



Knowledge, Attitude and Awareness about the infection control protocols among dental students and professionals during COVID-19 pandemic – A questionnaire based study.

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ABSTRACT: Aim: To assess the knowledge, attitude, and awareness concerning infection control measures among dentists of South India.

Materials and Method: A total of 500 dentists of South India participated in this study. A questionnaire survey comprising 20 questions regarding knowledge, attitudes, and awareness was completed by the participants.

Results: It was observed that a majority of the dental students and professionals were highly concerned regarding the infection control protocol. Almost 70-80% of dentists advocate the use of disinfectants in dental practice. Almost all were aware of the symptoms of infected persons. 65.8% dentists recommend the use of N95 masks with respirators for dental residents and 56% felt that full PPE should be used for reception staff. 99.4% were following the WHO guidelines on hand hygiene.

Conclusion: The level of knowledge, awareness and attitude of infection control measures were acceptable, although compliance and practice of the same needs to be more worked upon.

Keywords: Knowledge; Dental Practice; Infection control; COVID-19; Pandemic

I. INTRODUCTION:

In January 2020, virus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified as the causative agent for a group of pneumonia cases, reported in Wuhan City of China.[1] This virus is responsible for the disease called coronavirus disease 2019 (COVID-19). The disease had spread to almost 216 countries and territories by 29th July, 2020.[2] The disease has involved a total of **16,341,920** cases, including **650,805** deaths worldwide till date.² Various researches have indicated that coronavirus had a

zoonotic origin, and it spread from one person to other.[3-5]

Although WHO is conducting various online courses for awareness of healthcare workers around the world, but still a state of anxiety prevail in our healthcare professionals regarding themselves or their patients getting infected from this disease. Among various health care professionals, dental surgeons are also highly prone of getting infected with this virus. The risk of cross-infection between dental practitioners and patients may be high due to the dental environments. Dental practices which are potentially affected by COVID-19 in or near areas should strictly follow infection control or disinfection protocols, as this is seen as the only way to curb the spread of the infection. Hence, knowledge of these protocols to the dental professionals is of utmost necessity during this pandemic time.

Dental council of India (DCI) and societies of various dental specialities have released guidelines related to infection control protocols to be followed in a dental set-up and precautions to be taken related to COVID-19 infection. Various programs and messages are being delivered to dental professionals through the means of mass media in the form of webinars, seminars and discussions. But still dental care professionals have a lot of confusion regarding the factors related to spread of COVID-19, consequences of infection, its prevention and guidelines for infection controls to be followed in dental clinics.

Thus, we conducted this study to assess the knowledge, attitude and awareness about the infection control protocols in dental practice during COVID-19 pandemic.



II. MATERIALS AND METHOD:

The study comprised of 500 dental health specialists working in hospitals, health care centres or private clinics. This was a cross-sectional, observational study carried out among dental students and dental professionals of South Indian region, using a semi-structured questionnaire with a consent form appended to it. The questionnaire was sent through emails, WhatsApp and other social media to dental health care professionals using Google Forms. The participants were encouraged to circulate the same survey questionnaire to as many dentists as possible in their contact list.

After they accepted to take the survey, they filled up the consent form and demographic details. Then they have to fill the response to a set of 20 questions of the questionnaire. Participants who were dental students and practitioners willing to give informed consent were included in the study. The data collection was initiated on 21st May 2020 to 30th July 2020.

The questionnaires were unspecified to keep the confidentiality of all data collected in the study. The questions of the survey were prepared after reassessing the published literature on COVID-19. The questionnaire was framed in English language and consisted of a total of 20 questions pertaining to the knowledge, attitude and awareness of dentists regarding infection control protocol in dental clinics. The data obtained were analyzed using IBM SPSS software version 20.0. Descriptive statistical analysis was done.

Frequencies and percentages were derived and used to describe the categorical data.

III. RESULTS:

Our study consisted of 500 dentists; with a response rate of about 50.0% (500 dentists contributed out of 1000 requested). Data regarding knowledge (n=8 questions), awareness (n=4 questions) and attitude (n=8 questions) of dentists toward the disease was collected.

KNOWLEDGE OF COVID-19: About 99.2% study subjects were aware of the signs of COVID-19 i.e fatigue, fever, myalgia, dry cough and sore throat. 84.6% dentists believe that COVID-19 infection spread through direct as well as contact transmission. Almost whole of dental fraternity was aware of the spread of infection through respiratory droplets of infected person. 76% dentists said that N95 masks were not affective against oil based particulates. 83.8% dentists knew that Isopropyl alcohol, 1% sodium hypochloride or bleaching powder is effective disinfectant against COVID-19. Around 71% of dentists were aware of the percentage required for effectively using alcohol to sanitize the metallic objects. Majority of the dental professionals (58.4%) do not advocate the use of chlorhexidine against coronavirus infection. 67.6% dentists felt that pre and post procedural mouth rinse like 0.2% povidone iodine or 1% hydrogen peroxide is effective against COVID-19. (TABLE 1) (FIG.1)

TABLE 1: Questions assessing knowledge of participants regarding the infection control protocols during covid-19 pandemic.

Question Number	Description
Q.1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, myalgia and sore throat.
Q.2	COVID -19 spreads through
Q.3	The COVID-19 virus spreads mainly via respiratory droplets of infected individuals.
Q.11	N95 mask is not effective against
Q.12	Isopropyl alcohol, 1% sodium hypochloride or bleaching powder is effective disinfectant against COVID 19
Q. 15	Whether 70% alcohol is best method to sanitize the metallic objects.
Q.17	Chlorhexidine is effective against COVID 19.
Q.18	Pre and post procedure mouth rinse such as 1% hydrogen peroxide or 0.2% povidone iodine is effective
	against COVID 19.

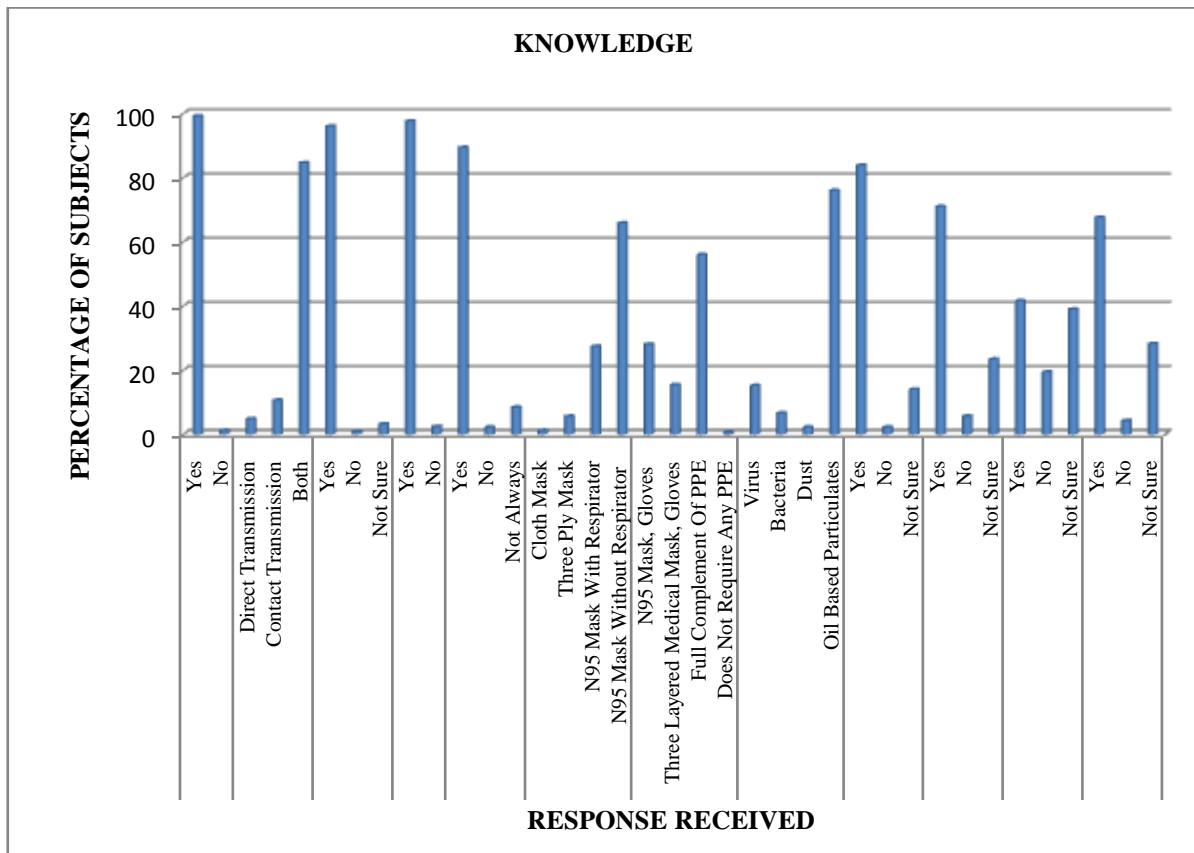


FIG.1: Bar chart showing percentage distribution of the knowledge of participants regarding the infection control protocols during covid-19 pandemic.

ATTITUDE OF DENTISTS: Around 97.4% dentists were covering their nose and mouth while sneezing or coughing with a tissue, handkerchief, etc. during the period of COVID-19 outbreak. 99.4% were following the WHO guidelines on hand hygiene. All dentists recommended washing their hands or using alcohol based sanitizer before and after screening of patient. Almost all dental professionals advocated the use of disinfectant in all the area where the patient had come in contact in the clinic. 96.4% dentists felt the need of disinfecting various surfaces (such as door, door handles, patients waiting area, chairs, tables, dental

chair etc.) frequently after every 1- 2 hour. 74.2% dentists said that only emergency services should be provided during the course of COVID-19; whereas 22.4% recommended both elective and emergency dental procedures. 70.4% dentists said that IOPA should be replaced with OPG/CBCT during Covid-19 Pandemic. 90.6% dental professionals proposed that aerosol generating procedures and minor oral surgery procedures should be done as the last appointment of the day. (TABLE 2) (FIG.2)



Question Number	Description
Q. 4	Are you covering your mouth and nose, while coughing and sneezing with a tissue, handkerchief, etc. during the outbreak?
Q.6	Do you follow the WHO guidelines on hand hygiene, whether it is important measure to prevent the risk of infection.
Q.8	Washing hands or using alcohol based sanitizer before and after screening should be recommended.
Q.13	Disinfectant is necessary in all the area where the patient had come in contact in the clinic.
Q.14	Surfaces such as door, door handles, patients waiting area, chairs, tables, dental chair, should be disinfectant frequently every 1- 2 hour.
Q. 16	What type of dental care should be provided during the pandemic ?
Q. 19	IOPA should be replaced with OPG/CBCT during Covid19 Pandemic.
Q. 20	Aerosol generating procedure, minor oral surgery procedure should be done as the last appointment of the day.

TABLE 2 : QUESTIONS ASSESSING ATTITUDE OF PARTICIPANTS REGARDING THE INFECTION CONTROL PROTOCOLS DURING COVID-19 PANDEMIC.

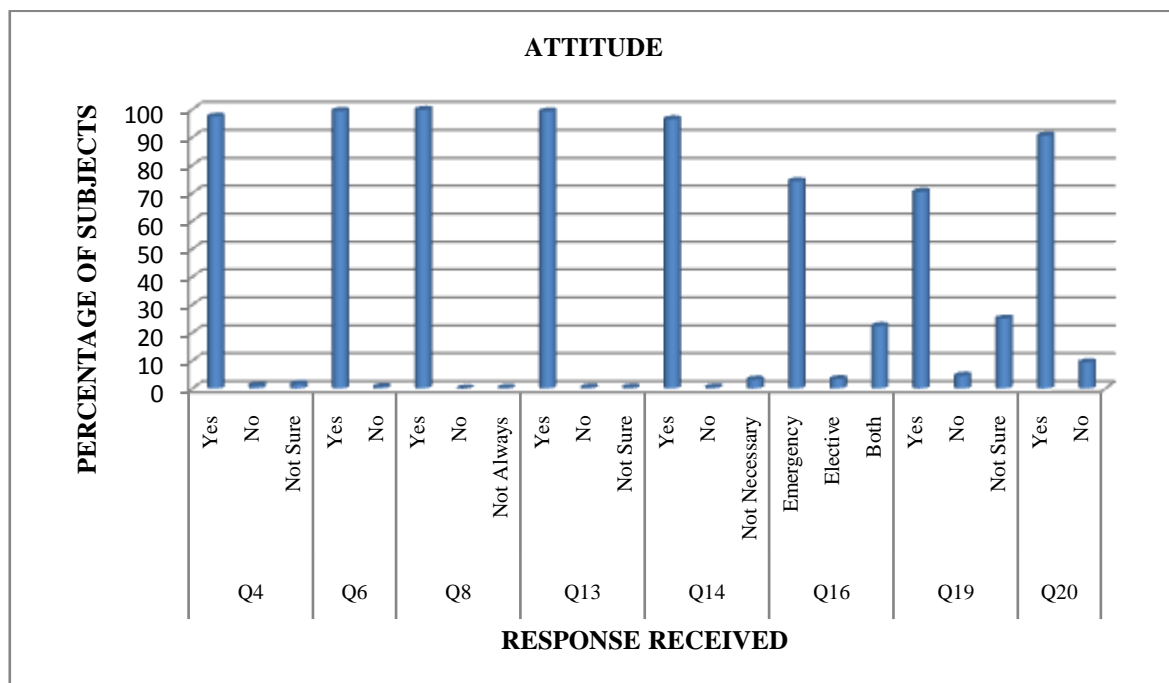


FIG.2: BAR CHART SHOWING PERCENTAGE DISTRIBUTION OF THE ATTITUDE OF PARTICIPANTS REGARDING THE INFECTION CONTROL PROTOCOLS DURING COVID-19 PANDEMIC.



AWARENESS ABOUT THE COVID-19 INFECTION: 97.6% dental professionals recommend maintaining social distance of 2 meter to prevent the spread of COVID-19. 89.4% dentists said that it is mandatory to screen each and every

patient for COVID-19 before the dental treatment. 65.8% dentists recommend the use of N95 masks without respirators for dental residents and 56% dentists felt that full PPE is recommended for staff at dental office reception. (TABLE 3) (FIG.3)

Question Number	Description
Q.5	Maintaining social distance of 2 meter is mandatory to prevent the spread of Covid 19.
Q.7	It is mandatory to screen each and every patient for COVID19 before the dental treatment.
Q.9	What type of masks should dental residents wear to prevent the infection by the COVID-19 virus.
Q.10	PPE recommended for staffs in dental office reception includes

TABLE 3: QUESTIONS ASSESSING AWARENESS OF PARTICIPANTS REGARDING THE INFECTION CONTROL PROTOCOLS DURING COVID 19 PANDEMIC.

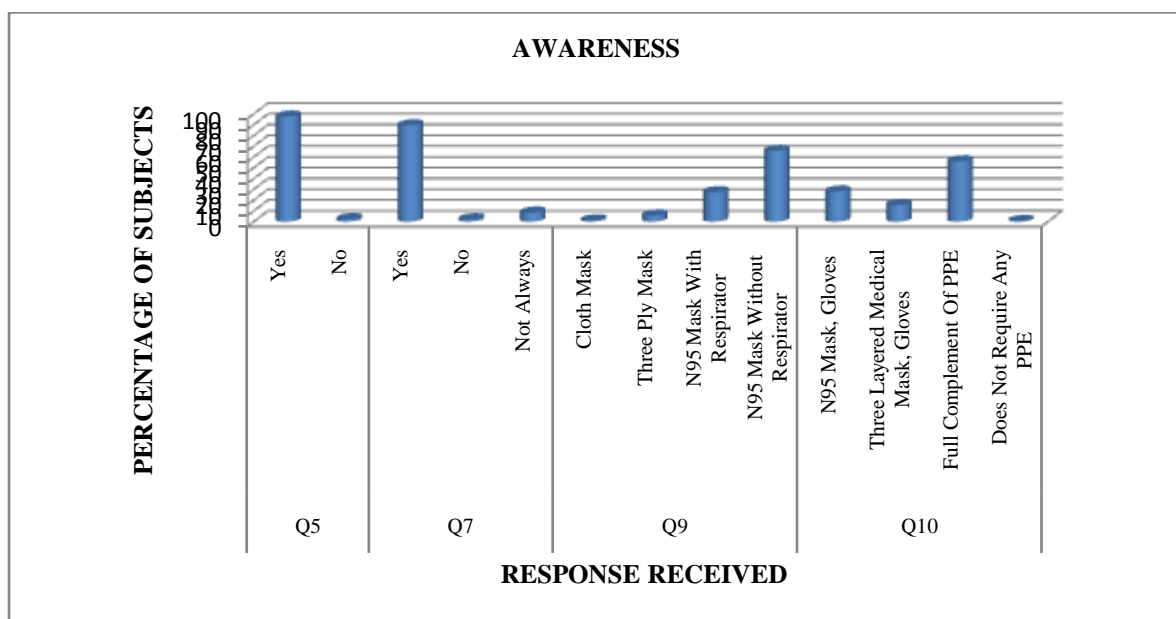


FIG.3: BAR CHART SHOWING PERCENTAGE DISTRIBUTION OF THE AWARENESS AMONG PARTICIPANTS REGARDING THE INFECTION CONTROL PROTOCOLS DURING COVID-19 PANDEMIC.

IV. DISCUSSION:

The spread of communicable diseases can be prevented by setting up some precautionary measures by dental set-ups or hospital. Dentists should be conscious about the risks associated with communicable diseases. We conducted a survey to measure the knowledge, awareness and attitudes of dental healthcare professionals concerning the infection control protocols regarding COVID-19 infection.

Although there is improvement in use of barriers for infection control, but still upgrading is required in following the precautions and guidelines of infection control measures by dental health care professionals. Around 99.2% study subjects were aware of the symptoms of COVID-19. 84.6% dentists believe that COVID-19 infection spread through direct as well as through contact transmission. Similar findings were observed by Khader Y et al.[6] who stated that



dental clinic and hospital has more chances of spread of infection to patients and dental staff by direct or contact transmission. Almost whole of dental fraternity was aware of the spread of infection through respiratory droplets of infected person. Results from our study were in accordance with studies by Peng, X et al.[7], Harrel SK et al.[8] and Meselson M.[9] They revealed that infectious pathogens in droplets can travel from respiratory tract of the infected subjects to mucosal surfaces of host. Respiratory droplets are produced when a person talks, sneezes, or coughs and by dental procedures generating aerosols.[7-9]

In our study, 76% dentists said that N95 masks were not effective against oil based particulates. Bizzoca ME et al.[10] revealed that in 95% of cases N95 masks were not effective against oil based droplets. The use of disinfectants (70% ethyl alcohol and 0.5% sodium hypochlorite) is recommended against enveloped viruses, such as the SARS-CoV-2 virus by WHO health care settings.[11-12] In our study, we asked few questions regarding the use of various disinfectants by dentists in their setup. Our study revealed that 83.8% dentists knew that Isopropyl alcohol, 1% sodium hypochloride or bleaching powder is effective disinfectant against COVID-19. Around 71% of dentists were aware of the percentage required for effectively using alcohol to sanitize the metallic objects. Majority of the dental professionals (58.4%) do not advocate the use of chlorhexidine against coronavirus infection. 67.6% dentists felt that pre and post procedure mouth rinse such as 0.2% povidone iodine or 1% hydrogen peroxide is effective against COVID-19.

Our study included four questions evaluating awareness of dentists with regard to infection control protocols against coronavirus infection. 97.6% dental professionals recommend maintaining the social distance of 2 meter to control the transmission of Covid-19.

The present study revealed that 89.4% dentists said that it is mandatory to screen each and every patient for COVID-19 before the dental treatment. 65.8% dentists recommend the use of N95 masks with respirators for dental residents and 56% dentists felt that full PPE is recommended for staff at reception in dental office reception. A study by Kamate SK et al.[13] also observed that dentists could extend awareness about the coronavirus infection, and advocated the use of PPE kits and proper hand hygiene in preventing COVID-19 infection.

The present study assessed the attitude of dentists in relation to the infection control measures against COVID-19 infection. To prevent and

control healthcare-associated infections, hand hygiene is considered to be the most effective method.[14] In our study, 99.4% were following the WHO guidelines on hand hygiene. Results of our study were in contrast to results of study by Halboub ES et al.[15], who observed that only 43.0% of dentists wash their hands during change of gloves. Almost all dental professionals advocated the use of disinfectant in all the area where the patient had come in contact in the clinic. 96.4% dentists felt the need of disinfecting various surfaces (such as door, door handles, patients waiting area, chairs, tables, dental chair etc.) frequently after every 1- 2 hour. Similar findings were observed in a study by Waghmare R et al.[16] who revealed that more than half (69.4%) of the dentists proposed that sanitizing hands with alcohol based sanitizer before and later screening the patients would help minimize the spread of infections. In present study, dental care professionals advocated that only emergency services should be provided in the course of COVID-19; and IOPA should be replaced with OPG/CBCT during COVID-19 Pandemic. Dental professionals proposed that aerosol generating procedures and minor oral surgery procedures should be done as the last appointment of the day. As dental professionals are dealing with the oral cavity, thus they are directly exposed to COVID-19 viral infection. To minimize this spread, different precautions need to be taken.[17-18] Dental professionals play an imperative role in breaking the transmission chain by using the appropriate procedures to decrease the diffusion of viral agents, or by controlling the unwanted spread of infectious disease, using the advised safety guidelines.[19-20]

Limitations of the study:

1. The study is conducted using limited sample size. More studies should be conducted with large sample and involving dental professionals from various parts of India.
2. The present study was a cross-sectional study. Thus self-selection bias can occur due to the sampling technique used.
3. We kept minimum number of questions in our survey to keep it simple and to improve the response rate of participants.

V. CONCLUSION:

In the present study, dentists from South India were found to have a good knowledge, awareness and attitude scores that is required to fight against COVID-19 infection. Dentists should be vigilant enough to monitor, segregate and refer



the cases with the signs and symptoms of COVID-19 infection. All the dental health care professionals should follow the CDC and WHO guidelines in their dental set-ups, so that we can control and defeat this pandemic.

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CONFLICTS OF INTEREST STATEMENT

The authors declare no potential conflicts of interest with respect to the authorship and/or publication of this article.

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Figure Legends:

FIG.1: BAR CHART SHOWING PERCENTAGE DISTRIBUTION OF THE KNOWLEDGE OF PARTICIPANTS REGARDING THE INFECTION CONTROL PROTOCOLS DURING COVID-19 PANDEMIC.

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