

Knowledge, Attitude And Practice Of Infection Control Among Dental Practitioners In Islamic International Dental Hospital, Riphah International University Islamabad

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Author's Contribution

^{1,2,3,4,5} Conception of study
^{1,2,3,4,5} Experimentation/Study Conduction
^{1,2,3,4,5} Analysis/Interpretation/Discussion
^{1,3,4,5} Manuscript Writing
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Article Processing

Received: 13/06/2022
Accepted: 28/11/2022

Cite this Article: Rao, U., Khan, A. R., Rizwan, Z., Rizwan, G., & Zia, S. H. (2023). Knowledge, Attitude And Practice Of Infection Control Among Dental Practitioners In Islamic International Dental Hospital, Riphah. *Journal of Rawalpindi Medical College*, 27(1).
DOI: <https://doi.org/10.37939/jrmc.v27i1.1937>

Conflict of Interest: Nil
Funding Source: Nil

Abstract

Objective: The aim of the study was to investigate the knowledge, attitude, and practices among dental practitioners at a dental hospital in Islamabad.

Material and Methods: This study consisted of 147 participants. The questionnaire had 21 questions related to vaccination status, barrier techniques infection control practices, and awareness. The questionnaire was distributed through Google Forms to the participants after getting their consent from them. The data was analyzed and tabulated through SPSS version 23.

Results: Out of 147, 123 participants responded to our questionnaire. 75.6% of the participants were vaccinated against hepatitis B and 87.8% regularly wash their hands before and after dental treatment., 100% of the participants wore and changed gloves after each patient. In the current study, the senior dental practitioners had a relatively poor mean score (4.1%) in terms of knowledge, attitude, and practice scores regarding infection control as compared to house officers and fresh graduates (59%).¹⁾

Conclusion: The infection control knowledge, attitude, and practices among dental practitioners were better, however, there is room for improvement in compliance and knowledge in dental healthcare workers. More knowledge about infection control measures should be provided to dental practitioners, moreover, efforts are needed to improve the attitude and practice of dental practitioners toward infection control at Islamic International Dental Hospital, Islamabad.

Keywords: Cross Infection, Infection Control, Dental Practitioners.

Introduction

Cross-infection control is the practice of disrupting or preventing the spread of infectious agents in a clinical environment between patients and staff. Patient health and safety is a vital component of healthcare which targets minimizing treatment mistakes, enhancing the quality of care, and patient safety. Infectious diseases are a major global health dilemma for healthcare systems across the globe. Dental health care workers are more prone to cross infection through sharp instruments and needle stick injuries⁽³⁾. Cross infections between patients and dental health care workers are possible through the dispersion of infectious agents during clinical practice. The spread of infectious diseases in a dental setting can occur via aerosol-generating procedures that disperse the microbes in the blood and saliva of patients. ⁽⁴⁾ Eyes are at higher risk because floating particles can easily reach to the eyes which is very dangerous for dental health care professionals⁽⁵⁾. In dentistry, cross-infection can occur through many microorganisms that reside primarily in the respiratory tract and as part of the oral flora such as Hepatitis B and C viruses, cytomegalovirus (CMV), herpes simplex virus (HSV type 1 and 2) and many other viruses and bacteria ⁽⁴⁾. In a Saudi Arabian study, a majority of female patients tested positive for serum HCV and HBV when they reported to the dental clinic of King Saud University⁽⁶⁾. Thus it is necessary for dental practitioners to wear gloves, eye wears, and face masks as well as additional precautions such as high-volume suction while performing aerosol-generating procedures.⁽¹²⁾ Many different guidelines for infection control measures are made by the Centers for Disease Control in 2003 with the aim of giving a better clinical setting having standard precautionary measures and prevention of the spread of diseases among patients and their dental care providers ⁽¹³⁾. Moreover, it is compulsory for dental practitioners to wash their hands with an anti-septic solution after chair-side dental treatment.⁽¹⁴⁾

Compliance with successful infection control practices by dental practitioners may be affected by many factors including educational background and knowledge ⁽⁸⁾. Knowledge is defined as "information that could be acquired through various ways namely, reading, experience and comprehension". On the other attitude is defined as "manner, feeling or position which regards the person or thing. While practice is the reflection of rules and knowledge that leads to

action.⁽⁹⁾ Infection control includes all the actions that the concerned healthcare workers take to ensure the safety of staff and patients from the spread of diseases ⁽¹⁰⁾. Although many dental patients seem clinically healthy when they are physically examined or when medical history is taken from them yet risk management strategies should not be applied based on their appearance ⁽¹¹⁾. Those dental care practitioners are more likely to be exposed to diseases that ignore the healthcare safety guidelines ⁽¹¹⁾. A study in the late 1970s concluded that the chances of dentists getting infected with Hep B are three times more than the average general population.⁽²⁰⁾ Despite the stress that was placed on making dental practitioners aware of the risk of cross-infection and suggested practices to control infection control transmission the percentage of dentists who stick to those practices was below expectations ⁽⁵⁾. However, there is evidence that manifests that dental practitioners have insufficient knowledge, they have negative attitudes, and poor practices related to Infection control measures. Many studies that are conducted in Iran also showed poor knowledge, attitude, and practice among dental health care practitioners ⁽¹⁵⁾ dental education in infection control is very important. It plays a significant role and helps dentists to adopt sufficient knowledge and attitude towards infection control measures. Many studies are conducted about infection control measures in dentistry by dental health care practitioners and dental students ⁽⁷⁾. This study aimed to assess the level of knowledge, attitude, and practice among dental seniors, junior practitioners, and house officers regarding infection control measures at Islamic International Dental Hospital, Riphah International University, Islamabad.

Materials and Methods

A cross-sectional study was conducted on almost 147 dental facility members, postgraduate trainees and house officers between June and August 2020 at Islamic International Dental Hospital, Riphah International University, Islamabad. Our study included house officers and junior and senior dental professionals. Junior professionals were the postgraduate trainees whereas senior professionals were the dental practitioners who were serving the academic posts and have more clinical experience. Students of 3rd year and final year were excluded from the study. The questionnaire was designed to obtain

information about infection control knowledge, attitude and practice. This study was approved by the ethical committee of Islamic International Dental Hospital before the study.

The questionnaire was sent to senior dental professionals through their 'Moellim' IDs and to the junior dental professionals and house officers through their email ids. It was compulsory for all the participants to fill in the questionnaire. Participants who did not respond to their first mailing were reminded again after one week. No personal information from the participants was asked. The goal of the study was also explained in the questionnaire. For all the responses strict confidentiality was maintained.

Questionnaire design:

The questionnaire was taken from the study that was conducted in Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, a public setup of Karachi, Pakistan containing 21 questions. These questions were divided into 4 sections. The first 3 questions were related to demographic information while the rest were asked to assess the knowledge, attitude and practice of infection control. Excluding the questions related to demographic information, the rest of the questions had three possible answers yes, no and maybe.

Statistical analysis:

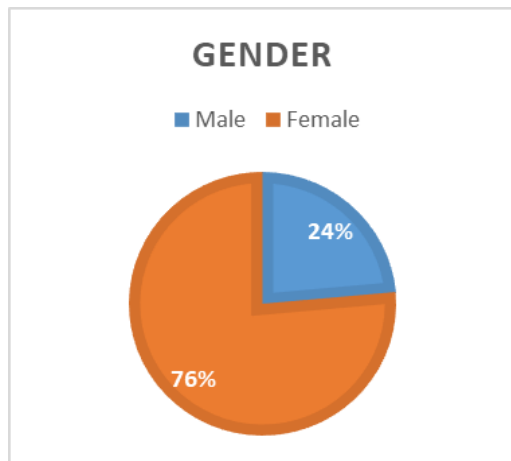


Fig-1 Showing gender of the participants.

Knowledge:

Most of the participants (89.4%) take detailed medical history before starting the treatment. All senior dental practitioners were vaccinated against hepatitis B, however 62 house officers out of 80 and 16 junior

Data was analyzed using Statistical Package of Social Sciences (SPSS) version 23. Statistical analysis like mean, standard deviations, frequencies and percentages for knowledge, attitude and practice of infection control was calculated.

Table-1 Showing the designation of the participants.

<i>Designation</i>	<i>Frequency</i>	<i>Percentage</i>
Assistant	5	4.1
Professor/ Associate		
Professor		
Demonstrator	6	4.9
House Officer	80	65
Post Graduate Trainee	27	21.9
Professor	5	4.1

Results

The questionnaire was distributed to almost 147 dental practitioners out of them 124 responded making the response rate 84.4%. Almost 1/4th of the participants was male(n=29) and the rest were females(n=94) (fig1). The majority of the participants belonged to the age group 21-25. (Table 2)

Table-2 showing distribution among the age groups

<i>Age</i>	<i>Frequency</i>	<i>Percentage</i>
21-45	82	66.7
26-30	26	21.1
31-35	9	7.3
35 and above	6	4.9

dental practitioners out of 26 were vaccinated. (Table 3)

Attitude:

50.4% dental practitioners replied that they wear gloves before touching anything in the department. This percentage is higher among house officers than

the rest of the senior dental practitioners. Nearly all participants change their gloves after every patient. Whereas only half of the participants change their facemasks after every patient and 85.3% participants wear facemasks in the department. Again, this percentage is higher among house officers. 32.5% of the participants mentioned wearing protective eyewear while performing the treatment. This percentage is higher in junior dental practitioners. A large number of participants (n=97) marked "yes" when they asked about whether they disinfect the impressions after taking them. The majority of the participants from senior, junior dental practitioners and house officers stated that they change hand pieces, extraction

instruments, saliva ejector and burs in operative dentistry department after every patient. (Table 3)

Practice:

Most of the participants (87.8%) washed their hands before and after commencing their procedure while only a few (34.1%) wore wristwatch or hand jewelry during the procedure. Not more than (32.5%) of the participants use rubber dams. Almost all of the participants agreed upon using an autoclave machine and the majority (78.8%) agreed upon using plastic wrappings for sterilization of instruments. A huge number of the participants=106) agreed that their department used special containers for the disposal of sharp objects. (Table 3)

Table-3 Showing infection control Knowledge, Attitude and Practices of the study population.

<i>Variables</i>	<i>Combined Frequency(%)</i>	<i>AP</i>	<i>Demo</i>	<i>HO</i>	<i>PG</i>	<i>Professor</i>
Knowledge						
Take detailed medical history	110(89.4)	4(3.3)	4(3.3)	72(59)	25(20)	5(4.1)
vaccinated against Hepatitis B	93(75.6)	5(4.1)	5(4.1)	62(50)	16(13)	5(4.1)
Attitude						
Wear Gloves Before Touching Anything in The Department	62(50.4)	1(1)	4(3)	43(35)	12(9.8)	2(1.6)
Change Gloves after every patient	123(100)					
Wear Face Mask in the Department	105(85.4)	5(4.1)	6(4.8)	80(65)	27(22)	5(4.1)
Change Facemask in between The Patients	62(50.4)	4(3.2)	6(4.8)	65(52.8)	25(20.3)	5(4.1)
Wear Protective Eye wear	40(32.5)	3(2.4)	4(3.2)	43(35)	12(9.8)	0
Disinfect Impressions after making them	97(78.9)	2(1.6)	4(3.2)	19(15.4)	13(10.5)	2(1.6)
Change Hand piece between patients	89(72.4)	3(2.4)	5(4.1)	77(62.6)	9(7.3)	3(2.4)
Change Extraction instruments after every patient	120(97.6)	5(4.1)	5(4.1)	55(44.7)	20(16.2)	4(3.2)
change saliva ejector after every patient		5(4.1)	6(4.8)	80(65)	24(19.5)	5(4.1)
Change Burs in operative Dentistry after every patient	119(96.7)					
Practices						
Wash Hands before and after treatments	115(93.5)	5(4.1)	6(4.8)	77(62.6)	26(21.1)	5(4.1)
Wear hand jewellery or wristwatch during treatment		5(4.1)	6(4.8)	75(61)	25(20.3)	4(3.2)
use rubberdam	108(87.8)	5(4.1)	6(4.9)	72(58.5)	21(17.1)	4(3.2)
Use autoclave for sterilization of instruments	42(34.1)	1(1)	3(2.4)	26(21.1)	10(8.1)	2(1.6)
Use plastic wrappings for sterilized instruments	40(32.5)	2(1.6)	2(1.6)	31(25.2)	5(4.1)	0
Does your department use special containers for disposal of sharp objects	119(96.7)	5(4.1)	6(4.8)	78(63.4)	25(20.3)	5(4.1)
	97(78.9)	5(4.1)	4(3.2)	64(52)	19(15.4)	5(4.1)
	106(86.2)	5(4.1)	5(4.1)	69(56.1)	22(17.9)	5(4.1)

Discussion

Taking measures essential for infection control is a significant piece of day-by-day dental practice from both patients' and professionals' perspective. In such manner, it is important to have a grip on information regarding the necessary precautions and to have a positive attitude. Currently, many dental settings and practitioners have improved the quality and perception regarding cross contamination control. This investigation shows a superior result with respect to mentality of dental specialists towards Hepatitis B immunization when contrasted with a study led in Pakistan ten years back. ⁽¹⁶⁾ But there is further interest of making every single house officer, junior and senior dental faculty to be inoculated with hepatitis B so as to obtain complete infection control.

The high rate (100%) of routine changing of gloves after every patient among the dental staff seems to demonstrate a serious extent of essential infection control practices among the dental practitioners. This rate is higher than previous examinations which was just 12% to 54% of the dental specialists that used different pairs of gloves for different patients. ⁽¹⁷⁾ The consequences of the current study indicated very good compliance with routine wearing of masks among dental practitioners: 85.3% respectively. This result is different from past studies in which only (20%-60%) of the dentists' wear masks regularly. ⁽¹⁷⁾ In previous studies it was found that 35% to 62% of the dentists wore eye protection. ⁽¹⁷⁾ In the current study, 32.5% of the dental staff always wore protective eye wear and 57.7% never wore them. Hand washing is one of the most significant practices for forestalling cross-contamination in dental practice, yet there is just incomplete consistence among health care professionals including dental specialists. ⁽¹⁸⁾ Even if gloves are worn hands may become polluted as a result of puncture or when gloves are removed. ⁽¹⁹⁾ In our study not all participants wash hands before and after treatment. A number of factors associated with lower rates of acquiescence with hand washing has been previously identified: the impact of hand washing on skin conditions, sinks availability and workload.

Less than half of the total participants did not remove their accessories such as jewelry or wristwatch before working on a patient. Similar findings were reported by studies ⁽²³⁾ in which participants removed their accessories prior to the start of a procedure. In the

current investigation the knowledge, attitude and practice of cross contamination control was found to be lower among experienced dental practitioners as opposed to house officers and junior dental practitioners. Such a finding could be considered because of the misinterpretation common to the senior dentists that supervise students and treat the patients as well. House officers and junior dental practitioners had a better overall mean knowledge score. This finding signals a positive sign among the young clinicians who are better equipped with understanding about infection control. House officers had demonstrated better perspectives and practices in contrast to senior and junior dental practitioners.

Table-4 showing correlation among Knowledge, Attitude and Practice score.

Variables	Correlation-co-efficient	P-value
Knowledge-Attitude	0.42	0.56
Attitude-Practice	0.46	0
Knowledge-Practice	0.3	0.626

LIMITATIONS:

One of the restrictions to this examination was the technique for surveying the act of the precautions. We had to rely on the responders' subjective self-evaluation because we couldn't monitor their training. Accordingly, it's plausible that the responses did not accurately reflect the knowledge and attitude that individuals normally have in practice, and as a result, the reported level of practice may be much lower than the actual.

Conclusion

Although junior dental practitioners and house officers had better infection control knowledge, attitudes, and practices, there is still room for improvement among dental care professionals to reduce cross-contamination in dental settings that are located in both the public and private sectors and to lower related morbidity and mortality rates for both dental professionals and patients.

References

1. Rao et al. Knowledge, Attitude and Practice of infection control guidelines among dental students in Islamic International Dental Hospital Islamabad, Pakistan. Merit Research Journal of Medicine and Medical Sciences (ISSN: 2354-323X) Vol. 8(11) pp. 690-695, November, 2020
2. Pearson M, Chilton R, Wyatt K, Abraham C, Ford T, Woods HB, Anderson R (2015). Implementing health promotion programmes in schools: a realist systematic review of research and experience in the United Kingdom. *Implementation Science*, 10(1), 149.
3. Al-Zoughool, M., & Al-Shehri, Z. (2018). Injury and infection in dental clinics: Risk factors and prevention. *Toxicology and industrial health*, 34(9), 609-619.
4. Baseer, M. A., Rahman, G., & Yassin, M. A. (2013). Infection control practices in dental school: A patient perspective from Saudi Arabia. *Dental research journal*, 10(1), 25.
5. Shaghaghian, S., Pardis, S., & Mansoori, Z. (2014). Knowledge, attitude and practice of dentists towards prophylaxis after exposure to blood and body fluids. *Int J Occup Environ Med (The IJOEM)*, 5(3 July), 379-146-354.
6. Ashri, N., & Al Sulimani, R. (2007). Prevalence of serological markers for viral hepatitis B and C in female dental patients. *Saudi Dent J*, 19(3), 171-175.
7. Al-Maweri, S. A., Tarakji, B., Shugaa-Addin, B., Al-Shamiri, H. M., Alaizari, N. A., & AlMasri, O. (2015). Infection control: Knowledge and compliance among Saudi undergraduate dental students. *GMS hygiene and infection control*, 10.
8. Tada, A., Watanabe, M., & Senpuku, H. (2014). Factors influencing compliance with infection control practice in Japanese dentists. *Int J Occup Environ Med (The IJOEM)*, 5(1 January), 298-224-231.
9. Jain, M., Sawla, L., Mathur, A., Nihlani, T., Ayair, U., Prabu, D., & Kulkarni, S. (2010). Knowledge, attitude and practice towards droplet and airborne isolation precautions among dental health care professionals in India. *Med Oral Patol Oral Cir Bucal*, 15(6), e957-961.
10. Shetty, D., Verma, M., Shetty, S., Dubey, S., Walters, S., & Bernstein, I. (2011). Knowledge, attitudes and practice of dental infection control and occupational safety in India: 1999 and 2010. *World J Dent*, 2(1), 1-9. Mosley, J. W., Edwards, V. M., Casey, G., Redeker, A. G., & White, E. (1975). Hepatitis B virus infection in dentists. *New England Journal of Medicine*, 293(15), 729-734.
11. de Souza, R. A., Namen, F. M., Jr, J. G., Vieira, C., & Sedano, H. O. (2006). Infection control measures among senior dental students in Rio de Janeiro State, Brazil. *Journal of public health dentistry*, 66(4), 282-284.
12. Mohiuddin1, S., & Dawani, a. N. Knowledge, Attitude and Practice of Infection Control Measures among Dental Practitioners in Public Setup of Karachi, Pakistan: Cross-sectional Survey.
13. Askarian, M., & Asadian, O. (2009). Infection control practices among dental professionals in Shiraz Dentistry School, Iran.
14. Kohn, W. G., Collins, A. S., Cleveland, J. L., Harte, J. A., Eklund, K. J., & Malvitz, D. M. (2003). Guidelines for infection control in dental health-care settings-2003.
15. Ajami, B., Ebrahimi, M., & Seddighi, Z. (2009). Evaluation of awareness and behavior of dental students of Mashhad dental school on infection control. *Journal of Mashhad Dental School*, 33(1), 53-62.
16. Puttaiah, R., Miller, K., Bedi, D. R., Shetty, S., Almas, K., Tse, E., . . . Minquan, D. (2011). Comparison of knowledge, attitudes and practice of dental safety from eight countries at the turn of the century. *J Contemp Dent Pract*, 12(1), 1-7.
17. Scully, C., Porter, S., & Epstein, J. (1992). Compliance with infection control procedures in a dental hospital clinic. *British dental journal*, 173(1), 20.
18. Angelillo, I. F., Villari, P., D'Errico, M. M., Grasso, G. M., Ricciardi, G., & Pavia, M. (1994). Dentists and AIDS: a survey of knowledge, attitudes, and behavior in Italy. *Journal of public health dentistry*, 54(3), 145-152.
19. Doebbeling, B. N., Pfaller, M. A., Houston, A. K., & Wenzel, R. P. (1988). Removal of nosocomial pathogens from the contaminated glove: implications for glove reuse and handwashing. *Annals of internal medicine*, 109(5), 394-398.
20. Mosley, J. W., Edwards, V. M., Casey, G., Redeker, A. G., & White, E. (1975). Hepatitis B virus infection in dentists. *New England Journal of Medicine*, 293(15), 729-734.
21. Yamalik, N., & Van Dijk, W. (2013). Analysis of the attitudes and needs/demands of dental practitioners in the field of patient safety and risk management. *International Dental Journal*, 63(6), 291-297.
22. Yüzbasioğlu, E., Saraç, D., Canbaz, S., Saraç, Y. S., & Cengiz, S. (2009). A survey of cross-infection control procedures: knowledge and attitudes of Turkish dentists. *Journal of applied oral science*, 17(6), 565-569.
23. Stevenson, A. R., & Higgins, T. J. (1989). Infection Control in general dental practice: results of a postal survey of 600 registered dental practitioners in New South Wales. *Australian dental journal*, 34(2), 106-114.