



## Knowledge and attitude of patients presenting to a dental school clinic towards HIV/AIDS

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### ABSTRACT

**Introduction:** This study aimed to assess the knowledge and attitude of patients presenting to dental school about the acquired immunodeficiency syndrome (AIDS) in 2017-2018.

**Materials and Methods:** This descriptive, cross-sectional study was conducted on 450 patients presenting to dental school of Tehran University of Medical Sciences, International Campus, in 2017. The patients had a mean age of 33 years (range 11-66 years). The Farsi version of the international AIDS questionnaire with 18 questions (13 questions about knowledge and five questions about attitude) was used for data collection. Each correct response was allocated a score of 1. Regression analysis was used to assess the effect of age, sex, level of education and financial status on the knowledge and attitude scores. The Pearson's correlation coefficient was used to assess the correlation between knowledge and attitude scores.

**Results:** The mean knowledge and attitude scores were 10.55 and 4.1, respectively. By an increase in the knowledge score, the attitude score significantly increased and vice versa ( $r=0.376$ ,  $P<0.0001$ ). Age, sex and financial status had no significant effect on knowledge about HIV/AIDS, and only the effect of level of education was significant ( $P=0.0001$ ). Age had no significant effect on attitude score but gender ( $P=0.001$ ), level of education ( $P=0.001$ ) and financial status ( $P=0.038$ ) significantly affected the attitude score. The attitude score was higher in females.

**Discussion:** In general, participants had favorable knowledge and attitude towards AIDS. However, the knowledge and attitude of the Iranian population should be further enhanced in this respect.

**Keywords:** Knowledge, Attitude, AIDS.

### Introduction

Acquired immunodeficiency syndrome (AIDS) is an important health dilemma. It is a contagious disease, which has become epidemic in many communities [1-4]. The first report of AIDS was published in 1981 occurring in homosexuals in the United States [5]. According to the latest report by the World Health Orga-

nization, about 71 million people are infected with human immunodeficiency virus (HIV) and around 34 million have died because of it. On the other hand, about 36.9 million people were reported to be infected with HIV by the end of 2014; out of which, 2.6 million were children born to HIV-positive mothers.

The highest reported prevalence rate belongs to the Sahara with a prevalence rate of 1 out of 20 individuals [6]. HIV is more prevalent among men and according to a report by the Center for Disease Control, 80% of the newly diagnosed HIV patients in the United States are males. According to a report by the Ministry of Health and Medical Education of Iran, the number of HIV+ patients in 2009 was 20,130 patients while the number of AIDS patients was 2,097 patients [7]. This rate is higher than the prevalence rate in other countries in the region and Asia, which is between 0.2% to 0.4% [8].

The existing treatments can only limit the progression of HIV, and no definite treatment has been suggested so far for this condition. In 2015, 15.5 million people with AIDS were provided with antiviral medications limiting the disease. Education is the most important preventive measure for AIDS. This education should enhance knowledge about the factors causing AIDS and practical solutions to prevent affliction with HIV such as safe sex education, needle and syringe programs, opioid replacement therapy for intravenous drug users and medication intake before and after exposure [9].

Considering the increasing prevalence of AIDS in developing countries such as Iran, and patient concerns regarding transmission of HIV infection via dental procedures [6], promotion of public knowledge about this disease and its routes of transmission and prevention and educational programs are among the main strategies to fight HIV/AIDS.

Evidence shows that patients seeking dental treatment often have limited knowledge about HIV/AIDS. A previous study on Nepali adolescents in 2006 showed that most of them had moderate level of knowledge about AIDS, and their level of knowledge about the routes of transmission and prevention of AIDS was poor [11]. Arigbede et al, in 2011 evaluated the level of knowledge of patients presenting to outpatient clinics, dental centers and a university hospital in Nigeria and reported that their knowledge about oral and systemic manifestations of AIDS, high-risk groups and routes of transmission of infection during dental clinical treatment was not satisfactory [12]. On the other hand, a study evaluated high school students in Tehran and reported that more than 50% of them (66.6%) were afraid of AIDS. They introduced TV as their main and most important source of information in this respect [13].

This study aimed to assess the level of knowledge and attitude of patients presenting dental school of

Tehran University of Medical Sciences, International Campus towards AIDS in 2017.

## Materials and Methods

This descriptive, cross-sectional study was conducted on patients presenting to dental school of Tehran University of Medical Sciences, International Campus. The international AIDS questionnaire was used for data collection, which included a demographic section (age, gender, financial status and level of education) and knowledge and attitude questions regarding AIDS. This questionnaire was translated to Farsi by Escandary et al, in 2013 [1] and its validity and reliability were confirmed. They administered the questionnaire among 448 students selected by convenience sampling and showed optimal validity of the four domains of the questionnaire and its favorable reliability [1]. The Farsi version of this questionnaire included 18 questions about AIDS designed in four domains. These domains included myths and wrong beliefs, attitude towards AIDS patients (questions 11-15), perception about the risks of AIDS (questions 16-18) and knowledge about AIDS-related facts (questions 1-10). Questions 1-10 and 16-18 were knowledge questions and questions 11-15 were attitude questions. One positive score was allocated to each correct answer to knowledge and attitude questions. The mean scores of knowledge and attitude were calculated and reported. Before administration of the questionnaire, patients were informed about the objectives of the study and written informed consent was obtained from them. They were also ensured about the confidentiality of their information.

The mean, standard deviation, maximum and minimum scores were reported. Regression analysis was used to assess the effect of different factors on knowledge and attitude of patients. The correlation between the knowledge and attitude scores of patients was determined using the Pearson's correlation coefficient.

## Results

Of all patients, 4 (0.9%) were illiterate, 94 (20.9%) had middle school education, 170 (37.8%) had high school diploma, 67 (14.9%) had college education, 65 (14.4%) had bachelor's degree, 18 (4.0%) had master's degree and 32 (7.1%) had doctorate degree. There were 145 (32.2%) males and 305 (67.8%) females. Of all, 29 (6.4%) had poor, 281 (62.4%) had moderate, 120 (26.7%) had good and 20 (4.4%) had excellent financial status. The mean age of patients was 33.04±9.8 years (range 11-66 years). Table 1 shows the percentage of correct and wrong answers. The mean knowledge score

was found to be  $10.55 \pm 1.89$  (range 3.0-13.0). The mean attitude score was  $4.1 \pm 1.14$  (range 0.0-5.0) (Tables 2 and 3).

The Pearson's correlation coefficient showed a significant correlation between the knowledge and attitude scores of patients ( $r=0.376$ ,  $P<0.0001$ ). In other words, by an increase in knowledge score, the attitude score significantly increased as well and vice versa.

On the other hand, regression test showed that age ( $P=0.36$ ), gender ( $P=0.32$ ) and financial status ( $P=0.54$ )

had no effect on knowledge of patients about HIV/AIDS but the effect of level of education ( $P=0.0001$ ) was significant (Table 4). On the other hand, the effect of age on attitude scores was not significant ( $P=0.202$ ). Gender ( $P=0.001$ ), level of education ( $P=0.001$ ) and financial status ( $P=0.038$ ) significantly affected the attitude scores (Table 4).

Questions	Right answer	Wrong answer
Spreads via coughing and sneezing	17 (3/8%)	433 (96/2%)
Can be transmitted by sharing a cigarette	58 (12/9%)	392 (87/1%)
Can be transmitted by hugging the infected patient	16 (3/6%)	434 (96/4%)
Can spread by airborne transmission	13 (2/9%)	437 (97/1%)
Can be transmitted in a swimming pool	46 (10/2%)	404 (89/8%)
Can be passed on from a toilet seat	76 (16/9%)	374 (83/1%)
Can be transmitted by mosquito bite	198 (44%)	252 (56%)
Condom decreases the risk of transmission of HIV	418 (92/9%)	32 (7/1%)
Can be transmitted from mother to child	378 (84%)	72 (16%)
Can be transmitted by infected spermatozooids	407 (90/4%)	43 (9/6%)
Children with AIDS should be kept away from school	65 (14/4%)	385 (85/6%)
If my friend is diagnosed with AIDS, I would end my friendship with her/him.	45 (10%)	405 (90%)
I am interested in doing charity work for AIDS patients	244 (54/2%)	206 (45/8%)
If a family member is diagnosed with AIDS, he/she should be left alone.	23 (5/1%)	427 (94/9%)
AIDS patients should remain at home or in the hospital.	63 (14%)	387 (86%)
Asians, compared to other races, are at lower risk of AIDS.	159 (35/3%)	291 (64/7%)
Only drug abusers, prostitutes and homosexuals are infected with HIV	243 (54%)	207 (46%)
You can prevent AIDS by vaccination.	128 (28/4%)	322 (71/6%)

Table 1. Frequency distribution of correct and wrong answers.

Knowledge score	Frequency	Percentage
0/4%	2	3
0/2%	1	5
3/1%	14	6
5/6%	25	7
5/1%	23	8
8%	36	9
20%	90	10
22%	99	11
21/8%	98	12
13/8%	62	13
Total	450	Total

Table 2. Frequency distribution of knowledge scores.

Attitude score	Frequency	Percentage
1/3%	6	0
4/4%	20	1
3/3%	15	2
10%	45	3
34/9%	157	4
46%	207	5
Total	450	Total

Table 3. Frequency distribution of attitude scores.

Score	Variable	Non-standard coefficient		Standard coefficient	P value
		B coefficient	Standard error	Beta coefficient	
Knowledge	Constant	8/17	0/547	-	0/0001
	coefficient	-0/008	0/008	-0/039	0/36
	Age	0/169	0/17	0/042	0/32
	Sex				
	Level of education	0/599	0/061	0/458	0/0001
	Economic	0/081	0/131	0/028	0/536
Attitude	Constant	2/828	0/36	-	0/0001
	coefficient				
	Age	-0/007	0/005	-0/06	0/202
	Sex	0/366	0/112	0/15	0/001
	Level of education	0/134	0/04	0/171	0/001
	Economic	0/179	0/086	0/102	0/038

Table 4. Results of regression test on the effect of different parameters on knowledge and attitude scores.

## Discussion

There is public concern regarding the transmission of HIV/AIDS by insect bite, family contacts and saliva. The percentage of patients with poor knowledge about the routes of transmission of AIDS was low in our study. However, a significant number of patients believed that HIV/AIDS can be transmitted via a mosquito bite.

Gupta et al, in 2015 evaluated the knowledge of students in India about HIV/AIDS and reported that they had some wrong beliefs about the routes of transmission of HIV such as transmission through mosquito bite, eating/drinking and kissing [14]. It seems that such wrong beliefs about the routes of transmission of HIV are common. The percentage of people with such wrong beliefs is important and this rate was low in our study (except for those believing that HIV could be transmitted by mosquito bite).

Tavoosi et al, in 2004 evaluated the knowledge and attitude of middle schoolers in Iran about AIDS and reported that students wrongfully believed that this disease could be transmitted via insect bite (33%), public swimming pools (21%) and restrooms (20%) [15]. Level of knowledge of patients in our study in this regard was higher than that in the study by Tavoosi et al. Chu et al, in 1995 evaluated the knowledge and attitude of teachers and students of a middle school in Hong Kong towards HIV infection and showed that one of the two teachers and one of the three students believed that HIV could be transmitted via saliva [16].

The routes of transmission of HIV include blood products, needle sharing by intravenous drug users, transmission among health care workers, vertical transmission from mother to child and unsafe sexual intercourse. However, due to the instability of HIV virus in ambient air, transmission through cutaneous and oral contact is not possible [17]. Due to the presence of wrong beliefs about the routes of transmission of AIDS, educational programs are required to decrease its unfavorable social and psychological consequences.

On the other hand, 84% of participants in our study knew that AIDS can be transmitted from mother to child and 92.9% correctly stated that using condom decreases the risk of disease transmission. Also, 90.4% knew that AIDS can also be transmitted via infected spermatozooids. These findings indicate good knowledge of patients about the routes of transmission of AIDS.

Yazdi et al, in 2006 evaluated the knowledge and attitude of Iranian adolescents about HIV/AIDS and reported that most of them knew about the possibility of transmission of disease via sexual intercourse (90%) and needle sharing (94%) [18]. However, only 53% pointed to the role of protective measures for prevention of HIV infection via unsafe sexual intercourse [18].

Regarding the attitude of patients, 85.6% stated that it was wrong to keep HIV infected children away from school; 90% believed that it was wrong to break up friendship with AIDS patients and 94.9% stated that it was wrong to abandon a family member diagnosed with HIV/AIDS. On the other hand, only 14% believed that AIDS patients should remain at home or in the hospital and 86% thought that it was wrong. Moreover, 54.2% were interested in volunteer work for AIDS patients while 45.8% were not interested to do so.

Sadeghi and Hakimi in 2009 evaluated the knowledge and attitude of dental students towards HIV/AIDS and reported that 57.4% had a negative attitude towards it [19]. Tavoosi et al, in 2004 evaluated middle schoolers in Iran and reported that 46% believed that HIV positive students should not participate in classes. This attitude is not acceptable and must be changed [15]. Rad et al, in 2009 evaluated patients presenting to the Oral Medicine Department of Kerman University of Medical Sciences and stated that 48.2% of participants believed that AIDS patients should be quarantined [20].

Due to the presence of some wrong beliefs about AIDS, it is important to inform the public in this regard. Since knowledge and attitude are correlated, enhancement of knowledge in this regard can improve the public attitude towards it. The highest incidence of AIDS has been reported in the Sahara with one out of 20 individuals afflicted with HIV [6]. Its prevalence in some Asian countries particularly in south-east Asia is also high. In our study, 64.7% were against the statement that Asians are at lower risk of AIDS compared to other racial groups.

Developed European countries have been able to significantly prevent HIV/AIDS by enhancing the public knowledge in this respect. However, in developing countries such as Iran, problems still exist and further attempts are required by the policy makers to implement preventive programs. Our study showed that 54% of participants believed that only intravenous drug users, prostitutes and homosexuals are afflicted with HIV/AIDS. The main high-risk groups for AIDS

include intravenous drug users, prostitutes, homosexuals, dental office staff, stylists and transit drivers [11]. It seems that occupation-specific educational programs for transit drivers and stylists and also face-to-face and over-the-phone counseling services can prevent further spread of disease. No vaccine or definite treatment has been found for HIV. Thus, prevention and education are the only solutions to fight this disease. However, 28.4% of participants in our study thought that vaccination can prevent AIDS, which is obviously wrong.

Since the emergence of AIDS in Iran, intravenous drug use has been its most important route of transmission and drug users have been the main target group for education [21-23]. Over time, the main route of transmission of HIV changed and researchers believe that sexual intercourse will soon become the main route of transmission of HIV [24,25]. Thus, some modifications should be made in method of instruction and the target groups, and constant monitoring programs are required to assess the knowledge of target groups. Also, health care workers, dentists and physicians must receive necessary warnings regarding the routes of transmission of HIV.

Several factors affect the public knowledge about HIV/AIDS. A study in 2000 showed that even language can significantly affect the level of knowledge [26]. According to our results, age, sex and financial status had no significant effect on knowledge about HIV/AIDS and only level of education had a significant effect on knowledge. On the other hand, age had no significant effect on attitude score but gender, level of education and financial status significantly affected the attitude score.

Pernaz-Linsuy et al, in 2015 evaluated Peruvian women and reported that higher level of education, higher socioeconomic class, living in the capital city during childhood, professional occupation, having commercial or spiritual position and access to social media were significantly correlated with higher knowledge about HIV [27]. Ugarte et al, in 2013 evaluated the knowledge and attitude towards HIV and high-risk sexual behaviors in adults in Nicaragua and indicated that low level of education, poverty and rural living were correlated to limited knowledge about AIDS [28].

Rad et al, in 2009 showed a significant correlation between level of knowledge about AIDS and level of education of dental students in Kerman University of Medical Sciences [20]. The same findings were obtained in our study and our results showed that level of education was correlated with the level of knowledge of

participants about AIDS.

Socioeconomic factors such as financial wellbeing, level of education and living environment are correlated with the knowledge and attitude towards AIDS. This finding has been reported in some other studies as well. In general, our results showed that participants had good knowledge and attitude towards AIDS. However, due to the presence of wrong beliefs, public knowledge of the Iranian population about AIDS still needs to be improved. Previous studies on this topic have shown varying levels of knowledge and attitude about HIV/AIDS. Such a controversy in the results may be due to difference in target groups and methodology of studies. The target population of previous studies included dentists, nurses, dental students, laypeople presenting to medical centers or students, which would obviously have different levels of knowledge. In Iran, many attempts have been made to enhance the knowledge and attitude of different groups towards AIDS. However, this process must be accelerated. Also, considering the shift in the common routes of transmission of HIV in at-risk and high-risk groups, strategies in this respect must be based on targeted studies.

## Conclusion

In total, knowledge and attitude of participants towards AIDS were favorable in our study. However, due to the presence of some wrong beliefs in this regard, it seems that the knowledge and attitude of the Iranian population must be further enhanced.

## Conflict of Interest

There is no conflict of Interest to declare.

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