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Knowledge and Perceptions of Personal Protective Equipment (PPE) Usage among Dental Residents in Karnataka State, India: A Cross-Sectional Survey

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Abstract
Background: Healthcare workers have trouble implementing barriers due to discomfort and inability to deliver the best outcomes due to limited practising ability when wrapped with Personal Protective Equipment. **Objective:** To assess the knowledge, attitudes, and perceptions of using Personal Protective Equipment (PPE) among dental residents from various dental institutions in Karnataka state**Methods:** A cross-sectional study was conducted among 427 residents from 2 February 2021 to 18 April 2021. A self-administered questionnaire was distributed through multiple social media platforms. The questionnaire consisted of two parts: (1) demographic details of the study participants such as gender, speciality and the year of the residency program; (2) attitude and perceptions of using PPE and various aspects of the working conditions. Responses to each item in the questionnaire were compared with the year of study using the Chi-Square test.**Results:** Among 427 dental residents, about 75.9% of participants felt that it was difficult to work with PPE for an extended period. Almost 89.2% of respondents expressed their visibility being hampered. However, residents from all three years were unaware if disinfection of gowns was required before doffing the PPE.**Conclusions:** The majority of residents demonstrated reasonable levels of practice and responded to questions regarding their attitudes toward PPE. This survey emphasizes that it is crucial to incorporate recurring training programs about isolation precautions into the residency and pre-doctoral curriculum to keep up with the constantly changing trends in infectious diseases, especially after the pandemic in 2020.

Keywords: Aerosols; COVID-19; questionnaire; personal protective equipment.

Introduction

Occupational Safety and Health Act (OSHA) has classified dentistry as a high-risk job due to potential exposure to COVID-19 during aerosol-generating procedures.[1,2]Dental procedures often generate airborne droplets and aerosols, containing various microorganisms such as bacteria, viruses, fungi, and blood.Due to the high transmissibility of COVID-19, dental healthcare workers are advised to implement the usage of Personal Protective Equipment (PPE).[3-5] It functions as a physical barrier, safeguarding dental personnel from microorganisms.[4]

In the latest mortality analyses from John Hopkins University and Medicine, India was reported to have 38.46 deaths per 100K population with a case fatality of 1.2% as of March 2023.[6] This signifies the existence of loopholes in the current practices in healthcare and the necessity to conduct studies to identify the flaws. Although the majority of the population is under the impression that they are immune due to being vaccinated, WHO has always warned the population all over the world to look out for mutated viruses that can continually raise concern.Studies have been carried out after 2020 addressing COVID-related interventions but little evidence exists that can strengthen barrier practices.[7,8] Moreover, healthcare workers have trouble implementing barriers due to discomfort and inability to deliver the best outcomes due to limited practising ability when wrapped with PPE.

Although the pandemic is ongoing, the initial statistics from its spread can assist public health and the healthcare system in their attempts to fight its spread. While the current statistics show deaths due to COVID-19 in reduced numbers, it was necessary to design this study to identify the deficiencies following protocols in practice and understand the perceptions of healthcare professionals towards the use of PPE. Therefore, this study aims to evaluate the knowledge, attitudes, and perceptions of using Personal Protective Equipment (PPE) among dental residents in Karnataka state, India.

Methods

Study design and participants

An online survey-based, cross-sectional study was conducted among the first-year, second year and final-year residents of the Department of Endodontics, Prosthodontics, Oral and Maxillofacial Surgery, Pedodontics, Periodontics and Public Health Dentistry at various dental institutions across Karnataka statefrom 2 February 2021 to 18 April 2021 through Google Forms (Google, Inc., Mountain View, CA, USA) sent via e-mail and WhatsApp(Meta Platforms, Inc., Menlo Park, California, United States).Ethical approval for this study was obtained from the Institutional Ethical Committee at A.J Institute of Dental Sciences Ethics Committee, Mangalore

(IEC/PGPROS20/37/V1).The study followed theStrengthening the Reporting of Observational studies in Epidemiology (STROBE) guidelines.

For the calculation of sample size, the formula applied was $n= Z^2pq/d^2$, where Z corresponds to precision (1.96; at 95% confidence interval), p denotes prevalence, q denotes 1-p, and d is the allowable error obtained from the precision. The sample size was estimated to be 427, based on a previousstudy conducted.[4]

Data Collection

A self-administered questionnaire was used to assess the knowledge, attitudes and perceptions regarding the use of PPE (Table 1). The developed questionnaire comprised two sets. The first set consisted of three questions related to the demographic details of the study participants (i.e., gender, speciality and the year of residency program). The second set of questions consisted of 18 questions in total on the attitude and perceptions of using PPE and various other aspects of the working conditions of the residents. The questionnaire was presented to dental healthcare professionals for validation, and modifications were made accordingly. Survey questionnaires consisted of one multiple-choice question, eleven Likert scale questions, five dichotomous scale questions and one open-ended question.

Data analysis

The outcome measures were automatically recorded upon submission to Google Forms (Google, Inc., Mountain View, CA, USA) and were downloaded as a Microsoft Excel (Microsoft Corporation, Redmond, WA) spreadsheet.The data was analysed using SPSS for Windows [SPSS version 22.0, IBM Corp., Armonk, NY]. Descriptive statistics was used to present baseline details of study participants. The responses on a 5-point Likert scale were reduced to a 3-point Likert scale (Disagree = Strongly disagree + disagree, Neutral, Agree = Agree + Strongly agree) for analysis. Responses to each item in the questionnaire were compared with the year of study using the Chi-Square test. The data was presented using graphical illustrations and tables and $P \leq 0.05$ was considered statistically significant.

Results

1. Demographic details of the study participants

Among the 427 study participants, it was found that 50.8% were males and 49.2% were females. In addition, the majority of study participants belonged to the specialities of Periodontics (19.4%), Conservative Dentistry and Endodontics (18.5%), and Prosthodontics (16.4%) respectively. About 42.2% of study participants were from the second year of their residency program. The complete demographic details are presented in Table 2.

2. Attitude and Perceptions of using Personal Protective Equipment

It was found that 56.7% of study residents felt that PPE is not mandatory for all dental procedures. Around 62.8% of residents donned PPE for every case. About 75.9% of residents felt that it is difficult to work with PPE for an extended period and 85% of residents experienced difficulty in breathing (Graph 1).The majority of residents89.2% felt their visibility was affected while using face shields. Amongst this,48% reported smudging, 44.9% reported fogging and 7.1% reported splatter on the face shield (Graph 2).

3. Responses on various aspects of Personal Protective Equipment(Table 3)

About 85.7% of residents experienced a limitation of movement while working with PPE. Around 92.7% of residents reported that wearing N95 masks and face shields for a longer time causes soreness, marks and eruptions on the skin. About 94.1% reported that working on patients wearing PPE can be exhausting. In addition, 94.1% agreed that proper hand hygiene measures should be followed before donning PPE. The overall responses regarding the necessity of PPE disinfection before doffing was found to be 53.9% and only 32.8% agreed that wearing PPE resulted in a feeling of a dreaded space.

It was found that 38.4%, 45.9% and 15.7% of III MDS, II MDS and I MDS residents respectively, felt that PPE is required for all dental procedures (P = 0.028) (Graph 3). Additionally, only 17.5% of I MDS residents wore PPE for every case and 45.1% of II MDS residents wore PPE for every case (P = 0.02). About 38.8% of I MDS residents did not find it difficult to work with PPE and 44.1% of II MDS residents found it difficult to work with PPE (P = 0.001). Furthermore, 43.8% of II MDS residents think that visibility does get hampered while using face shields and 52.2% of I MDS residents did not feel that visibility gets hampered (P = 0.001). Statistically significant values were observed for the above-mentioned responses (Table 4).

Overall, it was observed that the majority of residents across all the years agreed on responses to questions regarding their attitudes toward PPE (Table 5). It was found that there was no statistically significant difference in the distribution of responses from study participants for attitude towards PPE according to year of study (P> 0.05) except for responses to feeling abnormal (P = 0.001). It was noted that 46.2% and 45.5% of I MDS and III MDS residents disagreed that they felt abnormally dreadful being in a closed space when working with PPE. However, 42.8% of II MDS agreed that they felt dreadful in closed spaces while working with PPE. Moreover, though not statistically significant, it was found that 46.2%, 33.3% and 37.7% of participants from I MDS, II MDS and III MDS had little idea if disinfection of gowns is mandatory before doffing the PPE (P = 0.26).

Discussion

The outbreak of the 2019 Coronavirus strain (COVID-19) has caused an unprecedented challenge in the healthcare system and professionals. Among all the healthcare workers, dental professionals are in the high-risk category. Several protocols were tried and implemented to control and prevent the spread of the pandemic until the vaccines were formulated. Health organizations across the globe have issued clinical guidelines; strict compliance to such protocols has become routine in the practice of the control of the pandemic or any other infectious disease in the present day. One such precaution was to incorporate the usage of Personal Protective Equipment (PPE) into standard protocols.[8-10]

It is very crucial to understand the effectiveness of protective equipment and to quantify transmission risk.[8] PPE includes gloves, eyewear, mask, gown, shoe cover, and hair cover.[9-11] To prevent the risk of infection, healthcare workers, supporting staff, and laboratory staff providing dental care should wear PPE. The increased risk of COVID-19 infection through droplets and aerosols has brought the use ofPPE by dentists under renewed scrutiny.Hence negligence and noncompliance with the standard protocols perhaps increase the risk of transmission among dentists and dental assistants, and in turn, medical staff can spread the disease to other patients and family members and the community.[7,10]Ensuring safety from the virus is crucial, but it is also essential to prioritize the dentists' ease in delivering the best possible treatment.[11] Therefore, this study assessed the knowledge, attitude and perceptions of using PPE among residents across Karnataka state. The study emphasized the attitudes of residents during the pandemic since most of the private practices were unavailable to the public and the majority of the patients were seen by educational institutes where PPE was mandatory.

Extensive usage of PPE was noted in the healthcare sector after the surge in COVID-19. This was evident in the current study where 268 residents (62.8%) confirmed wearing a PPE for every case,although 185 residents (56.7%) think wearing a PPE is not mandatory for every case. The decision to use personal protective equipment in the workplace is however dependent on the situation, personal values and beliefs of each individual.[12-14]A study among healthcare workers showed about 45% received training on PPE but only 4.3% claimed adherence to wearing PPE.[8]

Currently, there is limited research that evaluates the difficulties that healthcare workers face while working with PPE in the Indian context. In our study, 324 participants (75.9%) felt that it is difficult to work with PPE for an extended period and around 363 participants (85%) had difficulty breathing while working with PPE. According to previous studies, 85% of respondents claimed that wearing PPE negatively impacted their work efficiency, while 89% experienced difficulty communicating.[9,14]

Dental procedures involve the production of large amounts of droplets or aerosols that carry many micro-organisms including the virus.[10]Faceshield acts as a barrier to avoid

the aerosols in contact with the personnel, but it compromises the visibility of the dental personnel while operating. According to a survey by Jain et al., wearing a mask for an extended period can cause eyewear to fog, reducing visibility and work efficiency.[12] This was reflected in our study where 381 respondents (89.2%) expressed their visibility being hampered, of which, 44.9% of participants reported fogging, 48% reported smudging and 7.1% reported splatter to be the reasons for impaired visibility.

Dental personnel including residents face certain challenges, physical and mental, from wearing PPE. Some of the challenges faced by dentists are difficulty in communicating with patients due to added layers of PPE with the surrounding noises, physical exhaustion of the dentists reducing their work efficiency due to heat and perspiration, headaches, profuse sweating, breathlessness, skin irritation and dehydration.[9,11,14]The majority of dental personnel also agreed that working with PPE is tedious, and time-consuming, prolonging the duration of treatment. This was evident in a study where 67-69% of dentists found donning and doffing to be difficult processes.[11] Similarly, in the present study, 366 respondents (85.7%) reported limitations of movement when working, 396 respondents (92.7%) agreed that prolonged use of N95 masks and Faceshield resulted in skin irritations, 321 respondents (75.2%) needed assistance while working, 167 respondents (39.1%) disagreed that they felt abnormal about being in a closed space and 377 respondents (88.3%) confirmed that N95 and face shield impaired speech while communicating with patients.

However, the responses on the association between attitudes according to year of study demonstrated that the residents were unaware if disinfection of gowns was required before doffing of PPE. It is crucial to modify individuals' attitudes and provide education regarding the advantages of Personal Protective Equipment. The knowledge and perceptions of dental residents on the usage of PPE were significantly related to age, years of experience, patient exposure, and risk assessment. Adequate training on instructions to don and doff PPE is also essential as it can increase the risk of exposure to infectious diseases. As a result, strict measures must be implemented to ensure the safety of healthcare workers, patients, and coworkers to reduce the risk of cross-infection.

The limitations of the current study were that the residents' responses could not be deemed an accurate reflection of their actual practice or behaviour in real life. Future research on the tasks and obligations of dentists employed in private dental practices with years of experience in the field as well as dentists' attitudes toward PPE is recommended. Continuing education on barriers to reducing the spread of infectious disease may be mandated for private practitioners by regulatory governing bodies. Moreover, recurring training programs on isolation precautions should be a part of the curriculum to sustain and update the knowledge in response to the changing trends in infectious diseases.

Conclusion

In our study, various responses were obtained by the residents regarding their attitude and the challenges faced while working with PPE demonstrating reasonable levels of practice. The use of PPE has been amplified during the pandemic and it is a challenge for dental personnel as it reduces work efficiency. Solid knowledge and skills regarding personal protection are the most basic and effective ways of self-protection during this pandemic. However, further discussion and large-scale research are needed to better understand the prevention and control strategies for future outbreaks.

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Ethical approval

Ethical approval for this study was obtained from the Institutional Ethical Committee at A.J Institute of Dental Sciences Ethics Committee, Mangalore (IEC/PGPROS20/37/V1).

Conflict of interest

The authors declare that no competing interests and no personal relationships with other people or organizations that could inappropriately influence their work.

Contributions : All authors have each made a substantial contribution to the study.

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References

1. Guidance on Preparing Workplaces for COVID-19.
2. Coulthard P (2020). Dentistry and coronavirus (COVID-19)-moral decision-making. Br Dent J, 228(7):503-5.
3. Akbari N, Salehiniya H, Abedi F, Abbaszadeh H (2021). Comparison of the use of personal protective equipment and infection control in dentists and their assistants before and after the corona crisis. J Educ and Health Promot,10.
4. Lakshmi G, Jennifer HG, Stanly AM, Mary C (2018). A study on personal protective equipment use among health care providers, Tamil Nadu. Int J Community Med Public Health, 5(5):1771-7.
5. Cheng L, Chen L, Xiao L, Zhang J, Cheng Y, Zhou L, et al (2020). Problems and solutions of personal protective equipment doffing in COVID-19. Open Med,15(1):605-12.
6. Johns Hopkins Coronavirus Resource Center. Mortality analyses.

7. CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings.
8. Siegel JD, Rhinehart E, Jackson M, Chiarello L (2007). 2007 Guideline for isolation precautions: preventing transmission of infectious agents in health care settings. Am J Infect Control, 35(10):S65-164.
9. Neves HC, Souza AC, Medeiros M, Munari DB, Ribeiro LC, Tipple AF (2011). Safety of nursing staff and determinants of adherence to personal protective equipment. Rev Lat Am Enfermagem, 19:354-61.
10. Fan J, Jiang Y, Hu K, Chen X, Xu Q, Qi Y, et al (2020). Barriers to using personal protective equipment by healthcare staff during the COVID-19 outbreak in China. Medicine, 99(48).
11. Hakim SA, Abouelezz NF, El Okda EM (2016). Use of personal protective devices among health care workers in a teaching hospital in Cairo, Egypt. Egypt J Occup Med, 40(2):287-300.
12. Jain VM, Parihar SR, Acharya S, Acharya S (2023). Effects of wearing personal protective equipment (PPE) and its role in affecting the work efficiency of dentists during the COVID-19 pandemic. Work, 1-8.
13. Aguwa EN, Arinze-Onyia SU, Ndu A (2016). Use of personal protective equipment among health workers in a tertiary health institution, South East Nigeria: Pre-Ebola Period. Int J Health Sci Res, 6(8):12-8.
14. Malandkar V, Choudhari S, Kalra D, Banga P (2022). Knowledge, attitude and practice among dental practitioners with regard to overcoming the barriers created by personal protective equipment in the COVID-19 era and delivering effective dental treatment: A questionnaire-based cross-sectional study. Dent Med Probl, 59(1):27-36.

Tables

Table 1: Questionnaire administered to the study participants.

Demographic details of study participants
1. Gender
2. Specialty
3. Study year of residents
Responses regarding knowledge, attitude and perceptions of using PPE
1. Personal Protective Equipment (PPE) is mandatory for all dental procedures?
2. Do you wear PPE for every case?
3. Do you think it is difficult to work with PPE for a long time?
4. Do you think visibility is hampered while working with a Faceshield?

5. Have you experienced difficulty in breathing while working with PPE
6. What do you think is the primary cause for the visibility being hampered?
7. There is a limitation of the clinician's movement when working with PPE.
8. Wearing N95 masks and Faceshield for a longer period causes soreness, marks and eruptions on the facial skin.
9. There is a requirement for a clinical assistant at all times since wearing the isolation gowns, foot cover and other PPE hampers the movement of the clinician.
10. There is an abnormal dread of being in a closed space in working with PPE
11. It is more exhausting when working with PPE when compared to not working with one?
12. There are chances of getting cross-contamination if doffing (taking off) PPE is not done correctly.
13. Disinfection of gowns before doffing (taking off) is mandatory.
14. Proper hand hygiene measures should be taken before donning (putting on) a PPE
15. The time consumed for the same clinical procedures when working with PPE when compared to not working with one is more.
16. Using an N95 mask and Faceshield significantly impairs speech perception hence communication with the patient becomes difficult
17. Wearing a face shield, N95 mask, disposable gowns and foot cover during the procedure can prevent getting infected by the disease.
18. What are the other difficulties that you face when working with PPE?

PPE: Personal Protective equipment.

Table 2: Baseline details of study participants

Demographic details		**Number (percentage)**
Gender	Male	217 (50.8)
	Female	210 (49.2)
Specialty	Public Health Dentistry	21 (4.9)
	Orthodontics	50 (11.7)
	Pedodontics	61 (14.3)
	Periodontics	83 (19.4)
	Prosthodontics	70 (16.4)

	Oral Surgery	63 (14.8)
	Conservative Dentistry	79 (18.5)
Year of residency	I MDS	93 (21.8)
	II MDS	180 (42.2)
	III MDS	154 (36.1)

Table 3: Study participants' responses on various aspects of PPE.

Various aspects of PPE	**Disagree %**	**Neutral %**	**Agree %**
There is a limitation of the clinician's movement when working with PPE.	2.6	11.7	85.7
Wearing N95 masks and Face shields for a longer period causes soreness, marks and eruptions on the facial skin.	2.1	5.2	92.7
There is a requirement for a clinical assistant at all times since wearing the isolation gowns, foot cover and other PPE hampers the movement of the clinician.	9.8	15	75.2
There is an abnormal dread of being in a closed space while working with a PPE.	39.1	28.1	32.8
It is more exhausting when working with PPE when compared to not working with one.	1.4	4.4	94.1
There are chances of getting cross-contamination if doffing (taking off) PPE is not done correctly.	1.6	10.8	87.6
Disinfection of the gowns before doffing (taking off) is mandatory.	8.4	37.7	53.9
Proper hand hygiene measures should be taken before donning (putting on) a PPE.	0.5	5.4	94.1
The time consumed for the same clinical procedures when working with PPE when compared to not working with one is more.	2.8	9.8	87.4
Using an N95 mask and Faceshield significantly impairs speech perception hence communication with the patient becomes difficult	2.3	9.4	88.3
Wearing a face shield, N95 mask, disposable gowns and foot cover during the procedure can prevent getting infected by the disease	1.9	22.2	75.9

Table 4: Association between attitude and perceptions of PPE according to the year of study

Question	Response	I MDS N (%)*	II MDS N (%)*	III MDS N (%)*	Total	Significance
PPE is mandatory for all dental procedures.	Yes	29 (15.7)	85 (45.9)	71 (38.4)	185	0.028 †
	No	64 (26.4)	95 (39.3)	83 (34.3)	242	
Do you wear PPE for every case?	Yes	47 (17.5)	121 (45.1)	100 (37.3)	268	0.020 †
	No	46 (28.9)	59 (37.1)	54 (34)	159	
Do you think it is difficult to work with PPE for a long time?	Yes	53 (16.4)	143 (44.1)	128 (39.5)	324	0.001 ‡
	No	40 (38.8)	37 (35.9)	26 (25.2)	103	
Have you experienced difficulty breathing while working with PPE?	Yes	73 (20.1)	152 (41.9)	138 (38)	363	0.058
	No	20 (31.3)	28 (43.8)	16 (25)	64	
Do you think Visibility is hampered while working with a Face shield?	Yes	69 (18.1)	167 (43.8)	145 (38.1)	381	0.001 ‡
	No	24 (52.2)	13 (28.3)	9 (19.6)	46	

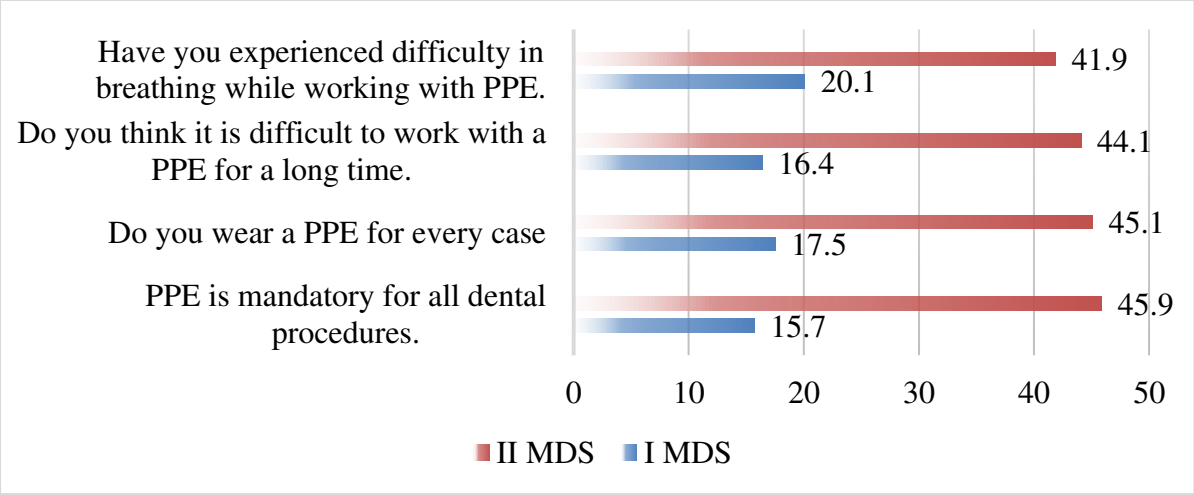
PPE: Personal Protective equipment.
* Data presented as number (percentage)
† Statistically significant at $P< 0.05$
‡$P< 0.01$ using the Chi-square test

Table 5: Association between attitude on various aspects of PPE according to year of study

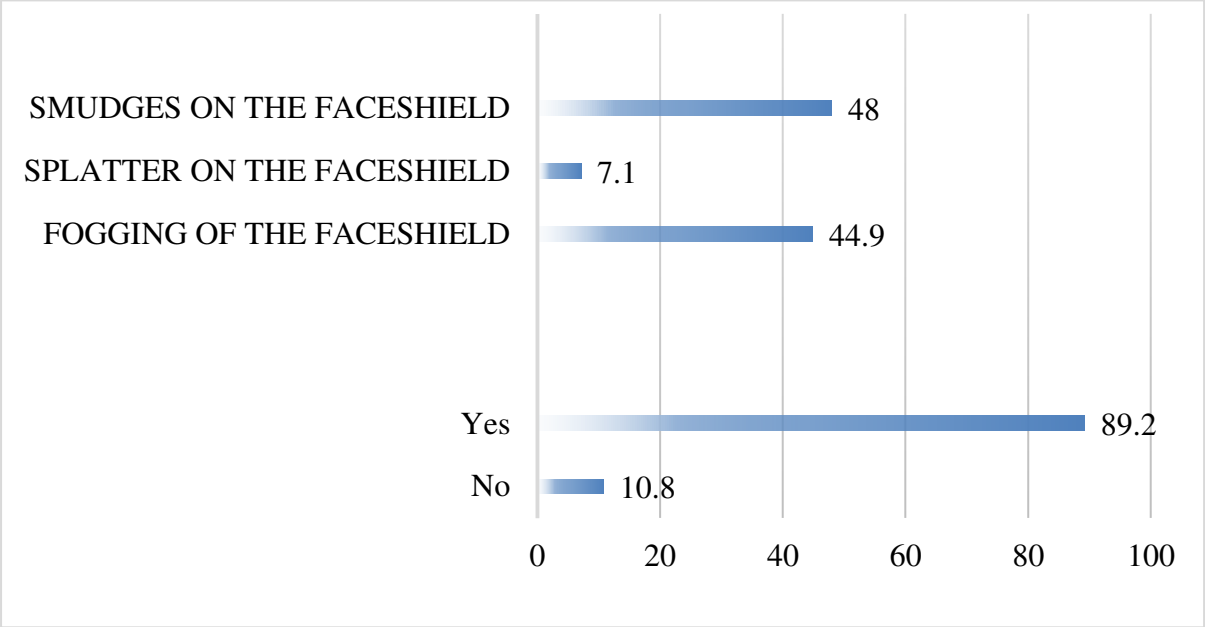
Question	Response	I MDS* N (%)	II MDS* N (%)	III MDS* N (%)	Total	Significance
Limitation of the clinician's movement when working	Disagree	4 (4.3)	5 (2.8)	2 (1.3)	11	0.21
	Neutral	10 (10.8)	27 (15)	13 (8.4)	50	
	Agree	79 (84.9)	148 (82.2)	139 (90.3)	366	
Wearing N95 masks and Face shields for longer period causes soreness, marks and eruptions on the facial skin	Disagree	2 (2.2)	4 (2.2)	3 (1.9)	9	0.34
	Neutral	8 (8.6)	5 (2.8)	9 (5.8)	22	
	Agree	83 (89.2)	171 (95)	142 (92.2)	396	
Requirement for a clinical assistant since wearing PPE hampers the movement of the clinician	Disagree	14 (15.1)	18 (10)	10 (6.5)	42	0.24
	Neutral	14 (15.1)	24 (13.3)	26 (16.9)	64	
	Agree	65 (69.9)	138 (76.7)	118 (76.6)	321	
Abnormal dread of being in a closed space in working with a PPE?	Disagree	43 (46.2)	54 (30)	70 (45.5)	167	0.001 †
	Neutral	31 (33.3)	49 (27.2)	40 (26)	120	
	Agree	19 (20.4)	77 (42.8)	44 (28.6)	140	
More exhausting when working with PPE when compared to not working with one.	Disagree	1 (1.1)	2 (1.1)	3 (1.9)	6	0.6
	Neutral	6 (6.5)	9 (5)	4 (2.6)	19	
	Agree	86 (92.5)	169 (93.9)	147 (95.5)	402	
Chances of getting cross-contamination if PPE is not taken off properly	Disagree	2 (2.2)	3 (1.7)	2 (1.3)	7	0.24
	Neutral	14 (15.1)	22 (12.2)	10 (6.5)	46	
	Agree	77 (82.8)	155 (86.1)	142 (92.2)	374	
Disinfection of the gowns before Taking off is mandatory	Disagree	9 (9.7)	15 (8.3)	12 (7.8)	36	0.26
	Neutral	43 (46.2)	60 (33.3)	58 (37.7)	161	
	Agree	41 (44.1)	105 (58.3)	84 (54.5)	230	
Proper hand hygiene measures should be taken before donning a PPE	Disagree	0	0	2 (1.3)	2	0.09
	Neutral	8 (8.6)	11 (6.1)	4 (2.6)	23	
	Agree	85 (91.4)	169 (93.9)	148 (96.1)	402	
The time taken to complete clinical procedure is more with PPE than without one	Disagree	1 (1.1)	7 (3.9)	4 (2.6)	12	0.15
	Neutral	13 (14)	20 (11.1)	9 (5.8)	42	
	Agree	79 (84.9)	153 (85)	141 (91.6)	373	
N95 mask and Face shield impair speech perception hence communication with the patient becomes difficult	Disagree	2 (2.2)	4 (2.2)	4 (2.6)	10	0.64
	Neutral	11 (11.8)	19 (10.6)	10 (6.5)	40	
	Agree	80 (86)	157 (87.2)	140 (90.9)	377	
Wearing complete PPE during the procedure can prevent getting infected by the disease	Disagree	2 (2.5)	3 (1.7)	3 (1.9)	8	0.7
	Neutral	25 (26.9)	35 (19.4)	35 (22.7)	95	
	Agree	66 (71)	142 (78.9)	116 (75.3)	324	

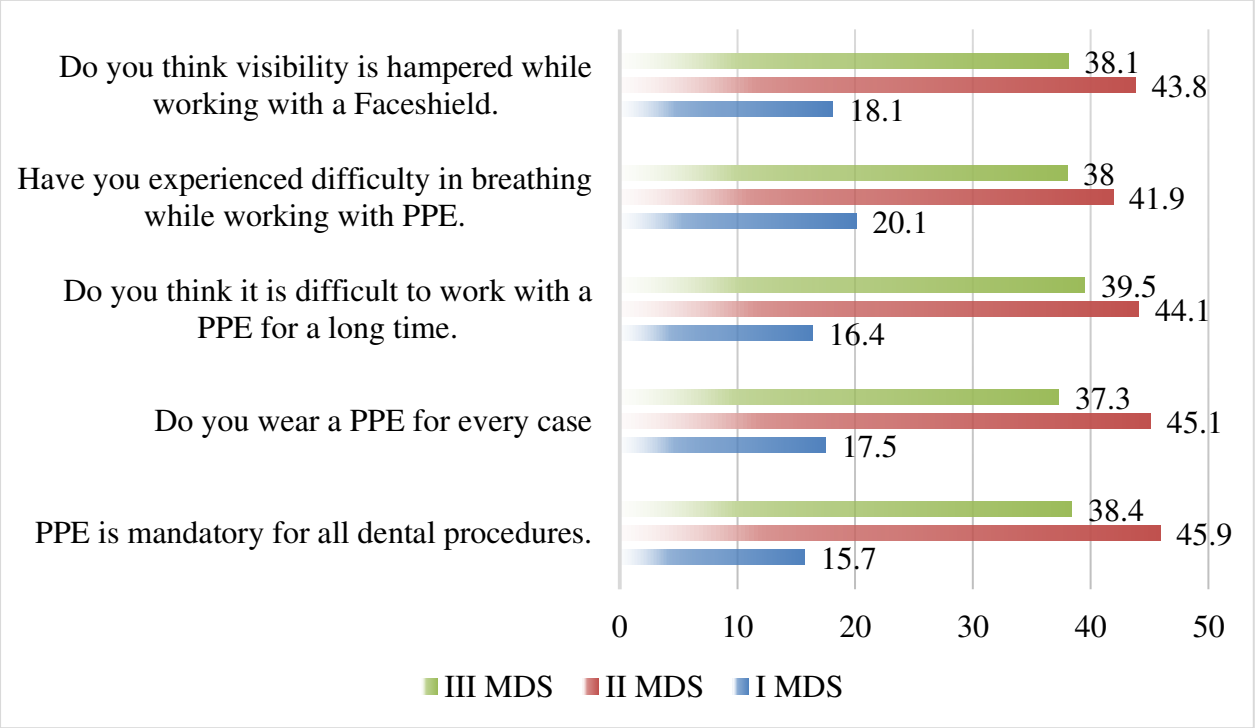
† Statistically significant at *P*< 0.05 using Chi-square test

Graph 1: Attitude and Perceptions of using Personnel Protective Equipment (PPE) among study participants.



Graph 2: Visibility and reason if hampered while using Faceshield.





Graph 3: Responses towards attitude and perceptions of using PPE according to year of study (Only Yes).