

A Study Evaluating Infection Control Practices in a Post Pandemic World Among Dentists

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Abstract

Objective: The objective of this study was to evaluate fear of Coronavirus disease 2019 and infection control practices in a post pandemic world amongst dentists.

Methodology: This Descriptive study was undertaken in Rehman college of Dentistry, Peshawar, from 15th August 2022 till 15th February, 2023. Online questionnaire was shared with 200 dentists questions relating to fear of dentists and infection control practices in a post pandemic world. Results were analyzed with the help of Statistical package for social sciences.

Results: Out of 200 dentists (n=200), there were 69 females (58.5%) and 131 males (41.5%) having mean age of 28.73, ranging from 22-68 years with a standard deviation of 6.31 years with most being demonstrators. Majority of the dentists were scared of getting infected with COVID-19. 134(67%) dentists think that they contracted COVID-19 while giving treatment to patients. 162(81%) of the dentists used to feel fear when they would see a patient cough or sneeze. 101(52%) dentists were taking patient's history before doing any dental work. Most Of dentists were aware of CDC guidelines and use of PPE. Very few dentists were using rubber dam and high volume suction to decrease aerosol generation during dental procedures.

Conclusion: Infection control practices play a crucial role in mitigating the spread of COVID-19 and reduce the risk of infection among health care workers and patients. Adherence to recommended infection control measures such as Personal Protection Equipment, environmental cleaning etc significantly contributes to preventing risk of transmission of this virus.

Keywords: COVID-19, hypochondriasis, personal protection equipment, aerosols.

Introduction

Coronavirus disease 2019(COVID-19) was initially reported in Wuhan, China. This virus along with other microorganisms make oral biofilms which are surface associated assembling of microorganisms.¹ This disease mostly attacks the respiratory system of patient resulting in acute respiratory distress. The oxygen perfusion of patient becomes low as the alveoli in the lungs are filled with fluid.² The blood becomes coagulated and other vital organs are also affected resulting in severe damage to different organ systems of the body sometimes resulting in death.³ Virus is transmitted through cough, sneeze and droplet transmission resulting in Covid-19.⁴ Dentists along with other health care providers are at high risk of exposure to COVID-19 due to droplets and aerosol which are produced in a closed environment during dental practice.⁵ The aerosols which are produced during clinical procedures can have virus contaminating the environment. This can lead to a dangerous situation where both health care providers and patients are at a high risk of contracting COVID-19.⁶ Cagetti MG. found in their study that the aerosol and splatter produced after routine dental work was

statistically significant.⁷

Although with rigorous implementation of infection control guidelines, vaccines and understanding of COVID-19, the pandemic has subsided but infection control practices need continuously to be reviewed. There is still risk of infectious disease outbreaks. It is also crucial to sustain the progress made in controlling current outbreak. Infection control practices need continuously to be reviewed for building resilience, maintain progress, improving patient safety, minimizing disruptions and driving scientific advancements.

The objective of this study was to evaluate fear of COVID-19 and infection control practices in a post pandemic world amongst dentists.

Methodology

This descriptive study was done at Rehman college of dentistry after getting ethical approval from ethical committee review board. It was carried out from 15th August 2022 till 15th February, 2023. 200 dentists of any age, gender and designation were included in this study. Dentists which returned incomplete surveys were excluded. The G* Power software version 3.1.9.4 at a p-value of 0.05, medium-power(0.3) and confidence level of 95.1% was used to calculate sample size. The questionnaire was designed on Google Forms based on the latest Centre of Disease Control and Prevention (CDC) guidelines. A pilot survey was done initially on 50 dentists and a Cronbach's alpha value of 0.72

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showed strong intra-class correlation. The online questionnaire had 21 closed ended questions of which 3 were about the dentists' demographics and 8 questions related to fear of COVID-19 infection adapted from study done by Ahmad et al⁸. The rest of the questions were regarding infection control practices during the COVID-19 outbreak in accordance with the updated CDC guidelines. Online questionnaire was shared with dentists through the WhatsApp application (2020 WhatsApp, California, USA) and the participants were requested to fill the questionnaire. Participants were also guided about the aims and objectives of the study and informed consent was obtained verbally to make sure they understand each aspect of the study before filling the survey form. Dentists demographics including age, gender, designation was recorded. Fear of dentists and infection control practices was rated using a 5-point Likert scale varying from “strongly disagree” to “strongly agree”.

The data from the Google forms was imported to Statistical package for social sciences (SPSS version 22) and analyzed. Analysis was done of questions in form of Frequencies and percentages.

The objective of this study was to evaluate fear of COVID-19 and infection control practices in a post pandemic world amongst dentists.

Results

Out of 200 dentists (n=200), there were 69 females (58.5%) and 131 males (41.5%) having mean age of 28.73, ranging from 22-68 years with a standard deviation of 6.31 years with most being demonstrators in Table 1.

Most dentists had fear of getting infected with COVID-19 due to clinical environment. 134(67%) dentists think that they contracted COVID-19 while giving treatment to patients.

162(81%) of the dentists used to feel fear when they would see a patient cough or sneeze. Results regarding fear and anxiety of dentists are summarized in Table 2

101(52%) dentists were taking patient's history before doing any dental work. Most Of dentists followed CDC guidelines and used PPE to protect themselves. Rubber dam and high volume suction was used by very small number of dentists to decrease aerosol generating procedures. Results of infection control practices among dentists are summarized in Table 3.

Table 1: Age, Gender distribution and designation of dentists(n=200)

Age	Gender	Designation	Total	Percent
Range: 22-68 years	Male: 83(41.5%)	House officer	48	24 %
Mean: 28.73 years ± 6.31	Female: 117(58.5%)	Demonstrators	55	27.5%
		Post Graduate Trainee	51	25.5%
		Consultant	46	23%

Table 2: Fear level of dentists during COVID-19(n=200)

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	Neither Agree Nor Disagree
Have you provided dental treatment to confirmed or suspected COVID-19 patients?	37(18.5%)	30(15%)	115(57.5%)	3(1.5%)	15(7.5%)
Do you fear you are unprotected and at risk of infection despite wearing safety gear?	9(4.5%)	118(59%)	30(15%)	3(1.5%)	40(20%)
You are satisfied with the personal protection equipment provided to you by the hospital?	126(63%)	15(7.5%)	49(24.5%)	8(4%)	2(1%)
Does it worry you that your families are at risk of contracting COVID-19 because of you?	89(44.5%)	45(22.5%)	8(4%)	50(25%)	8(4%)
During peaks of COVID-19 spread, did you hesitate to come to clinic at the thought of not putting the children and elderly members of your family at risk of COVID-19?	58(23%)	59(29.5%)	8(4%)	26(13%)	49(24.5%)
If you did contact COVID-19, do you think you were exposed to it in your clinic?	67(33.5%)	67(33.5%)	34(17%)	10(5%)	22(11%)
Regardless of whether patients are COVID-19 positive or not, do you feel a slight scare when you see a patient coughing or sneezing?	58(29%)	104(52%)	8(4%)	15(7.5%)	15(7.5%)
Do You feel like you have developed hypochondriasis (fearing anyone with even one symptom of COVID-19)	37(18.5%)	66(33%)	47(23.5%)	5(2.5%)	45(22.5%)

Table 3: Infection control practices of dentists during COVID-19(n=200)

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	Neither Agree Nor Disagree
Is the COVID-19 vaccine effective.	20 (10%)	108 (54%)	29 (14.5%)	1 (0.5%)	42 (21%)
Have you been vaccinated for COVID-19.	10(5%)	120(60%)	35(17.5%)	2(1%)	33(16.5%)
Do you think the patient appointments in your clinical setting are spaced so that the waiting area is not saturated.	30(15%)	68(34%)	59(29.5%)	4(2%)	37(18.5%)
Do you take history of the patient and ask questions about body temperature, body aches etc.	8(4%)	96(48%)	52(26%)	22(11%)	22(11%)
Do you wear safety gear like the KN-95 mask or the filtering facemask for every patient?	8(4%)	110(51%)	52(26%)	0(0%)	30(15%)
Do you wear a fresh pair of gloves for every patient?	0(0%)	200 (100%)	0(0%)	0(0%)	0(0%)
Do you wear safety gear like the face shield (to minimize aerosol droplets spread) for every patient?	0(0%)	96 (48%)	67 (33.5%)	0(0%)	37(18.5%)
You are satisfied with the level of disinfection of various susceptible areas of your clinical setting like the elevator push buttons, dental chairs, reception desks, patients waiting area etc.	8(4%)	59 (29.5%)	89 (44.5%)	34(17%)	10(5%)
Do you use rubber dam isolation and use of high volume suction to decrease aerosol generation.	5(10%)	9(18%)	134 (68%)	20(10%)	32(16%)
Is your knowledge of COVID-19 and its safety protocols remarkably high.	30(15%)	126 (63%)	8(4%)	14(7%)	22(11%)

Discussion

Coronavirus disease 2019(COVID-19) which is due to severe acute respiratory syndrome corona virus 2 (SARS COV-2) attacks the respiratory system of patient resulting in acute respiratory distress. The virus effects different vital organs resulting in severe damage to the body sometimes resulting in death.⁹ COVID-19 pandemic with its increased mortality rate and fear of cross infecting your family members has many psychological implications.¹⁰ Dentists are afraid of getting infected and to carry infection to their homes.¹¹ To counter act this dentists all over the world have modified their infection control practices to safeguard themselves, patients and their families.¹² This study was undertaken to look into fear levels and infection control practices of dentists in our area.

Our study revealed that most dentists were afraid of getting infected while giving treatment to patients and to carry infection to their home. Also most dentists believed that they were exposed to COVID-19 during their clinical work. A Turkish study which showed that 90-95% of dentists had fear of getting infected which was similar to our study and that they were concerned about infecting their families due to their occupation.¹³

Patients with COVID-19 have symptoms which can easily help in diagnosis. History of a patient is important to filter out patients with infections such as hepatitis, AIDS etc.¹⁴ Our study revealed that 54 % of dentists took history and asked questions regarding body temperature and aches. This value is considerably lower than other parts of the world.¹⁵ This may be due to a number of factors such as prevalence of COVID-19 in the region, local guidelines and patient's presenting symptoms.

Dentists usually work very close to the mouth of patients and are thus at high risk of getting infected specially in situations as COVID-19 pandemic.¹⁶ Face shields, goggles and avoiding of aerosol generating procedures is recommended to prevent spatter during different procedures.¹⁷ Our study revealed that 55% of dentists used filtering mask for every patient and around 48% used face shield or goggles to protect themselves. This is in sharp contrast to a study done in India which revealed that only 12.36 % dentists used N95 type filtering masks.¹⁸ The reason can be attributed to foreign aid which Pakistan has received during the current pandemic in form of PPEs such as masks and gowns etc.¹⁹

Rubber dams minimize risk of droplet infection in aerosol generating procedures.²⁰ Current study showed that only 28% of dentists used rubber dam isolation. This figure is comparatively low as compared to other studies done world wide.²¹ The reason for this can be attributed to the significant strain which COVID-19 pandemic has put on our health care system. Availability of PPE and other necessary supplies might have impacted the wide spread use of rubber dams. Some dentists also prefer room ventilation and use of high speed evacuation systems to control aerosols rather than use of rubber dam.²² Some patients also have poor compliance towards use of rubber dam.²³

Limitations

Studies need to be done on larger populations so that the results can be extrapolated to a larger context. COVID-19 has a rapidly evolving nature resulting in changing of information and recommendations of COVID-19. This renders some of the protocols less relevant. The availability and access to resources like PPE, testing kits and healthcare facilities can influence infection control practices which might vary in different part of the world.

Conclusions

Infection control practices play a crucial role in mitigating the spread of COVID-19 and reduce the risk of infection among health care workers and patients. Adherence to recommended infection control measures such as PPE, environmental cleaning etc significantly contributes to preventing risk of transmission of this virus.

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Author Contributions

1. Arbab Zia ur Rehman - Conceptualization and Methodology of study
2. Momena Rashid - Literature review
3. Faiqa Farman - Manuscript review
4. Asma Ali - Data Analysis
5. Muhammad Amir Sardar - Manuscript writing
6. Junaid Islam - Data Interpretation
7. Rija Fatima – Data Collection