KNOWLEDGE, ATTITUDE AND PRACTICES TOWORDS PREVENTION OF COVID19 AMONG DENTAL PROFESSIONALS IN SANGLI – KOLHAPUR DISTRICT IN MAHARASHTRA: A CROSS-SECTIONAL STUDY

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Abstract

Aim: To analyse the knowledge, attitude and practice towards prevention of COVID19 among dental professionals.

Objectives: The objective were to assess knowledge regarding the significance of history, symptoms, universal precautions, infection control, possible transmission, cross contamination between patients and spread of covid19 and use of personal protective equipments and to analyze Practices about attitude of the dental practitioner towards the prevention of Covid 19 during dental treatment planning in pandemic among Dental professionals in Sangli- Kolhapur District.

Materials and method: Online questionnaire was distributed among dentists across West Bengal city, using a combination of convenience and snowball sampling. The questionnaire had 17 questions: (1) Section A was „General section" which comprised of socio-demographic and professional details of the subjects (gender, educational status, speciality, type of practice, number of years of experience); (2) Section B comprised of 7 questions of knowledge regarding COVID-19; (3) Section C comprised of & questions of Attitude; Section D comprised of 7 questions of prevention. The data collected was subjected to statistical analysis with level of significance at $p<0.05$. The descriptive statistical analysis was done to compute frequency and percentages. Intergroup comparison was determined by *Chi* square statistical analysis to determine the level of significance for responses of each question. ANOVA (analysis of variance) was carried out for between groups significance.

Results:150 participants filled the questionnaire with 62% of male. Of which majority were the practitioners with 54.7%. Experience with less than five years of experience were the majority with 34.7%. Among the speciality, public health dentists were least while general practitioners were in majority. A significant difference with ANOVA ($p <0.05$) was seen for the methods of spread of COVID 19 and ways of spreading the awareness, knowledge and preventing COVID 19.

Conclusion: A constant update regarding COVID-19 should be made available to dental health care professionals through webinars, seminars, discussions and articles. Dentists should keep themselves updated and help to fight against this pandemic.

Keywords: attitude, COVID 19, dentists, knowledge, infection, pandemic

Introduction: It was December 31st, 2019 when Chinese Health officials informed the World Health Organisation (WHO) about the cluster of a mysterious pneumonia in 41 patients in the city of Wuhan and in the Chinese province of Hubei[1]. On January 2020, Chinese scientists identified this as a novel coronavirus, temporary labelled as, severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2)[2]. Its name was then changed to coronavirus disease 2019 (COVID-19) by the World Health Organisation in February 2020 as the disease spread worldwide[3]. Globally there have been more than 3,489,053 confirmed cases of COVID-19 reported to WHO, including 241,559 deaths[4]. Early diagnosis and isolation of infected individuals will play a vital role in stopping the further escalation of this pandemic[5].

As saliva is a main tool of spread, dentists are in danger of contracting Covid-19 because of the close contact to the patients.[1]Coronaviruses are enveloped viruses with a positive sense single-stranded RNA genome Three specific strains of these viruses that are of zoonotic origin, including severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERSCoV), and 2019 novel coronavirus (2019-nCoV), have recently caused lethal infections in humans.[2]

Coronavirus infections in humans mainly affect the upper respiratory tract and to a lesser extent the gastrointestinal tract. Manifestations of coronavirus infections can range from relatively mild (similar to the common cold) to severe (bronchitis, pneumonia, and renal involvement.[3]The primary non-specific reported symptoms of 2019-nCoV infection at the prodromal phase are malaise, fever, and dry cough and commonly reported signs and symptoms are fever, cough, dyspnea, and myalgia or fatigue. Upper respiratory tract and intestinal manifestations such as sore throat, rhinorrhea, and diarrhea are infrequent [4].Due to close face-to-face contact with patients and frequent utilization of sharp devices, dental personnel are repeatedly exposed to respiratory tract secretions, blood, saliva, and other contaminated body fluids and are always at risk for 2019-nCoV infection.Transmission in dental settings occurs through four major routes: direct exposure to respiratory secretions containing droplets, blood, saliva, or other patient materials; indirect contact with contaminated surfaces and/or instruments; inhalation of suspending airborne viruses; and mucosal (nasal, oral, and conjunctival) contact with infection-containing droplets and aerosols that are propelled by coughing and talking without a mask.[5]

In a dental setting, as the dentist and their equipment are in close proximity to the patient, the chance of acquiring infection from the micro-droplets of an infected patient is high and there is a risk of cross-transmission. In developing and tourist-friendly countries, there is a boom of dental tourism due to the availability of quality treatment at affordable prices, which attracts patients from all over the world.[6] In the event of an outbreak, the dentist can be the first person to come in contact with an infected person; they can either unknowingly become a carrier and infect others. But by following proper guidelines, they can prevent the possible spread of the disease and save theentire community from its disastrous consequences. To combat the transmission of coronavirus infection, dentists should be aware of recent guidelines to be followed for dental set-up and dental health care professionals.[5]Hence, the present study was undertaken with the aim to analyse the knowledge, attitude and practice towards prevention of COVID19 among dental professionals.

Methodology

Protocol development: The study was performed and written in according to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.[7]

The following focused research question in the Participants (P), Exposure (E), Comparison and Outcome (O) format was proposed "What is the knowledge, attitude and practice towards prevention of COVID19 among dental professionals in Sangli-Kolhapur district in Maharahtra?"The PECO criteria for this review were as follows:

P (Participants) – Dental professionals in Sangli-Kolhapur district in Maharashtra

E (Exposure) – Dental professionals exposed to covid patient treatment

C (Comparison) – "Optional"

O (Outcome) – To assess the knowledge, attitude and practice towards prevention of COVID19

Study Design

A descriptive cross-sectional (questionnaire) study was conducted among the dental health care professionals in Sangli – Kolhapur district in Maharashtra. Study subjects were selected using convenience (re-searchers themselves contacted dentists to participate in the study) and snowball sampling (the participating dentists were asked to forward the questionnaire to their colleagues), so that maximal participation could be ensured. Participation in the study was voluntary and identification information was not collected from the study subjects.Considering potential errors and sample loss, the final sample size was estimated according to the following formula

$$N= \frac{p \ (100-p) \ z^2}{E^2}$$

where, n is the required sample size

P is the percentage occurrence of a state or condition

E is the percentage maximum error required

Z is the value corresponding to level of confidence required

Research instrument

After obtaining permission from the Scientific Advisory Committee and Institutional Ethics Committee, the participants were recruited online. A self-designed questionnaire written in English language was made specifically for the study. An Online pre-validated semi-structured, self-administered Questionnaire (google forms) was sent to the participants through their email ids and WhatsApp (social media application) and not handed over personally. The questionnaire was pre-tested for validity and reliability. The reliability of the questionnaire was good (0.84). The questionnaire was divided into four sections: (1) Section A was „General section" which comprised of socio-demographic and professional details of the subjects (gender, educational status, speciality, type of practice, number of years of experience); (2) Section B comprised of 7 questions of knowledge regarding COVID-19; (3) Section C comprised of & questions of Attitude; Section D comprised of 7 questions of prevention. The subjects were given twoweek"s time to fill the questionnaire and return it.

Statistical analysis

After obtaining the response from the participants the data was entered in Microsoft Excel 2019. The data collected was subjected to statistical analysis with level of significance at p<0.05, using IBM SPSS software 20.0. The descriptive statistical analysis was done to compute frequency and percentages. Intergroup comparison was determined by *Chi* square statistical analysis to determine the level of significance for responses of each question. ANOVA (analysis of variance) was carried out for between groups significance.

Results

A total of 150 study subjects were included in study, out of which 62% (n=93) were males and 38% (n=57) were females. For practitioners, faculty were 38% (n=56), post graduate student were 7.3% (n=11) and practitioners were 54.7% (n=82). For the years of experience, the majority was of less than five years with 34.7% (n=52) and least was for more than 20 years with 2.7% (n=4). Majority specialization was for general dentist with 53.3% (n=80) while the least was seen for public health dentistry with 25 (n=3) as shown in **table 1 below.**

Table 1: showing Distribution of study subjects according to demographic characteristics

Descriptive data		
Gender (150)	**Number of responses**	**Percentage**
Male	93	62.0
Female	57	38.0
Descriptive data		
Are you a practitioner (150)	**Number of responses**	**Percentage**
Faculty	57	38.0
Post Graduate Student	11	7.3
Practitioner	82	54.7
Descriptive data		
Number of years of experience (150)	**Number of responses**	**Percentage**
11-15 years	35	23.3
16-20 years	30	20.0
6-10 years	29	19.3
Less than 5	52	34.7
More than 20 years	4	2.7
Descriptive data		
Speciality (150)	**Number of responses**	**Percentage**
Conservative Dentistry & Endodontics	7	4.7
General Dentist	80	53.3
Oral Medicine and Radiology	12	8.0
Oral Pathology	4	2.7
Oral Surgery	8	5.3
Orthodontics	11	7.3
Pediatric Dentistry	8	5.3
Periodontology	8	5.3
Prosthodontics	9	6.0
Public Health Dentistry	3	2.0

Table 2: showing response to the questionnaire

The questionnaire was divided into four sections: (1) Section A was „General section‟ which comprised of socio-demographic and professional details of the subjects (gender, educational status, speciality, type of practice, number of years of experience); (2) Section B comprised of 7 questions of knowledge regarding COVID-19; (3) Section C comprised of & questions of Attitude; Section D comprised of 7 questions of prevention. The various responses to the questionnaire is mentioned below in **table 2**

Q. Covid 19 is a	Number of responses	Percentage
Bacterial Infection	1	.7
Don't know	2	1.3
Viral Infection	147	98.0
Q. WHO has declared Covid as	**Number of responses**	**Percentage**
Epidemic	1	.7
Pandemic	149	99.3
Q. Persons with COVID 19 cannot infect the virus to others when they are asymptomatic	**Number of responses**	**Percentage**
Agree	21	14.0
Disagree	126	84.0
Neither Agree or Disagree	3	2.0
Q. Prevalence of COVID 19 can be reduced by active participation of health care professionals in hospital infection control programmes	**Number of responses**	**Percentage**
Agree	132	88.0
Disagree	7	4.7
Neither Agree or Disagree	11	7.3
Q. COVID 19 patients should be kept in isolation	**Number of responses**	**Percentage**
Agree	147	98.0
Disagree	2	1.3
Neither Agree or Disagree	1	.7
Q. The incubation period of COVID 19 ranges	**Number of responses**	**Percentage**
1-2 months	2	1.3
2-14 days	146	97.3
2-3 months	1	.7
Don't Know	1	.7
Q. Wearing a Mask During COVID 19 situation is important	**Number of responses**	**Percentage**
Always	148	98.7
Occasionaly	2	1.3
Q. I prefer oral mouth rinse before commencement of any treatment procedure	**Number of responses**	**Percentage**
Always	137	91.3
Never	1	.7
Occasionally	12	8.0
Q. Before commencement of examination - travel history, contact history and history of symptoms is necessary for every patient	**Number of responses**	**Percentage**
Always	147	98.0
Never	1	.7
Occasionally	2	1.3
Q. Transmission of Covid 19 can be prevented by using universal precautions given by CDC, WHO, etc.	**Number of responses**	**Percentage**
Always	147	98.0
Never	1	.7
Occasionally	2	1.3
Q. COVID 19 spread can be	**Number of responses**	**Percentage**

prevented by		
combination of all above	146	97.3
Physical distancing	1	.7
wearing mask	3	2.0
Q. Disinfection of the dental chair, dental equipment and other contaminated surfaces is required between patients	**Number of responses**	**Percentage**
Always	149	99.3
Occasionaly	1	.7
Q. During the COVID 19 outbreak are you treating patients?	**Number of responses**	**Percentage**
No	7	4.7
Only emergency procedures	35	23.3
Yes	108	72.0
Q. Do you agree that closure of Dental Clinics during Pandemic was a precautionary measure?	**Number of responses**	**Percentage**
No	53	35.3
Yes	97	64.7

Table 3: showing method of COVID spread

Various modes of spread of COVID was suspected along with the descriptive as shown below in **table 3.** Between the various method of COVID spread for the health care professionals, a significant difference was observed with p value <0.05

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
aerosols	150	.94	.238	.019	.90
ultrasonic scalers	150	.01	.082	.007	-.01
air/water syringe	150	.57	.497	.041	.49
taking IOPA	150	.49	.502	.041	.41
infected patient coughing	150	.83	.374	.031	.77
Don"t know	150	.01	.082	.007	-.01

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	118.806	5	23.761	201.147	.000*

P value < 0.05*

Table 4: Knowledge and awareness about COVID 19

Various ways spread of knowledge and awareness about COVID 19 was explored among the practitioners as shown below in **table 4**. A significant difference was seen among the various modes of spread of knowledge and awareness about COVID 19.

1.	News and Media	Number of responses	Percentage
No		41	27.3
Yes		109	72.7
2.	Social media	Number of responses	Percentage
No		69	46.0
Yes		81	54.0
3.	Govt. websites	Number of responses	Percentage
No		68	45.3
Yes		82	54.7
4.	WHO and CDC	Number of responses	Percentage
No		58	38.7
Yes		92	61.3
5.	Journals, Seminars and Webinars	Number of responses	Percentage
No		69	46.0
Yes		81	54.0

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3.855	4	.964	4.057	.003*

P value < 0.05*

Discussion

The purpose of this study withthe aim was to analyse the knowledge, attitude and practice towards prevention of COVID19 among dental professionalsin regard to COVID-19 infection. Sangli is a populated region in Maharashtra and currently had a total number of 50,000 COVID-19 cases and on an average 50 new cases daily till 30thSeptember. Hence, it becomes imperative that the dental practitioners stay aware of the recent guidelines published by WHO and DCI regarding this crisis[8-10]. The transmission of COVID-19 poses a risk for people who come in close contact with an infected individual, and the risk is greater among those who are in close proximity to or work near the patient, i.e., relatives and healthcare workers[11]. The distance between the working field and the dentist is approx. 35–40 cm, and certain procedures can be very time-consuming, which puts the dentist at a higher risk of contracting COVID-19.[12]

According to *Lauer* et al.[13]the median incubation period from infection with SARS COV- 2 to onset of symptoms is approximately 5 days. According to *Backer* et al.[12]incubation period is 3-6 days after exposure with an upper conservative limit of 11 days. In the present study 64.7% of dentists conveyed that the incubation period of COVID-19 is 1-14 days, whereas only 4.3% of the respondents were aware of the more recent updates on the incubation period of 5 days by American College of Cardiology. Researchers estimated that people who get infected with coronavirus can spread it to others, 2 to 3 days before symptoms start and are most contagious 1 to 2 days before they feel sick.[10] Hence, it becomes critical for clinicians to have an accurate idea about the incubation period of COVID-19 to prevent transmission in the dental clinic.

The common symptoms of COVID-19 were correctly identified as fever, cough, sore throat etc.[11]In our study, 98.9%, 93% and 90.3% of the responders said fever, cough and sore throat as the prime signs of corona virus infection. The response rate was higher as compared to the findings in a study by *Gambhir* et al.[9] Recent research indicated that gastrointestinal symptoms like diarrhea and vomiting are also associated with COVID-19.[8]Unfortunately in our study, only 50% and 31.7% of the subjects were aware of diarrhea and vomiting respectively as a symptom of COVID-19. Newer symptoms like anosmia and myalgia have also been associated with

this infection.[7] However, only 25.8% knew about myalgia and 22% knew about anosmia in our study. 80.6% of the subjects said that COVID-19 may not present with any symptoms.

The data obtained in the study indicated insufficient information regarding the recent symptoms of corona virus among the dentists in sangli. The dentist may end up treating asymptomatic patients inadvertently leading to the spread of the disease which should be addressed immediately and care should be taken to sensitise the dentists.

As per the Geo Sentinel surveillance survey,[6] 11% of the respiratory tract infections were reported among the travellers returning to their country of residence, and PPE can provide protection as well as reduce the risk of any nosocomial infections and cross transmission in the dental setting. [6,7]. This collaborated with the study conducted *Liu* et al.[10] Hence proper usage of PPE is mandatory[8,11] and 97.3% of our study subjects are of the same opinion.

A total of 44.1% dentists responded that COVID-19 was fatal in nature and this could be attributed to the fact that the mortality associated with any new outbreak (although lower in the case of COVID-19) instils a fear of the unknown among people.

Thus, present study showed that 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.

Limitations of the study

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

Conclusion

The present study concluded that the knowledge of dentists with regard to the pathogenesis, mode of transmission and clinical features was not updated. Therefore, a periodic update among dentist regarding the pathogenesis, mode of transmission and clinical manifestations of the disease should be made available through webinars and articles.

It is the duty of the dentist to be aware and provide assistance in the war against COVID-19. The paradox of the situation is that dentists are unable to treat patients without proof of a negative test result yet is not in a position to administer the tests themselves. The government should make measures to let the dentists test for COVID-19 by collecting swabs from the patients in the dental clinic to combat this disease.

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