

Knowledge and Attitude of Prosthodontic Post Graduates on COVID 19: A Qualitative Research

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ABSTRACT-

Background: The disease caused by novel corona virus (COVID-19) is a pandemic. The World Health Organization officially declared COVID-19 as a pandemic on March 11, 2020. The source of the disease is unknown but its routes of transmission are person to person via hands, saliva, nasal droplets and surface contacts. Dental professionals are particularly at risk due to the nature of their clinical work. The prosthodontic dentists have to deal with geriatric patients who are at risk.

Materials and Methods: The risk factors are aged people with additional medical comorbidities like hypertension, diabetes mellitus, asthma, chronic obstructive pulmonary disease, and other cardiovascular conditions are more prone to develop a severe form of the disease. Majority of these risk factors are seen in old patients who form a major part of prosthodontic practice. Hence a survey was carried out to know the knowledge of the prosthodontic post-graduate students on COVID-19.

Results: A total of 60 participants. 80% has adequate training in COVID 19. 61.6% were confident managing patients with required precautions during COVID 19 pandemic. 63.6% aware of the authority to contact if you come across a suspected COVID 19 patient. 96.6% agreed that the pandemic has affected your academic activities

Conclusion: A better understanding of aerosol transmission and its implication in dentistry can help us identify and rectify negligence in daily dental practice. In addition to the standard precautions, implementation of special precautions could prevent disease transmission from asymptomatic carriers. These special precautions would not only help control the spread of COVID-19 but also serve as a guide for managing other respiratory diseases.

Keywords –Prosthodontic, coronavirus, social distancing, hand hygiene, disinfection

INTRODUCTION -

The novel coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 was first identified in Wuhan. The World Health Organization officially declared COVID-19 as a pandemic on

March 11, 2020 [1]. It is caused by a new strain of novel coronavirus (SARS-COV-2). The subgroups of coronaviruses family are alpha(a), beta (β), gamma (γ) and delta (δ) coronavirus. This virus affects humans infecting their respiratory, gastrointestinal and central nervous system. All of these belong to β-CoV Alpha and beta coronaviruses mainly cause disease. Although the source of origin and transfer to humans is still unclear, current evidence has confirmed that COVID-19 is highly transmittable and that the predominant route of transmission is human-to-human[2,3]. SARS CoV-2 is phylogenetically related to the two highly pathogenic respiratory coronaviruses i.e Severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS - CoV)[4,5]. Structurally, COVID-19 is an ss-RNA, enveloped virus with a size of ~350 kilobase-pair (kbp). COVID-19 has the potential to cause severe acute respiratory tract infection among infected humans and is commonly transmitted from person to person via hands, saliva, nasal droplets, and surface contacts. The average incubation period ranges of COVID-19 from 4 to 14 days. The infected person usually presents with upper respiratory tract infection (RTI) and complaints of high-grade fever, a dry cough, and dyspnoea. It is highly recommended to keep any suspected individuals in quarantine (isolation) and under observation until further investigation by the real-time polymerase chain reaction (RT-PCR) can take place [2]. COVID can progress in different stages, such as mild, moderate, and severe.[6,7,8] Dental professionals are particularly at risk due to the nature of their clinical work. Well-meaning dentists who want to serve the needs of their patients as they should may be spreading the virus faster and extensively, without being aware of it. [9,10] The prosthodontist defiance will be more because of many elements; exposure to blood during pre-prosthetic surgery and implant placement, exposure to aerosols during tooth preparation for crown and bridge, and abundant salivary concentration in dentures and measurement trays. All of these mentioned factors with the majority of prosthesis patients who belongs to old age group mainly susceptible to infection easily and long multiple visiting appointments making the prosthodontist in front of distinctive challenge to guarantee dual safety at every appointment and in every step of work [5]. The prosthodontist is very familiar with universal personal protective equipment and other cross infection control measures and risk assessment [6]. The current epidemiological data shows COVID-19 has higher transmissibility than SARS-CoV and MERS CoV. The presence of SARS-CoV-2 in the saliva and faeces has been identified in infected patients. Incubation period for COVID-19 is between 2 to 14 days and it can also be transmitted through asymptomatic patients. Thus, social distancing, proper hand hygiene and surface disinfection are highly recommended to stop its rapid spread. In this process, dentists may provide routes for virus transmission from unrecognized COVID-19-infected patients and patients under surveillance [7,8]

MATERIALS AND METHODS:

A survey questionnaire was circulated amongst the post graduate students of the prosthetic department. The provider's demographics of gender, age and the year they are studying in during COVID pandemic is to be filled in. Also, the respondents consent regarding their participation in the survey – “ if they are willing to participate in the survey ? “ is recorded. The remaining seven questions were to assess the practise, knowledge and experience of the respondents regarding the ongoing COVID pandemic. The questions were mostly based on the behaviour of the prosthodontic students and how they carried themselves and practised during the ongoing COVID pandemic.

DATA ANALYSIS AND RESULTS :

The data was obtained and analysed.(Table 1,2). A total of 60 participants. 80% has adequate training in COVID 19. 61.6% were confident managing patients with required precautions

during COVID 19 pandemic. 63.6% aware of the authority to contact if you come across a suspected COVID 19 patient. 96.6% agreed that the pandemic has affected your academic activities.

TABLE 1: CUMULATIVE RESPONSES FOR DIFFERENT BATCHES OF POST GRADUATE STUDENTS

Questionnaire	Total post graduate students (n=60)(%)
Attending college/university	60 (100%)
Are you awareness of the guidelines issued by the DCI for dental colleges	60 (100%)
Do you follow the guidelines in your department?	60 (100%)
The training provided to me in COVID 19 infection prevention and control was	adequate – 48 (80%) inadequate- 12 (20%)
Are you confident managing patients with required precautions during COVID 19 pandemic?	Yes -37 (61.6%) No-20(33.3%) Maybe-3(5%)
Are you aware of the authority to contact if you come across a suspected COVID 19 patient?	Yes -38(63.3%) No-15(25%) Maybe-7(11.6%)
Do you agree the pandemic has affected your academic activities?	Strongly agree-58(96.6%) Agree-2(3.4%) Neutral -0 Disagree-0 Strongly disagree-0

TABLE 2: RESPONSES FOR DIFFERENT BATCHES OF POST GRADUATE STUDENTS

Questionnaire	I MDS (n=20)(%)	II MDS (n=20)(%)	III MDS (n=20)(%)
Attending college/university	20 (100%)	20 (100%)	20 (100%)
Are you awareness of the guidelines issued by the DCI for dental colleges	20 (100%)	20 (100%)	20 (100%)
Do you follow the guidelines in your department?	20 (100%)	20 (100%)	20(100%)
The training provided to me in COVID 19 infection prevention and control was	adequate – 15(75%) inadequate- 5(25%)	Adequate- 18(90%) Inadequate- 2(10%)	adequate – 15(75%) inadequate- 5(25%)
Are you confident managing patients with required precautions during COVID 19 pandemic?	Yes -10 (50%) No-8(40%) Maybe-2(10%)	Yes - 12(60%) No-7(35%) Maybe- 1(5%)	Yes -15(75%) No-5(25%) Maybe-0
Are you aware of the authority to contact if you come across a suspected COVID 19 patient?	Yes -8(40%) No-5(25%) Maybe-7(35%)	Yes - 15(75%) No-5(25%)	Yes -15(75%) No-5(25%) Maybe-0

		Maybe-0	
Do you agree the pandemic has affected your academic activities?	Strongly agree-18(90%) Agree-2(10%) Neutral -0 Disagree-0 Strongly disagree-0	Strongly agree-20(100%) Agree-0 Neutral -0 Disagree-0 Strongly disagree-0	Strongly agree-20(100%) Agree-0 Neutral 0- Disagree-0 Strongly disagree-0

TABLE 3. COMMON TREATMENT URGENCIES IN PROSTHODONTIC CLINICAL PRACTICE

Emergency Treatments	Managed with Minimally Invasive Procedures and Without Aerosol Generation	Managed with Invasive and/or Aerosol-Generating Procedures	Nonroutine Treatments	Routine Treatments
• Pain with diffuse infection-causing extraoral and/ or intraoral swelling that can compromise the patient's airway	• Fractured prosthesis or soft tissue trauma from denture • Cementation of crown or bridge • Severe pain from tooth fracture from biting or trauma • Severe pain from pulpal infection or inflammation • Localized dental/ periodontal abscess	• Fracture of removable or fixed prosthesis causing soft tissue injury • Deboned fixed prosthesis cleaning and cementation • Severe pain from tooth fracture that need to be managed by generating aerosol • Severe pain from pulpal inflammation that need to be managed by generating aerosol • Removable dentures adjustments for radiation	• Removable dentures adjustments or repairs for normal patients • Asymptomatic fractured or defective restoration or prosthesis • Chronic periodontal disease	• Examination of the fully edentulous patient • Restorative treatments • Aesthetic dental procedures • Teeth bleaching • Dental implant surgery

		therapy patients		
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TABLE 4 : PROTOCOL FOR THE STERILIZATION OF THE DENTAL IMPRESSION.

Type of disinfection	Disinfectant	Recommended concentration	Type of impression material	Time of exposure	Commercial preparation
High level disinfection	Glutaraldehyde	2%	Irreversible hydrocolloid	10 min	Cidex
Zinc oxide eugenol			10 min		
Poysulfide Polyether			10 min		
Addition silicone			10 min		
Intermediate level disinfection	Sodium hypo-chlorite	0.5 % Or 200 – 5000 PPM	Impression compound. Irreversible hydrocolloid, Zinc oxide Eugenol. Polysulfide’ Polyether, Addition silicone	10 min	Purex Clorox Chloramine T
Iodophores		1 – 2%	10 min	Betadine Hy-sine Ioprep	
Phenols		1 – 3%	10 min	Lysol Dettol Hi-phene	
Alcohols		60 – 90%	10 min	Isopropyl alcohol	
Chlorhexidine		2 – 4%	10 min	Savlon	
Low level disinfection		Quaternary ammonium compounds Simple phenol detergents		Not recommended for impression disinfection	
Stone casts			Spray or immerse in hypochlorite or iodophor		
Fixed (metal/porcelain)			Immerse in gutaraldehyde		
Wax rims or bites			Spray-wipe-spray with iodophors		

DISCUSSION:

Pandemic of COVID-19 has led to global crisis. The rapid surge of COVID-19 disease has not only raised widespread public health concerns but has collapsed world's economy. It has put immense strain on social stability and the global health systems. When a person coughs, sneezes, laughs, or talks, large (>5 µm diameter) and small (=5 µm diameter) droplets or

aerosols are generated. Due to gravity, larger droplets fall to the ground quickly; therefore, droplet transmission requires close physical proximity between an infected individual and a susceptible individual. On the other hand, small droplets or small particle residues of evaporated droplets have a low settling velocity, so they may remain in the air for a longer time and travel further before they can enter the respiratory tract or contaminate surfaces (WHO, 2014) [9]. The risk factors are aged people with additional medical comorbidities like hypertension, diabetes mellitus, asthma, chronic obstructive pulmonary disease, and other cardiovascular conditions are more prone to develop a severe form of the disease [2]. Majority of these risk factors are seen in old patients who form a major part of prosthodontic practise. Hence, it is essential for the practising prosthodontic dentists to take utmost care to contract COVID-19 as well as pass it to other geriatric patients. (Table 3)

Hand Hygiene

Hand washing is one of the most frequently emphasized measures by WHO and healthcare authorities to limit the spread of coronavirus. Reinforcement of good hand hygiene for both patients and dental professionals is vital as appropriate hand washing protocol may not be followed on some occasions which can create unnecessary challenges for infection control during a pandemic. It has been suggested that dental professionals must wash their hands before examining a patient, prior to any dental procedure, after contacting the patient, and after touching any equipment and surrounding surfaces without disinfection. Hands must be washed also after any direct contact with oral mucosa, wounds or damaged skin, blood, body fluid, saliva and excreta. Dental professionals must avoid touching their own eyes, nose and mouth until it safe to do so [12]. During the pandemic too, prosthodontic postgraduate students have to deal with emergency like situations. The various procedures undertaken by a prosthodontist can be classified as Also, it becomes very essential that all the prosthetic procedures carried out for should be carried out under proper and appropriate protocol. Various protocols have been suggested for different clinical procedures. Different procedures like impression making, tooth preparation for crown and bridge prosthesis, denture try-in and trimming, etc. require proper sterilization. An example of the protocol for the sterilization of the dental impression is given below in Table 4. Also, the disinfection of wax rims, casts, prosthesis and cast is to be done by the given protocol. Currently, there is not a practical solution to avoid generation of aerosols mixed with patient's blood and saliva, and this creates great concerns regarding transmission of COVID-19 pathogenic agents to the dental team and patients. Moreover, aerosol can stay airborne for an extended length of time entering the patients' and dental professionals' body through respiratory tract. The aerosol can also settle on the surfaces of the dental surgery and instruments making cross-contamination between the attendees to the dental surgery highly possible in the absence of. Effective and rigorous cross-infection control protocols [12,15]. Use of alcohol-based hand rubs with at least 60% ethanol or isopropanol has also been documented as a simple and effective cross-infection control technique which can inactivate enveloped viruses, including coronaviruses [12].

CONCLUSION-

As COVID-19 has altered the lifestyle all over the globe. Considering the routes of COVID-19 transmission, even we as dental professionals have to alter and follow standard protocols for preventing the spread of infection. Dentists must have thorough knowledge about the signs and symptoms and follow strict infection control measures in such clinical situations. Without the potential to prevent community infection, prevention of health care transmission will remain a challenge [2,5,10]. It is advisable to instruct the patients before attending the dental office to take clinical screening and it's preferred for both dental professionals and

patients to take the test rCOVID-19 before dental treatment. Unless COVID-19 test of a patient has been negative, elective treatments should be performed following the infection control measures presented in above recommendations [5,10]. A better understanding of aerosol transmission and its implication in dentistry can help us identify and rectify negligence in daily dental practice. In addition to the standard precautions, implementation of special precautions could prevent disease transmission from asymptomatic carriers. These special precautions would not only help control the spread of COVID-19 but also serve as a guide for managing other respiratory diseases. Some of the key points for improvement of the practise are as follows-[12] Preparedness and contingency planning for modifying clinical practice in dentistry. Optimization of cross-infection control protocols. Further focus on prevention and oral health promotion for the public. Patient empowerment and education. The long-term consequences of this pandemic are currently unknown, but they will undoubtedly result in a 'new normal' for the provision of dental care [6].

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