the men in our study were university graduates, only 28.8% of the women were university graduates, and whereas 18% of the men were elementary school graduates, 35.9% of the women were elementary school graduates. Considering that our data found the number of correct responses increased with level of education and showed education to be the major factor affecting the number of correct answers, the differences in correct responses regarding the transmission of AIDS via blood and semen should be attributed to differences in level of education rather than to the gender of the respondent. Differences in responses according to education may reflect the facts that AIDS education is not properly integrated into the Turkish school system and that university graduates have greater access to information via the visual and print media and the internet.

In a survey assessing the knowledge and attitude of Hong Kong secondary school teachers and students towards HIV infection and dentistry, Chu et al. (1995)

found the large majority of respondents believed television to be the most informative and dentists the least informative source on AIDS out of a list of eight options. Approximately one-half of both teachers and students were concerned about contracting HIV infection during dental treatment, and 65% of students and 57% of teachers thought that dentists did not have sufficient knowledge to identify AIDS patients. Finally, more than three-quarters of respondents thought that it would be ill-advised to visit a dentist who treated HIV-infected patients.

It is essential for dentists to use proper sterilisation procedures during dental examinations. In our study, the number of respondents who were aware that AIDS could be transmitted via dental procedures was statistically lower ($p<0.01$) than those who were aware of other transmission modes such as semen and blood, surgical procedures, mother to infant, sexual contact and transfusion of blood and blood products. We believe that dentists need to take a more active role in educating and counselling patients about HIV.

In a 2002 study, Ganguli et al. investigated AIDS awareness among undergraduate students in Maharashtra, India. They found that while there was broad awareness that individuals indulging in sexually promiscuous behaviour are at risk of AIDS, the fact that AIDS could be transmitted by infected blood or from an infected mother to her child was not widely known. In addition, the study uncovered some misconceptions regarding modes of transmission, including the mistaken belief that social kissing, public swimming pools and insect bites could spread infection. Attitudes towards HIV-infected and AIDS patients were also found to be unsympathetic.

Another study by Maswanya et al. (2000) that evaluated knowledge and attitudes towards AIDS among female college students in Nagasaki, Japan found that students had a high level of knowledge concerning AIDS and HIV, but had considerable misconceptions about and prejudices towards people with HIV/AIDS. Our survey also found misconceptions concerning the transmission of AIDS via shared toilets and social kissing, with relatively few subjects giving correct responses on the related questions.

Interestingly, when asked, "Are you in favour of requiring HIV tests for all patients requiring dental treat-

ment?" 451 of 500 respondents (90.2%) said they were in favour of the idea; however, when asked if they were willing to take an HIV test at that time, only 79.2% were willing to do so. This discrepancy can be best explained by the responses given to the question, "Which individuals do you think are at risk of AIDS infection?" As Table 5 shows, there was a strong misconception that AIDS is found mainly among sex workers, homosexuals, bisexuals and individuals who have sexually promiscuous relations, and participants might have been reluctant to agree to an HIV test in order to avoid being regarded as a member of one of these groups.

Results of a study conducted by Saleh et al. (2000) indicated that a health education programme on knowledge and transmission of HIV in students of secondary schools in Buraidah City had a significant impact on the students who participated in the programme. In line with our recommendation, other studies have also mentioned the importance of a focused prevention program targeting young people (Nishimura et al. 2007). Another study that focused on the motivation for counselling and testing concluded that in a country in which 12% of individuals aged 15-49 years are infected, there is a need to encourage testing among population groups that may not perceive themselves to be at risk of infection (Jereni and Muula 2008).

In a recent study with a design similar to our own (Saad and Al-Ghanim 2005), an assessment was made of the knowledge and attitudes towards HIV/AIDS among individuals attending primary health centres in Riyadh, Saudi Arabia. Although the majority of respondents correctly identified the main modes of HIV/AIDS transmission, there was a relative lack of knowledge about the disease. This was in line with the findings from our study. Moreover, both the Riyadh study and our own found education levels to be an important factor in HIV/AIDS awareness. Although the prevalence of HIV/AIDS is relatively low in both Turkey and Saudi Arabia, considering the growth of both HIV infection and AIDS-related deaths throughout the world, it is important that the public in these countries are well informed regarding all aspects of the disease.

Conclusion

The study highlighted dental patients' misconceptions, risk perceptions, and attitudes towards HIV/AIDS.

References

- Chu CS, Chan TW, Hui HM, Samaranayake LP, Chan JC, Wei SH. The knowledge and attitude of Hong Kong secondary school teachers and students towards HIV infection and dentistry. *Community Dent Health* 1995; **12**:110-4.
- Cleveland J L, Barker L, Gooch B F, Beltrami E M, Cardo D. Updated USPHS guidelines for managing occupational exposures to HBV, HCV and HIV and considerations for dentistry. *JADA* 2002; **133**: 1627-1629.
- De Clercq E. AIDS in the Third World: how to stop HIV infection. *Verh K Acad Geneesk Belg.* 2007; **69**:65-80.
- Fobil JN, Soyiri IN. an assessment of government policy response to HIV/AIDS in Ghana. *Sahara J.*2006; **3**:457-65.
- Ganguli SK, Rekha PP, Gupte N, Charan UA. AIDS awareness among undergraduate students, Maharashtra. *Indian J Public Health* 2002 Jan-Mar; **46**: 8-12.
- Internet connection: (<http://www.aids.hacettepe.edu.tr>)
- Internet connection on 17.04.2008: (http://data.unaids.org/pub/EPISlides/2007/2007_epiupdate_en.pdf)
- Internet connection: <http://www.who.int/hiv/en>
- Irigoyen M, Zepeda M, Camara VL. Factors associated with Mexico City dentists' willingness to treat AIDS/HIV-positive patients. *Oral Surg Oral Med Oral Pathol* 1998; **86**: 169-74.
- Jereni BH, Muula AS. Availability of supplies and motivations for accessing voluntary HIV counselling and testing services in Blantyre, Malawi. *BMC Health Services Research* 2008, available from <http://www.biomedcentral.com/1472-6963/8/17>
- Nishimura YH, Ona-Kihara M, Mohith JC, NgManSun R, Homma T, DiClemente RJ, Lang DL, Kihara M. Sexual behaviours and their correlates among young people in Mauritius: a cross-sectional study. *BMC International Health and Human Rights* 2007, **7**:8 available from <http://www.biomedcentral.com/1472-698X/7/8>
- Maswanya E, Moji K, Aoyagi K, Yahata Y, Kusano Y, Nagata K, Izumi T, Takemoto T. Knowledge and attitudes toward AIDS among female college students in Nagasaki, Japan. *Health Educ Res* 2000 Feb; **15**: 5-11.
- Saad A. Al-Ghanim. Exploring public knowledge and attitudes towards HIV/AIDS in Saudi Arabia. A survey of primary health care users. *Saudi Medical Journal* 2005; Vol. **26** (5): 812-18.
- Saleh MA, al-Ghamdi YS, al-Yahia OA, Shaqran TM. Impact of health education programme on knowledge and HIV transmission in students of secondary school Buraidah city, Saudi Arabia: an exploratory study. *East Mediterr Health J* 2000 Sep; **5**: 1068-75.
- Schüpbach J. Human Immunodeficiency Viruses. In: Murray PR, Baron EJ, Pfaller MA, Tenover FC, Tenover RH, editors. *Manual of Clinical Microbiology*, 7th edi. Washington, D.C: ASM Press; 1999. p. 847-865.
- Scully C, Samaranayake L, Martin M. HIV: answers to common questions on transmission, disinfection and antiseptics in clinical dentistry. *Br Dent J* 1993; **175**: 175.
- Yerdaw M, Nedi T, Enquoselassie F. Assessment of awareness of HIV/AIDS among selected target groups in and around Addis Ababa, Ethiopia. *Afr J Reprod Health* 2002 Aug; **6**: 30-8.