

# PRACTICE OF PERSONAL PROTECTIVE EQUIPMENT DURING DENTAL TREATMENT

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**ABSTRACT:** *COVID-19 is the disease supported by SARS-CoV-2 infection, which causes a severe form of pneumonia. Due to the pathophysiological characteristics of the COVID-19 the particular transmissibility of SARS-CoV-2, and the high globalization of our era, the epidemic emergency has spread rapidly all over the world. Human-to-human transmission seems to occur mainly through close contact with symptomatic people affected by COVID-19, and the main way of contagion is only through the inhalation of respiratory droplets, for example when patients talk, sneeze or cough. The dental practitioners are particularly exposed to a high risk of SARS-CoV-2 infection because they cannot always respect the interpersonal distance of more than a meter and are exposed to saliva, blood, and other body fluids during surgical procedures. Moreover, many dental surgeries can generate aerosol, and the risk of airborne infection is to be considered higher. The questionnaire was shared among students pursuing dentistry which contained a set of 10 questions. The questions were about duration, practice on PPE and how aware and protected the students are during treating the patients. 88% of them agreed that the gloves they wear protect them from viral pathogens and 5% did not agree and 7% of them were not sure about it. 90% of them were trained on personal protective equipment whereas 10% of them were not trained before. This study observed good awareness regarding the practice of using protective equipment during dental treatment among the respondents.*

**KEYWORDS:** *COVID-19, infection, protective equipment*

## 1. INTRODUCTION:

The disease caused by the SARS-CoV-2 virus has been called, by the World Health Organization (WHO), COVID-19, an acronym derived from the terms CO-rona VI-rus D-isease<sup>1</sup>. The most commonly stated symptoms are nasal congestion, rhinitis and especially a dry cough and dyspnea with fever. Some patients could also have a sore throat or diarrhea. The symptoms are mild in 80% of the patients and more severe in 15% of the cases so as to require hospitalization. In the last 5% of patients, the onset of severe dyspnea leads to direct access to an intensive care unit<sup>2</sup>. The data on human-to-human transmission and surface stability of SARS-Cov-2 are

currently not totally clear. Human-to-human transmission seems to occur mainly through close contact with symptomatic people affected by COVID-19, and the main way of contagion is respiratory droplets when patients sneeze or cough<sup>3</sup>. Although the virus is more contagious when the patient is symptomatic, evidence suggests the possibility of human-to-human transmission even in patients with mild or absent symptoms<sup>8-12</sup>. The possibility that the virus can survive outside living organisms, in aerosol or on inanimate materials has also been recognized.

Since this spread through droplets, dentists are more prone for COVID. To keep the dental environment safe and healthy for patients it requires to wear personal protective equipment for both the patients and the doctor. Usual examinations like temperature check and oxygen saturation levels can eliminate patients who are showing symptoms of the disease.

## **2. MATERIALS AND METHODS:**

### **STUDY DESIGN:**

Cross sectional study

### **STUDY SETTING:**

It was an online based questionnaire that was given among dental students of Saveetha Dental College, Chennai

### **SAMPLE SIZE AND SAMPLING:**

The total sample size was 100, which involved the final years and interns. It was constricted to 100 samples according to the response obtained from the students.

### **SURVEY INSTRUMENT:**

The questionnaire contained 10 awareness questions, apart from the general demographic details of study participants, like name, age, gender. The questions were close ended, and depending upon the number of correct responses, they were grouped into yes and no. Questionnaire was administered in Google forms to general practitioners. Questionnaire validation was done giving the survey to 10% of the study population. The reliability was assessed by cronbach's alpha.

### **ETHICAL CLEARANCE:**

The ethical board of clearance was obtained from the scientific review board of Saveethauniversity.

### **DATA COLLECTION AND STATISTICAL ANALYSIS:**

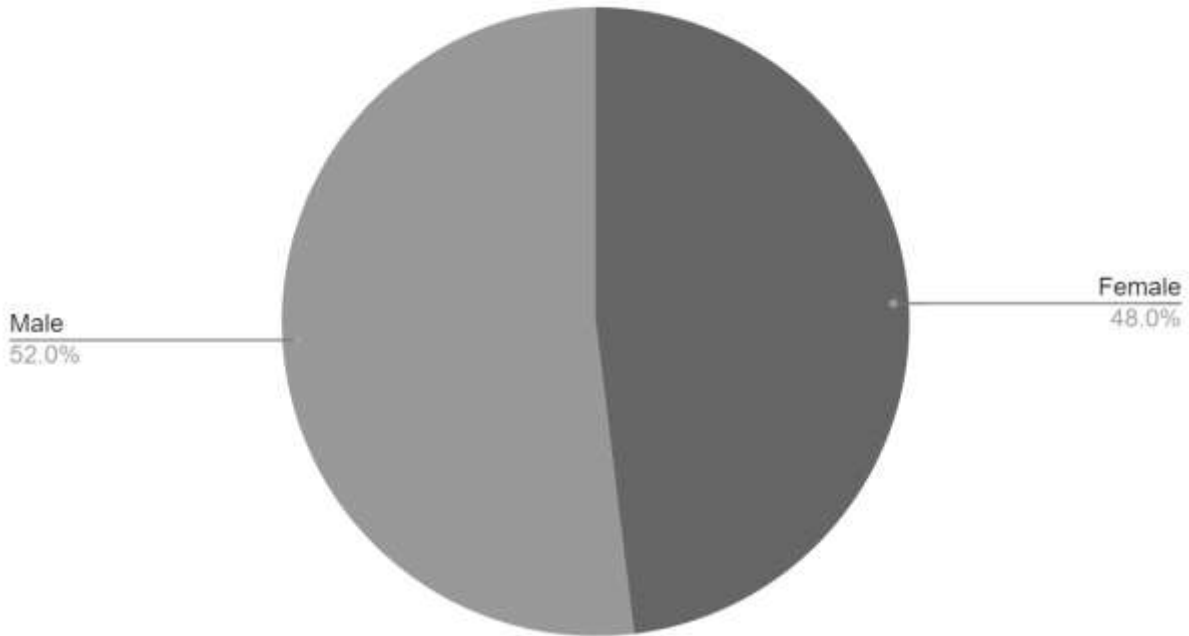
The responses obtained were transferred to excel sheets where it was segregated and tabulated accordingly. The data was further coded and graphs were made based on the yes or no response.

## **3. RESULTS AND DISCUSSION:**

This study had 48.0% female and 52.0% male out of which 26.2% with third years 17.5% were final years and 24.3% were interns and 32% were post graduates. 88% of them agreed that the gloves they wear protect them from viral pathogens and 5% did not agree and 7% of them were not sure about it. 90% of them were trained on personal protective equipment whereas 10% of them were not trained before. 54% of the students have used personal protective equipment and 46% have not used it before. 95% wanted to put on the highest level of PPE when there is a need and 5% did not agree to it. 90% agreed to use the PPE provided by the facility in the wake of Covid and 10% did not agree to it. 90% of the students felt protected under PPE and 10% of them did not feel protected. 55% of the students agreed that they touch their masks with a gloved hand and 45% did not agree to it. 80% of the students agreed that they face difficulties while

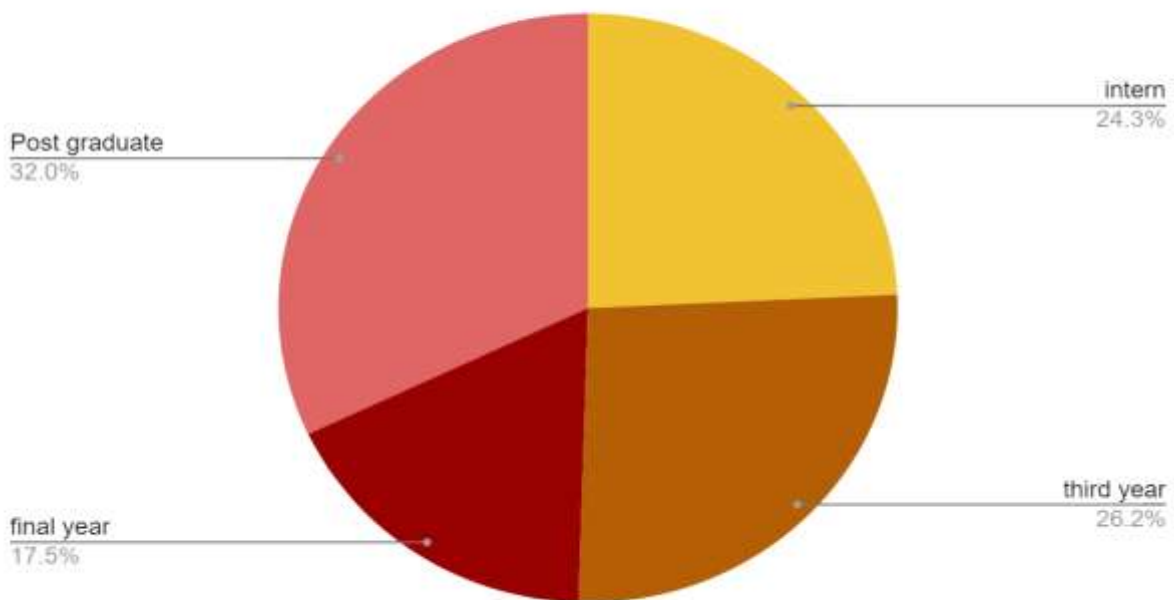
using PPE and 20% of them did not face any difficulty. 78% of the students believe that the face shield they wear protects them from aerosols and droplets entering their body whereas 4% of them believe it did not. 18% of the students were not sure of it.

### Gender

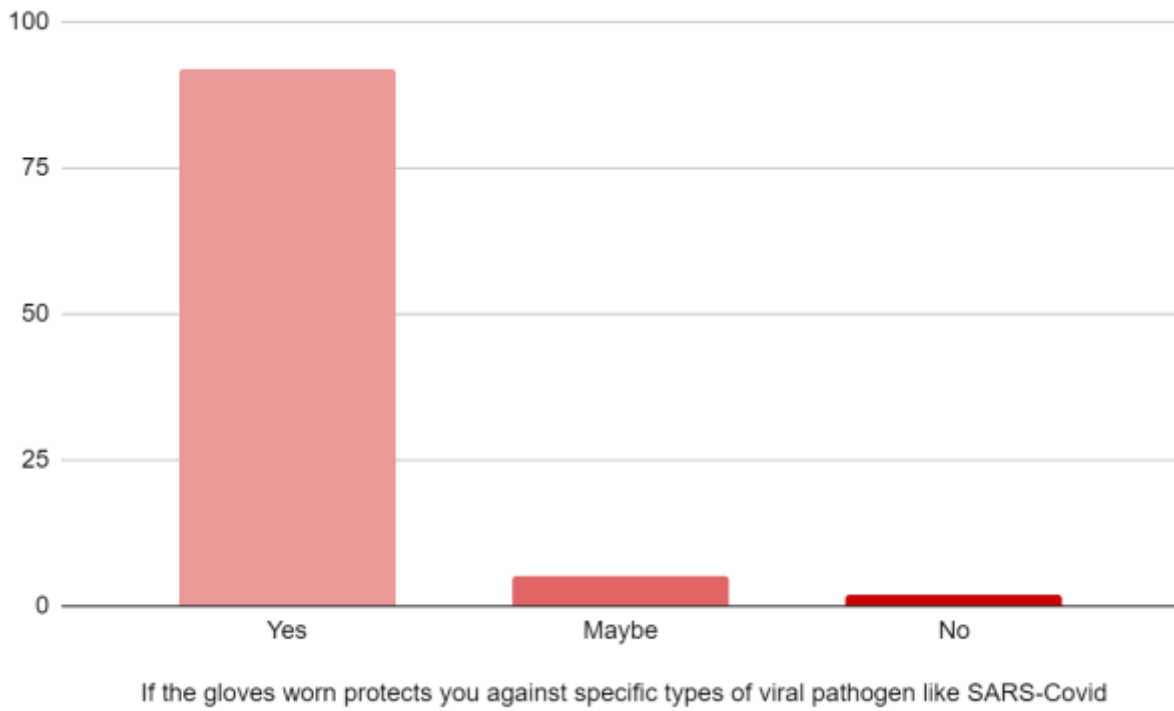


Graph 1:Representing the Gender

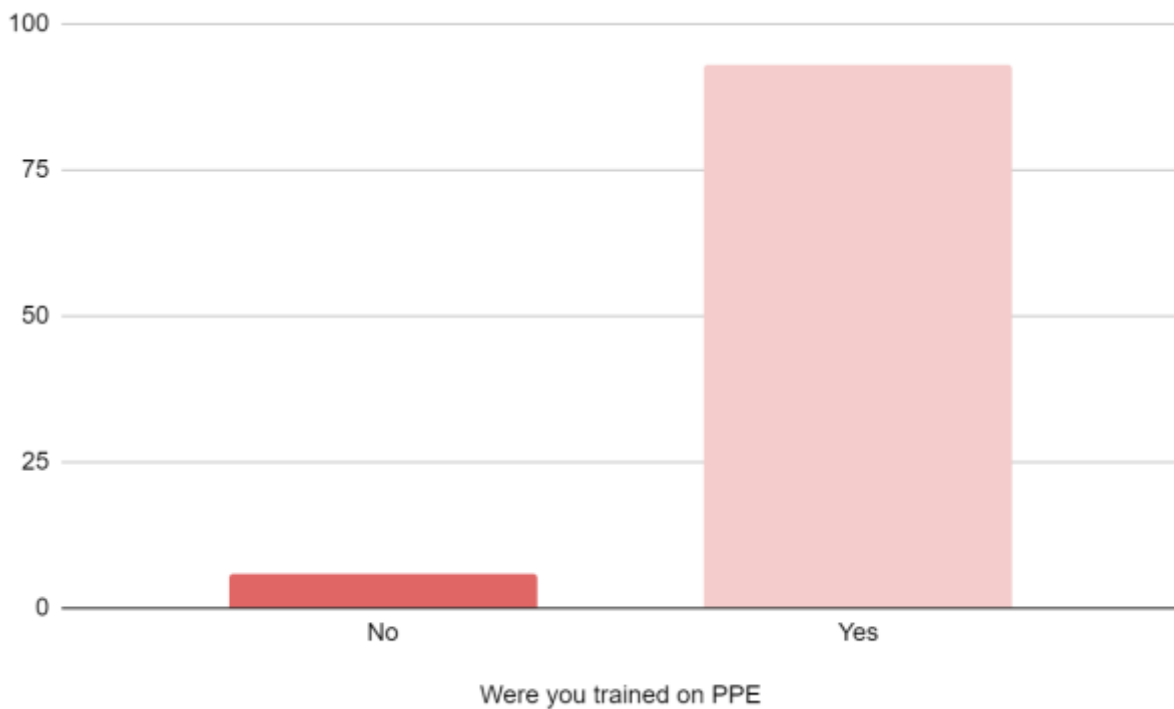
### year of study



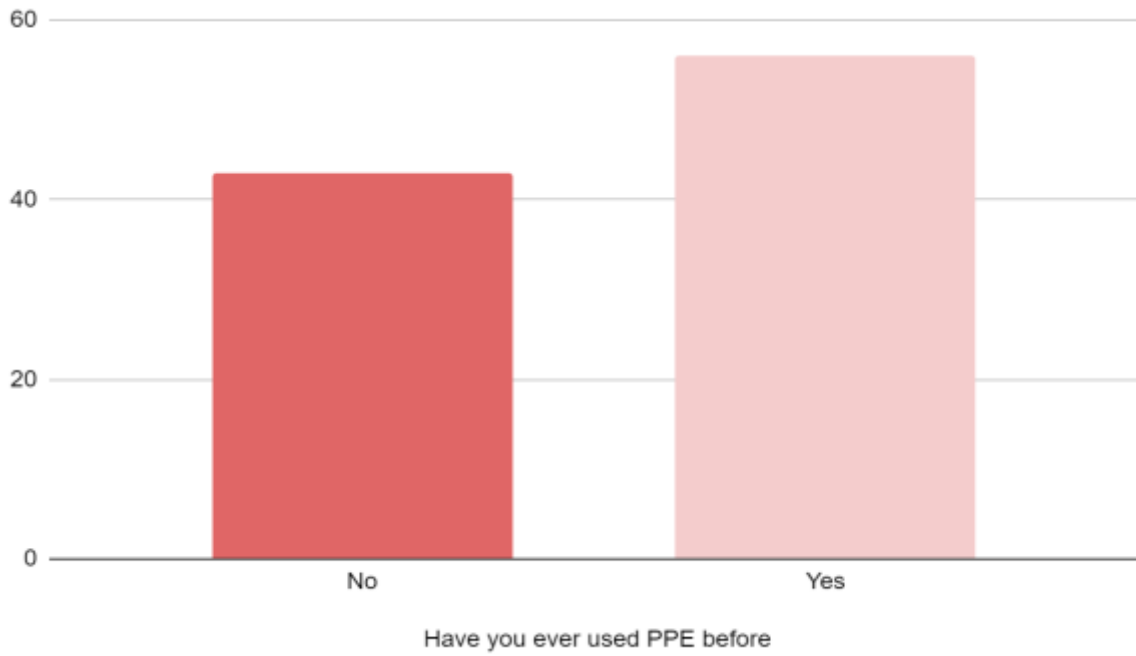
Graph 2:Representing the Year of study



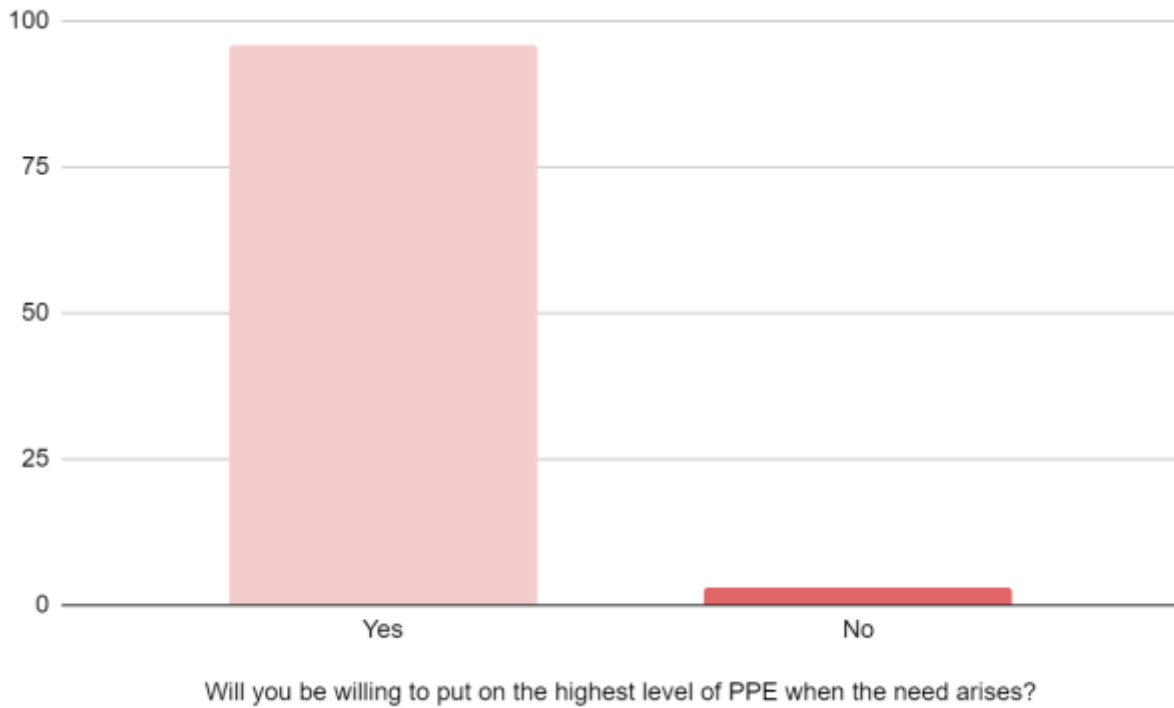
Graph 3: Representing the protection by glove



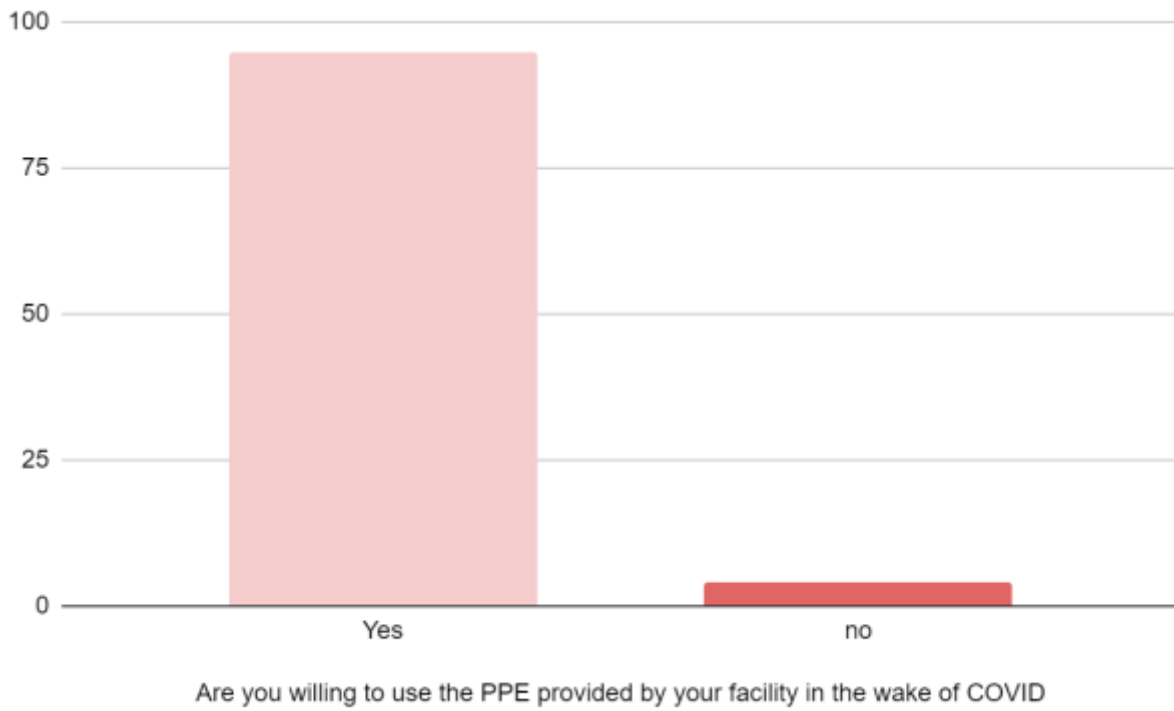
Graph 4: Representing the training on PPE



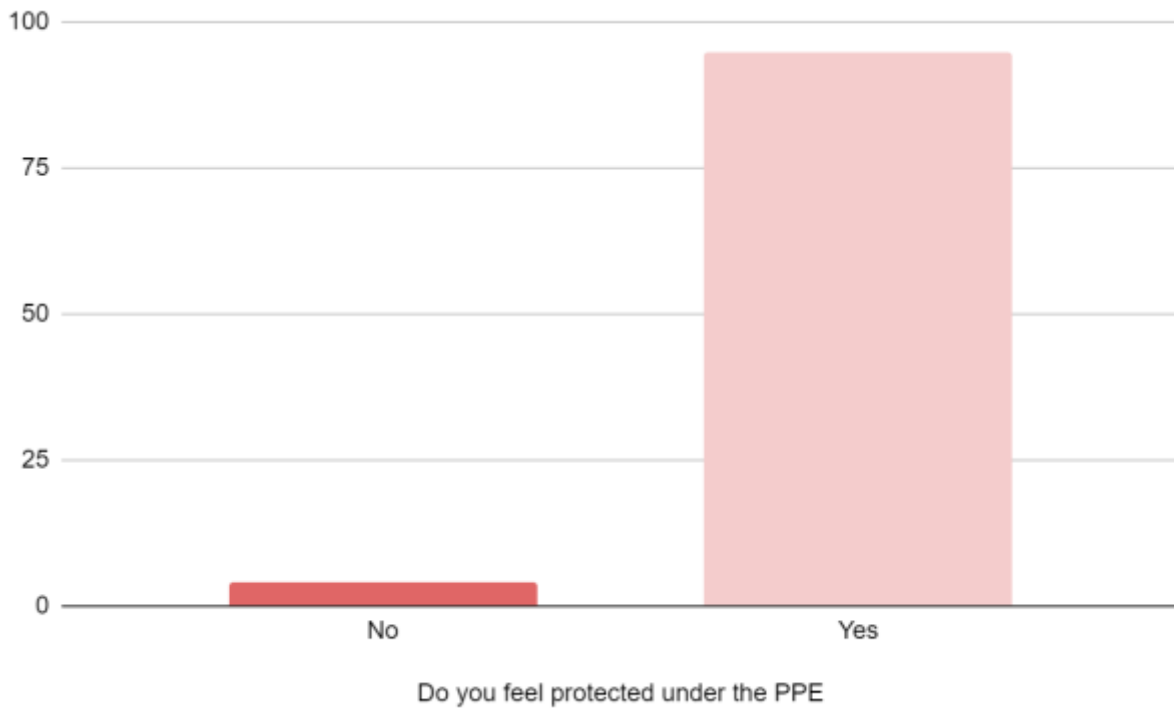
Graph 5: Representing usage of PPE before



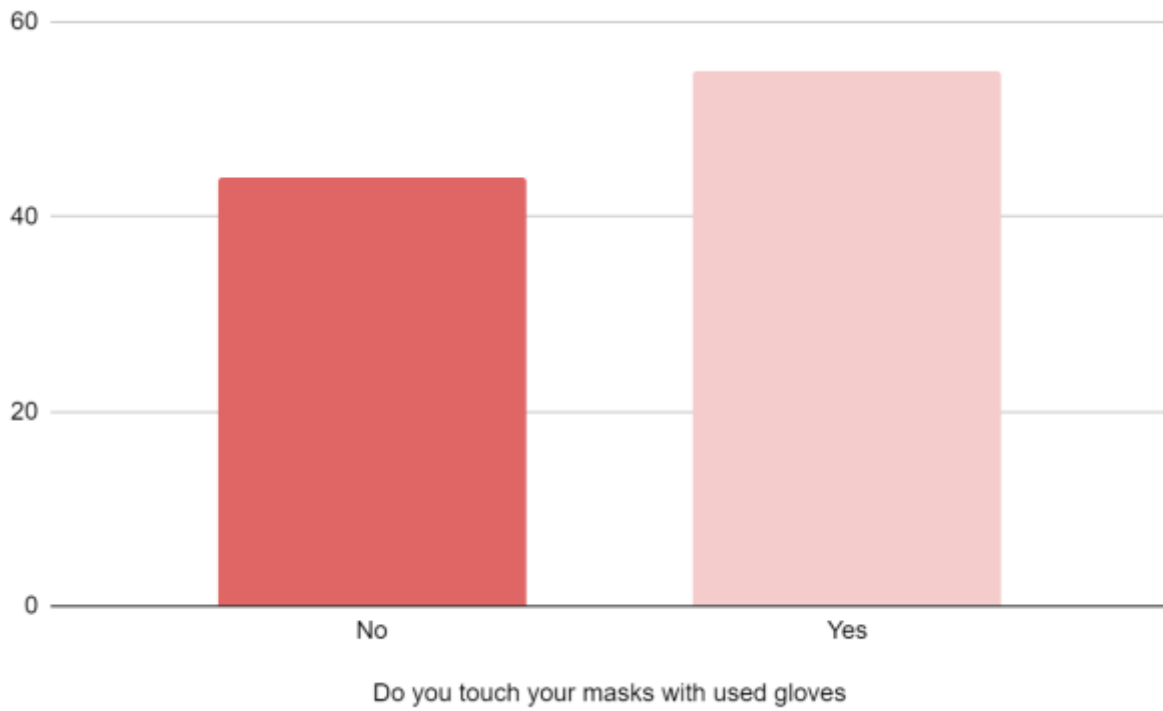
Graph 6: Representing, willingness to put high level of PPE



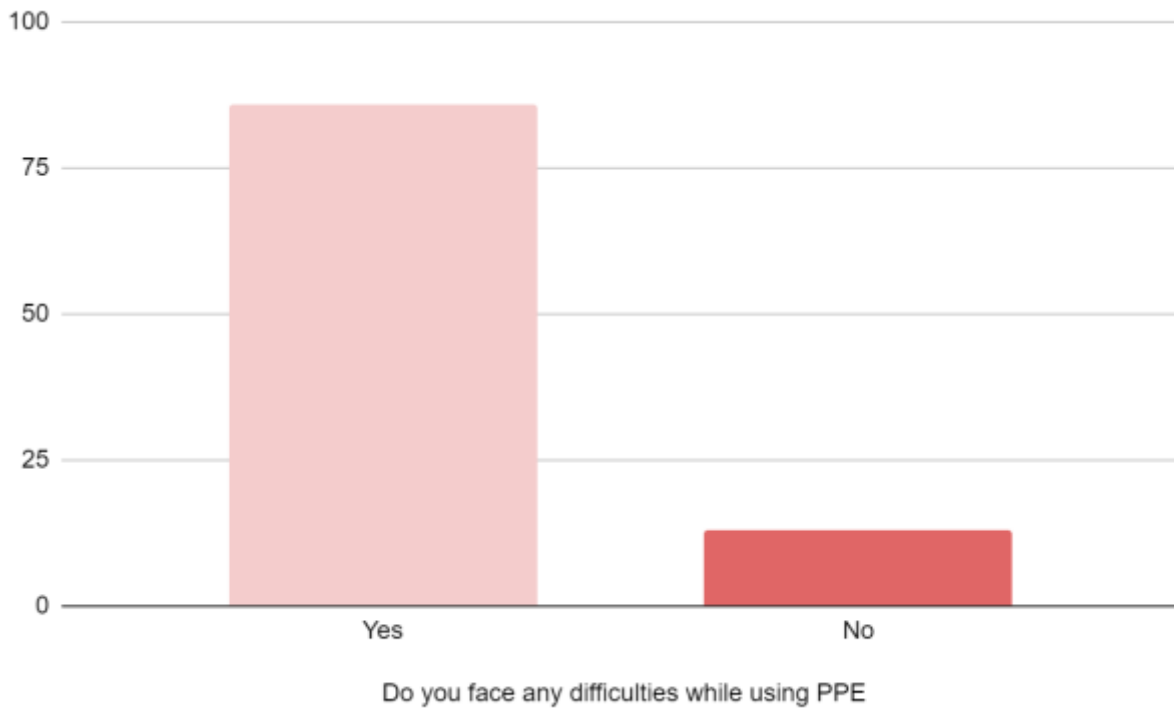
Graph 7: Representing , willingness to wear PPE



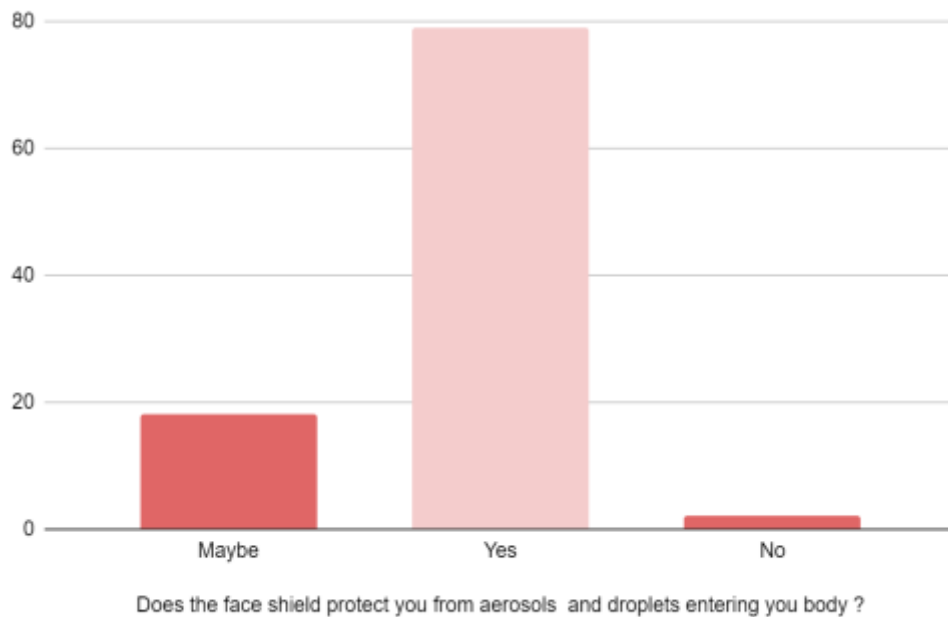
Graph 8: Representing , feel protected under the PPE



Graph 9: Representing , touching masks with used gloves



Graph 10: Representing , any difficulties while using PPE



Graph 11: Representing, face shield protection

The impact of this viral outburst has been tragic and catastrophic. Owing to the diversification and specialization of dental care, DHs must perform various tasks in prosthetics, preservation, corrective care, and preventive care. In the course of their work, DHs are consistently exposed to physically and chemically harmful environments<sup>4</sup>. This study was conducted to identify DHs' exposure to hazardous work environments and to examine their use of personal protective equipment.<sup>5</sup>

The pathophysiological characteristics of the COVID-19 syndrome, the particular transmissibility of SARS-CoV-2 make dentists and all dental workers highly exposed to a risk of infection. Efficient sanitizing procedures combined with the correct use of PPE can significantly reduce the probability of SARS-CoV-2 being transmitted during dental practice. Despite the strict infection control and preventive measures followed, several healthcare<sup>6</sup> workers are reportedly infected with SARS-CoV-2, while some of them died as well. The reasons for this failure need to be assessed and addressed in future to lower such issues in future. As per the recent analysis dentists are at the highest possible risk of contracting COVID-19.<sup>7</sup> Although dental treatments have been called off, several emergency conditions continue to be treated across many dental settings.

#### 4. CONCLUSION

This study observed good awareness regarding the practice of using protective equipment during dental treatment among the respondents. Dental staff, including non-dental health care workers who may treat dental emergencies, need to follow several steps, from patient evaluation to infection control at personal, procedural and clinical levels, to prevent any possible COVID-19 cross-contamination in dental clinics.



## 5. REFERENCES:

1. Yu P, Zhu J, Zhang Z, et al. A Familial Cluster of Infection Associated With the 2019 Novel Coronavirus Indicating Possible Person-to-Person Transmission During the Incubation Period. *The Journal of Infectious Diseases* 2020; 221: 1757–1761.
2. Harrel SK, Molinari J. Aerosols and splatter in dentistry: a brief review of the literature and infection control implications. *J Am Dent Assoc* 2004; 135: 429–437.
3. Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. Management of Biological Risk in Dental Practice. *Int J Environ Res Public Health*; 17. Epub ahead of print 28 April 2020. DOI: 10.3390/ijerph17093067.
4. Kim Y-S, Shin M-W. A Study on the Current State and Weight of Dental Hygienists' Works. *Journal of Korean society of Dental Hygiene* 2008; 8: 161–175.
5. Kim H, Choi S. Hazard Communication of Dental Materials for Dental Hygienists in Daegu or Gyeongsangbuk-do Province Area. *Journal of Korean Society of Occupational and Environmental Hygiene* 2015; 25: 506–515.
6. Wang J, Zhou M, Liu F. Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. *J Hosp Infect* 2020; 105: 100–101.
7. Patil S, Moafa IH, Bhandi S, et al. Dental care and personal protective measures for dentists and non-dental health care workers. *Dis Mon* 2020; 66: 101056.
8. Perumalsamy, Haribalan ; Sankarapandian, Karuppasamy ; Veerappan, Karpagam ; Natarajan, Sathishkumar ; Kandaswamy, Narendran ; Thangavelu, Lakshmi ; Balusamy, Sri Renukadevi In silico and in vitro analysis of coumarin derivative induced anticancer effects by undergoing intrinsic pathway mediated apoptosis in human stomach cancer . *PHYTOMEDICINE* .2018; 46;119-130 DOI: 10.1016/j.phymed.2018.04.021
9. Lakshmi, Thangavelu ; Ezhilarasan, Devaraj ; Nagaich, Upendra Acacia catechu Ethanolic Seed Extract Triggers Apoptosis of SCC-25 Cells. *PHARMACOGNOSY MAGAZINE* .2017; 13( 51)S405-S411. Supplement: 3 DOI: 10.4103/pm.pm\_458\_16
10. Lakshmi T, Rajendran R, Krishnan V. Perspectives of oil pulling therapy in dental practice. *Dent Hypotheses* 2013;4:1314
11. Krishnan, Vidya ; Lakshmi, T .Bioglass: A novel biocompatible innovation *JOURNAL OF ADVANCED PHARMACEUTICAL TECHNOLOGY & RESEARCH* .2013; 4(2); 78-83
12. Lakshmi, T., Ezhilarasan, D., Vijayaragavan, R., Bhullar, S. K., & Rajendran, R. (2017). Acacia catechu ethanolic bark extract induces apoptosis in human oral squamous carcinoma cells. *Journal of advanced pharmaceutical technology & research*, 8(4), 143–149. [https://doi.org/10.4103/japtr.JAPTR\\_73\\_17](https://doi.org/10.4103/japtr.JAPTR_73_17)