ORIGINAL RESEARCH

Awareness on infection control procedures among Dental students in a dental school in South Kerala

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Abstract

Background: Dental care providers in particular are at an increased risk as they provide care working with sharp instruments at very high speeds and limited access in an environment that is bathed in saliva and, in many instances, blood. Dental care professionals are at high risk of cross-infection while treating patients. Although several recommendations and guidelines are issued by medical and dental societies as well as governmental organizations, studies demonstrate that infection is not well-controlled in the dental settings and hospitals. The current study aims to determine the level of knowledge in infection control procedures among dental students in a dental school in south Kerala.

Methods: A questionnaire was designed to obtain information about infection control practices in dentistry among dental students. The sample (n=121) comprised of 30 third year students, 55 final year students and 36 interns. Questionnaire data was entered into a computer and analyzed by SPSS software.

Results: A total of 121 students participated in the present study. Out of the total study subjects 30(24.8%) were third BDS students, 55(45.5%) were final BDS students and 36(29.8%) were interns. Ninety-one percent of the study subjects

knew that universal cross infection control measures should be taken for all patients. Only 48.7% of the study subjects knew both mechanical device and scoop technique could be used for needle recapping during clinical procedures.

Conclusion: Students should be communicated the associated risks and importance of transmission of infectious diseases and exposures during dental treatments. Dental schools should focus on constantly motivating students in the correct and routine use of infection control measures and strictly monitor the adherence to the guidelines.

Introduction

Health care workers in general are susceptible to contracting infectious diseases while providing patient care if they do not use proper infection control procedures. Dental care providers in particular are at an increased risk as they provide care working with sharp instruments at very high speeds and limited access in an environment that is bathed in saliva and, in many instances, blood. Dental care professionals are at high risk of cross-infection while treating patients. This occupational potential for disease transmission becomes evident when it is considered that most human microbial pathogens have been isolated from oral secretion.[1,2] In addition, a majority of carriers of infectious diseases cannot be easily identified.[3,4] Research has shown that infective hazards are present in dental practice because many infections can be transmitted by blood or saliva via direct or indirect contact, droplets, aerosols, or contaminated instruments and equipment[4]. For this reason, since the end of the 1980s, many surveys have been carried out in several countries, especially in North America and Europe, to investigate practices to control infection and compliance with universal precautions in dental surgeries.[5-11]

Although several recommendations and guidelines are issued by medical and dental societies as well as governmental organizations, studies demonstrate that infection is not well-controlled in the dental settings and hospitals.[12] The results of previous studies indicate inappropriate knowledge, attitude, and practice regarding proper measures of infection control among dentists.[13-15] This study aims to determine the knowledge pertaining to infection control among dental students in a dental school in South Kerala, India.

Materials and methods

A questionnaire was designed to obtain information about infection control practices in dentistry among dental students. The study population comprised of clinical dental students from a dental school in Tiruvalla, South Kerala. A total of 121 clinical students were present in the dental school. All the students voluntarily participated in the survey. The survey was conducted in July 2012. The questionnaire collected data on knowledge pertaining to

infection control procedures, sterilization, disinfection of instruments, occupational hazards and immunization, *etc*. The self administered questionnaire was distributed among third year, final year BDS students and interns. The questionnaire was distributed among the three categories of clinical students in three different classrooms and collected after half an hour. The sample (n=121) comprised of 30 third year students, 55 final year students and 36 interns. The questionnaire was pretested in a group of students and validated. Each correct response was provided a score of one. The mean score was calculated gender wise and based on the year of study and comparisons were drawn.

Statistical analysis

Questionnaire data was entered into Microsoft Excel 2007 sheet and analyzed. t-test and ANOVA test were used to test the statistical significance. The level of significance was set at $p < 0.05$ for all statistical tests.

Results

A total of 121 students participated in the present study. Out of the total study subjects 30(24.8%) were third BDS students, 55(45.5%) were final BDS students and 36(29.8%) were interns (Table 1). In the present study, 23(19%) of the study subjects were males and 98(81%) of the study subjects were females (Table 2).

Table 1. Distribution of the study subjects by year of study

Year of Study	N	%
III BDS	30	24.8
IV BDS	55	45.5
Interns	36	29.8
Total	121	100

Table 2. Distribution of the study subjects by gender

Gender	N	%
Male	23	19
Female	98	81
Total	121	100

Ninety-one percent of the study subjects knew that universal cross infection control measures should be taken for all patients. Only 48.7% of the study subjects knew both mechanical devise and scoop technique could be used for needle recapping during clinical procedures. Similarly only 47.9% of the students were aware of the correct sequence of putting on protective barriers. Around 33% of the participants knew that face shield is not a good substitute for mask. A greater proportion (90.9%) of the participants possessed knowledge on the cross infection control measures which should be adopted by dental professionals. Seventy nine percent of the participants knew the proper immunization schedule for hepatitis B vaccination (Table 3).

Table 3. Distribution of study subjects based on correct responses provided

Questions	Correct Response	
	N	%
Universal infection control measures are taken for	121	90.9
Sterilization of instruments in an autoclave would be achieved at	114	94.2
Needle recapping is done using	59	48.7
Handpiece belong to which category of instruments	96	79.3
Order of wearing protective barriers	58	47.9
First step to be done after accidental needle exposure from a HIV positive patient	73	60.3
Masks should be replaced	61	50.4
Antibody protection level against Hepatitis B for a dentist	62	51.2
Is face shield a good substitute for mask	41	33.8
Disinfectant effective in	12	9.9
removing dried blood on a surface		
Duration for disinfection of dental impressions	78	64.4
Cross infection control measures to be adopted by all dental professionals	110	90.9
Does hand washing minimize infection risk secondary to leakage	88	72.7
Immunization schedule for hepatitis B vaccination	96	79.3
How often is biological monitoring of autoclave sterilization done	70	57.8

The difference between the mean scores of females and males was found to be insignificant (p=0.380) (Table 4). Similarly no significant difference was observed in the mean scores among the various groups of students (p=0.052) (Table 5).

Table 4. Comparison of knowledge scores by gender

		N	Mean	SD	F	Sig	df
Score	Male	23	8.09	2.087	0.776	0.38	119
	Female	98	8.37	2.404			

*t test

Table 5. Comparison of knowledge scores by year of study

					95% Confident interval	
	Year of study	N	Mean	SD	Lower limit	Upper limit
Score	Interns	36	8.97	2.36	8.17	9.77
	IV BDS	55	7.78	1.98	7.24	8.32
	III BDS	30	8.50	2.73	7.48	9.52
	Sum of squares		df	F	Sig	
Score	Between groups	32.212	2			
	within groups	625.854	118	3.03 7	0.052	

*ANOVA

Discussion

Dental students like any other health care workers face a recognized risk of occupational exposure to blood borne viruses such as the Human Immunodeficiency Virus (HIV), hepatitis B virus (HBV), and the hepatitis C virus (HCV).[16,17] The present study reveals that the level of knowledge was highest among interns followed by third year students and final year students. It was observed that females had a higher level of knowledge when compared to their male counterparts. Around ninety- one percent of the study subjects knew the fact that universal control measures should be applied for all patients. This study revealed that 94.2% of the study subjects were aware of the correct procedure for sterilization instruments using an autoclave which was similar to a study conducted in Pakistan.[18]

Around 49% of the students were aware of the proper needle recapping procedures in the present study which is lower when compared to a study conducted in UAE(88.5%).[19]Majority of the study subjects were unaware of the proper order of putting on protective barriers. Sixty four percent of the subjects were aware of the duration for disinfecting dental impressions. Around eighty percent of the study participants knew the correct immunization schedule for hepatitis B vaccination.

One of the limitations of the present study is that the respondent's practice could not be supervised and relied on their subjective self-assessment. Therefore, the responses might not have accurately reflected the true levels of knowledge, attitude and behavior, and thus, the reported level of practice might be lower than the real level. It is important for any hospital or a dental clinic to set up CDC protocol to prevent the spread of infectious and transmissible

diseases. For this purpose, it is important that the dental health care professionals be aware of the risks and the seriousness of infections. Educational programs on infection control isolation precautions for all the health care workers, especially the dental health care professionals, and the facilities to allow compliance with the infection policies are necessary to lessen the infection hazards among dental health care professionals and their patients.

Conclusions

Our study revealed that the knowledge of dental students was adequate in most aspects except knowledge about protection barriers and prevention of needle stick injuries. It is necessary to effectively communicate to students the associated risks and importance of transmission of infectious diseases and exposures during dental treatments. Dental schools should focus on constantly motivating students in the correct and routine use of infection control measures and strictly monitor the adherence to the guidelines. Regular continuing dental education programmes should be organized on infection control in all dental schools so as to update student's knowledge and reinforce them with the infection control protocols.

Acknowledgement

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