

## ORIGINAL ARTICLE

**Awareness/ Knowledge and practice about the cross-contamination control among Demonstrators**FARHEEN MALIK<sup>1</sup>, MUHAMMAD SHOAIB<sup>2</sup>, MUHAMMAD ALI<sup>3</sup>, JAVERIA AFZAL<sup>4</sup>, NIDA BADAR<sup>5</sup>, RABIA MAHMOOD<sup>6</sup>, MUSTAFA SAJID<sup>7</sup><sup>1</sup>Senior Medical Officer, Tertiary Care Public Hospital Islamabad<sup>2</sup>Assistant Professor, Department of Oral & Maxillofacial Surgery, Multan Medical and Dental College Multan<sup>3</sup>Assistant Professor, Department of Community Dentistry, CIMS Dental College CMH Multan<sup>4</sup>Senior Lecturer, Department of Community Dentistry, Multan Medical and Dental College Multan<sup>5</sup>Demonstrator, Department of Physiology, Foundation University Medical College Islamabad<sup>6</sup>Assistant Professor, Department of Community Medicine, Federal Medical College Islamabad<sup>7</sup>Associate Professor, Department of Operative Dentistry, Multan Medical and Dental College MultanCorrespondence to Dr. Muhammad Shoaib, Email: [risingrock\\_star2006@hotmail.com](mailto:risingrock_star2006@hotmail.com)**ABSTRACT****Background:** Cross infection is a type of infection which can spread between three stack holders of the community i.e. Doctors, paramedical staff and the patient. The infectious diseases can spread from doctors to the patients, or patients to the doctors and healthcare workers<sup>2</sup>. These infectious diseases can spread during medical, surgical or dental treatment. Dental treatment is considered as most notorious one to spread cross infection between the healthcare workers and the community.**Aim:** To assess & check the awareness/ knowledge and practice about the cross-contamination control among demonstrators**Study design:** Descriptive Cross-sectional study**Place and duration of study:** Multan Dental College Multan. Duration of this study was 3 months.**Methodology:** This study was a cross-sectional survey which was conducted in the dental section of Multan Medical and Dental College Multan where forty demonstrators were included in the study. Data was collected by random sampling. After taking informed consent a questionnaire was filled by the participants.**Results:** Out of forty demonstrators. Males were twenty-four while females were sixteen. 95% participants consider that the dental clinics/hospitals are additionally predisposed to contamination/infection when compared with other medical fields. 90% participants wash hands regularly after giving the treatment to each and every patient.**Conclusion:** Participants showed acceptable awareness/knowledge and satisfactory practice about contamination control.**Keywords:** Cross-contamination control, Demonstrators, Dentistry, and Protective measures**INTRODUCTION**

Cross infection is a type of infection which can spread between three stack holders of the community i.e. Doctors, paramedical staff and the patient<sup>1</sup>. The infectious diseases can spread from doctors to the patients, or patients to the doctors and healthcare workers<sup>2</sup>. These infectious diseases can spread during medical, surgical or dental treatment<sup>3,4</sup>. Delivery of the dental/oral care is also not unobstructed from this risk. Dental treatment is considered as most notorious one to spread cross infection between the healthcare workers and the community. There are many ways to spread like spatter, mists, aerosol, blood contaminated instruments and blood contaminated components of barrier technique etc<sup>5,6</sup>.

During dental procedures many bacteria and virus can cause hilarious diseases like mycobacterium tuberculosis, staphylococcus aureus, influenza virus, herpes infection, mumps, measles, hepatitis A, B and C, and HIV. Dentistry also got intentions during last three years when COVID-19 hit the world badly because it is an air born infection which can spread from one to other by breathing also. Upper respiratory tract is also a good habitat for COVID-19 virus<sup>6-8</sup>.

Studies showed that many dentists and their personals had experienced major threats from the hepatitis B and Hepatitis C virus during their life. That is why cross infection is one of the serious concerns for not only patients but also for the healthcare workers<sup>10</sup>.

As the world is going towards the glamorous life style, need for the dental rehabilitation is becoming the integral part of life. That is why dental treatment is becoming an important part of life and this world is experiencing more dental treatments than earlier<sup>11,12</sup>. Due to burden on dental clinics it is becoming difficult to maintain cross infection control. Now it is the responsibility of dentists and their healthcare workers that they control the cross-infection diseases among the community and themselves<sup>13-16</sup>. In a study of Riyadh blood samples of many dental patients were sent to lab for serotype of hepatitis B and Hepatitis C virus and it is

surprising that few patients are positive among those but they don't know about it because they have no clinical symptoms of this virus<sup>17</sup>.

Another study stated that infectious diseases can spread very fast among the patients who are previously treated by the dental treatment<sup>18</sup>. During last decade viral infection spread more faster than before. That is why the dentist and healthcare workers are more prone to be infected from the patients if the cross-infection control measures will not be taken<sup>8</sup>. Dentists and their personals must be aware of these threats and the also now that how they can seize the cross infection between the community and themselves<sup>18</sup>.

Aim of this study was to assess & check the awareness/ knowledge and practice about the cross-contamination control among dental demonstrators henceforth we can manage and arrange further courses of training for them.

**METHODOLOGY**

This study was a cross-sectional survey which was conducted in the dental section of Multan Medical and Dental College Multan after permission from Ethical Committee where forty demonstrators were included in the study. Data was collected by random sampling. After taking informed consent a questionnaire was filled by the participants. All the demonstrators of dental department working at time of this research were included in our study. This questionnaire encompassed closed ended interrogations associated with awareness/ knowledge as well as cross infection control practice, sterilization, asepsis, and various techniques for protection of healthcare personal (PPE), vaccination status of the Hepatitis B virus, and usage of PPE while treating the HBV /HIV infected folks. Results obtained from participants were collected and tabulated.

**RESULTS**

Questionnaire was filled by forty demonstrators. Males were twenty-four while females were sixteen (Table 1). 95% participants consider that the dental clinics/hospitals are additionally

Received on 24-05-2022

Accepted on 13-09-2022

predisposed to contamination/infection when compared with other medical fields. 100% partakers were absolutely aware about the universal precautions to avert cross infection. 90% participants wash hands regularly after giving the treatment to each and every patient. All subjects reported that PPE usage has a main part in cross contamination prevention. 90% subjects thought that vaccination against a virus of Hepatitis B is essential in dental career. All the subjects generally maintained additional precautions while giving treatment to AIDS & hepatitis B, C patients. 85% subjects used goggles & facemask while doing the scaling procedure. These responses about an awareness/ Knowledge and practice of the subjects about cross contamination control are shown in Table 2. Majority of these partakers use facemask and gloves but Protective eyewear or goggles, aprons & head caps were not in use by the most of participants. Protective measures embraced to avert cross contamination are shown in Figure 1.

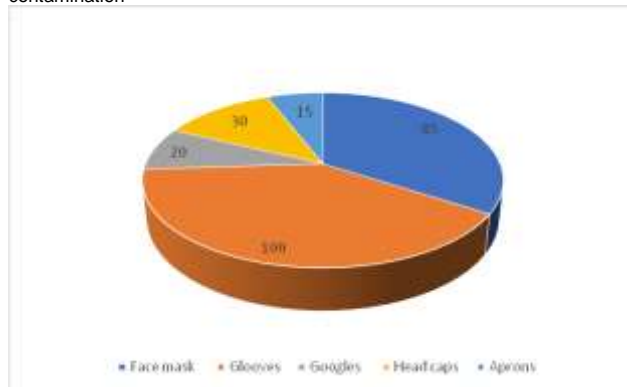
Table 1: Gender distribution

Male	Female	Total
24 (60%)	16 (40%)	40

Table 2: Knowledge and practice of participants about a cross contamination control

Variable name with category	Yes Freq (%)	No Freq (%)
Dental clinics are more prone to infection	38 (95)	2 (5)
Awareness about universal precautions	40 (100)	0 (0)
Hand washing before and after treating patients	34 (85)	6 (15)
PPE usage has a main part in cross contamination prevention	40 (100)	0 (0)
Vaccination against a virus of Hepatitis B is essential in dental career	36 (90)	4 (10)
Additional precautions while giving treatment to AIDS & hepatitis B, C patients	40 (100)	0 (0)
Goggles & facemask usage during the scaling procedure	34 (85)	6 (15)
Care for sharp instruments	38 (95)	2 (5)

Fig. 1: Percentage of Protective measures adopted for prevention of cross contamination



## DISCUSSION

In this study, most of the participants (95%) concluded that dental clinic caused ore infection than medical one. Halboub et al reached the consequences that their more than 95% participants blamed the dental clinics for the spread of infection<sup>19</sup>. R. Varshan's study concluded that 76% participants thought that dental clinic are more vulnerable to cross infection<sup>20</sup>. Many researchers stated that dental care givers are more prone to viral and bacterial infection<sup>11,21</sup>.

In this study all participants thought that Personal Protection Equipment play a major role to protect the healthcare workers against infectious diseases spread by dental clinics. Javaid et al also concluded that Personal Protection Equipment protected the healthcare workers against cross infection<sup>21</sup>. In current research, all the participants were aware about practicing the universal

precautionary measures against the cross infection in the dental clinics. Tahir et al resulted that 94% participants were fully aware of universal precautionary measures and the reason of this low proportion than that of current study is that he used the undergraduate population for the study. In this survey, 85% participants washed hands regularly after giving treatment to every patient. This is better than that stated by Tahir and colleagues where 74.6% contributors used to wash hands after each procedure<sup>22</sup>. This is fewer than results told by another researcher where this percentage came out to be 93.3%<sup>23</sup>. 93.6% contesters in a survey of Qamar et al washed their hands beforehand and afterwards patient examination<sup>24</sup>.

B is very danger virus which can cause liver damage within no time. Universal precautionary measures and vaccination are the economical and easy way to protect healthcare workers against this virus. Each healthcare worker should complete his/her vaccination before joining the dentistry. Chances of getting Hepatitis B infection can get raised up to 30% if preliminary precautions were not taken<sup>9,4</sup>. A few studies in Pakistan noticed that dental treatment increased the rate of hepatitis B and C infection<sup>22</sup>.

This study shows that 90% of contributors believed that jab against a Hepatitis B is required in profession of dentistry. This is more when compared with percentages of Ibrahim et al (71.2%)<sup>8</sup> & R. Varshan (73%)<sup>20</sup>.

In the researches of Mallick & Alshiddi, majority of subjects were fully vaccinated<sup>25,26</sup>. While merely 3.8% folks were vaccinated in study of Ali MF et al<sup>27</sup>.

Every individual who see dental treatment should be considered as infected. The reason of this contemplation is that any people does not now that they have certain infection because infection is at subclinical level and undiagnosed and sometime few patients hide their disease due to fear of refusal of getting dental care own to their disease. So, healthcare workers should take universal precautionary measures against all the patients treated in dental surgery<sup>28,19</sup>.

In order to accomplish that level of health, the health care givers are advised to use personal-protective equipment & also stick to all rules and guidelines of precautions during medical/dental procedures so that all chances of receiving cross contaminations may well be eluded or at-least minimized<sup>29,25</sup>.

Face mask is an integral part of cross infection control. In the current study eighty five percent participants thought that face mask is necessary part of cross infection control. This percentage is comparable to that of Javaid research where about 86% participant were in favor face masks<sup>29</sup>. Another research contributed that only 27.5% participants thought that face mask could decrease the spread of infection among the community and healthcare workers<sup>27</sup>. The reason of this vast difference is that latter one studied on the populations who have low and variable educational and socioeconomic level than that of current study. This is also comparable to that ninety-four per cent partakers of one more investigation who quantified that masks were indispensable component of cross-contamination control<sup>30</sup>.

OSHA & CDC have already identified 6 basic areas for personal barrier protection which are Gloves, Rubber dam, Face masks, Body gowns, Eye wear and hand-washing plus care<sup>28</sup>. Gloves were used by all subjects of this research which is almost alike that listed by Maqbool A (88.1%)<sup>31</sup> & is also in harmony with that (96.8%) testified by Mallick<sup>25</sup> & 98% told by Javaid M et al<sup>29</sup>. Eye wear & head caps were used by 20%, 30% contestants of this study. This percentage is closer to that conveyed by Halboub (14%)<sup>19</sup> & a little less than stated by another researcher<sup>25</sup>.

Only 15% of our participants agreed that long protective gown should be wear during dental treatment. This percentage is comparable to the study of Maqbool where 12.7% participants used gown for the treatment.<sup>31</sup> Good cross infection control should only be achieved by practicing strictly the universal precautions in the field of medicine as well as in dentistry<sup>29,32</sup>.

In the current study most of the participants (95%) practiced universal precautionary measures during handling of sharp instruments. This percentage is higher than that of other study where 72.5% followed proper guidelines during the use of sharps<sup>21</sup>. 85% respondents often use goggles as well as facemask during procedure of scaling, which is better than reported in one more research where 51.3% believed that facemask and goggles should be in use during scaling and polishing procedure<sup>21</sup>.

## CONCLUSION

Participants have good knowledge and awareness regarding the guidelines of cross infection control in the dentistry. There is always a need of continuous education program of cross infection control through lectures and tutorials. Furthermore, dental schools should also concentrate on establishment of guidelines for cross-contamination control at institutional levels.

**Conflict of interest:** None to declare

## REFERENCES

- Mutlu S, Porter SR, Scully C. Cross-infection control in dentistry. Erolset, Istanbul, Turkey; 1996.
- WHO. Ten threats to global health in 2019 [Internet]. Available from <https://www.who.int/emergencies/ten-threats-to-global-health-in-2019>
- Sajid M, Jamil M, Javed M. Vaccination status of dental students of Multan dental college against hepatitis b virus. *J Pak Oral Dent* 2018; 38:513-5.
- Sajid M, Jamil M, Javaid M, Sultan M. Hepatitis B Vaccination Status of MBBS & BDS Students in Multan Medical & Dental College, Multan. *J Pak Pub Health* 2018; 8:138-41.
- McCarthy GM, Britton JE. A survey of final-year dental, medical and nursing students: occupational injuries and infection control. *Journal-canadian dental association*. 2000 Nov 1;66(10):561-.
- Baseer MA, Rahman G, Yassin MA. Infection control practices in dental school: A patient perspective from Saudi Arabia. *Dental research journal*. 2013 Jan;10(1):25
- Bueno-Marí R, Almeida A, Navarro JC. Emerging zoonoses: eco-epidemiology, involved mechanisms, and public health implications. *Frontiers in public health*. 2015 Jun 8;3: 157.
- Ibrahim NK, Alwafi HA, Sangoof SO, Turkistani AK, Alattas BM. Cross-infection and infection control in dentistry: Knowledge, attitude and practice of patients attended dental clinics in King Abdul aziz University Hospital, Jeddah, Saudi Arabia. *Journal of infection and Public Health*. 2017 Jul 1;10(4):438-45.
- Javaid M, Jamil M, Sajid M. Status of vaccination against hepatitis B among dental assistants of multan. *J Pak Dent Assoc* 2020;29(1):42-45.
- Muqheet A, Noor R, Mahmood A, Wahab A, Jamil M & Sajid M. vaccination status against hepatitis B virus among house officers of a private dental institute/college in Multan. *Pak J Med Health Sci* 2021; 15(1):117-19
- Javaid M, Jamil M, Saadullah M, Haider E, Sajid M, Mahmood A. Knowledge, attitude & practice regarding use of personal protective equipment among dental assistants. *Pak J Med Health Sci* 2019; 13: 623-6.
- Sajid M, Noreen R, Jamil M, Javed M, Haider E, Ahmad M. Prevalence of Dental Traumatic Injuries in Young Children in Public School of Layyah. *Pakistan Oral & Dental Journal*. 2019 Dec 1;39(4):337-40
- WHO. Patient Safety Curriculum Guide for Medical Schools France: WHO Press; 2011, Available from: [www.who.int/patientsafety/activities/technical/medical\\_curriculum/en/index.html](http://www.who.int/patientsafety/activities/technical/medical_curriculum/en/index.html). Accessed October 2011.
- Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safety health system. The Quality of Health Care in America Committee of the Institute of Medicine (IOM). Washington D.C.: National Academy Press; 2009, Available from: [http://www.nap.edu/openbook.php?record\\_id=9728&page=R1](http://www.nap.edu/openbook.php?record_id=9728&page=R1). Accessed 25 October 2013.
- Perea-Perez B, Santiago-Saez A, Garcia-Marin F et al. Patient safety in dentistry: dental care risk management plan. *Med Oral Patol Oral Cir Bucal* 2011 16: 805-9.
- Yamalik N, Van Dijk W. Analysis of the attitudes and needs/demands of dental practitioners in the field of patient safety and risk management. *International dental journal*. 2013 Dec 1;63(6):291-7.
- Ashri NY, Al Sulimani RS. Prevalence of serological markers for viral hepatitis B and C in female dental patients. *Saudi Dent J* 2007; 19:171-5.
- Mohebati A, Davis JM, Fry DE. Current risks of occupational blood-borne viral infection. *Surg Infect (Larchmt)* 2010; 11:325—31.
- Halboub ES, Al-Maweri SA, Al-Jamaei AA, Tarakji B, Al-Soneidar WA. Knowledge, attitudes, and practice of infection control among dental students at Sana'a University, Yemen. *Journal of international oral health: JIOH*. 2015 May;7(5):15-19.
- R. Varshan, MeignanaArumugham, Ashish R. Jain. Knowledge and practice of infection control among dental students. *A survey. J pharmacy research* 2017; 11 (12): 1499-1502
- Javaid M, Sahu EH, Malik A, Khan N, Noor A, Shaukat MS. Practice of Personal Protective Equipment among Dental Surgery Assistants: Survey from a Public Sector Hospital. *Journal of the Dow University of Health Sciences (JDUHS)*. 2020 Aug 30;14(2):66-71.
- Mw T, Mahmood A, Abid AN, Saad-Ullah M, Sajid M. Knowledge, Attitude and Practices of Cross Infection Control among Dental Students of Punjab Pakistan. *Pak J Med Health Sci*. 2018;12: 238-42.
- Mohiuddin S, Dawani N. Knowledge, attitude and practice of infection control measures among dental practitioners in public setup of Karachi, Pakistan: Cross-sectional survey. *J Dow Univ Health Sci* 2015; 9: 3-8.
- Qamar MK, Shaikh BT, Afzal A. What Do the Dental Students Know about Infection Control? A Cross-Sectional Study in a Teaching Hospital, Rawalpindi, Pakistan. *BioMed Research International*. 2020 Jun 1;2020: 1-5
- Mallick A, Khaliq SA, Nasir M & Khan Z. Knowledge, Attitude and Practices among Dental Students and House Officers Regarding Infection Control in Clinical Settings. *Int J Pharm* 2014; 4(1): 208-212.
- Alshiddi IF. Attitude and awareness of dental students and interns toward infection control measures in prosthodontic clinics. *Journal of International Oral Health*. 2015 Dec 1;7(12):10-15.
- Hussain Mf, Maqsood A. Knowledge Attitude and Practice Concerning Infection Control Measures Among Dental Health Care Providers of Dow University of Health Sciences. *Pakistan Oral & Dental Journal*. 2014 Sep 1;34(3):452-6.
- Shah AH, Wyne AH. Cross-infection control in dentistry: a review. *Pakistan Oral & Dental Journal*. 2010 Jun 1;30(1). 168-74
- Javaid M, Kumar R, Abbasi MMJ, Kiyani S, Kavita, Basharat S. Knowledge, Attitude & Practice regarding use of Personal Protective Equipment (PPE) among Dental Assistants Working at Tertiary Care Hospitals of Multan, Pakistan. *J Liaquat Uni Med Health Sci*. 2019;18(03): doi: 10.22442/jlumhs.191830000
- Khan N, Sartaj R, Sajid M, Jamil M, Javaid M. Patient perception regarding cross infection control; a cross sectional study. *Pak Oral Dent J* 2021; 41(1):15-17.
- Maqbool A, Ronis KA. Assessment of infection control: knowledge and compliance among dental undergraduate students at Nishtar institute of dentistry, Multan. *Pakistan J Public Heal* 2016;6 (3):1-6.
- Afzal J, Ahmed M, Ali M, Khan N, Jamil M, Noor A. Awareness and Practice Regarding Cross Infection Control Among Dental House Officers in a Tertiary Care Setting. *Pakistan Journal of Public Health*. 2022 Aug 20;12(2):60-3.