

Assessment of Knowledge, Attitude and Practice among Dental Health Care Professionals: Using Personal Protection Equipment during Health Emergencies

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ABSTRACT

Introduction: PPE helps health care professional from exposure by preventing occupational exposure from various highly contagious viruses like Ebola Virus, SARS (Severe Acute Respiratory Syndrome), and novel coronavirus infection (COVID-19) and helps them to treat when working in a dental operator or quarantine facility. PPE is used by healthcare professionals, supporting staff, laboratory staff, family members of patients, and situations where contact with blood, body fluids, secretions, or excretions is highly contagious and infectious diseases. PPE acts as a physical barrier between Microorganisms and Health care professionals and protects by preventing microorganisms from contamination of hands, eyes, clothing, hair and shoes.

Materials and methods: A questionnaire-based survey consisting of 10 questions with multiple choices is framed using Google forms by (Google LLC). The demographic data, knowledge-based, and attitude-based sections of the questionnaire were separated. The study subjects' participation was completely voluntary, and no personal information was taken from them. The subjects' willingness to engage in the study was based on their informed consent.

Results: This survey was done to assess the knowledge, attitude and practice regarding the use of PPE during emergencies. This survey enables the reader to better understand the precise and indispensable usage of PPE during health emergencies. Within the limitations of the study, it shows that knowledge concerning Personal Protective Equipment (PPE) is Moderate, compared to attitude and practice among respondents.

Conclusion: It is recommended that CDE programmes, Hands-on courses, and webinar programs be conducted for dentists to increase their awareness and gain more knowledge about the usage of personal protective equipment.

Keywords: Mask; Health care; Infection; COVID-19

INTRODUCTION

PPE helps health care professional from exposure by preventing occupational exposure from various highly contagious viruses like Ebola Virus, SARS (Severe Acute Respiratory Syndrome), and novel coronavirus infection (COVID-19) and helps them to treat when working in a Dental operator or quarantine facility. PPE is used by healthcare professionals, supporting staff, laboratory staff, family members of patients, and situations where contact with blood, body fluids, secretions, or excretions is highly contagious and infectious diseases. PPE acts as a physical barrier between Microorganisms and Health care

professionals and protects by preventing microorganisms from contamination of hands, eyes, clothing, hair and shoes. Gloves, protective eyewear (goggles), mask, apron, gown, boots/shoe cover, and hair cover are examples of PPE.

The dental operator poses a riskier environment because of the high possibility of cross-infection between dental practitioners and patients by aerosol procedures. A study on personal protective equipment use among health care providers in Tamil Nadu by Archana Lakshmi P. A. in 2018 concluded that inappropriate use and lack of adequate knowledge on infection control practices emphasizing that periodic retraining is needed.

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Received: 01-Mar-2022, Manuscript No. JOY-22-17038; **Editor assigned:** 07-Mar-2022, PreQC No. JOY-22-17038(PQ); **Reviewed:** 21-Mar-2022, QC No. JOY-22-17038; **Revised:** 25-Mar-2022, Manuscript No. JOY-22-17038(R); **Published:** 04-Apr-2022, DOI: 10.35248/JOY-22.6.616.

Citation: Gowtham N (2022) Assessment of Knowledge, Attitude and Practice among Dental Health Care Professionals: Using Personal Protection Equipment during Health Emergencies. J Odontol. 6: 616.

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A COVID-19 positive case can go symptomless for many days; therefore, various guidelines are recommended by the Centre for Disease Control and Prevention (CDC) and World Health Organization (WHO) for dental health care workers. Adequate precautions must be taken; the exact behaviour of the virus is not fully understood by the scientists, making it even riskier for a health practitioner. There have been peaceful protests worldwide by doctors, nurses, and other healthcare professionals demanding PPE [1].

Highly infectious diseases and their exposure to contaminated body fluids, in healthcare staff. It reviewed contemporary evidence on 'which type of PPE and which method of donning or doffing PPE protocol have the least risk of contamination or infection for Health care workers, and which training methods would increase compliance with PPE protocols. The evidence from this review is of great importance whereas the risk of infection, and even though COVID-19 is not considered a high consequence disease in the UK. Its findings remain relevant to the current pandemic and continue to be updated.

There are numerous studies regarding the use of PPE by Health Care Officials; many of the studies are regarding use in Medical; there are few studies regarding PPE use in Dental clinics. The knowledge awareness and practice among dentists use personal protection equipment during health emergencies or during pandemic situations in Chennai, Tamilnadu, India.

MATERIALS AND METHODS

Study characteristics

The current study was a cross-sectional (questionnaire) descriptive study. Ethical clearance was given from the Institutional Human Ethical Committee of Saveetha Dental College and Hospital, SIMATS, Chennai, Tamilnadu, India. The survey was conducted in May 2020 among General dentists, Postgraduate students, and Dental specialists to assess the knowledge, attitude and practice regarding the use of Personal Protection Equipment during Health Emergencies or during Pandemic Situations in Chennai Tamilnadu, India. A questionnaire-based survey consisting of 10 questions with multiple choices is framed using Google forms by (Google LLC). The demographic data, knowledge-based, and attitude-based sections of the questionnaire were separated. The study subjects' participation was completely voluntary, and no personal information was taken from them. The subjects' willingness to engage in the study was based on their informed consent. Statistical analysis was done using descriptive statistical analysis. SPSS software version 23.0 by IBM was used to analyze the results statistically [2]. The information gathered was entered into excel sheets. Bar graphs and pie charts were used for pictorial representation of the result of the study.

RESULTS AND DISCUSSION

A total of 104 responses were received from the respondents. Among 104 responses, 44 are female, and 60 are male, of which 22 are a general dentist, and 82 are specialists, and 21.16% of the participants had a professional experience within five years,

whereas 78.84% of the participants had a professional experience of more than five years as shown in Table 1.

Table1: Showing demographic data of participants.

Demographic variables	Categories	Number of respondents	Percentage (%)
Gender	Male	60	0.577
	Female	44	0.423
Field of practice	BDS	22	0.212
	MDS	82	0.788
Years of experience	0-5	22	0.2116
	4-7	34	0.327
	8-10	30	0.2884
	>15	18	0.173

Note: 21.2% of general dentists followed by 78.8% are speciality dentists participated in this survey, 21.2% belonged to 0-5 years of experience, 32.70% belong to 6-10 years of experience, 28.84% belong to 11-15 years of experience and 17.30% belong to >15 years of experience.

Based on the knowledge regarding how to use PPE shows that 34.62% reveals no knowledge regarding the use of PPE, and 65.38% reveals that they know the use of PPE. Regarding the knowledge regarding usage of PPE shows that 61.54% does not know the usage of PPE and 28.85% reveals that they have knowledge regarding usage of PPE, and 9.62% reveals that they use PPE sometimes during health emergencies [3]. Regarding the necessity of wearing PPE during health, emergencies show that 95.19% of respondents use PPE in all conditions regardless of the procedure, while 2.88% of respondents will wear PPE while doing Aerosol procedures and 1.93% respondents will wear PPE while doing any procedures which are in contact with the infection during health emergencies (Figure 1).

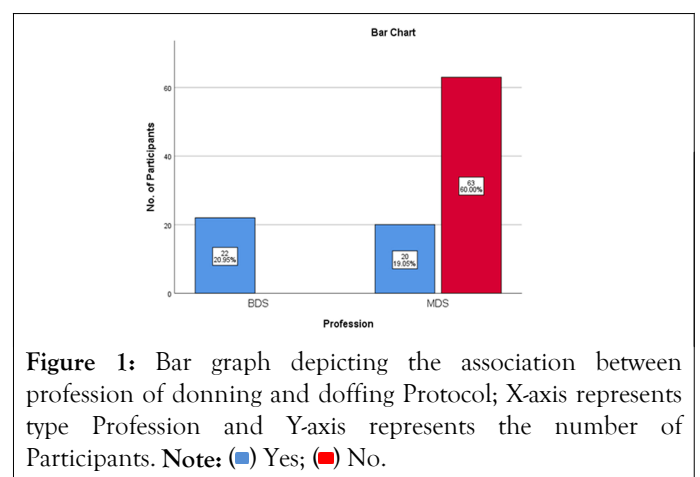


Figure 1: Bar graph depicting the association between profession of donning and doffing Protocol; X-axis represents type Profession and Y-axis represents the number of Participants. **Note:** (■) Yes; (■) No.

The graph shows most of them doesn't know the protocol MDS. Chi-Square test represents the statistical association between

profession and Donning and Doffing Protocol having p-value-0.000 (p value<0.05) making it statistically significant (Figure 2).

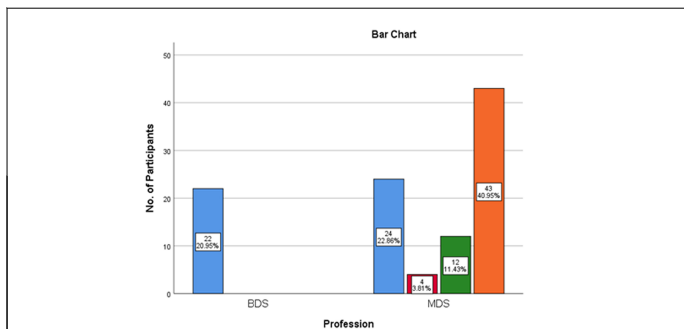


Figure 2: Bar graph depicting the association between profession and Disposal of PPE; X-axis represents type Profession and Y-axis represents the number of Participants. **Note:** (■) Air sealed biomedical waste; (■) Black colour; (■) Red colour; (■) Yellow colour.

The graph shows most of them preferred Yellow colored Bag for disposal in MDS. Chi-Square test represents the statistical association between profession and Disposal of PPE having p-value- 0.000 (p value<0.05) making it statistically significant (Figure 3).

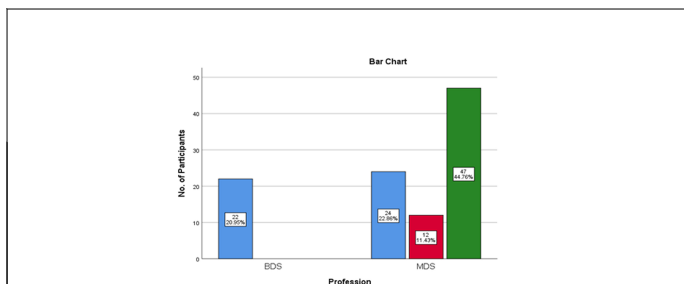


Figure 3: Bar graph depicting the association between profession and Time took to wear PPE; X-axis represents type Profession and Y-axis represents the number of Participants. **Note:** (■) 10-15 Mins; (■) 15-20 Mins; (■) 5-10 Mins.

The graph shows most of them took 5-10minutes for wearing PPE in MDS. Chi-Square test represents the statistical association between profession and wearing of PPE having p-value-0.000 (p value<0.05) making it statistically significant.

Depending on participants attitude regarding attending any courses regarding PPE use and disposal shows that 76.92% of respondents have not attended any course, while 23.08% of respondents have attended courses regarding usage and disposal of PPE [4-7]. Regarding donning and doffing protocol for PPE use shows that 59.62% of respondents know about donning and doffing protocol while 40.38% of respondents do not know about donning and doffing protocol for PPE use and regarding how much time it takes to wear PPE shows that 44.23% respondents take 10-15 minutes to while PPE and 43.27% respondents take 5-10 minutes and 12.50% respondents take 15-20 minutes to wear PPE (Figure 4).

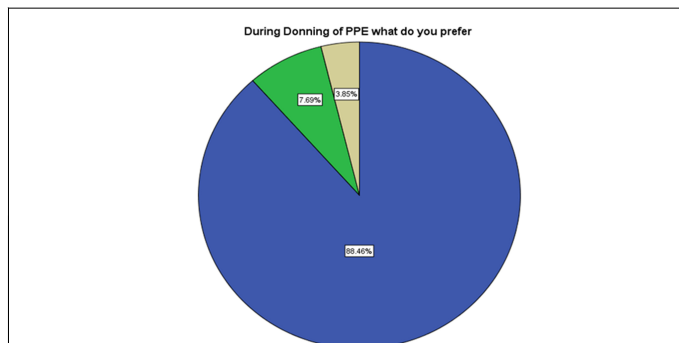


Figure 4: The pie chart reveals which components wear while using PPE. **Note:** (■) cover all, goggles, shoe covers, face shield, Triple layer mask, Nitrile gloves; (■) glove, cover all, goggles, N-95 mask, shoe cover, face shield, Triple layer medical mask, nitrile glove; (■) Glove, coverall, goggles, N-95, shoe covers, face shield, Triple layer medical mask, alcohol sanitization.

The above figure shows that 88.46% of respondents pick coverall, goggles, shoe cover, face shield, triple-layer mask and Nitrile gloves (6 components) followed by 7.69% respondents pick glove, coverall, goggles, N-95 mask, shoe cover, face shield, triple-layer mask and Nitrile gloves(8 components) and 3.85% respondents pick glove, coverall, goggles, N-95 mask, shoe cover, face shield, triple-layer mask and alcohol sanitization (8 components).

Depending on PPE practice during health emergencies, it reveals how much time it takes to wear PPE shows that 44.23%of respondents take 10-15 minutes to while PPE and 43.27% respondents take 5-10 minutes 12.50% respondents take 15-20 minutes to wear PPE. Regarding how much time it takes to wear PPE shows that 44.23% of respondents take 10-15 minutes to while PPE and 43.27% respondents take 5-10 minutes and 12.50% respondents take 15-20 minutes to wear PPE. Regarding which components do you wear while using PPE shows that 88.46% of respondents pick coverall, goggles, shoe cover, face shield, triple-layer mask, and Nitrile gloves(6 components), followed by 7.69% of respondents pick glove, coverall, goggles, N-95 mask, shoe cover, face shield, triple-layer mask and Nitrile gloves (8 components) and 3.85% respondents pick glove, coverall, goggles, N-95 mask, shoe cover, face shield, triple-layer mask and alcohol sanitization (8 components) and also regarding where to dispose PPE after use shows that 44.23% respondents dispose of them in Air sealed container of Biomedical waste [8]. In comparison, 40.38% of respondents dispose of them in a yellow colour bin while 11.54% of respondents dispose of them in red colour bin and the remaining 3.85% dispose of them in black colour as shown in Table 2.

Table 2: Association between profession of donning and doffing protocol.

Parameters	df	Chi-Square
Donning and doffing protocol	1	0.000

Disposal of PPE	3	0.000
Time is taken to wear PPE	2	0.000

Note: Chi-square test was done; the p-value was 0.000 showing that it is statistically significant.

Comparing medical and dental health care professionals, we found that knowledge scores were significantly higher in medical professionals. Attitude and practice score was found to be significantly higher in dental professionals. A multinational study found dentists to have good knowledge and practice scores, which is vital to combat health emergencies like COVID-19.

PPE should be considered after a risk assessment and as just one issue in a more effective preventive approach, including aerosol, droplet and splatter reduction and ventilation. Risk reduction must be considered along with other significant challenges to our staff's health and wellbeing, including the nature of care and the complex business of dentistry. We do not have all the answers about universal precautions for the future, but all dental professionals will need to identify and manage risk in line with national guidance and learn from our colleagues worldwide. We have to justify our actions in managing risk, collect evidence, and be prepared to adapt where necessary.

CONCLUSION

Blue M can be used as a safe alternative to chlorhexidine in reducing the microbial load after the placement of implants. There was a promising result in reducing the bacterial load very similar to chlorhexidine. But when compared to each other there wasn't a significant change between them. Chlorhexidine has the edge in being very cheaper compared to Blue M. Further studies are required with conclusive evidence to be able to determine whether oxygen enriched mouthwashes can replace chlorhexidine in the future.

LIMITATIONS

- Limited to a small number of responders; hence, it cannot be used to a wide population.
- Web-based surveys are inaccessible to challenging respondents who may lack access to the survey.

- Online surveys might lead to sampling problems.
- Open-ended questions and responses might lead to interviewer bias.
- In future, a larger population, particularly for a specific speciality/age/experience group
- among dentists should be studied.

ACKNOWLEDGEMENT

Nil

CONFLICTS OF INTEREST

No conflicts of interest.

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