**Knowledge, Awareness, and Practice of Dentists in Preventing- Novel Corona Virus (COVID-19) Transmission - A Questionnaire Based Cross-Sectional Survey.**

**Abstract**

Background

The global issue that urges the public health emergency is the outbreak of the Novel Corona Virus strain (COVID-19). Dentists being are highly prone to airborne transmission during dental treatment due to aerosols generated by various dental procedures on patients with COVID-19. Taking this fact into consideration, the present survey research was mainly aimed at evaluating the knowledge, attitude, and practice of dentists in preventing the disease transmission of Novel Coronavirus (COVID-19).

Material and methods

The present study is prospective research, where the online survey questionnaire was distributed among 300 dentists in Andhra Pradesh and Telangana states in India, who were randomly recruited for the study. The participants were recruited based on the clinical experience ranging from less than five years to more than ten years, who were working in both the private and government sectors. 15 close-ended questions were formulated and validated. The questionnaire consisted of the necessary demographic details of the participants and equally distributed into three sections that contained questions that assessed the knowledge, attitude, and practice of dentists in preventing the disease transmission of Novel Coronavirus (COVID-19).

Results

The results revealed that dentists have an adequate knowledge and awareness on COVID-19 transmission and most of the dentists felt that dentists have a major role in preventing the disease transmission. Majority of the participants raised the importance of awareness programs have to be conducted on various measures in preventing COVID-19 transmission among dental fraternity and in public.

Conclusions

From the survey research it can be concluded that dentists have an adequate knowledge and awareness on COVID-19 disease. Majority of them are trying their level best in the present situation to prevent COVID-19 transmission.

**Keywords:** COVID-19, Dentists, Infection control

**Introduction:**

The global issue that urges the public health emergency is the outbreak of the Novel Corona Virus strain (COVID-19).[1] The symptoms of these outbreaks range from fever, cough, and an acute respiratory disease to severe life-threating respiratory infection, leading to pneumonia, kidney failure, and even death.[2] The severity of this respiratory illness first reported in Wuhan, Hubei, China, which has currently spread worldwide.[3] The genomic sequencing samples collected samples, suggest that viral emergence is related to bat coronaviruses.[4] The coronavirus infection in humans presents with different severities based on the type of infection. Although, mild severity was seen in humans with coronavirus infections, reported mortality rates were severe with beta coronavirus infection of either severe acute respiratory syndrome coronavirus (SARS-CoV)[5] or Middle East respiratory syndrome coronavirus (MERS-CoV).[6]

Currently, different routes of COVID-19 transmission have to be explored. But the transmission among humans has been confirmed.[7],[8] Several potential routes of COVID-19 transmission have been established via contact with droplets from talking, coughing, sneezing, or through aerosols generated during any clinical procedures, as similar to other respiratory infections. The larger viral droplets contribute to the transmission to nearby surroundings. In contrast, the smaller droplets tend to travel more considerable distances and transmit the infection to longer distances.[9] Although symptoms were seen in infected individuals, asymptomatic infections to seem to be possible,[10] and transmission may occur before the disease symptoms occur. Taking a fact from a recent clinical study in 138 hospitalized patients with COVID-19 in Wuhan, China, 29% of them were health care workers.[11]

Dentists being are highly prone to airborne transmission during dental treatment due to aerosols generated by various dental procedures on patients with COVID-19.[12] In this context, as healthcare workers, dentists may be unknowingly providing the direct care to the infect but not yet diagnosed COVID-19 patients or those considered to be suspected cases for surveillance.[13] Taking this fact into consideration, the present survey research was mainly aimed at evaluating the knowledge, attitude, and practice of dentists in preventing the disease transmission of Novel Coronavirus (COVID-19).

**Methodology**

The present study is prospective research, where the online survey questionnaire was distributed among 300 dentists in Andhra Pradesh and Telangana states in India, who were randomly recruited for the study. The participants were recruited based on the clinical experience ranging from less than five years to more than ten years, who were working in both the private and government sectors. Out of 300 dentists, 180 were females, and 120 were males. 15 close-ended questions were formulated and validated. The questionnaire consisted of the necessary demographic details of the participants and equally distributed into three sections that contained questions that assessed the knowledge, attitude, and practice of dentists in preventing the disease transmission of Novel Coronavirus (COVID-19).

The collected data was analysed using IBM. SPSS Software 23.0 Version. To describe data, descriptive statistics like frequency and percentage analysis was used.

**Survey Questionnaire:**

1. DO YOU KNOW THAT COVID-19 IS PANDEMIC AND SPREAD IS MOSTLY CONTROLLABLE IF APPROPRIATE SANITISATION AND INFECTION CONTROL IS FOLLOWED IN DENTAL PRACTICE?
2. YES B) NO C) MAY BE
3. ACCORDING TO YOU, WHICH HEALTH CARE PROFESSIONALS ARE AT HIGHER RISK OF NOVEL CORONA VIRUS?

A) DENTAL PROFESSIONALS B) PARAMEDICS C) NURSES D) OTHER HEALTH CARE PROFESSIONALS

1. WHICH SOURCE OF INFORMATION DO YOU FEEL IS RELIABLE ON OBTAINING KNOWLEDGE ABOUT COVID-19?

A) GOOGLE B) YOU-TUBE C) SOCIAL MEDIA D) NATIONAL HEALTH AUTHORITIES & WHO WEBSITE

1. DO YOU FEEL THE AVAILABLE SOURCE OF INFORMATION ON COVID-19 IS SUFFICIENT TO PREVENT THE DISEASE TRANSMISSION?

A) YES B) NO C) MIGHT NOT BE SUFFICIENT

1. DO YOU FEEL THE NATIONAL HEALTH AUTHORITIES ARE ABLE TO CONTROL THE SPREAD OF INFECTION & BETTER TO FOLLOW THEIR INSTRUCTIONS TO PREVENT TRANSMISSION?

A) YES B) NO C) NOT SURE

1. WHICH HISTORY OF THE PATIENT YOU FEEL IS MORE IMPORTANT, AND YOU ARE CONCENTRATING THE MOST, BEFORE PROCEEDING TO A DENTAL TREATMENT?

A) TRAVEL HISTORY B) HISTORY OF CHRONIC ILLNESS C) HISTORY OF RECENT FEVER, MALAISE OR SUSCEPTIBLE SYMPTOMS D) ALL THE ABOVE

1. WHICH PERSONAL PROTECTIVE EQUIPMENT YOU FEEL IS MORE IMPORTANT TO PROTECT YOURSELF IN PREVENTING TRANSMISSION?

A) MOUTH MASKS AND HEAD CAPS B) GLOVES, FACE SHIELDS, OVER COATS, GOWNS AND EYE WEAR C) DISINFECTANT SOLUTIONS, SANITIZERS D) ALL THE ABOVE

1. DO YOU FACE SCARCITY OF ANY PERSONAL PROTECTIVE EQUIPMENT? IF YES, THEN WHICH ONE DO YOU FEEL IS SCARCER IN THE PRESENT SITUATION?

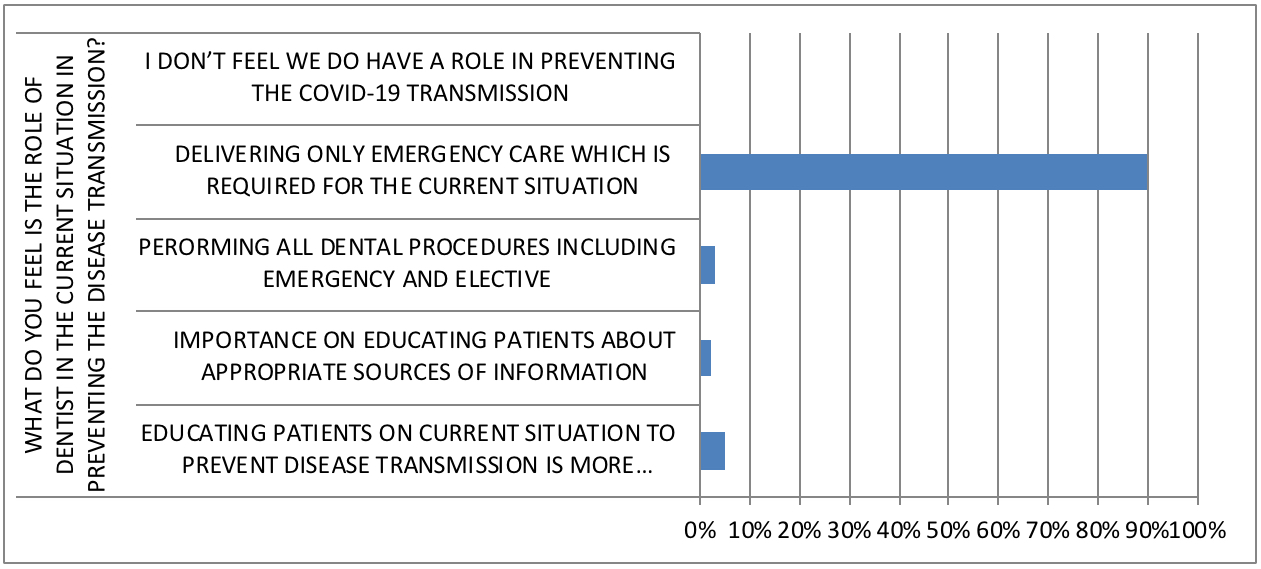
A) MOUTH MASKS B) GLOVES C) OTHER EQUIPMENT'S D) I DON'T FEEL ANY SCARCITY

1. WHAT IS THE REASON FOR THE SCARCITY OF THIS PERSONAL PROTECTIVE EQUIPMENT'S?
2. LACK OF AVAILABILITY B) HIGHER COST C) INCREASED USAGE BY GENERAL POPULATION (ESPECIALLY MOUTH MASKS) D) NO REASON FOR SCARCITY
3. WHICH DENTAL TREATMENT PROCEDURES DO YOU FEEL HAS MORE CHANCES TO TRANSMIT COVID-19?
4. RESTORATIVE PROCEDURES OR ANY PROCEDURES PRODUCING AEROSOLS B) SURGICAL PROCEDURES C) ORTHODONTIC PROCEDURES D) PROSTHODONTICS PROCEDURES E) OTHER MINOR DENTAL TREATMENT PROCEDURES
5. IN THE CURRENT SCENARIO WHAT TREATMENT PROCEDURES YOU ARE PRACTICING THE MOST KEEPING IN MIND ABOUT COVID-19 TRANSMISSION?
6. DENTAL EXTRACTIONS B) EMERGENCY ENDODONTIC THERAPY C) ORAL SURGERIES D) ORAL PROPHYLAXIS E) CROWN PREPARATIONS F) OTHER DENTAL TREATMENTS NOT LISTED G) ONLY SYMPTOMATIC MANAGEMENT NO INTERVENTIONAL TREATMENTS
7. DO YOU FEEL DENTIST HAS A MAJOR ROLE IN EDUCATING THE PATIENTS ABOUT THE PANDEMIC SPREAD OF COVID-19?
8. YES B) NO C) NOT MUCH
9. WHAT DO YOU FEEL IS THE ROLE OF DENTIST IN THE CURRENT SITUATION IN PREVENTING THE DISEASE TRANSMISSION?
10. EDUCATING PATIENTS ON CURRENT SITUATION TO PREVENT DISEASE TRANSMISSION IS MORE IMPORTANT THAN PERFORMING NON-EMERGENCY PROCEDURES B) IMPORTANCE ON EDUCATING PATIENTS ABOUT APPROPRIATE SOURCES OF INFORMATION C) PERFORMING ALL DENTAL PROCEDURES INCLUDING EMERGENCY AND ELECTIVE D) DELIVERING ONLY EMERGENCY CARE WHICH IS REQUIRED FOR THE CURRENT SITUATION E) I DON'T FEEL WE DO HAVE A ROLE IN PREVENTING THE COVID-19 TRANSMISSION
11. WHAT IS YOUR CONCLUSIVE REMARK ON PRESENT SITUATION?

A)DON'T BE PANIC AND FOLLOW NATIONAL HEALTH AUTHORITIES & WHO GUIDELINES B) PERFORM ALL CLINICAL PROCEDURES C) DON'T PRACTICE UNTIL EVERYTHING COMES UNDER CONTROL D) POSTPONE ALL NON-EMERGENCY PROCEDURES UNTIL SITUATION IS UNDER CONTROL

1. DO YOU FEEL THAT IN THE PRESENT SITUATION WE REQUIRE MORE AWARENESS PROGRAMMES AMONG DENTAL FRATERNITY AND IN THE PUBLIC ON IMPORTANCE OF VARIOUS MEASURES IN PREVENTING COVID-19 TRANSMISSION?
2. DEFINITELY REQUIRED B) NOT REQUIRED C) REQUIRED BUT THROUGH APPROPRIATE & RECOGNISED SOURCES

Graphs: Depicting the Results of the Survey Questionnaire



**Results**

When results of the present survey were analyzed, among 300 participated dentists, 170 had professional experience less than 5 years, 80 of them had 5-10 years of experience, and 50 of them were 10 years experienced.

On analyzing the questionnaire, 60% of participants were aware that COVID-19 has pandemic spread and is mostly controllable if appropriate sanitization methods and infection control were followed (Graph 1). But, 38% felt that the spread could not be controllable with the present sanitization methods and infection control. The majority of the dentist's views were in correlation with the information provided by Centre for Disease Control (CDC), which stated that COVID-19 could be mostly prevented from transmission if infection control and appropriate sanitization is followed.[14]

Questionnaire on the health care professionals risk assessment on COVID-19 transmission was analyzed (Graph 2), 40% of the participants felt that dentists are at higher risk, 50% of them felt that other health care professionals and nurses are at higher risk of disease transmission. The previous study reports reveal that health care workers are at higher risk of disease transmission due to inhalation of airborne particles and aerosols during dental procedures.[15]

When the reliability of the source of obtained information was asked (Graph 3), 60% reported keeping in update with National Health Authorities and WHO Websites. But 30% of participants still rely on Google for updating information on COVID-19.

The majority of the participating dentists around 50% felt that the available source of information might not be sufficient to prevent disease transmission (Graph 4), whereas 30% of them thought that the present updated information is adequate.

The majority of the participants, around 58%, felt that National Health Authorities are able to control the infection spread and better to follow their instructions to prevent transmission (Graph 5). 40% of them were not sure of this aspect.

When they were asked about the information on the important patients they are concentrating on in the day to day practice (Graph 6) majority of the participants around 70% were concentrating on the history of travel, history of recent acute symptoms, and history of chronic illness. But 40% of them were mostly concentrating on travel history.

The majority of the dentists around 90% of them felt that personal protective equipment is essential for the prevention of disease of transmission. (Graph 7) The majority of them around 78% felt the scarcity of mouth masks and head caps. (Graph 8) 62% of them felt that the shortage was due to lack of availability, but 30% of the participants thought that it was because of the increased usage by the general population. (Graph 9) The recommendations of infection controls in dental practice as stated by a recent article on transmission routes of 2019-nCoV and controls in dental practice (quote xi peng 2020) stated that, adequate patient evaluation, hand hygiene, appropriate personal protective measures, preoperative mouth rinse before procedures, rubber dam isolation, anti-retraction handpiece, disinfection of clinical settings and appropriate management of medical waste to be followed for disease transmission.

When they were asked about the current treatment procedures practiced the most, keeping COVID-19 transmission prevention, (Graph 10) majority of them around 50% are doing only the symptomatic managements with no interventional treatments. None of them are performing aerosol procedures such as crown preparations or oral prophylaxis procedures using scalers. Only 35% of the total participants are delivering emergency endodontic therapies. CDC guidelines state that only emergency interventions to be performed, rescheduling the elective treatment procedures.[16]

60% of the participants felt that restorative procedures and any procedures producing aerosols have higher chances to transmit COVID-19. (Graph 11) Only 35% of them felt that surgical procedures have higher chances in the transmission of infection. A recent article stated that airborne spread by aerosols has higher chances of COVID-19 transmission.[17]

90% of the practicing dentists felt that dentists have a major role in preventing the pandemic spread of COVID-19. (Graph 12) 90% of practicing dentists felt that it is important to deliver only the emergency care which is required for the present situation is more important than performing other elective procedures (Graph 13)

When dentists were asked on the conclusive remark on the current situation, 55% advised not to be panic and urged to follow National Health Authorities and WHO guidelines. 40% of them suggested postponing all non-emergency procedures until the situation is under control. (Graph 14) The views were in correlation of CDC recommendation, which stated to postpones non urgent dental procedures, dental visits and surgeries.[16]

When the questionnaire was asked on the importance of awareness programs among dental fraternity and in public on various measures in preventing COVID-19 transmission, the majority of them around 65% felt that it is required for such programs, but trough appropriate and recognized sources.

**Conclusion**

From the present study, it can be concluded that dentists have adequate knowledge of COVID-19 transmission, and the majority of them raised the importance of performing only emergency procedures postponing the elective procedures. Many of them felt that awareness programs are more needed both in dental fraternity and public on COVID-19 prevention.

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