

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

### Kazanılmış İmmün Yetmezlik Sendromunun (AIDS) Bulaşım yolları Hakkında Dış Hekimliği Hastalarının Bilgi ve Farkındalıkları

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#### 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 mosquitos bite (47.2%) were less recognized. Saliva (32.2%), urine (36.9%), tears (58.5%), sweat (54.5%), 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 knowl-edge. 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 ihtiyacının olup olmadığının tespiti amaçlanmıştır.

**Gereç ve Yöntem:** 301 hastanın (ortalama yaş: 37.12 ± 7.85 yıl, % 41.5 erkek ve %58.5 kadın) dahil edildiği bu çalışmada, hastaların bilgi seviyelerini değerlendirmek 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 bir çoğunluğunun AIDS'in bulaşım yolları hakkında bilgi sahibi olduğu tespit edilmekle beraber; anne sütü (%31.6), umumi tuvaletler (%44.9) böcek ve sivrisinek ısırması (%47.8) gibi bulaşma yollarının hastalar tarafından daha az bilindiği tespit edilmiştir. Aynı zamanda bulaşım yolu olabilen tükürük (%32.2), idrar (%36.9), gözyaşı (%58.5), ter (%54.5), anne sütü (%30.6), dışkı (%36.9) ve beyin omurilik sıvısı (%7.3) gibi vücut sıvılarının ankete katılanlar tarafından daha az bilinen vücut sıvıları olduğu tespit edildi. Genel olarak üniversite ve lisans üstü seviyede eğitimi olan hastaların diğer gruplara göre daha doğru bilgi sahibi oldukları tespit edildi. Hastaların %63.1'i HIV/AIDS hakkında daha fazla eğitime ihtiyaçları olduğunu bildirdi. **Sonuç:** Bu çalışmanın sonuçları HIV/AIDS hakkında hastaların kabul edilebilir seviyede bilgi sahibi olduğunu göstermekle beraber; hastaların kendi bilgi seviyelerinin hangi düzeyde olduğunu bilmediklerini gösterdi. Sonuç olarak, HIV/AIDS ile ilgili daha etkin eğitim programları oluşturulmasının gerekli olduğu düşünülmektedir.

**Anahtar kelimeler:** HIV; AIDS; bilgi; farkındalık; anket

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## **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  $\pm$ 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.

		n	%
Marital Status	Single	121	40,2
	Married	180	59,8
Education	Elementary	66	21,9
	Highschool	94	31,2
	University	111	36,9
	Postgraduate	30	9,9
Monthly Income	0-1000 TL	76	25,2
	1000-2000 TL	103	34,2
	>2000TL	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	True	279	92,7
	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 and	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 with mosquitoes or insects bite, HIV/AIDS positive women to fetus, unsafe sexual interaction, public restrooms than patients who has low income ( $p < 0.05$ ). 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.

		n	%
Blood	True	269	89,4
	False	3	1,0
	I don't know	29	9,6
Saliva	True	75	24,9
	False	97	32,2
	I don't know	129	42,9
Urine	True	55	18,3
	False	111	36,9
	I don't know	135	44,9
Tears	True	14	4,7
	False	176	58,5
	I don't know	111	36,9
Sweat	True	16	5,3
	False	164	54,5
	I don't know	121	40,2
Breast-milk	True	92	30,6
	False	85	28,2
	I don't know	124	41,2
Semen	True	219	72,8
	False	14	4,7
	I don't know	68	22,6
Vaginal fluid	True	214	71,1
	False	18	6,0
	I don't know	69	22,9
Cerebrospinal fluid	True	22	7,3
	False	38	12,7
	I don't know	241	80
Feces	True	19	6,3
	False	111	36,9
	I don't know	171	56,8

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 educated 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 ( $p=0.021$ ).

**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	Yes	282	93,7
	No	9	3,0
	I don't know	10	3,3
Do you still wanted to be treated with a HIV/AIDS positive dentist	Yes	189	62,8
	No	96	31,9
	I don't know	16	5,3

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 ( $p=0.034$ ).

**Table 5.** Dental patients knowledge and education level about HIV/AIDS and need for further education.

		n	%
Do you think your knowledge about HIV/AIDS is enough?	Yes	75	24,9
	No	215	71,4
	I don't know	11	3,7
Do you think you got enough education about HIV/AIDS?	Yes	64	21,3
	No	227	75,4
	I don't know	10	3,3
Do you want further education about HIV/AIDS?	Yes	190	63,1
	No	99	32,9
	I don't know	12	4,0

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 ( $p>0.05$ ).

## 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).

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

	Education Status				P
	Elementary	Highschool	University	Postgraduate	
	n (%)	n (%)	n (%)	n (%)	
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)	<b>0,234</b>
Do you still wanted to be treated with a HIV/AIDS positive dentist?	33 (%50)	64 (%68,1)	78 (%70,3)	14 (%46,7)	<b>0,008**</b>
Do you think your knowledge about HIV/AIDS is enough?	11 (%16,7)	24 (%25,5)	28 (%25,2)	12 (%40)	<b>0,108</b>
Do you think you got enough education about HIV/AIDS?	9 (%13,6)	22 (%23,4)	24 (%21,6)	9 (%30)	<b>0,269</b>
Do you want further education about HIV/AIDS?	38 (%57,6)	51 (%54,3)	78 (%70,3)	23 (%76,7)	<b>0,031*</b>

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.

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None declared

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