

Knowledge, Attitude and Practices of Cross Infection Control Protocols among Dental Students and Professionals

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ABSTRACT

To evaluate dentists' knowledge, attitude, and practice of cross infection control protocol. The questionnaire proforma was based on 15 questions was used to check the knowledge, attitude, and practice of the standard infection control protocols among the 3rd and 4th-year students of BDS, house officers and demonstrators of College of Dentistry, Sharif Medical and Dental College, Lahore, who were active in dental health provision in a clinical setting. A total of 200 participants were enrolled in the study after convenient sampling. We found that despite good knowledge of safety protocols, implementation of these standards is lacking. Non-compliance in following standard infection control protocols is a big challenge and can increase the risk of cross-infection.

Keywords: cross-infection, dental practitioners, sterilization.

INTRODUCTION

Cross infection can be defined as the spread of infectious agents between patients and staff within a clinical setting.^{1,2} Dental clinics is a location where diffusion or spread of disease often occurs. This occupational transmission of disease becomes important when it is measured that most human microbial pathogens have been insulated from oral secretions.^{2, 3} Also, there are most chances that dentists can be exposed to those mouth microorganisms as they have to deal with sharp instruments in clinical setup e.g. sharp needles.¹ Furthermore, widely held carriers of infectious disease cannot be easily detected. Dental care professionals are more susceptible to the disclosure of any infectious material, including body solutions such as blood, droplets either directly through needle stick injury, splash or directly through contamination of instruments or equipment.^{4,5,6,7} Cross infection control protocol is the code of behavior followed by dental practitioners to reduce their exposure to blood borne pathogens. Dental professionals in this regard should wear personal protective equipment, such as gloves, facial masks and eye protection during daily practice to protect themselves from injury.⁸ Infection control, which is one of the most debated issue in dentistry, has been converted to such a vital part of the practice that the dental health workers extensively inquire about its necessity.² This type of exposures in dental clinics can only be avoided by using safety in these settings and implementation of infection control procedures. Though some exposures cannot be prevented, vaccinated and are in the need of post exposure infection management.^{8,9}

According to the infection control guidelines for the prevention of transmission of infectious diseases in the health care setting (2004), the universal application of standard precautions is the minimum level of infection control required in the treatment and care of all patients to prevent the transmission of blood-borne viruses.⁸ There were also surveys carried out somewhere in dental set ups. Though some proposals have been made by medical & dental societies as well as governmental organizations, studies disclose that infection is not well-controlled in dental settings¹⁰

There are many surveys regarding cross infection control procedures which have been carried out in several countries. The outcomes of previous studies indicate that there is incorrect awareness, approach, and practice regarding appropriate measures of infection control among dentists. ¹¹ The aim of this study is to evaluate the knowledge attitude and practice of cross infection control protocol among dentists and dental students.

MATERIALS AND METHODS

After taking approval from the institutional ethical review board, this cross-sectional study was conducted in clinics of the College of Dentistry, Sharif Medical and Dental College Lahore. A convenience sampling technique was used and the sample population was purposely selected. The participants of the present study included students of 3rd year and 4th year, house officers and demonstrators. House officers had completed their four year BDS program (bachelor of dental surgery) and demonstrators were practicing in dental clinics of said institute. The study was completed in 2 months period. Informed consent was obtained from all study subjects. Out of total population, 200 participants of study were asked to fill a well-constructed questionnaire consisting of 15 questions irrespective of their genders. Persons not willing to give consent were excluded from the study.

A questionnaire consisting of 15 questions pertaining to cross infection control knowledge was distributed among students in 3rd and 4th year, house officers and demonstrators. The pretested questionnaire comprised 3 domains: Domain 1 containing questions (1-6) about knowledge of dentists regarding the spread of cross-infection, domain 2 containing questions (7-10) regarding precautionary measures taken by them to control infectious diseases among selected sample and domain 3 containing questions (11-15) regarding instruments used in dental procedures and sterilization methods.^{2,12,13} Data were coded using SPSS ver. 20.0. Nominal data were presented as frequency and percentages and all numeric data was presented as mean and its respective standard deviation.

RESULTS

Out of 200 dental participants who willingly took part in a research program, 59 were males and 141 were females. Most of the participants were house officers while the rest were students of 3rd year, final year and demonstrators as shown in table 1.

Table 1: Demographic Profile of the Participants

Gender	
Female	141 (70.5%)
Male	59 (29.5%)
Educational Status	
Third-year	48 (24%)
Final year	50 (25%)
House officers	96 (48%)
Demonstrators	6 (3%)

Table 2 shows that majority of the participants were aware of the concept of infection, infection control and its spread. The knowledge of participants regarding the basic concepts, mode of sterilization, frequency of sterilization and all the basic protocols of cross infection control have been shown in table 2.

Table 2: Knowledge of Participants Regarding Cross Infection Control Protocols in Dentistry

Questions pertaining to knowledge regarding cross infection control protocols	No of responses	
	Yes	No
Awareness of the meaning of infection	200 (100%)	0 (0%)
Awareness of infection control protocol	200 (100%)	0(0%)
Awareness about spread of infection by saliva	200 (100%)	0 (0%)
Awareness about spread of infection by blood	199 (99.5%)	1 (0.5%)
If sterilization is important, how many times it must be done?		
Everyday	198 (99%)	
Once in a week	2 (1%)	
Once in a month	0 (0%)	
No need	0 (0%)	
What do you think the best method of sterilization?		
Boiling	35 (17.5%)	
Dry heat	1 (0.5%)	
Autoclaving	163 (81.5%)	
Chemical	1 (0.5%)	
Which operative instruments should not be changed between the patients?		
Burs	5 (2.5%)	
Extraction instruments	5 (2.5%)	
Hand pieces	185 (92.5%)	
Saliva ejectors	5 (2.5%)	
Which of the following require disinfection?		
Dental chair	36 (18%)	
Air water syringe	0 (0%)	
Spittoon	0 (0%)	
Suction hose	0 (0%)	
Hand piece	1 (0.5%)	
Focus light handle	0 (0%)	
Dental impressions	0 (0%)	
Surgical instruments	9 (4.5%)	
All of the above	154 (77%)	
Temperature for sterilization in autoclave?		
100°C	0 (0%)	
121°C	199 (99.5%)	
150°C	1 (0.5%)	
Minimum time required for sterilization		
5 minutes	2 (1%)	
10 minutes	3 (1.5%)	
15 minutes	195 (97.5%)	
Which of the following is personal protective instrument in terms of health care provider?		
Eye guard	0 (0%)	
Gowns	1 (0.5%)	
Gloves	4 (2%)	
Face mask	1 (0.5%)	
Head cap	0 (0%)	
All of the above	194 (97%)	
Best method for disposal of waste material		
Separate container	154 (77%)	
Along with Non-infectious	19 (9.5%)	
Along with Infectious	27 (13.5%)	

Table 3 shows that majority of the participants had a positive attitude towards abiding the cross infection control protocols in dentistry. The responses to various questions regarding the attitude towards cross infection control protocols have been shown in table 3.

Table 3: Attitude of Participants Regarding Cross Infection Control Protocols In Dentistry

Questions pertaining to attitude towards cross infection control protocols	No. of Responses (%)	
	Yes	No
Do you think sterilization is important for patient safety?	200 (100%)	0 (0%)
Is it necessary to wear gloves while treating a patient?	200 (100%)	0 (0%)
Is it necessary to wear mask while treating patient?	198 (99%)	2 (1%)
Is it necessary to change barrier sheet while treating every patient?	197 (98.5%)	3 (1.5%)
Is it important to change the gloves with every patient?	198 (99%)	2 (1%)
Is it important to change mask with every patient?	185 (92.5%)	15 (7.5%)

Table 4 shows that majority of the participants had good practices regarding cross infection control protocols. The responses to questions regarding keeping patient's previous medical history, following the protocols in clinic and use of personal protective equipment are shown in table 4.

Table 4: Practices of Participants Regarding Cross Infection Control Protocols In Dentistry

Questions pertaining to practice of cross infection control protocols	Responses n (%)
Do you have the record of previous medical history?	
Yes	188 (94%)
No	12 (6%)
Do you follow cross-infection control protocol in your clinic?	
Agree	94(47%)
Strongly agree	27(13.5%)
Disagree	35(17.5%)
uncertain	44(22%)
As a clinician, what protective measures do you take to prevent yourself from injury?	
Face mask	4 (2%)
Eye wear	2 (1%)
Protective clothing	4 (2%)
All of the above	190 (95%)

DISCUSSION

Dental health care providers should keep in mind the hazards related to patient's treatment especially in reference to spread of infectious diseases as nature of job of professionals prone them to these risks. Infections can spread from health care giver to patients and vice versa and also from patient to patient. It is noted that dentists consider their patients as healthy subjects and do not follow the standard precautionary measures.¹⁴

Infection control guidelines for prevention of transmission of infectious diseases in health care setting in 2004 say that minimum level of following standard precautions can prevent blood born infection transmission in health care. These standard protocols include frequent hand washing, use of PPE (personal protective equipment such as gloves, protective eye shields, gowns), following aseptic methods, proper sterilization of instruments and other reusable items, proper disposal of contaminated, disposable and sharp materials and nonetheless, environment cleaning. It is advised to apply all the standard precautionary measures to all the patients regardless of their information available.¹⁴

We found that 94% of our participants were aware of infection control protocols that should be followed in every case. This number can be increased by more awareness and guidance. While assessing the knowledge of protocols, we found that 92.5% participants were of opinion that hand piece should be decontaminated after every patient rather than replacing it. Same protocol is reported in study by Shah et al. In same study 97% of studied population claimed to disinfect all the surfaces including dental chair, suction hose, air water syringe, light focus handle, spittoon etc. before the procedure.⁵ While in our present study 77% of population was of believe that surface decontamination is important in cross-infection prevention. Regarding protective barriers, 100% participants believed that wearing and changing of gloves are very important and same is reported in other studies.¹⁴ Similarly, 99% of subjects believed in wearing and changing of masks which is comparable previously published data.^{16, 17}

Ninety-five percent of participants stick to the use face masks and gloves. Despite having knowledge of standard infection control measures, only 11% of participants adhere to described standards other than use of masks and gloves. Among them, the demonstrators were in highest number who follow the protocols. This can be attributed to the fact that undergraduate students may lack the understanding of gravity of disease. Emphasis should be made on the importance of use of PPE among all the health care workers as accidental injuries to health workers have been reported in literature. McCarthy et al¹⁶, De Souza et al¹⁸ and

Rehman et al⁷ found 81%, 31% and 53.8% accidental injuries respectively due to non-compliance of standard infection control protocols.

Limitation: The present study results are based on participants' self-assessment and may not reveal the actual facts of practicing. To find more accurate results, a study should be conducted by direct observation of health care providers in clinical settings.

CONCLUSION

It is necessary to emphasize on following standard infection control protocols. Health care providers do have knowledge of infection control measures. Although, the protocols for infection control have been described and implemented, the challenge of poor compliance remains there.

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