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Original Article

Infection Control Knowledge And Practices Among Dental Students

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ABSTRACT

Aim: To evaluate the knowledge and practice of infection control measures among dental students in Riyadh Elm University and to clarify the importance of infection control in dental setting. **Methods** :A online cross-sectional survey was conducted among dental students in REU consisting of twenty one close-ended questions. The data was collected and were analyzed using SPSS. **Results**: Of the 200 respondents, the majority reported wearing gloves, eye wear/face shield, and gown. Most of the students reported changing gloves between patients and washing their hands after each gloves change. Most of the students knew that dental clinics were more prone to the transmission of infectious diseases than other medical clinics. Almost everyone reported sterilizing instruments after each procedure. **Conclusion:** The level of knowledge about the infection control among the dental students was satisfactory. The study highlighted the importance of infection control and the need more motivation and education of dental staff could be helpful in form of pamphlets and seminars.

INTRODUCTION

Infection control is important in dental practice. The oral pathogens can come in contact with patient's blood or in the lymphatic system through the dental procedures causing serious medical condition.1 Dental education plays an important role in infection control.2 Centre for disease control and prevention (CDC) guidelines has developed for hand hygiene to reduce the transmission of pathogens.3 A moderate knowledge of CDC guidelines among one third of general dentists has been reported.4 Hand hygiene is very important in prevention of cross-infection. However, many researchers reported low compliance of hand hygiene among health care provider.5-6

The outer surface of the skin containing the transient flora which is associated with healthcare individuals can be removed by hand-washing.7 The artificial nails have been reported to transmit infection and there was a clear evidence showing the colonization of bacteria and yeast more in artificial nails. A study has reported that wearing of finger ring can be a major factor for carrying staphylococcus aureus as this bacteria is an important nosocomial pathogens.8 Wearing of finger rings increases the chance of accumulation of microorganism beneath it.9 The jewelry on the hand can be a high risk for tearing the gloves.10

The risk for acquiring hepatitis B virus (HBV) is more in dentist than general population. Therefore, it should be considered that every patient has infection and should be handled with universal precautions and protection.11 Moreover, adherence to the infection guidelines and taking of vaccinations can prevent infection transmission in dental clinics. The recommendation of US centers for disease control and prevention are use of protective barriers such as mask,

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		Frequency	Percent
Gender	*Male*	15	7.5
	Female	185	92.5
Year of Study	*Second*	2	1.0
	Third	12	6.0
	Fourth	16	8.0
	Fifth	42	21.0
	Sixth	52	26.0
	Intern	76	38.0

Table 1. Demographics

		Frequency	Percent
Hepatitis B vaccination?	*Yes*	179	89.5
	No	21	10.5
Number of doses	*< 3*	53	28.7
	3	120	66.3
	Don't remember	9	5.0
Post HBV serology?	*Yes*	83	41.5
	No	117	58.5

Table 2. Proportion of vaccination, number of doses, and post-HBV serology

	Frequency (Percent)		
	Always	**Sometimes**	**Never**
Gloves	194 (97.0)	5 (2.5)	1 (0.5)
Masks	190 (95.0)	9 (4.5)	1 (0.5)
Eyewear/ Face shield	121 (60.5)	68 (34.0)	11 (5.5)
Gown	167 (83.5)	27 (13.5)	6 (3.0)
Head cap	92 (46.0)	48 (24.0)	60 (30.0)

Table 3. Use of protective barrier techniques reported by dental students

gloves, facial shield, gown, and careful handling of sharp instrument.2

Gloves will not replace hand wash and changing gloves between patients or if any visible contamination occurred.12 Mask protect the face from the fluid spattered and if visibly contaminated it should be changed.3 Eye injury can occur and it can be from fluid splattered around or the chemical materials used in dental clinic.11 The use of goggles help to protect them from serious problems.13 The aim of this study was to evaluate the knowledge and practice of infection control measures among dental students in Riyadh Elm University (REU), Riyadh, Kingdom of Saudi Arabia (KSA) and to clarify the importance of infection control in dental setting.

	Frequency (Percent)	
	Yes	**No**
Change of gloves between patients	198 (99)	2 (1)
Hand wash between each gloves change	137 (68.5)	63 (31.5)
Remove gloves while walking around	187 (93.5)	13 (6.5)
Remove mask while walking around	102 (52.5)	95 (47.5)
Change gown/lab coat if visibly contaminated	187 (93.5)	13 (6.5)
Dental clinics are more prone to infectious disease than other medical fields	181 (90.5)	19 (9.5)
Instruments sterilization after each dental procedure	199 (99.5)	1 (0.5)
Removal of watches and jewelry during procedures	124 (62.0)	76 (38.0)
Percutaneous injuries with a used instrument	92 (46.0)	108 (54.0)
Willingness to treat patients with infectious disease	141 (70.5)	59 (29.5)
Ever treat the patient with infectious disease	78 (39.0)	122 (61.0)
Willing to follow the same infection control in future (after graduation) that is used in your college	197 (98.5)	3 (1.5)

Table 4. Students' knowledge, practice, and attitude about infection control-related topics

METHODS

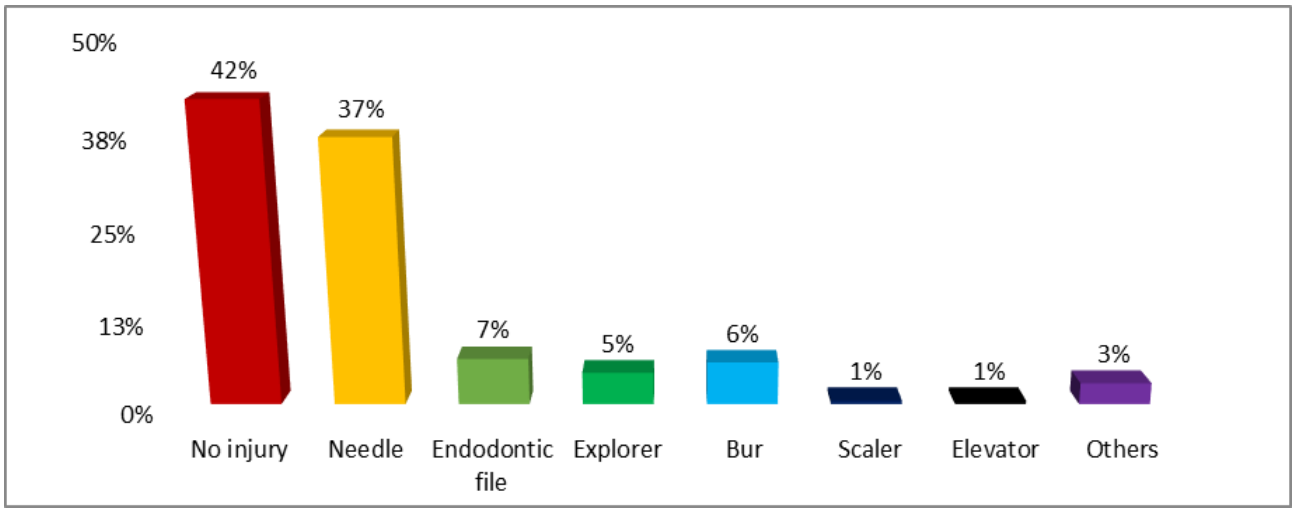

Figure 1. Proportion of exposures caused by different instruments

Dental students who treat patients in the clinics of REU were invited to participate in this study. Their participation was voluntary and implicit consent was considered from those who completed the questionnaire. The study protocol was approved by the Institutional Review Board of REU. An online cross-sectional survey was conducted among dental students in REU consisting of twenty one close-ended questions related to infection control knowledge and practices. Two questions about personal data such as gender and year of study were included. The data were collected and analyzed using SPSS. A p value of $\leqslant$ 0.05 was considered as statistically significant.

RESULTS

Of the 200 respondents, 92.5% (n=185) were females and 7.5% (n=15) were males. Over one-third of the sample was comprised of 38% (n=76) interns (Table 1). Table 2 shows the data related to hepatitis B immunization, the number of doses, and post-HBV immunization serology. Vaccination was completed by 89.5% (n=179) of the students with a statistically significant difference by gender ($p<0.05$). Statistically significant difference was also found by the year of study ($p<0.05$). Out of the vaccinated students, 66.3% (n=120) completed the required three doses. There was no statistically significant difference between the number of completed doses and gender ($p>0.05$). No statistically significant difference was found between the number of completed doses and year of study too ($p>0.05$).

Only 83 (41.5%) were tested for post-HBV immunization serology, with a statistically significant differences by gender ($p<0.05$). However, there was no statistically significant difference by the year of study ($p>0.05$). Table 3 illustrates students' self-reported use of protective barrier techniques. The vast majority of students reported wearing gloves (97%, n=194) and masks (95%, n=190) at all times. With regards to eyewear/face shield (60.5%, n=12) and gown (83.5%, n=167), the majority used it always, while only 46% (n=92) used head cap always. No statistically significant difference was found by gender and year of study ($p>0.05$).

Table 4 shows students' knowledge, practice, and attitude about infection control-related topics. The

majority of students reported changing gloves between patients (99%, n=198) and 68.5% (n=137) of them reported washing their hands after each gloves change. Most of the students reported that they always removed their gloves upon leaving the immediate area of patient care (93.5%, n=187), while only 52.5% (n=102) removed their mask upon leaving the immediate area of patient care. Around 93.5% (n=189) reported changing their gowns/lab coats if they were visibly contaminated. Most of the students (90.5%, n=181) knew that dental clinics were more prone to the transmission of infectious diseases than other medical clinics.

Almost everyone (99.5%, n=199) reported sterilizing instruments after each procedure. Just under two-third (62%, n=124) reported that they did not remove their watches or jewelry during dental care. Around 46% (n=92) of the students reported non-sterile occupational percutaneous and mucous injuries. One hundred forty one (70.5%) students reported their willingness to treat patients with infectious disease, while only 39% (n=78) ever treated the patient with infectious disease. In this study, 98.5% (n=197) students were keen to follow the same infection control procedures in their clinics after graduation. Most of the reported injuries were caused by needles (37%, n=74) and 42% (n=84) reported no injuries (Figure 1).

DISCUSSION

In the present study higher percentage of the students reported that they changed the gloves between the patients in comparison with a previous study.10 More than half reported washing their hands after each gloves change similar to the finding of a past study.14 Over half of the respondents reported to remove their jewelry while treating the patient but this finding was not in consistent with a recent study.2 The use of mask, facial shield, head cap, and gown can prevent spreading of microorganism. In the present study the majority of students used mask and facial shield and these result were similar to a similar to a previous study.15 On the contrary, only 46% always used the head cap and this finding is not in consistent with a recent study.2

Almost all the students reported changing contaminated gowns which is similar to a study in KSA.2 The majority of students reported that they believed the dental clinics are more prone to infectious disease than other medical fields and this was in consistent with the study reported in United Arab Emirates (UAE).16 In the current study, most of the students were vaccinated which was similar to a study in Brazil and more than half were completed full dose. However, the percentage of students who received the full dose were higher in Brazil than the current study17. Less than half in the present study were tested for post-HBV immunization serology which is similar to the study reported in Jordan.18 Most of the students reporting no self-injury during their work in the dental clinic but the rest who are reported with injuries were mainly by needles, this concedes with those found in UAE.16

CONCLUSION

The study highlighted the importance of infection control and the need for continuous dental educational programs and training workshops on infection control isolation precaution for dental students.

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