

## EVALUATION OF KNOWLEDGE AND PREPAREDNESS AMONG GENERAL DENTAL PRACTITIONERS, HOUSE SURGEONS AND POST GRADUATES OF DENTAL EDUCATIONAL SYSTEMS IN SOUTH INDIA DURING THE COVID 19 PANDEMIC: AN ONLINE QUESTIONNAIRE BASED SURVEY

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### ABSTRACT

**Background:** SARS-CoV-2 virus can spread through respiratory droplets, via the mucous membrane of the mouth, nose, and eyes. Using handpieces and ultrasonic instruments during dental procedures leads to the generation of blood and saliva droplets which can contaminate the dental instruments and subsequently the surrounding environment. Therefore, both dental practitioners and dental patients could be at risk of being infected. Hence, this survey aims to evaluate the knowledge about COVID 19 pandemic among the house surgeons, post graduates and general dental practitioners and to know how the dental community have prepared for it. **Methodology:** A sample of 2000 participants was involved in the study. The participants comprised of dentists practicing in South India. A questionnaire was

created on Google forms and circulated to participants using WhatsApp, Facebook messenger and E-mails. The data of responses of participants were analyzed and evaluated with the help of pie charts. **Results:** The participants were aware of the protocols issued by CDC and DCI, contents of a complete PPE kit and pre-procedural mouth rinsing. Only 64.8% were willing to treat a suspected COVID-19 patient even with all the necessary precautions. The participants preferred the dentist/staff to be subjected to routine rapid tests for COVID-19. A vast

majority of them were of opinion that every dentist should be vaccinated. **Conclusion:** The survey showed that the dental fraternity is well equipped to fight the pandemic while continuing to provide their services in the field of health care services.

**KEYWORDS:** COVID 19, Questionnaire, Survey, Pandemic.

## INTRODUCTION

An unprecedented pandemic of coronavirus disease 2019 (COVID-19) has created a global public health threat.<sup>[1]</sup> SARS-CoV-2 is the seventh member of the family of coronaviruses that infect humans.<sup>[2]</sup> Outbreak of COVID-19 began in December 2019.<sup>[3]</sup> This virus has spread in the whole world until now. The virus can spread through respiratory droplets, via the mucous membrane of the mouth, nose, and eyes.<sup>[4]</sup> Novel coronavirus disease (COVID-19) outbreak was declared a pandemic due to its rapid spread across the globe.

Confusions, misinformation, and opinions without much scientific basis prevailed even in scientific communities. Simultaneous research, studies in various countries throwing up newer facts every other day with or without peer review, dental fraternity too was left in dismay.<sup>[5]</sup> Using handpieces and ultrasonic instruments during dental procedures leads to the generation of blood and saliva droplets. As a result, these droplets can contaminate the dental instruments and subsequently the surrounding environment. Therefore, both dental practitioners and dental patients could be at risk of being infected.<sup>[6]</sup>

An assessment of the knowledge, attitude, and practices of dentists during the COVID-19 pandemic could help us evaluate the changing dynamics, understanding of dental professional's attitude, and the impact of novel coronavirus on their dental practice.

## MATERIALS AND METHODS

### Subjects

This study included a sample of 2000 participants. A cross-sectional questionnaire-based online survey was conducted among House surgeons, Post graduates and General practitioners working at colleges, hospitals and dental clinics in South India. The questionnaire was shared in the form of Google form through various channels such as WhatsApp, Facebook messenger, and E-mails. Participation in the study was totally voluntary. Any participant could opt out of the study by not filling the questionnaire. The responses were analysed and evaluated with the help of pie diagrams. House surgeons, Post

graduates and General practitioners of all age groups and both sexes were included. Undergraduates and doctors who are currently not practising dentistry were excluded.

### Questionnaire

The questionnaire consisted of 20 multiple choice questions. After filling out their Name, Email ID and Designation, participants were presented with the following questions:

- 1) Are you aware that dental profession is one of the high risk professions?
  - A. Yes
  - B. No
  
- 2) Are you aware of the protocols issued by CDC and DCI?
  - A. Yes
  - B. No
  
- 3) A complete PPE kit should consist of ?
  - A. Gloves and Gown
  - B. Face shield and Gown
  - C. Gown and N95 mask
  - D. All of the above
  
- 4) For how long do you perform hand washing using soap and water?
  - A. 20-30 seconds
  - B. 30-50 seconds
  - C. 40-60 seconds
  - D. Do not know
  
- 5) Does donning and doffing of PPE kit need to follow specific sequence?
  - A. Yes
  - B. No
  - C. Maybe
  
- 6) Are you aware that the patient has to be asked to perform pre-procedural mouth rinsing with 0.2-1% Povidine iodine or 1% Hydrogen peroxide for 1 minute?
  - A. Yes
  - B. No

- 7) Are you aware of the fact that 0.1% sodium hypochlorite or 70% isopropyl alcohol is effective disinfectant around the dental chair?
- A. Yes  
B. No
- 8) Do you think hydroxychloroquine can be used as a prophylaxis against COVID 19 before exposure?
- A. Yes  
B. No  
C. Maybe
- 9) Are you aware of toxicity with hydroxychloroquine medication?
- A. Yes  
B. No
- 10) Protective eyewear and face shields should be thoroughly disinfected after each procedure, using?
- A. Soap water  
B. 70% isopropyl  
C. Do not know
- 11) SARS-CoV-2 can persist in aerosol for up to 3 hours and has a relatively long half-life of approximately?
- A. 30 minutes  
B. 1.1 to 1.2 hours  
C. 1 hour 45 minutes  
D. Do not know
- 12) Which of the following is mandatory while dealing with emergency cases requiring aerosol generating procedures?
- A. Negative pressure or Airborne Infection Isolation Room  
B. Using high volume evacuation apparatus  
C. Protective outer wear, N95/FFP2 masks, protective eyewear  
D. All of the above
- 13) Do you ask the patient about the presence of symptoms suggestive for COVID-19?

- A. Yes
- B. No

14) Would you prefer the dentists/staff to be subject to routine rapid tests for COVID-19?

- A. Yes
- B. No

15) Are you aware of the double-phase triage, phone triage first and then in-office triage, which can help in reducing the spread of the pandemic?

- A. Yes
- B. No

16) Are you willing to treat a suspected COVID-19 patient with all the necessary precautions?

- A. Yes
- B. No

17) Which two COVID-19 vaccines are launched in India?

- A. Pfizer & Covaxin<sup>TM</sup>
- B. Covaxin<sup>TM</sup> & Covishield
- C. Pfizer & Covisafe
- D. Covisafe & Covishield

18) What type of sample is collected for RT-PCR diagnostic test for COVID-19 detection?

- A. Nasal swab
- B. Oropharyngeal swab/sputum
- C. Endotracheal aspirate
- D. Nasopharyngeal swab/sputum
- E. Both A & B

19) Do you think COVID-19 vaccine is safe and effective?

- A. Yes
- B. No
- C. Do not know

20) Do you think every dentist should be vaccinated?

- A. Yes

B. No

## RESULTS

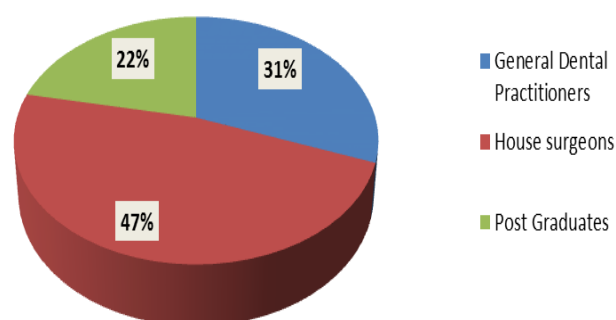
Participants in the study, conducted in the year 2020, included House surgeons, Post graduates and General dental practitioners all over South India. A vast majority of the participants accepted that dental profession is one of the high risk professions. Most of the participants were aware of the protocols issued by CDC and DCI, contents of a complete PPE kit and pre-procedural mouth rinsing. More than half of the participants were aware of the toxicity with hydroxychloroquine medication while 47.6% were still unsure whether hydroxychloroquine can be used as a prophylaxis against COVID-19 before exposure. Eventhough 89.9% ask their patient about the presence of symptoms suggestive of COVID-19, only 64.8% were willing to treat a suspected COVID-19 patient even with all the necessary precautions. Majority of the participants preferred the dentist/staff to be subjected to routine rapid tests for COVID-19. 91.3% were of the opinion that every dentist should be vaccinated while only 71.6% believed the vaccine is safe and effective.

## DISCUSSION

The virus that causes COVID-19, SARS-CoV-2, is profusely present in nasopharyngeal and salivary secretions of patients infected with SARS-CoV-2,<sup>[7-9]</sup> and is believed to be spread primarily through respiratory droplets, as well as aerosols.<sup>[6]</sup> Importantly, emerging evidence shows that normal breathing and talking can produce small droplets that are subject to aerosol transport and that aerosolized SARS-CoV-2 particles can remain suspended in the air for several hours,<sup>[10-13]</sup> although it is unclear how much aerosol spread contributes to viral transmission.<sup>[12,14]</sup> Dentists and other dental and oral health workers are allied members of the frontline healthcare workforce at extreme risk of COVID-19 infection due to generation of aerosols as part of providing dental care.<sup>[12]</sup> A basic concept is that the transmission of the virus occurs mainly through inhalation, eating and drinking and direct mucosal contact with salivary droplets. The virus can also survive on dental equipment for up to 9 days.<sup>[6]</sup> Because viral load in human saliva is high, the use of mouthwash can only reduce the microbial load in the mouth and does not have the potency to completely eliminate COVID-19.<sup>[15,16]</sup>

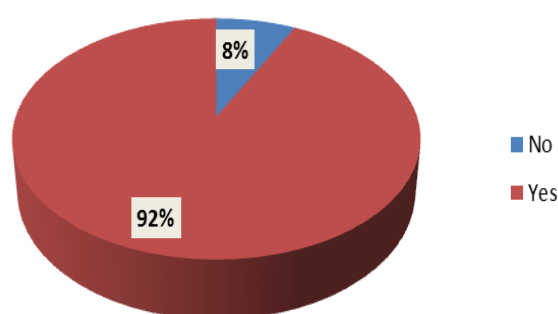
The questionnaire was fabricated on Google forms which were then circulated to the participants via Whatsapp groups, Facebook messenger, and E-mail. We got responses from 2000 participants who were willing to participate in the study. The participants were House

surgeons, Post graduates or Private dental practitioners working at colleges, hospitals and dental clinics in South India. After 2000 participants filled the Google questionnaire form, the data was collectively analysed. On analysing the data, 47% of participants involved in the study were House surgeons, 31% were General dental practitioners and 22% were post graduates (Figure 1).

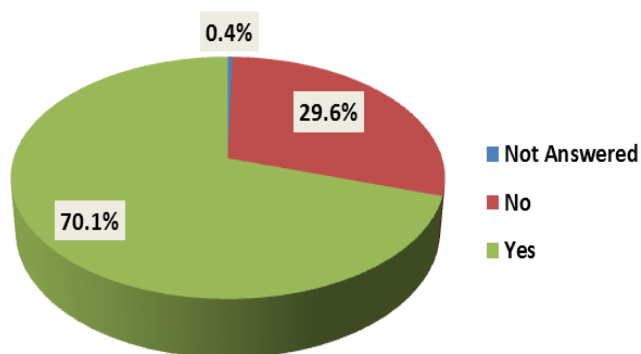


**Figure 1: Designation of the participant.**

92.6% of the participants felt that dentists are at higher risk of contracting COVID-19 than any other healthcare workers whereas 8% of the participants did not feel the same (Figure 2). 70.1% of the participants were aware of the protocols issued by CDC and DCI, while 29.6% were not (Figure 3).

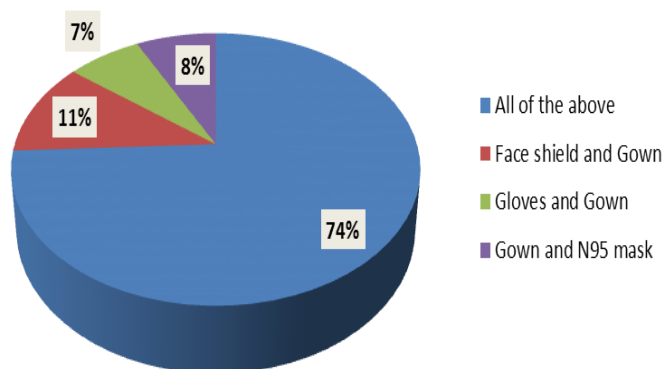


**Figure 2: Are you aware that dental profession is one of the high risk professions?**



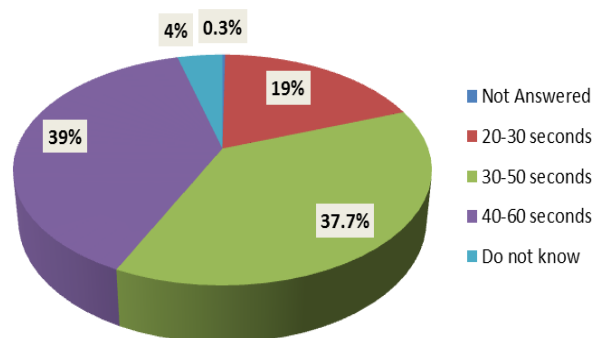
**Figure 3: Are you aware of the protocols issued by CDC and DCI?**

Majority (74%) of participants were of the opinion that a complete PPE kit should consist of gloves, gown, face shields and N95 mask (Figure 4). On asking the patients for how long they performed hand wash using soap and water 39% replied 40-60 seconds while 37.7% replied 30-50 seconds and 19% replied 20-30 seconds (Figure 5). When asked about their opinion on whether donning and doffing of PPE kit has to be performed in a specific sequence, a whopping majority of 57% strongly agreed while a minority of 10% disagreed (Figure 6). 84% of the participants were aware that the patient has to be asked to perform pre-procedural mouth rinsing with 0.2-1% Povidine iodine or 1% Hydrogen peroxide for 1 minute while 15.6% were not (Figure 7).

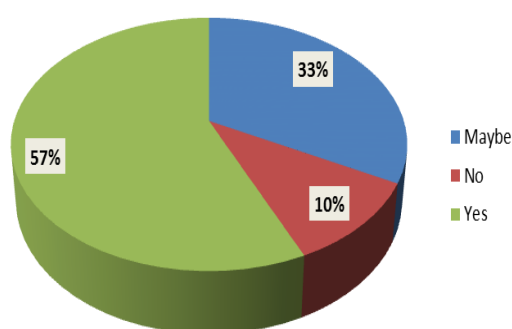


**Figure 4: A complete PPE kit should consist of ?**

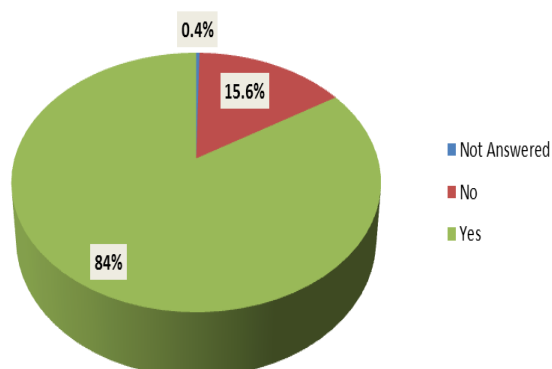




**Figure 5: For how long do you perform hand washing using Soap and Water?**



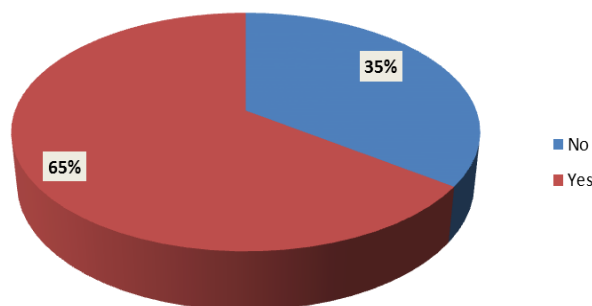
**Figure 6: Does Donning and Doffing of PPE kit need to follow specific sequence?**



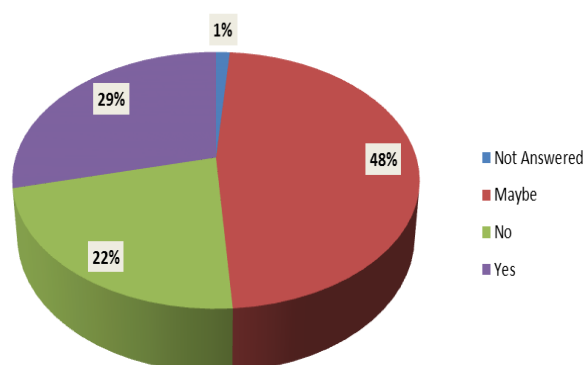
**Figure 7: Are you aware that the patient has to be asked to perform pre-procedural mouth rinsing with 0.2-1% Povidine iodine or 1% Hydrogen peroxide for 1 minute?**

65% were aware of the fact that 0.1% sodium hypochlorite or 70% isopropyl alcohol is effective disinfectant around the dental chair when 35% did not (Figure 8). 22% of the participants strongly felt that Hydroxychloroquine can't be used as a prophylaxis against COVID-19 before exposure and 29% of the participants polled for the contrary while a majority of 48% were not sure about the prophylactic use of the medication (Figure 9).

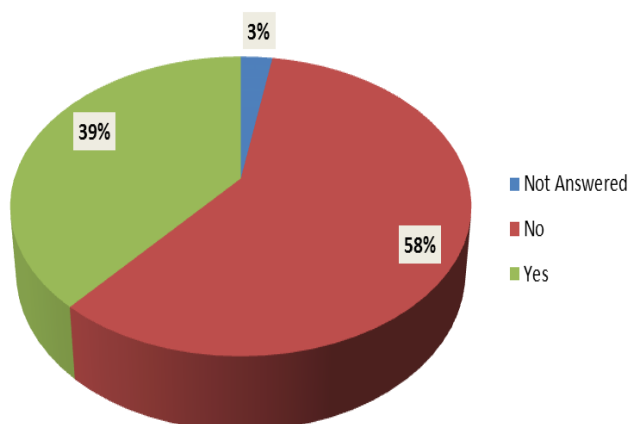
Among the participants 39% were aware of the toxicity with Hydroxychloroquine medication while 58% were not aware (Figure 10).



**Figure 8: Are you aware of the fact that 0.1% sodium hypochlorite or 70% isopropyl alcohol is effective disinfectant around the dental chair?**

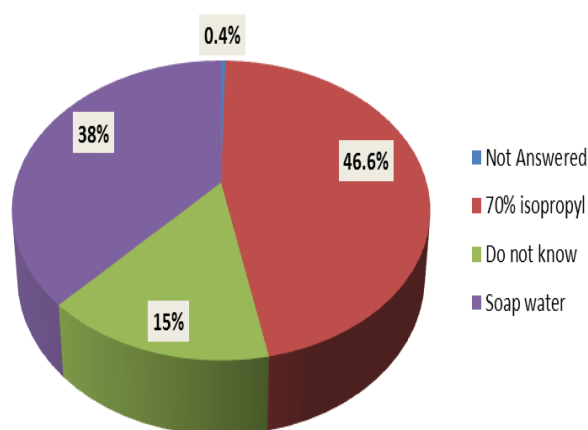


**Figure 9: Do you think Hydroxychloroquine can be used as a prophylaxis against COVID-19 before exposure?**

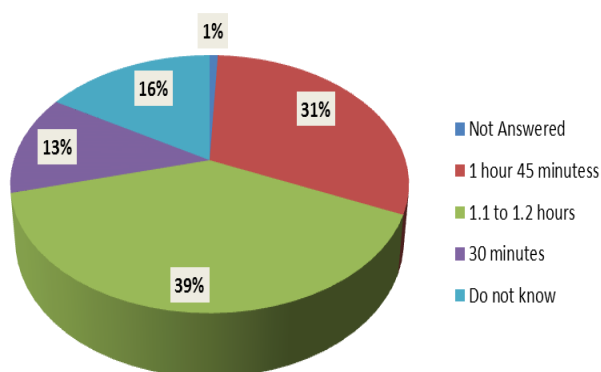


**Figure 10: Are you aware of toxicity with Hydroxychloroquine medication?**

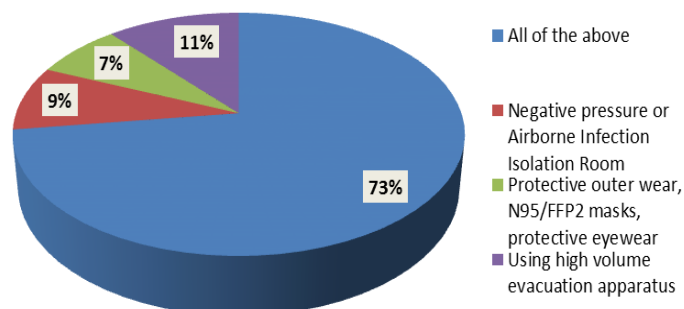
46.6% of the participants were of the opinion that 70% isopropyl should be used to thoroughly disinfect protective eyewear and face shields after each procedure while 38% preferred soap water for the same (Figure 11). 39% selected the option of 1.1 to 1.2 hours as the half-life of the SARS-CoV-2 while 31% selected 1 hour 45 minutes (Figure 12). Negative pressure or Airborne infection isolation room, using high volume evacuation apparatus, protective outer wear, N95/FFP2 masks, protective eyewear were voted by majority (73%) as mandatory while dealing with emergency cases requiring aerosol generating procedures (Figure 13).



**Figure 11: Protective eyewear and face shields should be thoroughly disinfected after each procedure, using?**

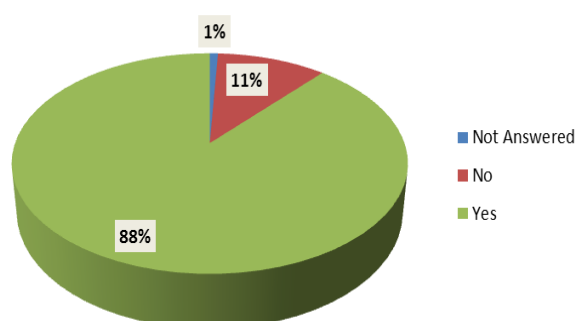


**Figure 12: SARS-CoV-2 can persist in aerosol for up to 3 hours and has a relatively long half-life of approximately?**

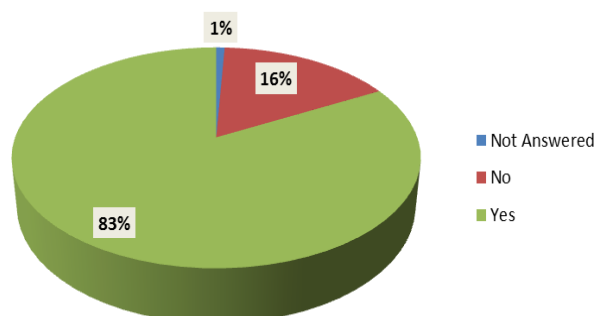


**Figure 13: Which of the following is mandatory while dealing with emergency cases requiring aerosol generating procedures?**

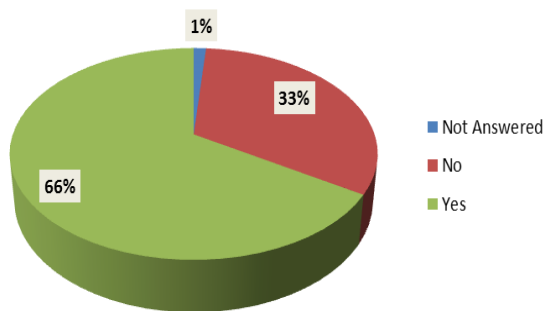
88% of the participants ask their patients about the presence of COVID-19 (Figure 14). 83% preferred the dentists/staff to be subject to routine rapid tests for COVID-19 (Figure 15). 66% were aware of the double-phase triage which can help in reducing the spread of the pandemic (Figure 16). When asked whether they were willing to treat a suspected COVID-19 patient with all the necessary precautions, 65% were willing (Figure 17).



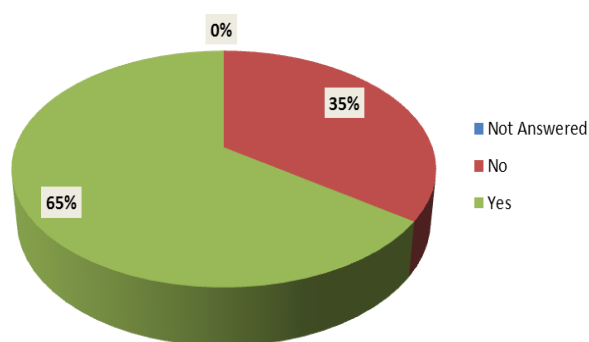
**Figure 14: Do you ask the patient about the presence of symptoms suggestive for COVID-19?**



**Figure 15: Would you prefer the dentists/staff to be subject to routine rapid tests for COVID-19?**

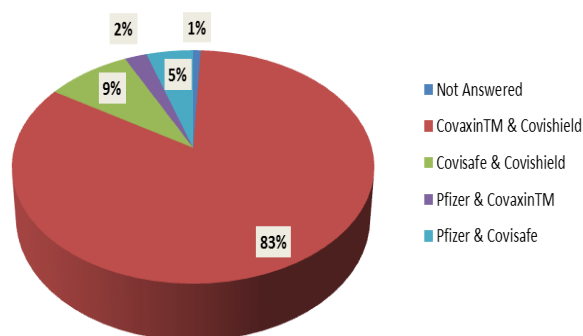


**Figure 16: Are you aware of the double-phase triage, phone triage first and then in-office triage, which can help in reducing the spread of the pandemic?**

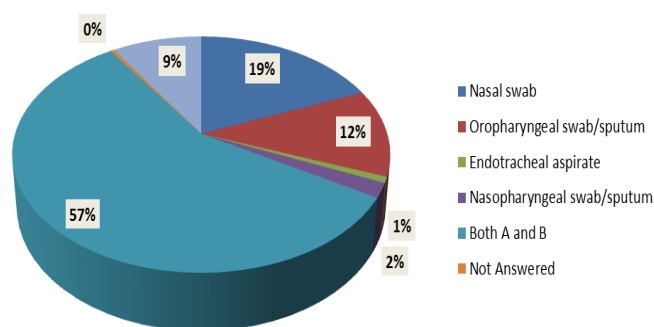


**Figure 17: Are you willing to treat a suspected COVID-19 patient with all the necessary precautions?**

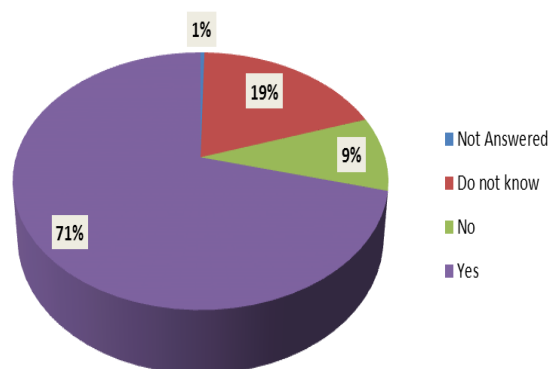
83% were aware of the two COVID-19 vaccines, Covaxin™ & Covishield, launched in India (Figure 18). 57% polled that nasal swab and oropharyngeal swab/sputum are the type of samples collected for RT-PCR diagnostic test for COVID-19 detection (Figure 19). 71% believes that the COVID-19 vaccine is safe and effective and a vast majority (91%) are of the opinion that every dentist should be vaccinated (Figures 20 & 21 respectively).



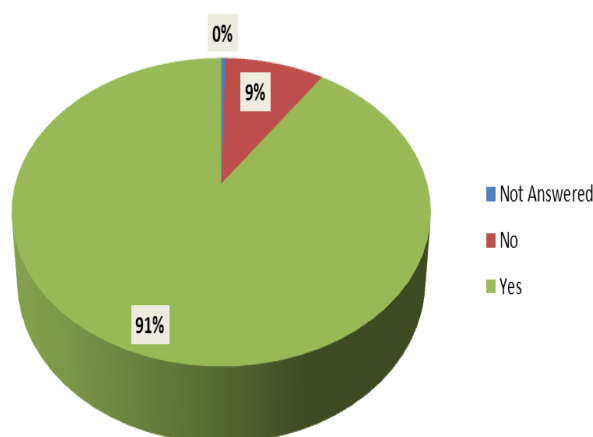
**Figure 18: Which two COVID-19 vaccines are launched in India?**



**Figure 19: What type of sample is collected for RT-PCR diagnostic test for COVID-19 detection?**



**Figure 20: Do you think COVID-19 vaccine is safe and effective?**



**Figure 21: Do you think every dentist should be vaccinated?**

## CONCLUSION

COVID-19 has had a devastating impact on the dental industry and all aspects of everyday life causing a huge socio-economic impact. The pandemic of COVID-19 has created a panic

nationwide. This questionnaire based survey clearly helped in assessing the knowledge and preparedness among the house surgeons, post graduates and general dental practitioners of Karnataka about the COVID-19 pandemic during the initial spread of the pandemic. Although the pandemic posed various drawbacks and threats to the profession of dentistry, it still fought its way out.

## ACKNOWLEDGEMENT

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