

# **A Cross sectional Study to Investigate the impact of COVID-19 Pandemic on Dealing with Dental Treatment on Dental Student in Babylon Province**

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**Abstract: Background And Aim:** Infection control practices in dentistry should be continuously evaluated. Dental students should learn the importance of infection control during their university training so that they adopt the right attitudes and behaviors as dental professionals. Education plays an important role in providing appropriate knowledge and attitudes related to infection control measures. **Method:** An online structured questionnaire is answered by 209 dental students fill the questionnaire between age (22-25) years in Babylon province. Among all participants 73 (34.9%) males and 136 (65.1) females. The questionnaire consisted of questions concerning their number and time of brushing, use of interdental aids, use of mouth wash, visiting the dentist, opinion about dental clinic environment, preventive measure against COVID-19, reluctance to visit the dentists, and fear from COVID-19. **Results:** The online questionnaires were completed by 209 dental students in Babylon province-Iraq in the period from 20th June to 10th July 2022. The most frequent response for each question was considered the most significant. **Conclusions:** There is a need for improvement in the level of knowledge on infection control for dental students.

**KEYWORDS:** COVID-19, dentist, dental student, infection control, preventive program.

## **INTRODUCTION**

In December 2019, an outbreak of a novel beta coronavirus disease 2019 (COVID-19) began in Wuhan, China's Hubei province (Yang et al, 2020). By now, the virus has spread all around the world and disrupted all aspects of human life. The symptoms of severe acute respiratory syndrome coronavirus (Wu et al, 2020) (SARS-CoV-2) are similar to the previously known coronavirus infections. These include fever, dry cough, fatigue; however, the SARS-CoV-2 has a higher spreading nature. The virus could spread via respiratory droplets and contaminated surfaces, through the mucous membrane of the mouth, eyes, and nose, and even via the fecal–oral route (Guo et al, 2020; Peng et al, 2020). This highly contagious nature of the virus has made many medical institutions to cancel all elective procedures to reduce the risk of contagion. The use of headpieces and ultrasonic instruments during dental procedures unavoidably results in the generation of blood and saliva droplets (Kohn et al, 2004). Consequently, these droplets could contaminate the dental instruments and the office environment. Hence, both dental practitioners and patients could be at risk of being infected with microbial pathogens (To KK-W et al, 2020). In this regard, researchers mentioned that dental clinics might be a possible transmission source of viruses such as human immunodeficiency virus (HIV) and hepatitis B virus (HBV); these viruses could transmit during dental practice to the patients and also the practitioners (Public Health Service guidelines, 2001). The highly contagious nature of the SARS-CoV2, and the fact that dental procedures commonly generate blood and saliva droplets resulting in the spread of the virus ensued the American Dental Association (ADA) to suggest dental practitioners limit their interventions to emergency treatments(ADA, 2020). Moreover, strict precautionary protocols must be performed during the pandemic to reduce the risk of infection. For instance, the

dentists and their assistants should regularly provide pre-procedural mouth rinse for the patients, and frequently disinfect the dental instruments. Additionally, to reduce the risk of transmission high volume saliva ejectors, anti-retraction handpieces, the rubber dam isolation, and personal protective equipment (PPE) should be used(CDC, 2020; Villani et al, 2020). The closure of dental clinics because of the COVID-19 pandemic has disrupted dental services to the patients<sup>13</sup>. As a result, the dental services were limited to the emergency and urgent cases during the early days of the pandemic(Wax et al, 2020; Guo et al, 2020)

Dental health care person (DHCP) refers to all paid and unpaid personnel in the dental health care setting who might be occupationally exposed to infectious materials, including body substances and contaminated supplies, equipment, environmental surfaces, water, or air. This includes: dentists, dental hygienists, dental assistants, dental laboratory technicians (in-office and commercial), students and trainees, contractual personnel and other persons not directly involved in patient care but potentially exposed to infectious agents (e.g., administrative, clerical, housekeeping, maintenance, or volunteer personnel) (Centers for Disease Control and Prevention, 2003).

Cross-infection and infection control in dentistry are topical issues. Knowing the chain of infection and breaking one of its links are essential requirements for disease prevention, especially in a pandemic context (Ibrahim et al, 2017; Algaissi et al, 2020). A review on this topic showed that high standards of infection control measures are of utmost importance for dental healthcare workers to avoid infectious disease transmission via cross-contamination (Volgenant and Soet, 2018)

Hand hygiene (HH) is the basis of infection control programs(Rotter, 1999; Centers for Disease Control and Prevention, 2021). Numerous studies have shown

gaps in hand hygiene behaviors, which are also highlighted in the context of the SARS-CoV-2 pandemic ( Rahim et al, 2021; Dwipayanti et al, 2021; Alsoufi et al, 2020; Cheng et al, 2019). The use of protective gloves does not provide absolute protection. Therefore, HH is very important. HH with antiseptic solution is very frequently used in daily practice and, although it is effective on transient microbial flora and resident microbial flora, it is not effective in removing organic matter (Pittet, 2000).

For this reason, some researchers consider HH with soap and water to be more effective than decontamination with antiseptic solutions. Although the recommendations of the World Health Organization (WHO) Hand Hygiene Guide contain all the necessary guidelines, practitioners are not sufficiently informed or do not adopt these routine procedures correctly (WHO, 2009).

Prevention of airborne infection transmission is a topical concern for specialists in the field, and all dental professionals should be aware of the aerosol-generating dental procedures. A recent study has shown that the disinfectants that best suit the needs of the dental clinic are hydrogen peroxide and sodium hypochlorite (Scarano et al, 2020). Preprocedural mouthrinses and the use of a rubber dam can lead to a considerable reduction of airborne contaminants. Therefore, knowledge of the protocol and its application are necessary. Dental offices and dental staff can become a dangerous source of airborne disease transmission unless proper infection control measures are implemented (Tysi c-Mis ta et al, 2021). Numerous studies have been conducted on the effectiveness of protective masks (Karuppasamy et al, 2021; Rengasamy et al, 2014; Suen et al, 2020; Fouladi Dehaghi et al, 2020). The protective mask provides protection against airborne contaminants, but it retains its maximum effectiveness only for the first 30 min after application (in the case of surgical masks), which should be known by all practitioners (Seresirikachorn et al, 2020)

The Occupational Safety and Health Administration (OSHA)'s bloodborne standard for reducing exposure risk and for infection control is represented by the adoption of Universal Precautions. Employees who observe Universal Precautions will treat all potentially infectious materials with appropriate precautions, such as hand hygiene, the use of personal protective equipment (PPE), and tools and work practice controls to limit exposure (Denault, D et al, 2021)

Bloodborne pathogens raise a serious risk to healthcare workers. Of the 20 bloodborne pathogens, hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) account for the majority of professionally acquired infections and are associated with significant morbidity and mortality. The HBV vaccine has been available since 1981 and is mandatory for all employees at risk of occupational exposure. However, HBV has a risk of transmission of 30% in the dental office. Due to the high prevalence and the constantly increasing incidence among health workers, rules and standards are essential to control the infection. The risk of HCV transmission when dental staff are exposed to HCV-positive blood is 1.8%, which is considerably lower than HBV, but there is currently no vaccine or postexposure prophylaxis (PEP) for HCV infection. The percutaneous risk of HIV transmission in the dental office is estimated at about 0.3%, the lowest when compared to HBV and HCV. Proper application of postexposure protocols to infected blood is especially important. For example, in the case of exposure to HIV-infected blood, postexposure prophylactic drugs are very effective in infection prevention, provided the treatment is administered within the first 72 h (Denault, D et al, 2021).

The control plan for the prevention of exposure to a pathogen primarily involves the training of personnel. Staff training should primarily include ways to reduce the risk of transmission of blood-borne pathogens. In conjunction with these notions, each worker in the field should be familiar with the series of

hepatitis B vaccines; the recognition of high-risk exposure situation; methods of reducing exposure; working control practices; and proper use and selection of PPE, including removal, handling, decontamination, and disposal of PPE.

High speed hand pieces are the most important tools in a dental office . When it comes to cleaning hand pieces, although contamination decreases with internal irrigation and external disinfection, this is not enough. Sterilization of handpieces is essential for dental practices to provide safe care (Sasaki et al, 2020). In the dental office, it is important to avoid cross-contamination by implementing effective hygiene measures and infection control procedures (Laheij et al, 2018). High-level disinfection is quick, effective, inexpensive, and recommended whenever heat sterilization is not feasible, which is not the case for handpieces .The dental staff must be aware of the differences between the two procedures, which is essential in infection control in dentistry, and cleaning and decontamination are mandatory steps (Xia et al, 2021).

### **Result:**

209 dental students fill the questionnaire between age (22-25)years . Among all participants 73(34.9%) males and 136(65.1%) females. The most frequent response for each question was considered the most significant.

The number of female that were share in the study more than the male (65.1%, 34.9%) respectively. The frequency of brushing was higher among (2) times than one time, (1-2) times and occasionally (30.25%, 29.7%, 27.7%, 12.9%) respectively. The time of brushing was higher among 1 minute than 2-3 minutes, less than one minutes, more than 4 minutes (40.2%, 34.5%, 22%, 3.3%)respectively. The numbers were used of interdental aides were higher than not used (55.5%, 45.5%). The numbers were used mouthwashes were higher higher among 2 times than not used, according to instructions, 1 time (34.5%,

30.6%, 19.6%, 15.3%) respectively. The numbers who visited the dentist recently were less than not visit (27.8%, 72.2%) respectively. The numbers who suggested that dental clinic was danger environment were more than not suggested (70.3%, 29.7%). The numbers who took preventive measure against corona virus were higher than not took(63.2%, 36.8%). Reluctance to go to dentist numbers were more ( 60.1%, 39.9%). Fear from covid 19 numbers were more than not fear (80.2%, 19.8%).

Cross-infection can be defined as the transmission of infectious agents between patients and healthcare professionals. The Standard Precautions are intended to ensure a safe working environment and to prevent the transmission of occupational and nosocomial infections among dental clinic staff and patients. Awareness and adherence to these recommendations are crucial for the prevention of infections. Similar studies have been conducted worldwide to investigate the knowledge and practices of dental students about infection control, and there is a general consensus that they need to be more aware so that they can be protected from the risks of transmitting infections (Qamar et al., 2020).

PPE protects employees from exposure by creating a barrier against bloodborne pathogens. Basic PPE, including gloves, masks, and gowns, should be readily available and worn whenever there is potential for contact with contaminated body fluids and equipment, One of the most important methods of reducing airborne pathogen transmission in the dental office is to use preprocedural mouthrinses with antiseptic solutions (Alharbi et al, 2019).

## **Conclusions**

Most Babylon DCWs do adhere to COVID-19 prevention measures. However, insufficient access to PPE remains a problem. Their quality of life is affected, the impact of the pandemic on the physical and mental health of the DCWs is

significant. Therefore, policies are needed to support DCWs and to ensure their physical and mental well-being.

### **Recommendation:**

The promotion of infection control methods, risk awareness courses, and programs, as well as courses to motivate the application of universal precautions, should be a priority. There is need for to improve the level of knowledge for both dental students and young dentists, as infection control is essential in their working field.

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