



## Awareness regarding safety measures to be followed during COVID 19 outbreak among dentists in Chennai - A questionnaire based survey

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### ABSTRACT

SARS - COVID 2019 is a global respiratory infection that has been confirmed as a global pandemic. The life of healthcare professionals has changed while working during the corona COVID-19 outbreak. During the coronavirus disease (COVID-19) outbreak, the dentist's knowledge about various practice modifications has been evaluated in order to combat COVID-19. A well-constructed questionnaire was designed; it was a close-ended questionnaire study involving 150 participants. The responses of the survey were obtained and subjected to statistical analysis using SPSS Software. The respondents were found to have good knowledge, which is important to combat COVID -19, which would help them imply those techniques in clinical practice. In Spite of having a high standard of knowledge while working during these current situations, dental practitioners are still in a state of anxiety and fear.



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### INTRODUCTION

Novel corona virus COVID-19, which has evolved from China, has influenced every aspect of life. COVID-19 spread globally in a few months on March 11<sup>th</sup> 2020, the World Health Organization (WHO) declared COVID-19 as a controllable pandemic disease (Meng *et al.*, 2020). From the seafood market in Wuhan, China the corona virus strain originated and based on the strain WHO used the term COVID-

19 on 11<sup>th</sup> Feb 2020.

Structurally COVID-19 is SS-RNA, an enveloped virus with a size 350-kilo base pairs (Kbp). Transmission routes of COVID-19 are from person to person via hands, saliva, nasal droplets and surface contacts, when it is transmitted, it can cause severe acute respiratory tract infection. It usually takes 4 to 14 days for the incubation period, and the infected person usually complains of high- grade fever, a dry cough and dyspnea.

Investigation for infected persons has to be done by the real-time polymerase (RT- PCR), and suspected persons should be quarantined. Vitamin A, C and D, chloroquine phosphate were advised to the patients as supportive therapy so that the general health of the patient will be maintained for the body immune system to increase. Every attempt has been taken to control the spread of infection by shutting down the teaching institutions, social gatherings, sports activities, events, airports and even banks.

While working on the patient's oral cavity with the aerosols related, health care professionals, espe-

cially dentists, are often getting infected, and it has the possibility to transmit to others. By the social, electronic and print media, based on COVID-19 reports, fear and anxiety levels are getting increased day by day. While working on the patients, standard universal precautions along with recording patients recent travel history, any signs and symptoms with respiratory tract infection, the recording body temperature of patients before starting with the treatment. Usage of rubber dam with high volume suction is necessary while working on patients. Thorough cleaning and disinfecting the work area, door handles and chairs of dental clinics have to be followed. These are the key steps highlighted by ADA by seeing the spread of pandemic disease COVID-19 (Nasim and Nandakumar, 2018).

Previously our team had conducted numerous studies which include in vitro studies, (Noor and Pradeep, 2016; Rajendran *et al.*, 2019; Ramanathan and Solete, 2015) reviews (Kumar and Antony, 2018; Ravinthar and Jayalakshmi, 2018; Rajakeerthi and Nivedhitha, 2019), surveys (Jose *et al.*, 2020), clinical trial (Janani *et al.*, 2020; Nasim *et al.*, 2018; Ramamoorthi *et al.*, 2015), in the field of conservative dentistry and endodontics. (Teja and Ramesh, 2019) Now we are focussing on epidemiological surveys. (Manohar and Sharma, 2018; Siddique and Jayalakshmi, 2019) and (Ramesh *et al.*, 2018). Therefore, the present study was undertaken to assess the awareness regarding COVID 19 outbreak among dentists in Chennai.

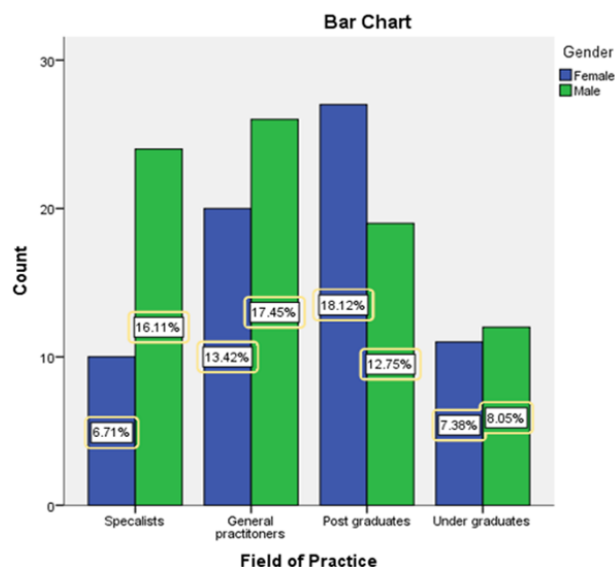
**MATERIALS AND METHODS**

The cross-sectional questionnaire-based study was circulated among participants via google forms. It consists of closed-ended questions. All the questions were mandatory to avoid participation and non-response bias. Convenience sampling method was followed, and 150 participants were chosen for the survey. It took about 5-10 mins to complete the survey. The data were tabulated in Microsoft Excel, followed by the exporting of the data to IBM SPSS Software 20(SPSS version 21.0 SPSS, Chicago IL, USA) for analysis. Frequency distribution tables were made, and the chi-square test was performed in order to check the comparison of responses amongst the undergraduates, postgraduates, general practitioners and specialists. The significance level was set at 0.05.

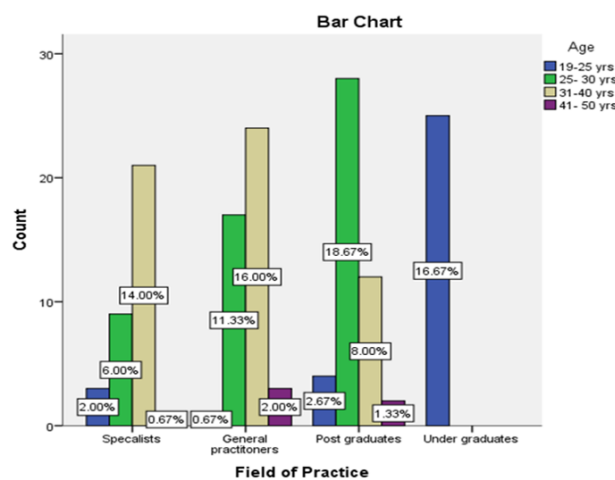
**RESULTS AND DISCUSSION**

Completed responses were received from 150 participants. No incomplete responses were received. Gender and age distribution of the respondents in

the survey are given in Figure 1, Figure 2. Survey results are explained in the figures. (Table 1, Table 2, Table 3, Table 4, Table 5, Table 6) and (Figure 3, Figure 4, Figure 5, Figure 6).



**Figure 1: The gender distribution of the respondents participated in the survey**



**Figure 2: The age distribution of the respondents participated in the survey**

From Figure 3, Figure 5, Figure 7, Figure 9, Figure 11, and Figure 13, where the X-axis represents the field of practice, and Y-axis represents the number of respondents. Chi-square test - there was no significant difference in the responses obtained from specialists, general practitioners, postgraduates and undergraduates.

From Figure 4, Figure 6, Figure 8, Figure 10, Figure 12, and Figure 14, where the X-axis represents the field of practice, and Y-axis represents the number of respondents. Chi-square test (p-value < 0.05), where there was a significant difference in the responses obtained from specialists, general practi-

**Table 1: Association between a field of practice and their response regarding the transmission of COVID-19**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.179 <sup>a</sup>	6	.000
Likelihood Ratio	30.470	6	.000
N of Valid Cases	150		

**Table 2: Association between a field of practice and their response regarding the status of COVID-19**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.518 <sup>a</sup>	6	.001
Likelihood Ratio	15.579	6	.016
N of Valid Cases	150		

**Table 3: Association between the field of practice and their response regarding the risk of COVID-19 transmission**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	34.037 <sup>a</sup>	9	.000
Likelihood Ratio	38.245	9	.000
N of Valid Cases	150		

**Table 4: Association between a field of practice and their response regarding the preferred method for hand hygiene**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.927 <sup>a</sup>	12	.003
Likelihood Ratio	32.256	12	.001
N of Valid Cases	150		

**Table 5: Association between the field of practice and their response regarding the frequency of handwashing**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.007 <sup>a</sup>	6	.000
Likelihood Ratio	35.284	6	.000
N of Valid Cases	150		

**Table 6: Association between the field of practice and their response regarding frequent hand washing techniques**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.822 <sup>a</sup>	3	.420
Likelihood Ratio	3.971	3	.265
N of Valid Cases	150		

**Table 7: Association between a field of practice and their response regarding social distancing during COVID-19 outbreak**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.109 <sup>a</sup>	3	.775
Likelihood Ratio	1.223	3	.747
N of Valid Cases	150		

**Table 8: Association between the field of practice and their response regarding travelling across countries during COVID-19**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.283 <sup>a</sup>	3	.000
Likelihood Ratio	21.922	3	.000
N of Valid Cases	150		

**Table 9: Association between a field of practice and their response regarding the importance of PPE during COVID-19**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.127 <sup>a</sup>	9	.024
Likelihood Ratio	21.202	9	.012
N of Valid Cases	150		

**Table 10: Association between the field of practice and their response regarding the use of hand sanitizers**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.620 <sup>a</sup>	6	.071
Likelihood Ratio	12.037	6	.061
N of Valid Cases	150		

**Table 11: Association between the field of practice and their response regarding the influence of social media during COVID-19 outbreak**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.612 <sup>a</sup>	6	.000
Likelihood Ratio	28.782	6	.000
N of Valid Cases	150		

**Table 12: Association between the field of practice and their response regarding the usage of masks in clinical practice**

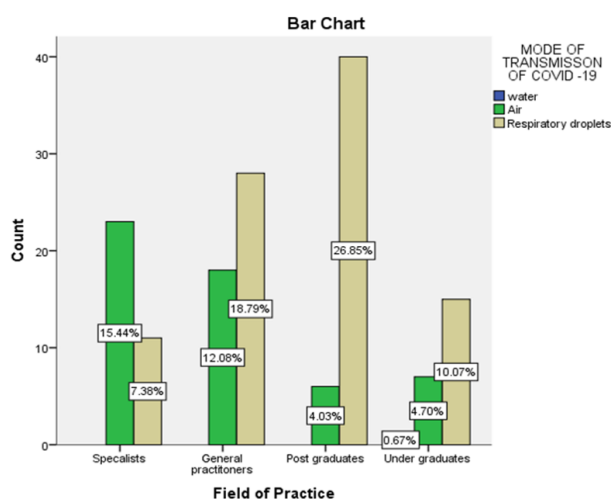
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.798 <sup>a</sup>	9	.972
Likelihood Ratio	3.563	9	.938
N of Valid Cases	150		

**Table 13: Association between the field of practice and their response regarding the usage of the face shield in clinical practice**

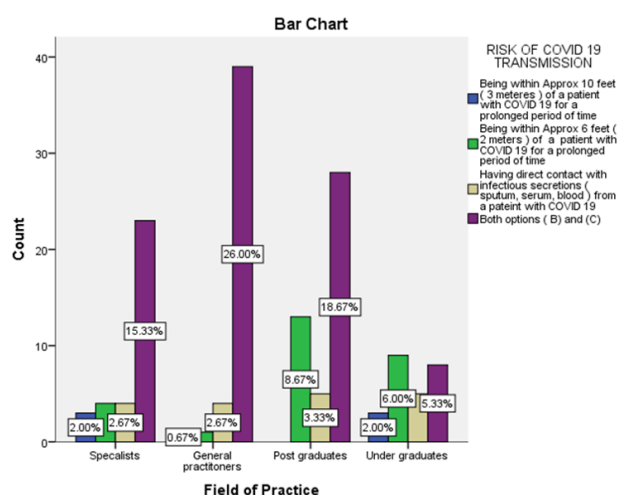
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.817 <sup>a</sup>	9	.454
Likelihood Ratio	8.818	9	.454
N of Valid Cases	150		

**Table 14: Association between the field of practice and their response regarding the usage of PPE in clinical practice**

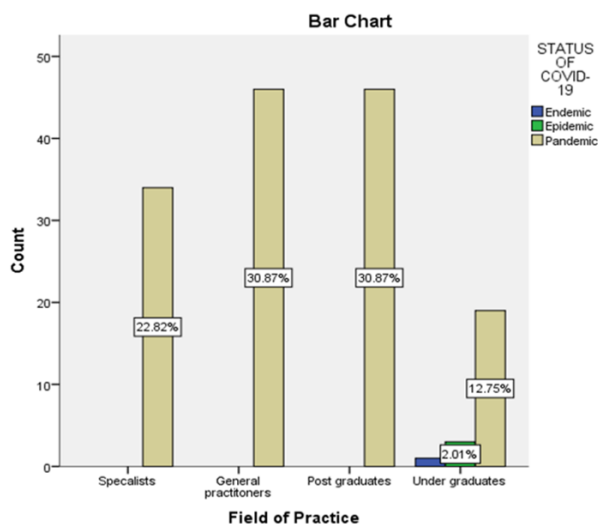
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.353 <sup>a</sup>	6	.969
Likelihood Ratio	1.348	6	.969
N of Valid Cases	150		



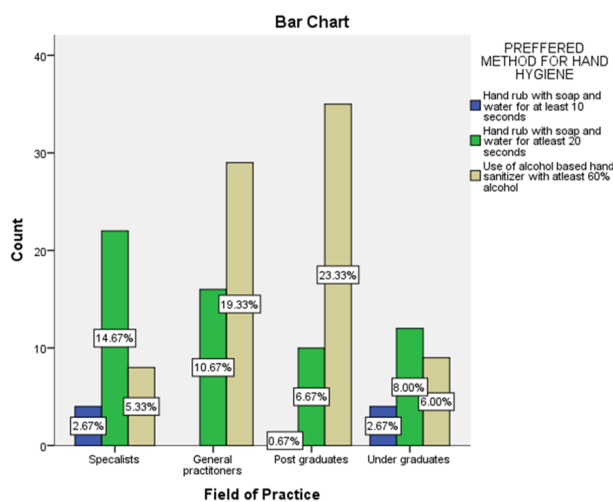
**Figure 3: The association between the field of practice and their response regarding the mode of transmission of COVID-19**



**Figure 5: The association between the field of practice and their responses regarding the status of COVID-19**



**Figure 4: The association between the field of practice and their response regarding the status of COVID-19**



**Figure 6: The association between the field of practice and their preferred method of hand hygiene**

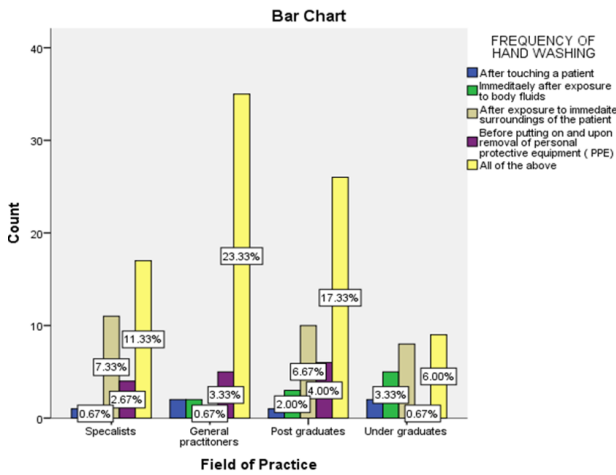


Figure 7: The association between the field of practice and their preferred method of hand hygiene

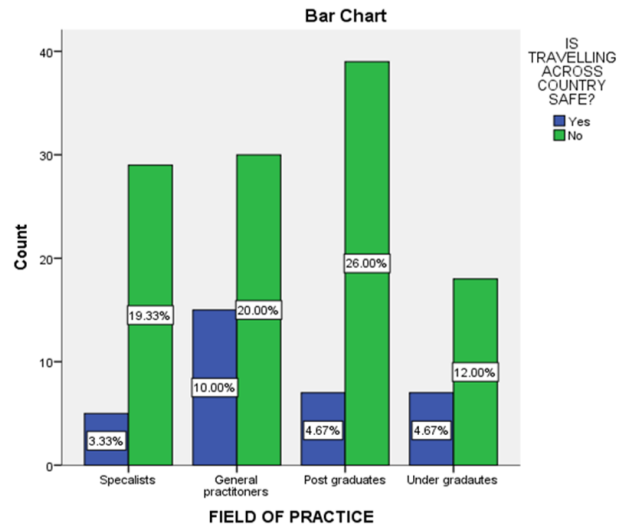


Figure 10: The association between the field of practice and their preferred method of hand hygiene

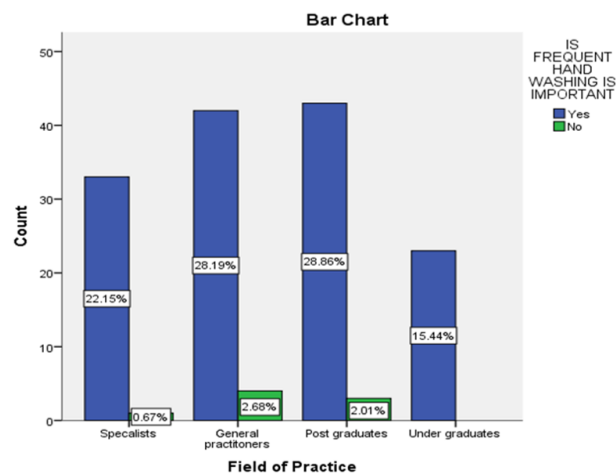


Figure 8: The association between the field of practice and their preferred method of hand hygiene

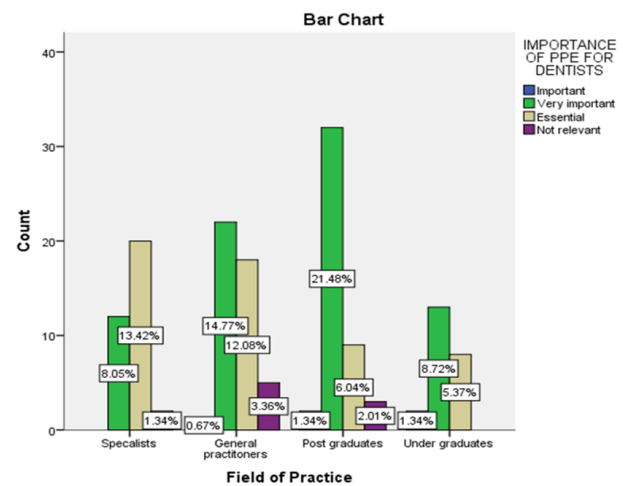


Figure 11: The association between the field of practice and their preferred method of hand hygiene

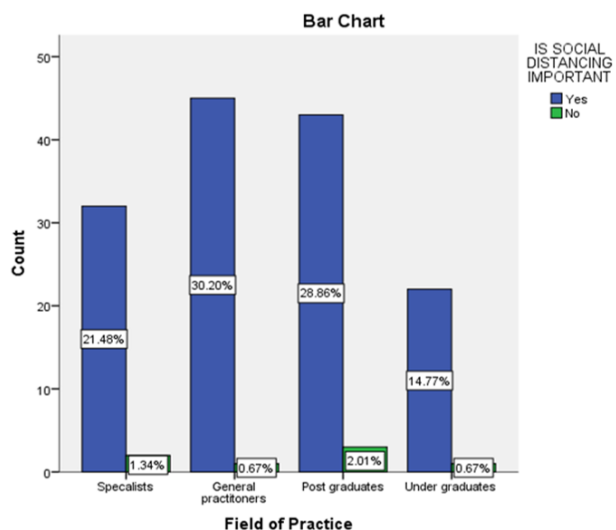


Figure 9: The association between the field of practice and their preferred method of hand hygiene

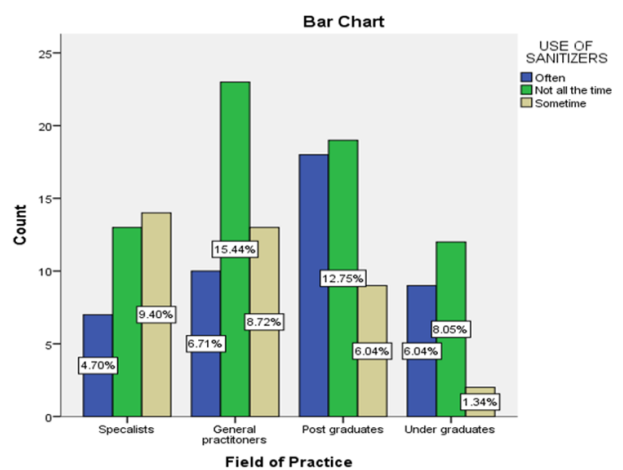
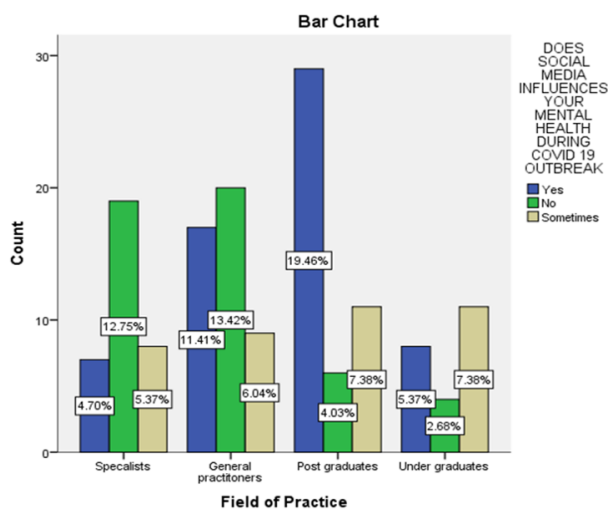
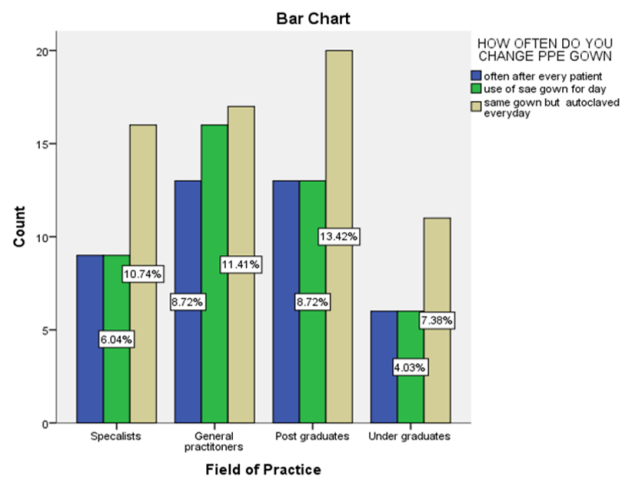


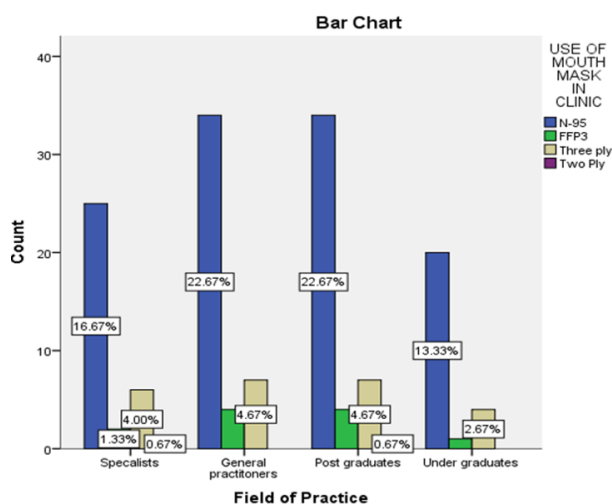
Figure 12: The association between the field of practice and their preferred method of hand hygiene



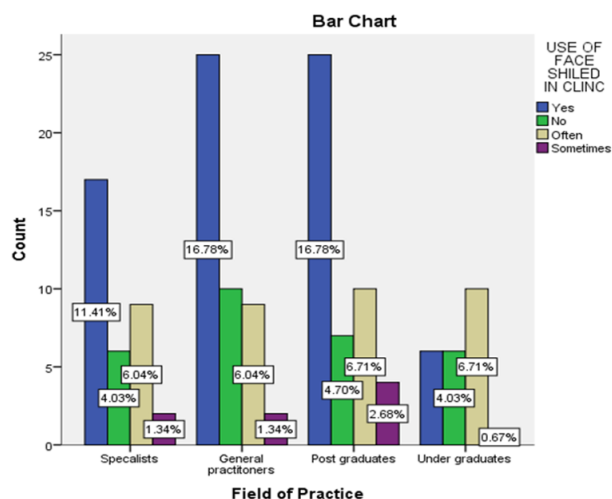
**Figure 13: The association between the field of practice and their preferred method of hand hygiene**



**Figure 16: The association between the field of practice and their preferred method of hand hygiene**



**Figure 14: The association between the field of practice and their preferred method of hand hygiene**



**Figure 15: The association between the field of practice and their preferred method of hand hygiene**

tioners, postgraduates and undergraduates.

From Figure 15, where the X-axis represents the field of practice and Y-axis represents the number of respondents. Chi-square test (p-value > 0.05) and there was no statistical significant difference between the respondents obtained from specialists, general practitioners, postgraduates and undergraduates.

In Figure 16, Bar chart showing the association between the field of practice and their preferred method of hand hygiene, where the X-axis represents the field of practice and Y-axis represents the number of respondents. Chi-square test (p-value > 0.05) and there was no statistical significant difference between the respondents obtained from specialists, general practitioners, postgraduates and undergraduates.

The (SARS- COVID-19) later known as n-COVID-19 or present as COVID -19 is a globally spread respiratory infection. It is known to cause pneumonia-like disease, with acute severe respiratory distress. Several similar pandemics have affected the world previously. For instance, in 1920, the Spanish-like flu has affected about 1/3rd of the world's population. To avoid such a catastrophic event again, it is the responsibility of every individual to avoid the cross infection (or) transmission of the disease (Ajilore *et al.*, 2017). Dentists are commonly exposed to a field (Jost *et al.*, 2017) where saliva and nasopharyngeal secretions are inevitable. Hence, dentists are placed in one of the highest risk categories among various professionals. Symptomatic irreversible pulpitis being the most common endodontic emergency, and were challenging during the COVID-19 outbreak, since inhalation of

airborne particles and aerosols produced during dental procedures on patients with COVID-19 could potentially expose dentists to the virus (Keil and Ali, 2006). The two ways to control the risk of infection for endodontic treatment could be reducing treatment time and exposure control. Vital pulp therapy, including pulpotomy or pulp capping, helps in shortening treatment time. Rubber dam should be used so that 70 % of airborne particles could be reduced around a 3-foot diameter from the operational field, and also it eliminates the presence of salivary components in the aerosol. To avoid such a transmission, the practice of proper disinfection along with the usage of necessary personal protective equipment becomes very crucial. Henceforth in dentistry during radiographs, CBCT. (Table 7, Table 8, Table 9, Table 10, Table 11, Table 12, Table 13 and Table 14).

The updated OSHA (2020) Guidelines for prevention defines personal protective equipment has a critical entity for all health workers, during the COVID-19 pandemic. It further states the head caps, N-95 mask, double surgical gloves, Impervious scrubs, shoe covers are the essential components along with a disposable faceguard. However, it should be noted that these precautions are often very time consuming and also not economical for most dental practitioners, especially when performing minor operative procedures.

Further, in the field of Endodontics, essentially the practice demands a minimum of an hour to a 1 hour half per patient. The procedure would require the clinician to have fine motor skills and good table sensation, all of which is very difficult in a standard full coverage personal protective equipment (Kinariwala *et al.*, 2020; Singhal, 2020). The ergonomics are also compromised as basic headband neck movements are also compromised, and use of any (or) all magnification devices becomes difficult to use. To add to this would also be a cost factor (Zhong *et al.*, 2020; Peng *et al.*, 2020).

High cost personal protective equipment, in turn, makes the treatment costs more, hence discouraging patients to and costs more, Hence discouraging patients to and dental treatment and hence ending by the regulatory authorities (Kang *et al.*, 2020).

Universal cross infections control protocols with additional precautions have to be taken while performing endodontic and operative procedures, any procedures utilizing ultrasonic scalers should be substituted with hand scalers in order to reduce the spread of aerosol and splatter. Usage of rubber dam with high volume suction can help prevent from the spread of aerosol splatter and droplets from patients oral cavity thereby preventing transmission

of infection (Diaz and Smaldone, 2010; Benson *et al.*, 2013). Only emergency dental treatments have to be performed which was given by the dental regulatory authorities such as ADA and it is a very crucial time to face the dental community. Towards COVID-19, the psychological factors such as fear and anxiety have to be maintained to remain calm and thereby function efficiently towards the situation (Khazeni *et al.*, 2009), health care workers should meticulously follow the relevant guidelines issued by dental regulatory authorities, so that the fear and anxiety level of dentists getting infected will gradually reduce.

Majority of respondents of the survey were aware of the personal protection techniques that are to be followed during COVID-19 outbreak. Their knowledge regarding the awareness and their implications in their clinical practice would help the dentists in treating patients during such outbreaks (Van Dam *et al.*, 2013) However undergraduate students who participated in this survey are not much aware of the protocols that are to be followed in treating patients during such epidemic. Henceforth, knowledge should be imparted to them regarding the advent use of personal protective equipment. Because of COVID outbreak, data was collected in a very concise duration of time, hence generalizability of the study is limited. Future scope of this research would be doing this survey on a larger population, indulging participants from different countries would help us to know more about the awareness among the dentists regarding treatment procedures to be performed during COVID-19 outbreak.

## CONCLUSION

Within the limitations of the study, it was observed that the knowledge regarding the safety measures that are to be followed during COVID-19 outbreak was good among the majority of the dental practitioners. However, it should be reinforced that all these protocols are followed while treating patients in pandemics such as COVID-19.

## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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The authors declare that they have no funding support for this study.

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