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**KNOWLEDGE OF CORONAVIRUS INFECTION AND ITS EFFECTS ON DENTAL  
PRACTICE - A QUESTIONNAIRE BASED SURVEY**

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**ABSTRACT**

COVID-19 (CORONAVIRUS INFECTIOUS DISEASE- 19) is a pandemic disease. It is a highly transmittable and pathological viral infection that causes severe acute respiratory syndrome CoV 2 (SARS CoV 2). All of the known coronaviruses are found in three serologically unrelated groups. It contains a single-stranded RNA. The dentist, during this corona pandemic period, plays an important role but also requires a full-fledged routine of precautionary measures. Dentists are prone to infection while using water driven instruments through aerosols etc. This survey was conducted to identify the knowledge of coronavirus infection among dentist and dental students. Questionnaires were prepared and distributed to the participants through an online portal. The descriptive statistics was carried out and chi square test was used and p value was calculated through SPSS software. The results have shown that there is no significant statistical difference (p value > 0.05) with respect to effects of coronavirus pandemic period. The dental students and dental practitioners have sufficient knowledge on the effect of corona pandemic.

**Keywords: COVID-19; Dentists; Instruments; Dental students; Infection Sanitizers**

## INTRODUCTION

COVID-19 (CoronaVirus Infectious Disease 19) is a zoonotic infection believed to have originated in bats and pangolin and transmitted to humans probably [1, 2]. Coronavirus belongs to the family of coronaviridae wherein it possess spike-like projections resembling the proteins. It has a single-stranded RNA expressing other polyproteins, nucleoproteins, and membrane proteins like RNA polymerase, accessory proteins, etc [3]. The spread can be decided through air droplet transmission, direct contact through contaminated purposes and through asymptomatic patients. The incubation period for this virus has been estimated to be between 2 and 10 days. The informal sector, self employment profession like dentistry are the one affected during this Corona pandemic period. The spread of coronavirus disease has been dictated to be human to human, through handshake, through aerosols [4, 5]. COVID-19, direct contact with other mucous membranes, other oral fluids and contaminated instruments and surfaces of the clinics [6, 7]. Dental instruments such as handpieces, water-driven instruments, ultrasonic scalers, suction tubes etc. are considered as contact surfaces [8, 9]. Previous studies explained that the risk of infection may be very high between the

dental practitioners and the patients. For dental clinics and hospitals that are affected by this pandemic disease, strict and effective infection control protocols are urgently needed [10]. Studies have been conducted to assess the fear and anxiety of getting infected among the dentists. A number of dental practitioners have modified their services according to the guidelines for emergency periods of treatment [11, 12]. Comprehensive dental treatments should be provided assessing the urgency of the required treatment and the risk and benefit associated with each treatment [13–15]. This includes routine teeth cleaning, dental examination, basic dental procedures, and oral surgery. If a dentist determines whether the patient is at moderate to high risk of this viral attack, urgent dental treatment and control measures are necessary [16, 17].

Patients then resort to home remedies for the same [18, 19]. Saliva can have a pivotal role in human to human transmission and non-invasive saliva diagnosis provides a convenient and cost-effective point of care platform for fast and early detection of virus [20, 21]. During treatment, dentists should prefer procedures that reduce the amount of aerosol produced in the environment [22, 23]. Aerosols play a critical role in the

transmission of infection during this period as the microorganisms stay in these contact surfaces for a considerable amount of time which can pave a way for infection to patients. The aerosol-generating procedure and ibuprofen in case of pain should be avoided in suspected and confirmed COVID cases [24-27]. Implications of dental treatment during this outbreak is an important thing to be considered [28, 29].

The aim of the study is to assess the knowledge of coronavirus infection among dentists and to analyse its effects on dental practice.

#### **MATERIALS AND METHODS**

A cross-sectional questionnaire study was conducted among 100 participants on April 2020 in Thiruvalluvar district. The questionnaire is created and distributed among the participants who were grouped into group 1 and 2 where group 1 represents dental practitioners and group 2 represents dental students. Non healthcare professionals were excluded from the study. The set of questionnaires includes demographic data of the participants and questions based on the awareness on COVID-19, dental treatments practiced during the Corona pandemic period. The participants were asked to fill the Google forms. The results and data collection were analysed using SPSS software. The

sample method used is a simple random sampling method. The descriptive analysis was carried out and chi square test was used for inference and p value calculated. The obtained results are converted into pie charts and graphs accordingly.

#### **RESULTS AND DISCUSSION**

Oral hygiene is also an important criteria included under the general health checkup list. Chlorhexidine mouthwash used, will act as an effective measure in maintaining dental hygiene. Health care workers are highly exposed to such infections if proper care is not ensured [30]. Proper hygiene is also an important factor that helps in the prevention of COVID-19. It was instructed that the use of soap and water to wash hands is a very effective measure. Dental practitioners should follow hand hygiene techniques and analyze the use of gels or soaps that help in preventing the enveloped virus. A minimum of 20 seconds of washing hands is required, as instructed by the World Health Organisation [31, 32]. COVID-19 can also be transmitted through saliva and the oral-fecal route. The risk of cross-infection among the dentists is high, due to the nature of work. Dental professionals will be affected as dentistry is a self-employed profession. Dental practitioners should have comprehensive knowledge about this virus

and its transmission route and it should be their responsibility to take proper precautions during dental treatments to protect themselves and their patients [33, 34].

In response to the question regarding age, (figure 1) shows that 75% falls under the age group of 18-25 years, 20% of participants falls under the age group of 25-30 years and 5% falls under the age group of 30-35 years. The response to the question regarding gender (**Figure 2**) and occupation (**Figure 3**) shows that 80% of the females and 20% of the males participated whereas depicts that 75% of the students and 25% of dentists participated respectively. The newly found coronavirus known to affect humans, has been named as COVID-19. The novel coronavirus family causes illnesses ranging from that of common cold to more severe diseases like that of a severe respiratory syndrome (SARS) and middle east respiratory syndrome (MERS). The message-sense RNA genome and the viral nucleocapsid phosphoprotein form a helical nucleocapsid around the virion [35]. A coronavirus has large, distinctive spikes in the envelope makes possible the identification of coronavirus by electron microscopy. The Spikes, oligomers of the spikes glycoprotein, bind to receptors on host cell membranes. Coronaviruses in the case of

group 2 also have hemagglutinin-acetyltransferase (HE) glycoprotein that binds to sugar moieties on cell membranes [36].

**Figure 4** depicts that 30% of the study population were aware of respiratory droplets as the mode of transmission, 10% of the study population aware that coronavirus transmitted through air, 5% of the study population were aware that coronavirus transmitted through objects and 55% of the study population were aware of all the routes of transmission. It has been said that coronavirus is transmitted between the people through respiratory droplets and contact routes. Though airborne transmission may be possible in specific circumstances and settings in which procedures that generate aerosols are performed [37]. **Figure 5** depicts the usage of hand sanitisers among the study population. It shows that 90% of the study population believes that hand sanitisers are useful, 5% of the study population believes that they are not useful and 5% of the study population have no idea about it. Hand sanitizers have a role in improving hand hygiene practices within home settings. Previous studies have concluded that alcohol based hand sanitizers help in reducing GI illness within the families [38].

**Figure 6** shows that 55% of the study population believes that coronavirus is as same as SARS, 30% of the study population believes that it is not as same as SARS, 10% of the study population believes that it may or may not be same as SARS and 5% of the study population has no idea about it. Preventive measures that were followed during SARS like isolation of cases, contact tracing and community quarantine are followed in COVID-19 to control the spread of disease. COVID-19 differs from SARS in terms of infectious period, transmissibility, clinical severity, and extent of community spread [39]. **Figure 7** shows that 60% of the study population believes that the coronavirus pandemic period causes psychological stress, 15% of the study population believes that the pandemic period causes other health issues and 25% of the study population believes that it may cause both. Recent studies concluded that elevated psychological distress was found among those who have background illness, those who feared contacting COVID-19 from a patient, and those who had higher subjective overload. This study has been taken in association of COVID-19 factors and psychological factors with elevated psychological distress among dental staff [40].

**Figure 8** shows the association between the group (Dental practitioners and Dental students) and transmission. It is shown that the majority of the dental practitioners (40.65%) believe that respiratory droplets, air and objects may cause the transmission. Chi square was carried out and p value is found to be 0.369 ( $p > 0.05$ ). **Figure 9** shows the association between groups (Dental practitioners and dental students) and the use of sanitizers. Majority of dental practitioners (68.75%) believe that sanitizers are useful. Chi square test was used to associate the variables, p value obtained is 0.264 ( $p > 0.05$ ). **Figure 10** shows the association between the group (Dental practitioners and Dental students) and the opinion on effects of corona pandemic. Majority of dentists believe that psychological stress is common in Corona pandemic. Chi square test was done which is used to associate the variables, p value obtained is 0.369 ( $p > 0.05$ ). Emergency procedures are taken during this time by dental professionals by giving them appointments in advance Dentists mainly endodontists and oral surgeons may turn up for treating life-threatening dental conditions keeping in mind the government norms [41, 42].

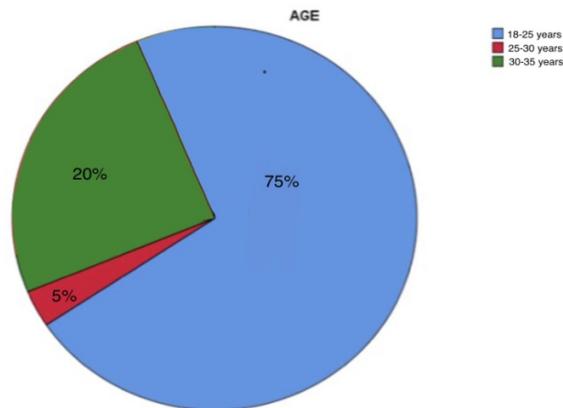


Figure 1: Pie chart shows the age distribution of the study population. It shows that 75% falls under the age group of 18-25 years (Blue), 20% of participants falls under the age group of 25-30 years (Red) and 5% falls under the age group of 30-35 years (Green).

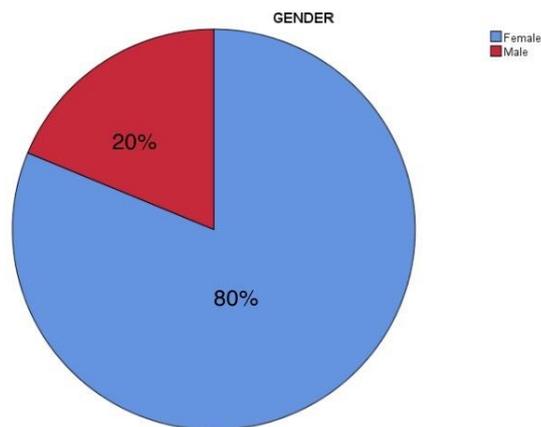


Figure 2: Pie chart shows the gender distribution of the study population. It shows that 80% of the females (Blue) and 20% of the males (Red) participated.

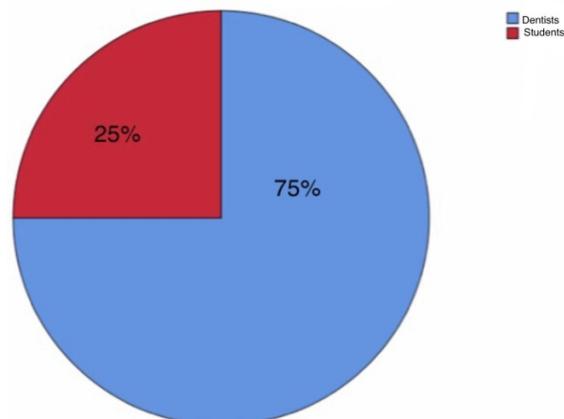


Figure 3: Pie chart shows the qualification of the study population. It depicts that 75% of the study population are dental practitioners (Blue) and 25% of the study population are students (Red).

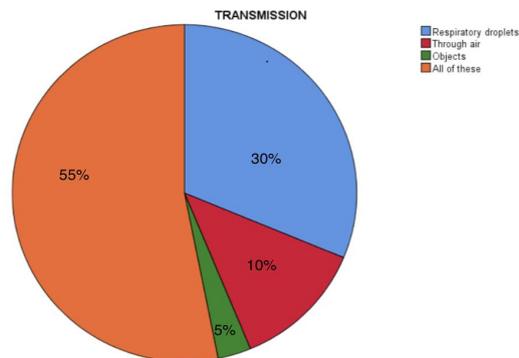


Figure 4: Pie chart depicts that 30% of the study population were aware of respiratory droplets alone as the mode of transmission (Blue), 10% of the study population aware that coronavirus transmitted through air (Red), 5% of the study population were aware that coronavirus transmitted through objects (Green) and 55% of the study population were aware of all the routes of transmission (Orange).

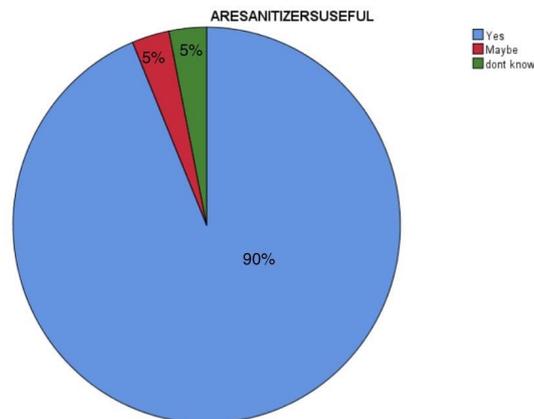


Figure 5: Pie chart depicts the usage of hand sanitisers among the study population. It shows that 90% of the study population believes that hand sanitisers are useful (Blue), 5% of the study population believes that they are not useful (Green) and 5% of the study population have no idea about it (Red).

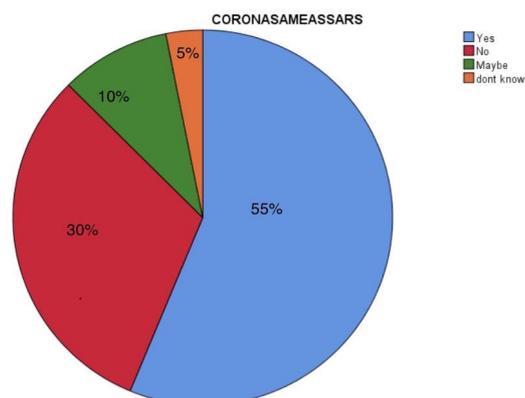


Figure 6: Pie chart shows that 55% of the study population believes that coronavirus is as same as SARS (Blue), 30% of the study population believes that it is not as same as SARS (Red), 10% of the study population believes that it may or may not be same as SARS (Green) and 5% of the study population has no idea about it (Orange).

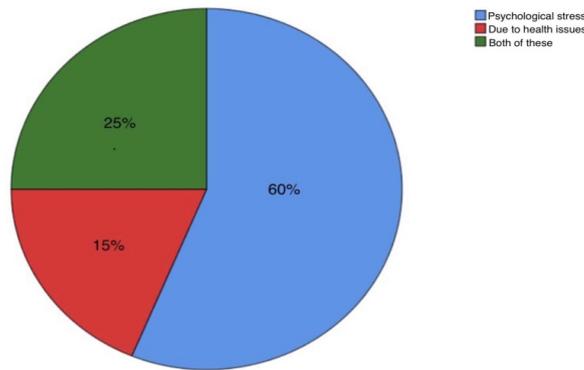


Figure 7: Pie chart shows that 60% of the dentists believes that the coronavirus pandemic period cause psychological stress(Blue), 15% of the study population believes that the pandemic period cause other health issues(Red) and 25% of the study population believes that it may cause both(Green) .

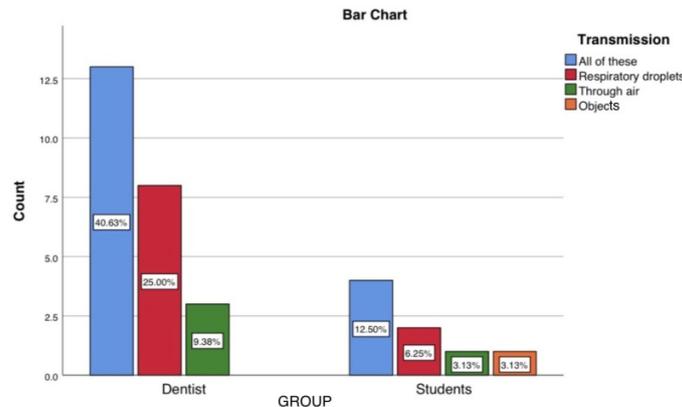


Figure 8: Bar graph shows the association between the group (Dental practitioners and Dental students) and transmission. X-axis represents the group (Dental practitioners and Dental students) and Y axis represents the number of responses to transmission. Majority of dental practitioners (40.63%) believe that coronavirus is transmitted through respiratory droplets, air and through the objects. There is no significant difference between the groups and transmission. Chi square test was used to associate the variables, p value 0.369 (p>0.05), Hence there is no statistical significance.

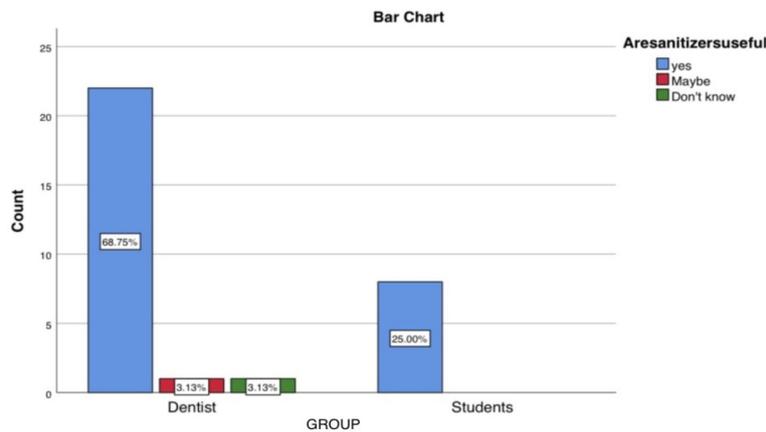
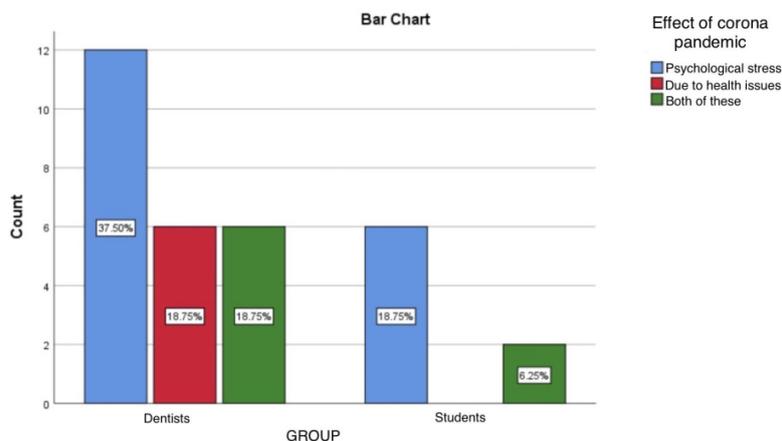


Figure 9: Bar graph shows the association between groups (Dental practitioners and dental students) and the use of sanitizers. X-axis represents the group (Dental practitioners and Dental students) and Y axis represents the number of responses to the use of sanitizers. Majority of dental practitioners (68.75%) believe that sanitizers are useful. There is no significant difference between the groups and the use of sanitizers. Chi square test was used to associate the variables, p value 0.701 (p>0.05), Hence there is no statistical significance.



**Figure 10:** Bar graph shows the association between the group (Dental practitioners and Dental students) and the opinion on effects of corona pandemic. X-axis represents the group (Dental practitioners and Dental students) and Y axis represents the number of responses to opinion on the effect of the corona pandemic. Majority of dentists (37.50%) believe that psychological stress is common in Corona pandemic. There is no significant difference between the groups and opinion on the effects of corona pandemic. Chi square test was used to associate the variables, p value 0.264 ( $p > 0.05$ ), Hence there is no statistical significance.

## CONCLUSION

From this survey, it can be concluded that dental practitioners and dental students have sufficient knowledge on Coronavirus infection and its effects in this pandemic period. Majority of the dentists said that it causes psychological stress as it has constrained the practice. Moreover the dental practitioners should be aware of the guidelines given by IDA in order to acquire knowledge about preventive measures taken during dental procedures.

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