



AWARENESS AND PERCEPTION REGARDING HAND HYGIENE AMONG DENTAL STUDENTS WESTERN INDIA

Dental Science

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ABSTRACT

Background: A questionnaire study was conducted among 567 undergraduate students and 151 postgraduate students. The objectives of this study were to explore the awareness and beliefs regarding infection control in dental clinics (Aim 1), to evaluate the knowledge regarding hand hygiene (Aim2) and to evaluate the practice of hand hygiene (Aim 3).

Method: The students responded to a self-administered survey consisting of 22 questions related to hand hygiene and infection control in dental hospital.

Result: Majority of students (94- 97%) of students were aware that saliva and blood can be the modes of transmission of infection. 86.43% of students washed their hand before touching the patient, only 31.26% washed their hands after touching the patient surroundings.

Conclusion: The results of this study should alert the teachers of dental profession to create awareness among their students regarding practical application of infection control measures.

KEYWORDS

Dental students, WHO Guidelines, Hand hygiene, Infection control, Hand Rubbing

INTRODUCTION

Dentists are exposed to blood, saliva and oral fluids. Various infections may be transmitted in the dental operator through various means, including direct contact with blood, oral fluids, or other secretions; indirect contact with contaminated instruments, operator equipment, or environmental surfaces; or contact with airborne contaminants present in either droplet splatter or aerosols of oral and respiratory fluid.¹ Gloves must be changed between patients and before touching clean sites on the same patient. Hand hygiene should be applied immediately after gloves are removed, before and between patient contacts. A mask, eye protection and a gown should be worn to protect mucous membranes, skin, and clothing during procedures that are likely to result in splashing of blood, body fluids, secretions, or excretions. Masks are worn within 1 meter (3 feet) of the patient.²

Current CDC guidelines recommend use of alcohol based hand sanitizer immediately before touching a patient, before handling invasive medical devices, after contact with blood, body fluids or contaminated surfaces and immediately after removal of gloves.³

The study was conducted among the undergraduate and post graduate students of dental college, with the following aims and objectives:

- 1) To evaluate the awareness regarding hand hygiene in dental clinics.
- 2) To evaluate the knowledge regarding hand hygiene.
- 3) To evaluate the practice of hand hygiene as means of personal protection.

MATERIAL AND METHOD

Recruitment of Participant and Ethical Approval:

Before the onset of the study approval was obtained from the Dental College review board (ECR/Inst/684/2014/RR-17). The study was conducted in full accordance with current National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017.⁴ All subjects participated after written and verbal informed consent, in accordance with local ethics committee standards and the revised Helsinki declaration (2013).⁵

Study Sample:

This study was a cross sectional study, conducted in three dental institutes of Western India. The duration of the study was from March to August 2019. The participants of the study were undergraduate (third

year, final year and interns) and postgraduate students. The first and second year students were excluded from the study as they had not yet begin their clinical training.

Selection criteria:

The inclusion criteria were: 1) The undergraduate (third year, final year and interns) and postgraduate students studying in the institute. 2) Voluntary students willing to give informed consent.

The exclusion criteria were: 1) the undergraduate (first and second year) students studying in the institute. 2) Involuntary students.

Sample Size:

567 undergraduate students (187 third year, 189 final year and 191 interns) and 151 postgraduate students participated in the study. Total 718 students participated in the study.

Questionnaire:

A validated questionnaire of 22 questions related to hand hygiene and infection control in dental hospital was prepared. The questionnaire was structured, close ended and designed in English language. There were three sections of the questionnaire. The first section covered the demographic profile including details regarding age, sex, and education. Section two had eight questions regarding awareness and beliefs regarding infection and infection control in dental clinics. Section three had 14 questions regarding knowledge regarding hand hygiene.

Reliability and Validity of Study:

The reliability and validity of the survey was tested prior to its administration. The validity of the content was analyzed and assessed by for researchers familiar with research methodology. After necessary corrections the questionnaire was tested on students of the institute to evaluate the comprehensibility and accessibility. Forty volunteers participated in the preliminary survey. They were able to comprehend the questionnaire of the survey without any difficulty. The questionnaire was tested on the same group after a period of one month to test the reliability and consistency of answers. This pilot test obtained 95% reliability. Cronbach's alpha internal consistency coefficient assessed the validity of the questionnaire. The sectional variability was compared using Chi-square test. Mean of knowledge

and awareness was compared using Analysis of variance (ANOVA).The statistical analysis of data was done using SPSS Statistics Version 25.

RESULTS

Total 718 students ((346male and 372 female) participated in the study.567 were undergraduate students (187 third year, 189final year and 191 interns) and 151 were postgraduate students (Table 1).

	Third Year	Final year	Interns	Post Graduates	Total
Male	92	93	91	70	346
Female	95	96	100	81	372
Total	187	189	191	151	718

The first objective of this study was to assess the awareness and beliefs regarding infection and infection control in dental clinics among the dental students. Table 2 shows around 94- 97% of students were aware that saliva and blood can be the mode of transmission of infection.93.5% undergraduate and all the post graduates believed that infections like AIDS, Hepatitis and herpes can be transmitted to the dentist during dental treatment.

Table 1: Distribution of study sample according to gender and academic year

Gender	n
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Table 2: Awareness and beliefs regarding infection and infection control in dental clinics

S.No.	Question	Answer	Academic Year			
			Third Year n(%)	Final year n(%)	Interns n(%)	Post Graduates n(%)
1	Do you understand the significance and meaning of infection?	Yes	178(88.89)	180(95.24)	188(89.13)	151(100)
		No	9(11.11)	9(4.76)	3(10.87)	0(0)
2	Are you aware about the protocol for infection control?	Yes	163(66.67)	171(73.80)	175(76.09)	142(82.35)
		No	24(33.33)	11(26.20)	16(23.91)	9(7.65)
3	Do you believe that harmful germs can be transmitted between patients by unclean hand of dentist?	Yes	172(66.67)	169(76.19)	186(78.26)	144(86.27)
		No	3(6.66)	9(4.76)	0	0
		I don't know	12(26.67)	11(19.05)	5(21.74)	7(13.73)
4	Do you believe that harmful germs can be transmitted from the patients to the dentist?	Yes	180(88.89)	185(97.62)	187(93.48)	150(8.04)
		No	0	0	0	0
		I don't know	7(11.11)	4(2.38)	4(6.52)	1(1.96)
5	Do you believe that saliva can be a mode of transmission for infection?	Yes	178(90)	185(95.24)	187(95.65)	149(96.08)
		No	2(3.33)	0	0	0
		I don't know	7(6.67)	4(4.76)	4(4.35)	2(3.92)
6	Do you believe that blood can be a mode of transmission for infection?	Yes	181(95.56)	185(97.62)	189(97.83)	150(98.04)
		No	0	0	0	0
		I don't know	6(4.44)	4(2.38)	2(2.17)	1(1.96)
7	Do you believe that harmful germs can be transmitted from the patients to the dentist?	Yes	172(83.89)	187(95.24)	189(95.66)	151(100)
		No	2(4.44)	1(2.38)	1(2.17)	0
		I don't know	3(6.67)	1(2.38)	1(2.17)	0
8	Do you believe that infections like AIDS, Hepatitis and herpes can be transmitted to the dentist during dental treatment?	Yes	185(95.56)	185(97.62)	191(100)	151(100)
		No	1(2.22)	0	0	0
		I don't know	1(2.22)	4(12.38)	0	0

The second objective of the study was to assess the knowledge and awareness regarding hand hygiene among the students (Table 3).

Table 3: Knowledge and awareness regarding hand hygiene

S.No.	Question	Answer	Academic Year			
			Third Year n(%)	Final year n(%)	Interns n(%)	Post Graduates n(%)
1	Do you feel that hand hygiene is important?	Yes	182(97.78)	189(100)	191(100)	151(100)
		No	5(2.22)	0	0	0
2	Are you aware about the CDC guideline for hand hygiene?	Yes	25(33.33)	35(42.86)	40(43.49)	76(50.98)
		No	162(66.64)	164(57.14)	151(56.51)	75(49.02)
3	Are you aware about the WHO guideline for hand hygiene?	Yes	21(24.44)	34(33.33)	89(41.30)	81(54.90)
		No	165(75.56)	165(66.67)	92(58.70)	70(45.10)
4	Are you familiar with the terms: Hand washing	Yes	179(93.33)	189(100)	191(100)	151(100)
		No	6(6.67)	0	0	0
		Hand scrubbing	Yes	168(62.22)	168(61.90)	179(65.22)
5	Are you aware about the difference between the above mentioned terms?	Yes	89(60)	156(66.67)	154(73.91)	140(78.43)
		No	89(40)	33(33.33)	37(26.09)	11(21.57)
		Hand rubbing	Yes	21(26.2)	21(26.19)	24(28.26)
6	Do you believe that hand scrubbing is more effective than hand washing?	Yes	166(73.80)	168(73.81)	167(71.74)	130(58.82)
		No	40(17.78)	46(21.43)	44(19.57)	16(31.37)
		I don't know	12(4.44)	13(7.14)	13(6.52)	5(9.81)
7	Do you believe that hand scrubbing is more effective than hand rubbing?	Yes	135(77.78)	130(71.43)	134(73.91)	130(58.82)
		No	9(20)	5(11.90)	11(23.91)	17(33.33)
		I don't know	3(6.67)	5(11.90)	4(8.7)	6(11.77)
8	Do you believe that hand scrubbing is more effective than hand rubbing?	Yes	133(73.33)	132(76.20)	31(67.39)	28(54.90)
		No	20(17.78)	35(19.05)	36(23.91)	15(29.41)
		I don't know	15(11.11)	14(9.52)	15(10.87)	6(11.77)
9	According to you what is the appropriate duration for hand rubbing?	Yes	132(71.11)	130(71.43)	140(62.22)	130(58.82)
		1-2 minutes	6(13.34)	6(14.29)	8(17.39)	10(16.61)
		3-5 minutes	11(24.44)	20(23.81)	20(21.74)	13(15.49)

		more than 5 minutes	168(72.22)	156(61.90)	158(60.87)	128(57.90)
10	According to you what is the appropriate duration for hand washing?	1-2 minutes	6(13.33)	12(23.81)	13(17.39)	10(19.61)
		3-5 minutes	10(20)	8(19.05)	20(21.74)	16(31.37)
		more than 5 minutes	169(72.28)	169(75.43)	158(68.95)	125(64.96)
11	Do you think that finger rings and nail polish can act as potential reservoir for germs?	Yes	21(24.44)	151(57.14)	146(56.52)	129(56.86)
		No	16(13.34)	18(19.05)	25(17.39)	12(23.53)
		I don't know	158(62.22)	30(23.08)	30(26.09)	10(19.61)
12	Do you think that it is necessary to remove finger rings and nail polish prior to hand preparation?	Yes	41(26.67)	120(47.62)	96(50)	131(60.78)
		No	37(15.55)	24(16.67)	42(21.74)	9(17.65)
		I don't know	109(57.78)	45(35.71)	53(28.26)	11(21.57)
13	Which of the following do you use for hand hygiene?	Soap and water	132(55.56)	122(52.38)	120(43.48)	126(50.98)
		antiseptic hand rub	25(11.11)	26(14.29)	29(19.56)	6(11.77)
		both	30(22.22)	41(33.33)	47(36.96)	19(37.25)
		none	0	0	0	0
14	Do you wash hand – before touching a patient?	Yes	154(75.55)	179(92.86)	180(86.96)	148(94.12)
		No	33(24.44)	10(7.14)	11(13.04)	5(5.88)
	Before aseptic procedures?	Yes	176(86.67)	178(90.48)	182(91.30)	150(98.04)
		No	11(13.33)	11(9.52)	9(8.70)	1(1.96)
	After risk of exposure to saliva and blood?	Yes	178(88.89)	189(100)	191(100)	151(100)
		No	9(11.11)	0	0	0
	After touching a patient?	Yes	109(57.78)	162(83.33)	164(84.78)	145(88.24)
		No	78(42.22)	27(16.67)	27(15.22)	6(11.76)
	After touching the patient surroundings?	Yes	9(11.11)	57(23.80)	57(26.09)	11(21.57)
		No	178(88.89)	132(76.10)	134(73.91)	140(78.43)

Most of the students were unaware about the CDC and WHO guideline for hand hygiene (62.64% third year, 61.70% final year, 49.70% interns and 48.65% post graduates). 68% of under graduate and 61.25% of post graduate were not aware of the difference between hand scrubbing and hand rubbing. 72.28% third year, 75.43% final year, 68.95% interns and 64.96% post graduate believed that appropriate duration for hand rubbing was more than 5 minutes. 88.98% third year students did not know that finger rings and nail polish can act as potential reservoir for germs. More than 76.87% students used soap and water for maintenance of hand hygiene. These responses showed that only a small percentage of respondents in each group knew correctly the hand hygiene protocol and majority of them did not follow it.

DISCUSSION

The dental students are at high risk of cross infection and contamination if they don't have sufficient knowledge, training and education.^{5,6} The aim of this study was to evaluate awareness and beliefs regarding infection control and hand hygiene among the undergraduate and post graduate students dental student in three dental colleges of Western India.

The data convincingly showed that the absolute majority (98%) of the students had the basic knowledge regarding infection and modes of its transmission which is higher than previous reported studies among Indian students.⁷ Although 96.8% students felt the importance of hand hygiene majority of them were unaware about the WHO and CDC guidelines for hand hygiene. Soap was found to be the preferred means of maintaining hand hygiene (76.87%) followed by both soap and antiseptic hand rub (35%). These results are better as compared to previous studies where only 9-14% students use antiseptic hand rub.⁸ Around 75.34% students were aware about the fact that the hands are considered to be the most infectious part of the body with infectious agents being trapped under finger nails, only 11-21% students washed their hands after touching the patient. This percentage was far below the previous studies conducted on Indian dental students.^{9,10}

To summarize, the results of this study indicate that though the students have theoretical knowledge of infection and infection control there is a lack of understanding of the basics of infection control, hand hygiene and the knowledge about gloves in large percentages of undergraduate and post graduate dental students who responded to this survey.

CONCLUSION

Improved educational efforts should be made to improve students'

awareness, skills, knowledge and its practical application in order to allow them to engage in optimal professional behaviour.

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