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Knowledge, Attitude, and the Real Practice of General Dental Practitioners in Shiraz, Iran Towards Accepting HIV-Positive Patients

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Abstract

Background: It is vital to ensure that dental services are provided for HIV-positive (+) patients.
Objectives: This study was designed to evaluate dentists' knowledge, attitude, and practice towards HIV+ patients of Shiraz, Iran.
Methods: In this cross-sectional study, 120 general dentists of Shiraz were randomly selected. Dentists' knowledge and attitude about HIV oral manifestations and transmission, concerns and approach to HIV+ patients, and infection control in practice were assessed using a questionnaire translated in a backward-forward method. The dentists' real practice was assessed by sending simulated HIV+ patients to their practice two months later. The results were analyzed using the chi-square test and the spearman correlation.
Results: The response rate was 85.8%, and 71.8% of the participants were male. The average age and work experience of the participants were 42 and 14 years, respectively. Dentists' knowledge about HIV oral manifestations and body fluids, which could transmit HIV, was 14% - 59% and 31% - 97%, respectively. Concern about the possibility of being infected during the treatment of HIV+ patients was the most important reason for the unwillingness to accept these patients. The percentages of dentists who claimed would accept HIV+ patients without hesitation, accept with hesitation if the patient insisted, refer, or reject immediately were 29, 31, 30, and 10, respectively. However, in reality, the observed percentages were 17.5, 0, 65, and 17.5, respectively.
Conclusions: Dentists' knowledge and attitude towards HIV+ patients and the acceptance of these patients were not desirable. Moreover, there was no significant correlation between their knowledge and attitude with their real practice.

Keywords: Shiraz, Dentist, Knowledge, Attitude, Practice, AIDS

1. Background

The human immunodeficiency virus (HIV) infection is caused by a retrovirus that affects the immune system. It is very important to understand and genuinely believe that HIV-infected people are patients and victims with the right to be treated by health professionals like other patients (1, 2).

HIV has limited means of transmission. Dentists are in danger of both acquiring infectious diseases and cross-transmission of these diseases among their patients, but only if they do not observe infection control standards in their practice. It should be noticed that nowadays, HIV+ patients can live like normal people due to medical advances (3, 4).

Unfortunately, some dentists still avoid providing treatment to HIV+ patients. This is despite the World Health Organization declaration, which clearly states that all dentists should treat HIV+ patients and have no right to reject a patient just because they have HIV/AIDS. In countries such as the United States, Canada, and many other Western Countries, a dentist who refuses to accept an HIV+ patient may face charges of discrimination to human rights (5, 6).

There are reports that dentists still reject providing services to HIV-infected patients, even in western countries, where legislation, rules, and the norm of society indicate that they should not refuse an HIV+ patient. In a study assessing the knowledge, attitude, and practice of dentists in the UK, all dentists working in the Cheshire area were invited twice to fill a questionnaire. The response rate was only 46%. Among those who did participate, up to 96% had good knowledge of oral lesions associated with HIV; however, more than half did not know which body fluids were proven as the means of HIV transmission. In the cited

study, 45% of the participants stated that they would treat an HIV+ patient with no hesitation. It is important to consider that this was 45% out of the 46% who did not hesitate to participate in a study on HIV. Less than half of the dentists claimed they had treated patients who disclosed their HIV infection (7). A study conducted in the early 1990s in the United States indicated that about half of dentists in the United States were not willing to treat an HIV+ patient, and only 31% had ever treated a known HIV/AIDS patient (8).

The percentage of dentists/dental students claiming that they would treat HIV+ patients willingly in studies conducted in developing countries varies from 5% in India (9), 15% in Jordan (10), to just more than half in Brazil (11). However, they might be well informed and have been well taught about HIV (12, 13). It should be considered that the response rate was relatively low in all these studies and that the participants' claims were used in the analysis.

Iran is also among the developing countries with no pressure on dentists to accept HIV+ patients. A study on dental students participating in dental students' congress in Iran found that about 85% of Iranian dental students were worried about becoming infected with HIV by their patients. Only 6% believed that they are informed about infection control to treat HIV/AIDS patients and less than 12% stated that they would treat an HIV+ patient. Just one dental student said he/she would give cardiopulmonary resuscitation (CPR) to an HIV+ patient in emergency cases (14). In a study on dentists working in private practices of the Fars, Iran, more than 75% believed in treating HIV+ patients as their duty, but only if necessary, as they thought there should be dental settings specially designed to treat these patients. Despite the fact that dentists were seriously concerned about the transmission of infectious diseases, basic standard infection control precautions were not observed by most of them (15).

In a recent study conducted on both general and specialist dentists working in Tehran, a simulated HIV+ patient was used to observe the dentists' real practice towards accepting HIV+ patients. Less than 15% accepted the patient. After using a questionnaire to study their knowledge and attitude about the HIV infection, no correlation was found between their knowledge about HIV infection and their attitude or real practice towards accepting HIV+ patients (16). This study was the only research in Iran, providing the report on dentists' practice towards HIV+ patients.

2. Objectives

Due to the lack of studies describing the Iranian oral health system's condition for HIV+ patients, this study was designed and conducted to evaluate the knowledge and attitude of dentists towards HIV infection and accepting HIV-infected patients in Shiraz, and also to compare their self-proclaimed attitude with their observed real practice towards accepting HIV+ patients.

3. Methods

This cross-sectional study was conducted in Shiraz, south of Iran, in 2015. The approval and ethical permission were obtained from the Ethical Committee of Shiraz University of Medical Sciences (SUMS). The list of registered general practitioners was obtained from the Dental Administration Office, SUMS. Based on the total number of registered dentists and the type of sampling method, and after consultation with a biostatistician, the sample size was determined to be 100 cases. However, based on the previous relevant studies, the possible attrition of about 20% was considered and added to the sample size. Therefore, using a table of random numbers, 120 general dental practitioners were randomly selected. Participants' knowledge and attitude were assessed using a questionnaire, whereas their real practice was assessed using simulated patients.

To develop a questionnaire for the current study, a questionnaire designed and used by Crossley for investigating the knowledge and attitude of the UK's dentists towards HIV positives and patients with other blood-borne diseases (7) was used. The original English questionnaire was translated into Farsi in a linguistic approach using a forward-backward method. The content validity of the translated questionnaire was then evaluated by an expert panel, including three dental and two medical specialists. Amendments were made to the questions, wherever necessary. A Farsi language editor was then asked to proofread the questions. The final version included a part, in which a brief explanation was given to the participants. Names, addresses, phone numbers, or any other personal details were not asked in the questionnaire.

The participants were first asked about the type of clinic/office they worked in. They were then asked about the oral manifestation of the HIV disease and its proven means of transmission. They were also asked if they had ever treated an HIV+ patient, and how many HIV patients they had treated in the past six months.

Next, the participants were asked about the routine precautions they would observe to prevent cross-contamination of transmittable diseases, such as HIV and hepatitis. Then, they were questioned if they would accept willingly, accept reluctantly, refer to other dental settings, or refuse to do anything for patients, such as homosexuals, patients with hepatitis, patients with respiratory infec-

tions, and HIV positives. They were also asked about their main concerns towards accepting HIV+ patients.

In the end, the participants' sex, age, years of experience, and the university they graduated from were noted. The questionnaire is presented as an appendix to this paper (Appendix 1 in Supplementary File).

A final year dental student visited each selected dentist, explained that the information was collected merely for scientific research purposes, ensured them of their privacy and confidentiality of the information, and asked them to fill the questionnaire in a timely manner. The dentists were informed about voluntary participation. They were also informed that they could refer to their files to answer some questions more precisely. A phone number was provided in case the participants needed more details. Each dentist who accepted to fill the questionnaire was revisited every day for up to 10 working days to collect the filled questionnaire. Those who refused to cooperate did not return the filled questionnaire in 10 working days, or left three or more questions blank were excluded from the study.

The participants' real practice towards HIV+ patients was evaluated two months later by observation. Two HIV+ patients (one man and one woman) were recruited, trained, and calibrated, and then sent to the selected dentists asking for checkup and treatment with a scenario that was equally done for all dentists. A member of the research team waited outside of the clinic to record the observations immediately. The simulated patients were blind to the dentists' previous responses to the questions. This part of the study was conducted during just one week to minimize the chance of disclosure of the secret of two HIV+ patients with a similar scenario attending several dental clinics.

The simulated patients were first asked for a routine checkup for one of them. The dentist could do the history taking in his/her own way. The patient answered any related question about his infection only if he was asked for. Otherwise, he did not disclose his infection at this time. He was then examined by the dentist. He then asked for a filling and a fixed prosthesis (that he really needed), asked if the dentist would be willing to do it for him, talked about the costs, and fixed an appointment to start his treatment course. He was then disclosed that he was an HIV+ patient. He then asked if the dentist would make an appointment further.

The obtained data were analyzed using IBM SPSS Software (version 22). Chi-square test and Spearman correlation were used to analyze the participants' answers to the questionnaires and their real practice towards accepting HIV+ patients.

4. Results

One hundred and three questionnaires were filled out (response rate = 85.8%), of which 74 (71.8%) and 29 (28.2%) questionnaires answered by male and female subjects, respectively. Their average age was 41.69 $\pm$ 8.93 years, with the oldest one being 63 years old. They had up to 37 years (mean: 14.36 $\pm$ 8.18 years) of experience in dentistry. Most of the respondents (87.4%) were graduated from the SUMS. Fifty-one (49.5%) dentists were only working in their own private offices, 11 dentists (10.7%) in others' private clinics, seven dentists (6.8%) in hospitals or clinics affiliated to the universities, three dentists (2.9%) in non-university clinics, and 31 dentists (30.1%) were working in more than one type of dental settings.

Table 1 presents the participants thought about the oral manifestations related to HIV infection. The percentage of correct answers was very low. The highest percentage of correct answers was 59.2%, which was related to oral candidiasis. The number of correct answers to this part was not statistically regarding either age (P = 0.773) or years of experience (P = 0.501) of the participating dentists.

Almost all participants (97.1%) reported blood as a means of transmission of HIV infection. A high percentage (86.4%) of participants knew that semen was also one of the body fluids that carry HIV. However, the participants' knowledge about other body fluids was relatively low, especially in the case of breast milk that less than one-third marked it as a proven way of HIV transmission (Table 2). The dentists' scores in this were not significantly related to either their age (P = 0.468) or years of experience (P = 0.669).

Eighty participants (77.7%) accepted that compared with HIV, the hepatitis B virus was more infectious and considered exposure to unvaccinated people as a greater

Table 1. Participants' Answers to "If any of the Cited Conditions Could Be a Manifestation Related to HIV Infection?"

Condition	Correct Answer	Number (%) of Correct Answers
Kaposi's sarcoma	Yes	54 (52.4)
Oral candidiasis	Yes	61 (59.2)
Acute ulcerative gingivitis	Yes	39 (37.9)
Necrotizing ulcerative periodontitis	Yes	39 (37.9)
Herpetic infections	Yes	49 (47.6)
Xerostomia	Yes	14 (13.6)
Aphthous ulceration	Yes	36 (35.0)
Lichen planus/lichenoid reaction	Yes	13 (12.6)
Hairy leukoplakia	Yes	31 (30.1)

Table 2. Participants' Answers to "Which Body Fluids Are Proved as the Means of HIV Transmission?"

Body Fluid	Correct Answer	Participants Answer[a]		
		Yes	No	Do Not Know
Blood	Yes	100 (97.1)	0 (0)	3 (2.9)
Saliva	No	39 (37.9)	52 (50.5)	12 (11.6)
Breast milk	Yes	32 (31.1)	47 (45.6)	24 (23.3)
Vaginal secretions	Yes	78 (75.7)	20 (19.4)	5 (4.9)
Semen	Yes	89 (86.4)	5 (4.9)	9 (8.7)
Mucus	No	26 (25.2)	58 (56.3)	19 (18.5)
Tears	No	13 (12.6)	72 (69.9)	18 (17.5)

[a]Values are expressed as No. (%).

hazard. Thirty-six dentists (35.0%) claimed that they ever treated an HIV+ patient. Eight of them indicated that they had treated one or two patients in the last six months. Two dentists reported that they had treated between two and five HIV+ patients in the past six months. No one claimed to treat more than five patients in the past six months period.

One hundred participants (97.1%) claimed they would always wear gloves and a mask. Seventy-seven dentists (74.8%) said they would always use safety glasses.

As Table 3 presents, 98 participants (95.1%) claimed that the protection of their team members from occupational exposure to HIV was one of their high priorities, whereas just one participant declared it was not his/her priority. Eighty-three participants (80.6%) reported that they were worried about occupational exposure to HIV infection. Eighty-two dentists (79.6%) thought that as a dentist, they were at increased risk of HIV infection. Less than two-thirds (62.1%) believed that HIV transmission in dental clinics was very likely. This was despite the fact that about 70% claimed that the infection control measures in their workplaces were adequate to prevent infection by HIV.

Four-fifths of the subjects commented that there should be dental settings specially designed for HIV-infected patients. Forty participants (38.8%) agreed and another 34 participants (33.0%) disagreed with the statement that "health professionals should have the right to refuse to treat HIV+ patients". This showed that there was uncertainty and controversy among dentists in this regard. However, 71 dentists (68.9%) agreed that as a dentist, they had an ethical responsibility to provide dental care to an HIV+ person. Comparing their reply to the last two statements, seven dentists gave answers that somehow contradicted each other (Table 3).

The participants' attitude towards treating patients with different infections or high-risk patients is shown in Table 4. There was no statistically significant difference between male and female dentists in answering this question ($P > 0.658$ and $P = 0.888$ regarding HIV+ patients, respectively). Also, no statistically significant difference was found in the expressed attitude of dentists based on where they were graduated from, or the type of settings they were practicing in ($P > 0.765$). Less than 30% of dentists mentioned they would treat an HIV patient with no hesitation. This was the lowest percentage compared with the other high-risk patients they were asked about. More than half of dentists (N = 53) mentioned the "Increase in personal risk to become infected" as their main concern when encountering an HIV+ patient (Table 5).

In real practice, however, controversial responses were observed when simulated patients were sent to them. No dentist from a total of 103 dentists took a medical history from the simulated patient. No dentist asked about HIV infection, and no dentist even asked, "Do you have any systemic problem/disease". All selected dentists carried out with oral examination, gave some suggestions, and reached an agreement with the patient about the treatment plan, costs, and an appointment to start the treatments.

It was challenging when the simulated patient voluntarily disclosed his HIV status. The two last rows in Table 4 compare what dentists claimed about how they would act and how they really acted. Only 18 dentists (17.5%) accepted to carry out the agreed treatment plan. The others either referred the patients to other dentists or just rejected the patients. However, 62 dentists (60.2%) had claimed in the questionnaire that they somehow would accept HIV+ patients. Dentists' real practice was statistically different from what they mentioned to act against exposure to HIV+ patients ($P < 0.001$).

Table 3. Participants' Attitude Towards the Treatment of HIV-Positive Patients in Dental Settings

Statement	Number (%) of Dentists Who Agreed/Disagreed with Each Statement		
	Agree	Disagree	No Opinion
The protection of dental workers from occupational exposure to HIV is a high priority for me	98 (95.1)	1 (1.0)	4 (3.9)
I am worried about occupational exposure to HIV infection	83 (80.6)	10 (9.7)	10 (9.7)
As a dentist, I am at increased risk of HIV infection	82 (79.6)	12 (11.7)	9 (8.7)
HIV transmission in dental clinics is very likely	64 (62.1)	26 (25.2)	13 (12.7)
The infection control measures in my place of work are adequate to prevent cross-infection of HIV	72 (69.9)	13 (12.6)	18 (17.5)
Specially designed discrete settings should be made available to treat HIV infected patients	81 (78.6)	8 (7.8)	14 (13.6)
Health professionals should have the right to refuse to provide treatment for an HIV-positive patient	40 (38.8)	34 (33.0)	29 (28.2)
As a dentist, I have an ethical responsibility to provide dental care to an HIV-positive patient	71 (68.9)	12 (11.7)	20 (19.4)

Table 4. Participants' Attitude Towards Accepting Patients with Different Infections or High-risk Patients

Patients' Condition	Number (%) of Dentists Who Would …			
	Treat with no Hesitation	Accept with Hesitation	Refer Elsewhere	Reject Immediately
The participants' claimed attitude				
A homosexual/ bisexual man	40 (38.8)	34 (33.0)	20 (19.4)	9 (8.7)
A hemophiliac patient	50 (48.6)	17 (16.5)	30 (29.1)	6 (5.8)
An IV drug user	33 (32.0)	32 (31.1)	26 (25.2)	12 (11.7)
A HBV-infected patient	52 (50.5)	28 (27.2)	16 (15.5)	7 (6.8)
A HCV-infected patient	52 (50.5)	22 (21.4)	22 (21.4)	7 (6.8)
A recipient of blood and blood products	55 (53.4)	22 (21.4)	2 (20.4)	5 (4.8)
A patient who has long been in prison	52 (50.5)	33 (32.0)	12 (11.7)	6 (5.8)
An HIV+/AIDS patient	30 (29.1)	32 (31.1)	31 (30.1)	10 (9.7)
Their real practice				
Their observed practice in accepting an HIV+ patient	18 (17.5)	0	67 (65.0)	18 (17.5)

Table 5. Participants' Concerns About Accepting Patients with HIV/AIDS

	Number (%) of Dentists Concerned in This Study	Percentage of Dentists Concerned in the UK Study (Crossley, 2004) (7)	Percentage of Dentists Concerned in the Canadian Study (McCarthy and Britton, 2000) (17)
Loss of other patients from practice	39 (37.9)	34	68
Dealing with staff fearing about patients with HIV/AIDS	42 (40.8)	59	67
Increase in personal risk to become infected	53 (51.5)	36	63
The financial burden for the practice due to increased infection control procedures	20 (19.4)	32	45

5. Discussion

This study was conducted to study the dentists' knowledge, attitude, and behavior towards HIV patients. In this study, the dentists' real practice when patients disclosed their HIV status was also assessed. The results showed that Shiraz dentists' knowledge regarding oral manifestations of HIV was surprisingly low. The most correct answers belonged to candidiasis and Kaposi sarcoma, which were recognized by just above half of the dentists. Dentists' knowledge about HIV transmission through different body fluids was also low. However, the most important finding of this study was the remarkable difference between dentists' claim of how they would act towards HIV+ patients and their real practice. Although about 70% felt responsible to provide dental care to HIV+ patients and more than 60% claimed that they would treat such patients, only 17.5% of them accepted the simulated HIV+ patient in real practice.

The low level of dentists' knowledge about the means of HIV transmission obtained in this study is comparable with those reported in a 2004 UK study (7). Therefore, it seems like a global concern that dentists are all worried about treating HIV patients but do not put much emphasis on understanding how HIV is transmitted and do not allocate enough time to increase their knowledge about HIV. Also, as it was found in this study, they, unfortunately, do not even bother to use proper protection measures.

Although over 70% claimed the infection control of their workplaces was adequate to prevent cross-infection and felt an ethical responsibility to treat these patients and even though more than 60% declared that they would treat HIV patients, only a small minority of dentists (18%) actually accepted to treat an HIV+ patient. This finding was in line with that found by Khosravanifard et al. in Tehran, where most dentists claimed they would accept HIV+ patients, but less than 15% actually did (16). According to the results, there was a difference between dentists' self-reported attitude and real practice. This means that the dentists know that they should accept and treat HIV+ patients but do not really accept them. Another study conducted in Kuwait also indicated that the "knowledge" of dentists about their duties for HIV+ patients does not easily convert into "practice" (18).

In this study, the main concern of dentists about accepting HIV/AIDS patients was increased personal risk to become infected (51.5%). However, in the study by Crossley in the UK (7), the main concern was dealing with the staff that scared of patients with HIV/AIDS (59%) and in a study by McCarthy and Britton in Canada (17), the main concern was losing other patients (68%). A complete comparison between the three studies is provided in Table 5.

A wide variety of dentists working in Shiraz were recruited in this study due to proper randomized sampling. Therefore, it seems that the problems detected by this study are related to all types of dentists, including both general dental practitioners and specialists, regardless of the university, they graduated or years of experience. However, a wider geographical study and a more in-depth interview study are necessary to better understand the factors affecting Iranian dentists on how they encounter specific patients, such as HIV+ ones. Using multiple-choice questions eased the analysis of the answers; however, it can be considered as a limitation on understanding the participants' points of view.

Dental professionals' hesitance to accept HIV+ patients can result in much worse consequences, for example, they will not disclose their HIV status in future visits to other dentists. This is called driving HIV underground (19, 20). Findings from such studies should be implemented in oral health systems to increase the services available to HIV+ patients and to decrease the chance of cross-transmission of HIV in dental/health sector settings (21).

The obtained results revealed the limited knowledge of dentists regarding HIV infection, which in turn can lead to rejection of HIV+ patients. Proper educational courses with precise pre- and post-tests could increase the dentists' knowledge of HIV-related oral manifestations. Not having correct knowledge about the means of HIV transmission could be a reason for not being confident in treating HIV+ patients. Precise knowledge about the means of HIV transmission could help dentists to protect themselves and decrease their anxiety when encountering an HIV patient. This also could be achieved through the proper education of dental students and updating their knowledge through continuing professional education programs. Moreover, a proper clinical audit system could be an important measure to both increase dentists' obligation to meet infection control instructions and decrease the refusal of such patients.

5.1. Conclusions

The dentists' knowledge about the means of HIV transmission and oral conditions related to HIV infection and their attitude towards accepting HIV+ patients and infection control was not at a good level. Their real practice regarding accepting an HIV patient was also disappointing. Proper educational courses, encouraging measurements, and supervising measures are suggested to be implanted in the oral health system of Iran to increase the number of dentists accepting HIV patients and to prevent the HIV patients from hiding their infection.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Authors' Contribution: Ali Golkari and Zahra Ranjbar designed the study and the questionnaire. Ali Golkari and Mojtaba Homayouni did the fieldwork and collected data. Ali Golkari and Aira Sabokseir entered the data into the software. All authors were involved in data analysis. Mojtaba Homayouni and Aira Sabokseir prepared the first draft. All authors read and approved the final manuscript. All authors were involved in a major revision asked by the e-Medical Journal.

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Patient Consent: The participants' consent were asked in the first visit when the study was explained to them and the questionnaires were given to them. Returning the questionnaire was considered as their final consent.

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