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Original Article

Knowledge, Attitude, and Willingness to Treat HIV positive Patients and Practice of Infection Control Measures and Post-exposure prophylaxis amongst dentists in Chengalpattu

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Abstract

Objective: To assess the knowledge, attitude, and willingness towards the treatment of HIV-positive patients, Practice of Post-exposure prophylaxis methods, and standard infection control protocol among dentists and dental students in Chengalpattu district, Tamil Nadu, India

Materials and methods : A cross-sectional questionnaire-based study was done using Google Forms. 200 dentists and dental students in the clinical part of the dentistry program (years 4 and 5) in Chengalpattu participated in the study

Results : Amongst the 200 dentists surveyed, 88% say that they are willing to treat HIV-positive patients. Only 21% know the immediate action to be taken in case of direct blood contact with HIV positive patient (i.e.) anti-AIDS drugs such as Zidovudine should be taken. Our interpretation of Practice of infection control methods as per OSHA regulations is that 97.5% of dentists wear gloves to treat or screen all patients, 89.5% dentists use aprons/ gowns as personal protective equipment, 78.5% dentists use goggles to prevent accidental exposure to eyes, 97% dentists wash their hands after handling every patient and 85.5% dentists never bend or recap needles after use.

Conclusion : Dentists need better training on HIV post-exposure prophylaxis methods due to knowledge gaps, impacting their comfort in treating PLWHAs. This study suggests awareness campaigns and training programs to bridge this gap and improve their competence and confidence.

KEYWORDS : HIV/ AIDS, Infection control, post-exposure prophylaxis, willingness to treat PLWHA

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INTRODUCTION

India has the third-largest HIV epidemic globally, with around 2.5 million individuals living with HIV/AIDS as of 2022. Among them, approximately 1.59 lakh reside in Tamil Nadu (1). As a result, dental care workers are more likely to encounter people living with HIV/AIDS (PLWHA) in clinics, necessitating that they are equipped with the necessary knowledge and the right attitude (2). As the number of individuals with HIV/AIDS seeking oral and dental care rises, it's imperative that dental students and dentists possess adequate understanding of the disease and exhibit attitudes aligning with professional standards (3).

Every possible effort should be made to protect both healthcare workers and patients from HIV exposure in dental practices, as the primary mode of transmission typically occurs through contact with infected blood or other bodily fluids (4).

In the field of dentistry, serious infections can often be transmitted through occupational accidents, particularly during the use of local anesthetic syringes, instrument recapping, cleaning, and changing of anesthetic carpules. Additionally, patients may require multiple injections during dental treatment, increasing the risk of injury with contaminated needles. Dentists face various challenges, such as limited field of vision and sudden patient movements during needle or sharp instrument use, making them vulnerable to exposure. Dental students, in particular, are considered highly susceptible to blood-borne exposure as they develop their skills within a constrained environment. Although the risk may vary throughout their careers, it is typically highest during their professional training. Post-exposure prophylaxis, as defined by the WHO, involves medical intervention to prevent the transmission of blood-borne diseases following potential exposure to HIV, HBsAg, HCV, and other viruses. It should be initiated as soon as possible, ideally within 6 hours of probable exposure, and no later than 72 hours afterward (5).

Among Health Care Workers (HCWs), common exposures include sharp injuries, mucocutaneous contamination, and bites. Annually, an estimated 385,000 sharp injuries occur in hospitals across the United States. These exposures pose a significant hazard to HCWs as they can lead to the transmission of bloodborne pathogens like hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) (6).

Prior reports have suggested that approximately 90% of HIV infections among healthcare workers occur in developing countries, where occupational safety is often overlooked (4).

Standard Precautions (SP) encompass a set of infection prevention measures applicable to all patients, irrespective of their infection status, across any healthcare delivery setting. These measures include adhering to hand hygiene practices, utilizing appropriate personal protective equipment such as gloves, gowns, masks, eye protection, or face shields based on the anticipated exposure, and ensuring safe injection practices. Despite the implementation of "Standard Precautions," healthcare workers may still encounter accidental occupational exposure to HIV. Clear guidelines for post-exposure prophylaxis (PEP) are available to minimize the risk of infection in such cases (7).

The dental treatment of AIDS patients poses challenges, and the attitude of the dentist or dental student is crucial in addressing them. Hence, it is essential to cultivate a diagnostic mindset among dental students and equip them with adequate skills and knowledge to identify the oral manifestations of AIDS. Additionally, they should be trained to deliver appropriate management for patients with this condition (3).

This study aims to determine the knowledge about post-exposure prophylaxis methods, practice of standard infection control protocol, and attitude and willingness towards treatment of HIV-positive patients amongst dentists and dental students in Chengalpattu district, Tamil Nadu, India.

MATERIALS AND METHODS

Study design: This was a cross-sectional questionnaire-based study to assess the knowledge, attitude and willingness to treat HIV-positive patients and practice of standard infection control measures and Post-Exposure Prophylaxis methods amongst dentists across Chengalpattu.

Questionnaire: The structured, self-administered questionnaire partly adapted from comparable studies previously conducted to capture the level of HIV-related knowledge among dental students in other countries and measure their attitudes toward treating PLWHA was made available in the English language. The questionnaire consisted of five sections which were Demographic data, Attitude and Willingness to treat PLWHA (4 questions), Professional ethics (4 questions), knowledge and practice of Post-Exposure Prophylaxis measures (8 questions), and knowledge and practice of infection control protocol (9 questions)

Study participants: The sampling frame consisted of dentists and dental students at the clinical stage of dentistry program (years 4 and 5) in Chengalpattu district, Tamil Nadu State, India. The questions were arranged in an electronic form (google form) and distributed and were open for 2 weeks. Data was collected in January 2024.

Statistical analysis: Chi-square tests were conducted to assess the differences in the willingness to treat HIV patients, knowledge of post-exposure prophylaxis methods, and adherence to infection control protocols among dentists based on variables such as years of experience, age, gender, or the type of institutions. Two-tailed analyses were conducted, and P values less than 0.05 were considered significant. The data were statistically analyzed using SPSS v. 23.0 (IBM, Armonk, NY, USA).

RESULTS

The survey results offer insights into the attitudes and practices of dentists in Chengalpattu district regarding HIV/AIDS treatment and infection control. A high percentage (88%) are willing to treat HIV positive patients, which is encouraging. However, (12%) remain unwilling, potentially due to lack of knowledge or personal biases. (Table 1) More than half (53.5%) disagree with refusing treatment, suggesting ethical considerations. The remaining 46.5% might hold different views, highlighting the need for education and clear guidelines. (Table 1) Over half (55.5%) find infection control procedures time-consuming and potentially impacting work quality. This could indicate resource constraints, training gaps, or fear of increased workload. (Table 1)

Nearly all dentists (95.5%) sterilize burs and files, demonstrating good hygiene practices. (Table 1) 87.6% dentists are aware of the post exposure prophylaxis protocol in case of accidental cutaneous exposure. (Table 3) Worryingly, only 21% know the immediate action to take after blood contact with an HIV positive patient. (Table 4)

The data on OSHA-compliant practices is positive: 97.5% wear gloves, 89.5% use gowns, 78.5% use goggles, 97% wash hands frequently and 85.5% avoid recapping needles. (Table 2) Chi-square tests were conducted, revealing no statistically significant differences in the willingness to treat HIV patients, knowledge of post-exposure prophylaxis methods, and adherence to infection control protocols among dentists based on variables such as years of experience, age, gender, or the type of institution. This indicates a consistent pattern across these demographic and professional factors regarding attitudes, knowledge, and practices related to HIV patient care among the surveyed dentists.

The survey reveals a generally positive picture regarding willingness to treat and infection control practices. However, significant gaps exist in knowledge about HIV/AIDS and the need for additional training and resources.

Figure 1: Responses for the question, "Action carried out when HIV patient arrives in your office"

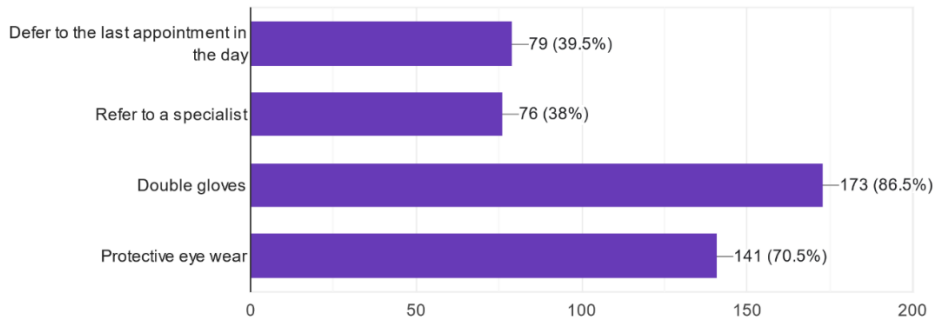

Figure 2: Responses for the question, "Do you feel the need to do any of the following after treating an HIV patient in your dental office"

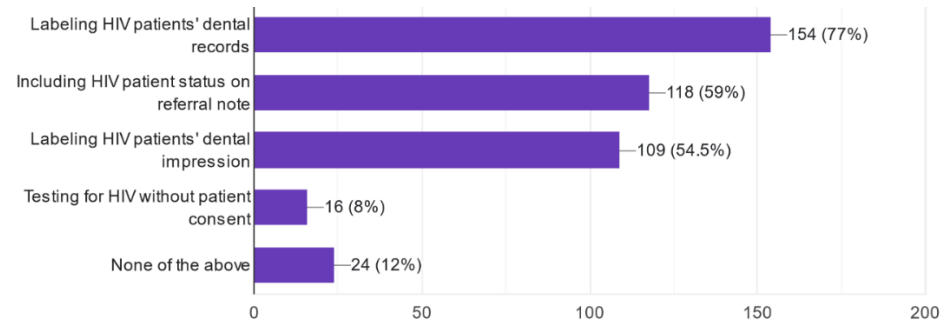

Table 1: Attitude, willingness, and awareness to treat HIV positive patients

QUESTION	RESPONSES N (%)	
	AGREE	DISAGREE
Are you willing to provide dental treatment for HIV patients in your practice?	176 (88)	24 (12)
Do you agree that regular dental care is an essential component of managing patients with HIV/AIDS?	176 (88)	24 (12)
Do you agree that Treatment of all patients should be done as potentially HIV-infected?	153 (76.5)	41 (23.5)
Do you feel that the dentist can decide to refuse to treat an HIV-positive patient	93 (46.5)	107 (53.5)
Do you feel that infection control procedures necessary for the treatment of patients with HIV/AIDS are time-consuming and may affect the work quality of the dentist	111 (55.5)	89 (44.5)
Can saliva be a vehicle for the transmission of AIDS?	97 (48.5)	103 (51.5)
After an accident with a sharp object/ needle stick injury, would you be worried about being infected?	187 (93.5)	13 (6.5)
After an accident with a sharp object/ needle stick Injury, would you be tested for HIV?	171 (85.5)	29 (14.5)
Do all sterilization methods have lethal effects against HIV?	93 (46.5)	107 (53.5)
Do you sterilize burs and files after every use?	191 (95.5)	9 (4.5)

Table 2: Practice of infection control methods as per OSHA regulations

Do you practice the infection control methods as per OSHA regulations?	Always practiced	Not always practiced
Gloves must be worn every time during the handling of potentially infected patients	195 (97.5)	5 (2.5)
Always wear aprons or gowns to prevent direct contact with blood and body fluids.	179 (89.5)	21 (10.5)
Wear goggles as necessary to prevent accidental exposure to the eyes.	157 (78.5)	43 (21.5)
Wash hands with soap and water after handling potentially infected patients.	194 (97)	6 (3)
Never bend or recap used needles.	171 (85.5)	29 (14.5)

Table 3: Knowledge of post-exposure prophylaxis methods to cutaneous exposure

Are you aware of the post-exposure prophylaxis methods in case of accidental cutaneous exposure?	YES	NO
Immediately wash contaminated skin (hands and face) and mucous membranes (eyes, nose, mouth).	193 (96.5)	7 (3.5)
Assess contaminated skin for erosion, ulceration, or dermatitis.	177 (88.5)	23 (11.5)
Disinfect the skin and squeeze the injured area to instigate bleeding	156 (78)	44 (22)

Table 4 : Knowledge on post-exposure prophylaxis (regimen)

What is the likelihood of HIV transmission following a single needle stick injury with a contaminated needle?		
	0.1 - 0.4%	50 (25)
	1 - 4 %	37 (18.5)
	10 - 40 %	48 (24)
	70 - 90 %	65 (32.5)
What immediate steps should be taken if there is direct contact with blood from an HIV-positive patient?		
	Anti-AIDS immunoglobulin should be administered	42 (21)
	Anti-AIDS drugs such as Zidovudine should be taken	42 (21)
	Blood tests should be carried out	116 (58)

Table 5: Professional ethics

What are your sentiments towards individuals with HIV?		**Respondent N (%)**
	Sympathy	60 (30)
	Empathetic	91 (45.5)
	Indifferent	45 (22.5)
	Disgust	4(2)

DISCUSSION

In our survey, 88% dentists are willing to treat People Living with HIV/ AIDS (PLWHA) who also think that routine dental checkup is an essential part of treatment for HIV positive patients. This is a strongly positive attitude shown by our respondents, given that 91.5% of our respondents are Dental students in Clinical phase of the course. According to Patil et. Al's study, respondents showed a negative attitude (mean score 62.9%) towards treatment of PLWHA(8). Our study also suggests that 38% dentists would prefer to refer PLWHA to specialists, despite the general positive attitude, this is in proportion to Wimardhini et. Al's statement (9).

About 25% dentists suggested that they feel negative emotions about PLWHA, this might induce personal bias and might even deny treatment opportunities for them. Similarly, Mc Carthy et. Al suggests that appropriate emphasis on ethics training at the undergraduate and postgraduate level and in continuing education may improve health care workers' sense of ethical responsibility and lead to a greater willingness to treat patients with bloodborne pathogens(10).

In accordance with Abou El Fadl et. Al' s study, 85% of the respondents had the correct knowledge about adhering to a standard set of infection control measures adequately preventing HIV transmission (11). This level is comparatively slightly higher in our study – 89.6%, provided this value also indicated the practice of standard infection control protocol provided by OSHA regulations.

According to Kumar et. Al, Though the odds of transmission of HIV from accidental exposure via contaminated needles is 0.1- 0.4%(12), only 25% dentists in our survey answered it correctly and 85.5% agree that they would get tested for HIV after the event of accidental exposure. According to Alali et. Al's study, 46% respondents would prefer to get tested for HIV after a similar exposure(3). This indicates a superior edge amongst dentists in Chengalpattu district.

HIV transmission through saliva in dental environment has not yet been established (Fotedar et. Al)(13). As per our study, only 51.5% are aware of the recent research progress. This is slightly better than the inference of Jain et. Al's (14) study conducted in Chennai (42.5%)

In our study, only 21% dentists consider the consumption of Anti-AIDS drugs like Zidovudine after suspected exposure. However, in Mukherjee et. Al's study, 100% respondents are aware of the necessity to consume PEP drugs after an accidental exposure (7). This indicates that dentists in Chengalpattu need to update themselves regarding post exposure prophylactic regimen and duration.

According to Mathewos et. Al' s study conducted in West Ethiopia; 44.1% respondents were aware of PEP guidelines to accidental cutaneous exposure(15). In our study, 87.6% respondents on an average, are aware of the PEP guidelines to cutaneous exposure. 95.5% dentists sterilize their burs and files after every single use suggestive of good hygiene practices among dentists in Chengalpattu district. 89.6% dentists adhere to infection control guidelines provided by OSHA and 87.6% dentists are aware of the post exposure

prophylaxis protocol in case of accidental cutaneous exposure. Worryingly, only 21% know the immediate action to take after blood contact with an HIV positive patient. This gap in knowledge necessitates

- Addressing the knowledge gaps about HIV/AIDS and immediate action after blood contact.
- Providing training and resources on time-efficient infection control procedures.
- Promoting education and awareness campaigns for dentists and the public.
- Encouraging open communication and addressing the concerns of dentists regarding HIV/AIDS treatment.

LIMITATIONS:

An overwhelming majority of the participants are comparatively less experienced with 1 - 3 years of clinical experience (91.5%) and belong to private institutions (83%). This affects the generalizability of the interpretations. Participants may have provided responses they believe are socially acceptable impacting the accuracy of self-reported information. The survey results are subjected to change with changing perspectives of dentists with experience. Hence, longitudinal studies can be done in the future to determine the dynamics in views of dentists in treating PLWHA overtime.

CONCLUSION

This study gives an insight that a vast number of young dentists are interested in providing PLWHA with dental treatment if necessity arrives and believe that dental treatment should be a part of the treatment protocol for HIV patients. Dentists need better training on HIV post-exposure prophylaxis methods due to knowledge gaps, impacting their comfort in treating PLWHAs. This study suggests awareness campaigns and training programs to bridge this gap and improve their competence and confidence.

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Nil

Conflicts of interest

There are no conflicts of interest

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