

Knowledge, Attitude and Unwillingness to Treat Patients with Herpes Labialis by Dental Health Care Practitioners in Karachi, Sindh - A Cross-sectional Study



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OBJECTIVE: To assess the knowledge and attitude of dental professionals regarding herpes labialis and to highlight the possible causes of refusal to treat infected individuals.

METHODOLOGY: A total of 144 participants responded to a self-administered questionnaire comprising 40 questions related to awareness and perception of dentists about herpes labialis. The study participants included dental professionals who perform routine dental procedures including house officers, resident doctors and faculty members. Undergraduates and parodontal staff were excluded. Participants who did not provide consent were also not included. Data was analyzed using SPSS version 26.0 and association of knowledge and practices with professional status was evaluated using Chi-square test. p-value of 0.05 is considered as significant.

RESULTS: Out of 144 respondents, 85 (91.4%) of house officers acknowledged saliva as a potential pathway of disease spread. Similarly, 30 (96.8%) residents and 16 (80%) dental faculty members were of the same opinion and a significant association between knowledge and professional experience was identified ($p = 0.015$). Regarding treatment of infected patients, 78 (83.9%) house officers along with 27 (87%) residents believed that providing treatment can put dentists at the risk of developing herpetic whitlow. A large proportion of dental faculty staff members 13 (65%) agreed with them and a statistically significant association opinion with professional expertise was noted ($p = 0.040$).

CONCLUSION: This study provides a comprehensive assessment of knowledge and attitude of dental professionals about herpes labialis. It highlights that most dental practitioners have adequate knowledge regarding cause and possible routes of spread of herpes labialis. A significant number of dental care providers may be reluctant to treat affected individuals citing occurrence of herpetic whitlow as a valid concern.

KEYWORDS: Herpes labialis, knowledge, practice

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INTRODUCTION

Herpes labialis has been recognized as one of the most well-known and prevalent viral infections of the oral cavity in recent times. The condition is

caused by Herpes Simplex Virus-1 (HSV-1) and predominantly affects the upper and lower lips along with the gingiva and tongue manifesting in the form of ulcerative lesions.¹ There has been an alarming increase in frequency of this disease reflected in the statistics provided by World Health Organization (WHO) which indicate that approximately 3.7 billion people under the age of 50 years suffer from HSV-1 infection worldwide.² Oral herpetic infections are found in 57% to 80% of the population of the U.S while in the Asian region the prevalence was found to be higher affecting more than 75% of adults.³

Close proximity with infected patients or direct contact with their lesions and body fluids such as saliva have been identified as the major routes of transmission posing dentists at an increased risk of infection.⁴ Various reports^{5,6} have

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highlighted the occurrence of conditions such as herpetic whitlow and herpetic keratitis in dental care providers as a consequence of treating patients with herpes labialis. The risk of viral spread can be reduced by adapting proper infection control practices. Although these protocols do not completely eliminate the chance of transmission making dental professionals unwilling to treat infected patients. HSV-1 has the tendency to shed during different stages of disease including the prodromal and clinical period. While it has been reported that most of the shedding occurs during the ulcerative phase, it may also occur even when individuals are asymptomatic.⁷ These findings in combination with the ability of the virus to penetrate through various dental materials such as acrylic monomer, solvent and latex gloves further illustrate increased exposure of dental practitioners to viral infections.⁸

It is extremely important that dental professionals should be equipped with adequate knowledge regarding treatment protocols for individuals presenting with active disease and methods of prevention. Moreover, the dental professionals should be aware that individuals suffering from disease may also experience depression and social anxiety which may worsen when they are refused treatment. This refusal to treatment may be considered unethical, creating discord between dentists and their patients.⁹

While a number of studies have been performed across the globe regarding the knowledge and attitude of undergraduate dental and hygienist students towards herpes labialis^{10,11}, there is a dearth of evidence about the knowledge and practices of dental practitioners in Pakistan. In this study we aim to provide a comprehensive evaluation of awareness of dental house officers, resident doctors and faculty members about possible methods of transmission and prevention of viral infection along with their potential reasons for treatment refusal.

METHODOLOGY

This cross-sectional analytical study was conducted at three different government dental colleges including Dow International Dental College (DIDC), Dow Dental College (DDC), and Dr. Ishrat-ul -Ebad Khan Institute of Oral Health Sciences (DIKIOHS). All three dental colleges are affiliated with Dow University of Health Sciences (DUHS). The study was conducted over a period of 8 months from June 2023 to January 2024. The study participants included dental professionals who perform routine dental procedures including house officers, resident doctors and faculty members. Undergraduates and parodontal staff were excluded. Participants who did not provide consent were also not included. The study was approved by the Institutional Review

Board (IRB) of DUHS bearing IRB number: IRB-2894/DUHS/Approval/2023/91.

Sample size was calculated using OpenEpi Calculator version 3.0 with 95% confidence interval and 5% power using frequency of dentists with adequate knowledge regarding herpes labialis (85%) reported in a study by Kanjirath et al,¹² The sample size was calculated to be 196.

A total of 196 participants were selected in accordance with inclusion criteria and data was collected after obtaining verbal consent. A validated, self-administered questionnaire adopted in a study by Adodo et al.¹³ was utilized as a data collection tool. The questionnaire consisted of 40 items covering several aspects of awareness and perception of dental professionals regarding herpes labialis along with possible reasons to refuse treatment. The responses were categorized as Yes, No and Don't know. Participation was voluntary and no incentives were offered to the respondents. Out of 196 questionnaires distributed, the number of completed questionnaires returned was noted to be 160 giving a response rate of 81.6%. 16 questionnaires were discarded due to improper filling and the final number of forms utilized for analysis was 144.

Statistical analysis was performed using SPSS version 27.0. Frequency and percentages were obtained using descriptive statistics. Association of knowledge and attitudes of participants with professional status was evaluated using Chi-square test. A p-value of < 0.05 was considered as significant.

RESULTS

It was observed that among the 144 respondents, 104 (72.2%) were females. The predominant age group was 23-25 years as 88 (57.1%) people belonged to this category. Conversely, only 6 (3.9%) individuals were aged 32 or more. The study population comprised 93 (64.6%) and 31 (21.5%) house officers and residents respectively along with 20 (13.9%) dental faculty members. (Table 01)

A majority of 91 (97.8 %) house officers and 30 (96.8%) of resident doctors identified the virus as a causative agent for herpes labialis. All members of the dental faculty also expressed similar opinions regarding etiology of this condition. Several questions were asked to assess knowledge of participants regarding possible routes of transmission and it was observed that while 14 (45.1%) residents and 12 (60%) faculty members favored spread of virus through tears, only 22 (23.7%) house officers agreed with them. A significant association of professional status and awareness was noted. ($p = 0.012$).

It was noted that 85 (91.4%) of house officers acknowledged saliva as a potential pathway of disease

Table 1: Socio-Demographic Characteristics of Study Participants

Characteristics	N = 144 (%)
Gender	
Male	40 (27.8)
Female	104 (72.2)
Age (years)	
20-22	16 (10.4)
23-25	88 (57.1)
26-28	23 (14.9)
29-31	11 (7.1)
≥ 32	6 (3.9)
Marital Status	
Single	112 (77.8)
Married	32 (22.2)
Professional Status	
House Officer	93 (64.6)
Resident Doctor	31 (21.5)
Dental Faculty	20 (13.9)

Table 2: Association of Knowledge of Participants with Professional Status

Knowledge	House Officers N = 93 (%)	Resident Doctors N = 31 (%)	Dental Faculty N = 20 (%)	P-value [‡]
Caused by Virus				
Yes	91 (97.8)	30 (96.8)	20 (100)	0.798
No	1 (1.1)	1 (3.2)	0 (0)	
Don't know	1 (1.1)	0 (0)	0 (0)	
Transmitted through tears				
Yes	22 (23.7)	14 (45.1)	12 (60)	0.012
No	53 (57.0)	11 (35.5)	6 (30)	
Don't know	18 (19.3)	6 (19.4)	2 (10)	
Transmitted through saliva				
Yes	85 (91.4)	30 (96.8)	16 (80)	0.019
No	3 (3.2)	1 (3.2)	4 (20)	
Don't know	5 (5.4)	0 (0)	0 (0)	
Transmitted through kissing				
Yes	83 (89.2)	30 (96.8)	17 (85)	0.604
No	2 (2.1)	0 (0)	1 (5)	
Don't know	8 (8.7)	1 (3.2)	2 (10)	
Transmitted through sharing toothbrush				
Yes	78 (83.9)	26 (83.9)	13 (65)	0.284
No	9 (9.6)	2 (6.4)	3 (15)	
Don't know	6 (6.5)	3 (9.7)	4 (20)	
Transmitted through sharing spoons & plates				
Yes	76 (81.7)	25 (80.6)	12 (60)	0.129
No	11 (11.9)	3 (9.7)	3 (15)	
Don't know	6 (6.4)	3 (9.7)	5 (25)	
Transmitted through sharing makeup				
Yes	70 (75.2)	24 (77.4)	15 (75)	0.862
No	11 (11.8)	5 (16.2)	3 (15)	
Don't know	12 (13.0)	2 (6.4)	2 (10)	
Transmitted through hands				
Yes	28 (30.1)	17 (54.8)	10 (50)	0.018
No	57 (61.3)	9 (29.0)	7 (35)	
Don't know	8 (8.6)	5 (16.2)	3 (15)	
Transmitted through sexual intercourse				
Yes	51 (54.8)	22 (71.0)	14 (70)	0.320
No	24 (25.8)	6 (19.3)	2 (10)	
Don't know	18 (19.4)	3 (9.7)	4 (20)	
Self-limiting disease				
Yes	61 (65.5)	18 (58.0)	10 (50)	0.499
No	20 (21.5)	8 (25.9)	8 (40)	
Don't know	12 (13.0)	5 (16.1)	2 (10)	
Treating patients may cause herpetic whitlow in dentists				
Yes	78 (83.9)	27 (87.0)	13 (65)	0.040
No	4 (4.3)	2 (6.4)	0 (0)	
Don't know	11 (11.8)	2 (6.4)	7 (35)	

[‡]Chi-square test

spread. A large proportion, 30 (96.8%) residents and 16 (80%) were of the same opinion and a significant association between knowledge and professional experience was

Table 3: Association of Knowledge Regarding Triggers of Herpes Labialis Infection and Professional Experience

Triggers for infection	House Officers N = 93 (%)	Resident Doctors N = 31 (%)	Dental Faculty N = 20 (%)	P-value [‡]
Fatigue				
Yes	58 (62.4)	16 (51.6)	11 (55)	0.531
No	35 (37.6)	15 (48.4)	9 (45)	
Fever				
Yes	65 (70.0)	22 (71.0)	17 (85)	0.386
No	28 (30.0)	9 (29.0)	3 (15)	
Sunlight				
Yes	68 (73.1)	18 (58.0)	12 (60)	0.210
No	25 (26.9)	13 (42.0)	8 (40)	
Menstruation				
Yes	40 (43.0)	10 (32.2)	5 (25)	0.240
No	53 (57.0)	21 (67.8)	15 (75)	
Stress				
Yes	78 (83.9)	27 (87.0)	17 (85)	0.910
No	15 (16.1)	4 (13.0)	3 (15)	
Hormonal change				
Yes	56 (60.2)	20 (64.5)	11 (55)	0.793
No	37 (39.8)	11 (35.5)	9 (45)	
Upper respiratory infection				
Yes	41 (44.1)	18 (58.1)	16 (80)	0.011
No	52 (55.9)	13 (41.9)	4 (20)	
Dental treatment				
Yes	55 (59.1)	12 (38.7)	13 (65)	0.092
No	38 (40.9)	19 (61.3)	7 (35)	
Extreme Temperature				
Yes	67 (72.0)	20 (64.5)	15 (75)	0.659
No	26 (28.0)	11 (35.5)	5 (15)	
Weak Immune System				
Yes	82 (88.2)	29 (93.6)	20 (100)	0.210
No	11 (11.8)	2 (6.4)	0 (0)	

[‡]Chi-square test

identified. (p = 0.015).

In addition to this, 78 (83.9%) house officers along with 27 (87%) residents believed that providing treatment to infected patients can put dentists at the risk of developing herpetic whitlow. More than half,¹³ (65%) dental faculty agreed with them and a statistically significant association of opinion with professional expertise was noted. (p = 0.040). (Table 02)

Important trends in participants' perceptions were observed regarding possible triggers that induce herpes labialis infections. It was detected that 58 (62.4%) house officers and 11 (55%) presumed fatigue as a trigger for disease. We were not able to uncover a significant relationship of opinion with different professional qualifications. (p = 0.531). Similar to this, no statistically significant association of knowledge with experience was identified concerning fever and stress as potential triggers. (p = 0.386) and (p = 0.240) respectively. (Table 03)

Regarding the attitude of study participants to treat herpes labialis patients, it was noted that 48 (51.6%) house officers were keen to educate patients about their ailment. However, only 13 (42%) and 9 (45%) residents and dental faculty showed similar interest and a significant association was observed (p = 0.013).

Only 19 (20.5%) house officers agreed to be comfortable in treating herpes labialis patients. Among residents and

dental faculty members,¹³ (42%) and 8 (40%) were willing to provide treatment and no substantial difference in attitudes was observed. (p = 0.215). Conversely, 7 (35%) dental faculty and 32 (34.4%) were apprehensive about provision of treatment. (p = 0.538) (Table 04)

Dental professionals were also inquired about adequate measures for prevention of herpes labialis. Majority of study participants believed in the efficacy of these measures; frequent handwashing was supported by 78 (83.9%) and 23

(74.2%) house officers and residents respectively. Avoidance of kissing and sharing crockery were also considered effective preventive measures by a large proportion of participants in each group. No significant association between opinions about preventive measures and professional status was observed.

DISCUSSION

One of the most fundamental responsibilities of a dentist is providing adequate oral health care. This provision of oral health puts clinicians at an increased risk of contracting various infectious diseases caused by microorganisms such as mycobacterium tuberculosis, Herpes simplex Virus 1 (HSV1), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and others.¹⁴ Herpes simplex is a highly contagious virus shed in saliva which can cause severe infections in exposed individuals, making its exposure a concern for dentists.¹⁵ It is extremely crucial for dental professionals to be well equipped with knowledge regarding possible routes of transmission of virus and its trigger factors enabling them to treat infected patients while adhering to strict prevention protocols.

The results of our study indicate that more than 90% dentists possessed sound knowledge regarding potential routes of transmission of virus. This result is quite encouraging in contrast to a study conducted in Nigeria assessing the knowledge of health care providers concerning herpes labialis infection. The study concluded that only 44.2% of dentists had sufficient information about etiology, transmission route and prevention of this infection.¹³ The findings of our study are supported by two studies performed in Egypt and Pakistan which report adequate knowledge among health care providers pertaining to spread of viral infections and appropriate infection control measures.^{16,17}

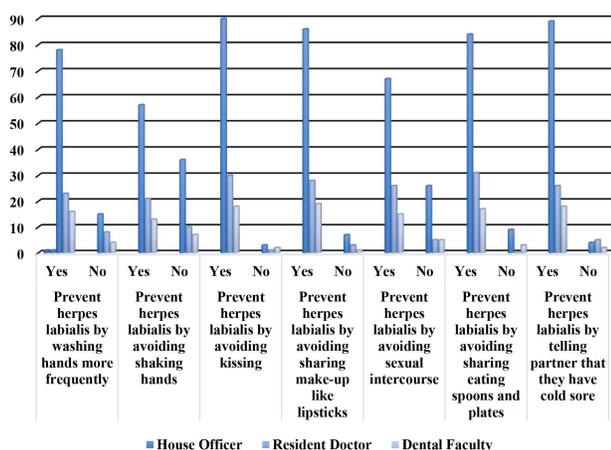
A significant difference was observed in responses between house officers, resident doctors and dental faculty (p-value 0.019) highlighting that professional experience may have an impact on level of knowledge. Bansal et al¹⁸ in their study evaluated awareness of herpes labialis among dental interns. It was reported that knowledge of most participants was unsatisfactory. In another study by Rao et al¹⁹ conducted in Rawalpindi, it was reported that senior practitioners exhibited less awareness regarding infection control procedures in comparison to dental students. HSV-1 exhibits the tendency to remain dormant in nerves for a prolonged period of time as observed by Gopinath et al.¹ However, the virus can be re-activated in response to certain triggers including stress, exposure to sunlight and changes in immune system.²⁰ Sufficient information regarding triggers and transmission potential of infectious agents is

Table 4: Association of Attitudes about Treatment with Professional Status

Attitude about Treatment	House Officers N = 93 (%)	Resident Doctors N = 31 (%)	Dental Faculty N = 20 (%)	P-value [£]
Comfortable				
Strongly Agree	16 (17.2)	3 (9.7)	4 (20)	0.215
Agree	19 (20.5)	13 (42.0)	8 (40)	
Neutral	31 (33.3)	10 (32.2)	4 (20)	
Disagree	17 (18.3)	3 (9.7)	4 (20)	
Strongly Disagree	10 (10.7)	2 (6.4)	0 (0)	
Concerned				
Strongly Agree	32 (34.4)	7 (22.6)	7 (35)	0.538
Agree	43 (46.2)	15 (48.4)	9 (45)	
Neutral	15 (16.2)	9 (29.0)	3 (15)	
Disagree	2 (2.1)	0 (0)	0 (0)	
Strongly Disagree	1 (1.1)	0 (0)	1 (5)	
Check Patient History				
Strongly Agree	53 (57.0)	15 (48.4)	9 (45)	0.791
Agree	32 (34.4)	11 (35.5)	9 (45)	
Neutral	6 (6.4)	5 (16.1)	2 (10)	
Disagree	1 (1.1)	0 (0)	0 (0)	
Strongly Disagree	1 (1.1)	0 (0)	0 (0)	
Use Infection Control				
Strongly Agree	64 (68.8)	15 (48.4)	9 (45)	0.171
Agree	24 (25.8)	13 (42.0)	8 (40)	
Neutral	4 (4.3)	3 (9.6)	2 (10)	
Disagree	1 (1.1)	0 (0)	1 (5)	
Strongly Disagree	0 (0)	0 (0)	0 (0)	
Educate Patients				
Strongly Agree	48 (51.6)	13 (42.0)	12 (60)	0.013
Agree	38 (40.9)	17 (54.8)	3 (15)	
Neutral	7 (7.5)	1 (3.2)	4 (20)	
Disagree	0 (0)	0 (0)	1 (5)	
Strongly Disagree	0 (0)	0 (0)	0 (0)	
Do not provide treatment				
Strongly Agree	15 (16.1)	1 (3.2)	3 (15)	0.183
Agree	14 (15.0)	10 (32.2)	7 (35)	
Neutral	21 (22.6)	8 (25.8)	4 (20)	
Disagree	31 (33.3)	8 (25.8)	6 (30)	
Strongly Disagree	12 (13.0)	4 (13.0)	0 (0)	

£Chi-square test

Figure 1: Graphical Representation of Dental Professionals' Response about Preventive Measures



compulsory for adoption of necessary preventive protocols in dentistry.

Our study indicates that the majority of the respondents were well-informed about potential triggers that can precipitate recurrence of infection and the preventive measures that need to be taken in order to reduce spread. The study by Azodo et al¹³ also emphasizes that lack of knowledge regarding HSV-1 and other viral infections results in failure to adopt optimal protective measures by the dentist, consequently they have an increased risk of developing herpetic whitlow and herpetic keratitis.

A number of measures can be advocated for prevention of herpes labialis such as minimizing contact with infected individuals and exposure to saliva.²¹ Our study revealed variations in the implementation of preventive measures among dentists. While house officers adhered to recommended protocols and favored frequent handwashing along with avoiding kissing, residents and faculty doctors were supportive of not sharing utensils and disclosing presence of a cold sore. Standardizing and reinforcing adherence to evidence-based guidelines, including the use of personal protective equipment and sterilization procedures is imperative to minimize the risk of transmission within dental settings.²²

There are certain dilemmas associated with treatment of herpes labialis infected patients among dental professionals. Some dentists may be reluctant to provide treatment which can impact patient care, treatment decisions, and the overall dynamics within a dental practice. We observed that most of the participants in our study would prefer to defer treatment of infected patients and might be concerned for their protection.

Similar attitudes have been seen in context to other infectious diseases such as HIV and HBV. Nair et al⁹ in their qualitative study revealed that there is discrimination against HIV infected individuals making health care providers reluctant to provide treatment. Conversely, 54.9% health care providers in Saudi Arabia were unwilling to treat HIV positive patients due to perceived high risk of exposure.²³ Addressing these attitudes through targeted educational initiatives and awareness campaigns is crucial for creating a supportive and nonjudgmental environment for both patients and practitioners.

The findings of this study have direct implications for patient care. Improvement in knowledge, attitudes and practices of dental professionals regarding herpes labialis can lead to enhanced patient outcomes, reduced transmission risks, and a more empathetic approach to those affected by the infection. It is important to acknowledge limitations of the study such as small sample size along with potential biases in self-reported data and cross-cultural variations.

CONCLUSION

Adequate knowledge regarding herpes labialis is indispensable for adoption of accurate preventive measures. Majority of dental professionals had sufficient knowledge and practiced appropriate infection control protocols. Some dentists were reluctant to treat infected patients which necessitates the need to provide continuous education within the dental community for improving patient care and minimizing the impact of herpes labialis infections in dental settings.

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DISCLOSURE

None

CONFLICT OF INTEREST

None declared

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