

Knowledge, Attitude and Practice of Mouth Mask among Dentist: A Cross-Sectional Survey

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ABSTRACT:

Purpose of Study: In dentistry, dental professionals are susceptible to contract infectious diseases while providing professional care. Transmission of microorganisms in the dental office may occur by direct contact or by inhalation/ingestion of the micro-organisms, inhaling aerosols from patient airways. As a personal protective equipment different type of masks has been indulged ranging from cloth masks, medical masks, and respirators. The study was conducted to check the knowledge, attitude, and awareness of mouth masks among dental professionals in wearing a surgical face mask to limit the spread of the disease. **Methodology:** A cross-sectional Survey was conducted among 461 dental professionals selected from Dhule District. The questionnaire comprised self-explanatory 19 closed ended self-filled questions. The questionnaire included set of 19 questions which had 7 knowledge-based questions 6 attitude-based questions and 6 practice-based questions regarding the use of mouth mask among dental professional. **Results:** 92.2% of participants mouth mask is necessary to prevent the spread of infections and 65.5% of participants believed that N95 mask should be used. 68.1% of participants believed that in the three-layered mask, middle layer act as a filter/barrier against infections. 67.5 % participants believed that surgical masks cover the nose, mouth, and chin and during aerosol generation procedures 57.9% study population preferred using N95 mask. **Conclusion:** Dentist's need to be aware and knowledgeable about best practices such as the use of mouth mask as the preventive strategies like protective barrier can provide a safe working environment for all the dental personnel.

Key words: Dentist, COVID-19, N-95 Mask, Communicable disease, Awareness

INTRODUCTION:

In dentistry, dental professionals are susceptible to acquire infectious diseases while providing professional care if they do not use proper infection control measures [1]. Oral health care professionals face direct contact with invasive microorganisms and this susceptibility contributes to increased infections with hepatitis B, tuberculosis, and recent respiratory diseases like SARS-CoV, MERS, and Ebola which spread by means of droplet [2]. Multiple factors are involved in the transmission as both patients and dental health care professionals (DHCP) can serve as a host for micro-organisms. Transmission of microorganisms in the dental office may occur by direct contact or by inhalation/ingestion of the micro-organisms, inhaling aerosols from patient airways, related to diseases ranging from influenza to tuberculosis, meningitis, or even severe acute respiratory syndrome, and large quantities of saliva, microorganisms, blood born pathogen, tooth particles and restorative materials from dental unit water. Recent reports on these different routes of

transmission shed new light on the possible risks for DHCP as well as for a patient receiving dental treatments [3]. In the field of dentistry, medical mask plays an important role in every practice among dental health care professionals. Different type of masks has been indulged ranging from cloth masks, medical masks, and respirators which are considered as personal protective equipment and act as a barrier control which have been used to prevent the spread of respiratory infections. OSHA has given precautionary guidelines for dentistry and the objective of these guidelines are based on standard, contact, droplet and airborne precaution in the treatment involving or may not involving aerosol-generating procedures [4]. Routine use of masks can serve as an infection control measure. Mouth mask is an effective tool in slowing the spread of infections by acting as a barrier over the nose and mouth. Therefore, dental practitioners and clinical auxiliary staff must wear suitable fluid resistant mask that block particles of 3 microns or less in size [1]. The correct use of these masks is particularly important, as an incorrect use and disposal

may actually increase the rate of transmission [2]. Dental practitioner must wear suitable masks, however there is evidence that DHCPs have inadequate knowledge, negative attitude and poor practices regarding infection control measures [5]. Hence, this study was conducted to check the knowledge, attitude and awareness of mouth mask among dental professionals in wearing a surgical face mask to limit the spread of the disease.

MATERIAL AND METHODS:

The study was conducted among Dental professionals selected from Dhule District. The Institutional Ethical approval was obtained from ACPM Dental College, Dhule. The study was conducted on a convenient sample of 461 participants.

Sampling method: The convenient sampling method was used for data collection

Validity of questionnaire: The validity of questionnaire I-CVI, S-CVI and UA in English was 0.96, 0.95 and 0.94.

Questionnaire: Questions comprised 19 closed ended questions. After obtaining the written consent, every participant was administered the questionnaire. Demographic data like name, age, gender, occupation, and education were recorded in the proforma. Questionnaire included a set of 19 questions which had 7 knowledge, 6 attitudes and 6 practice based questions regarding the use of mouth mask. In the next section participant’s knowledge was gathered about the use of mouth mask. Section three consisted of questions exploring the attitude and perception of the participants regarding use of mouth mask. The last section assessed the participant’s practices about the use of mouth mask. Total 475 participants were enrolled for the study and after fulfilling the inclusion criteria 421 participants were selected or the study. The printed Questionnaire was sent to all participants.

Statistical analysis: Data was collected and statistical analysis was done using SPSS v23 software. Descriptive statistics with frequency and percentage was computed.

RESULTS:

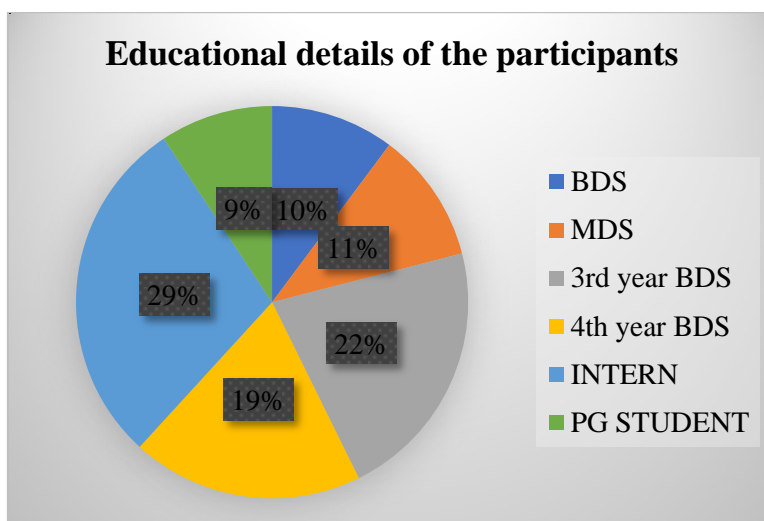


Fig. No 1

Table no. 2 Knowledge regarding mouth mask among dentist

Sr. No	Questions	Yes (%)	No (%)
	Is it necessary to wear a mask during examining (OPD) a patient?	99.8	0.2
	Do you think we can re-use mouth masks?	26.5	73.5
	Do you think it is necessary to dispose your mask immediately after removing it?	83.5	16.5
	Are you confident enough to know the correct steps of wearing	92	8.0

	a face mask?		
	Is mouth mask a biomedical waste?	89.6	8.9
	Do you touch the mouth mask while wearing hand gloves?	17.1	80.0
	Are all mouth masks equally effective?	4.1	94.1

Table no. 3 Attitudes and Practices regarding mouth mask among dentist

1	Which type of mask should we wear? (Attitude)	N95 mask	Surgical mask	Cloth facial mask	Other
		65.5%	31.2%	3.0%	0.2%
2	How many layers does a surgical mask contain? (knowledge)	1 Layer	2 Layer	3 Layer	4 Layer
		1.7%	22.3%	72.3%	1.5%
3	In a three-layered mask, which layer acts as a filter/barrier? (knowledge)	First Layer	Middle Layer	Inner Layer	Don't Know
		12.6%	68.1%	8.0%	11.3%
4	What is the purpose of the metal strip on surgical masks? (knowledge)	To fit on nose	To fit on chin	Don't know	
		94.1%	4.6%	1.3%	
5	Ideally, what should a surgical mask cover? (knowledge)	Nose only	Nose and mouth	Nose, mouth and chin	Don't know
		0.4%	31.7%	67.5%	0.4%
6	Why do you think wearing a mouth mask is necessary? (attitude)	To prevent the spread of infection	To prevent an individual from contacting any airborne infectious microorgan	To avoid any odour	All of the above

			ism		
		4.3%	2.8%	0.7%	92.2%
7	Which type of mouth mask is considered best for protection from infections? (knowledge)	N95 mask	Surgical mask	Cloth facial mask	Don't know
		82.6%	15.0%	2.0%	0.4%
8	During aerosol generation procedures which type of mouth mask are preferred? (practice)	N95 mask	Surgical mask	Cloth facial mask	Don't know
		57.9%	38.9%	2.0%	1.7%
9	Which type of mouth mask do you generally use? (practice)	N95 mask	Surgical mask	Cloth facial mask	Don;t know
		65.3%	31.5%	3.0%	0.2%
10	Frequency of changing mouth masks? (practice)	For every patient	Once daily	After contamination of mouth mask	After tear / damaged
		35.8%	35.1%	21.5%	7.6%
11	How do you remove the mask? (practice)	By catching its outer surface	From its strips	Push mask under your chin & then remove it	As per the convenience
		12.8%	62%	7.6%	17.6%
12	How do you dispose the used mask? (practice)	Yellow bags	Red bags	Blue bags	Black bags
		38.8%	10.2%	7.4%	26.4%

The present study included a total 461 participants of dental professional out of which 34% were male and 65% were female. The questionnaire was distributed to all the dental professionals out of which 28.9% were interns, 21.7% third BDS students, 19.1% fourth year BDS students, 9.3% were PG student, 10.2% BDS practitioners and 10.8% MDS practitioners (Fig No.1). 99.8% agreed to wear mouth mask during examination. 65.5% participants preferred using N95 mask whereas only 31.2% participants wear surgical mask and only 3% participants wear cloth mask. When asked regarding layer of surgical mask, 72.7%

participants agreed that surgical mask has 3 layers and according to 22.3% participants surgical mask has 2 layers. 68.1% participants believed that middle layer of mouth mask act as filter/barrier. The purpose metal strip present on surgical mask was to fit on nose according to 94.1% participant and 67.5% participants were aware that surgical mask should cover nose, mouth and chin. 92.2% participants agreed that mouth mask is necessary to prevent the spread of infections and among them majority believed in N95 mask as the best for protection from infection and only 2.0% stated that cloth facial mask provides best protection against

infection. 0.7% study participants stated that wearing a mouth mask is necessary to avoid any odour. 57.9% study population agreed that N95 mask are preferred during aerosol generation procedures whereas only 38.4% study population preferred surgical mask during aerosol generation procedures. 73.5% study population thought that mouth masks cannot be re-use also 83.5 % study population understands are aware regarding the disposal of mask immediately. 92.0% study population stated that they had good knowledge for correctly wearing a face mask whereas only 8.0% were not confident enough to know the correct steps of wearing a face mask. In the present study 35.8% participants used to change the mouth mask for every patient once daily and 7.6% participants change after tear / damaged mask. When asked regarding the technique of removal of mask, 62.0% of study participants were aware regarding the correct technique for mask removal which is from its strips. According to 89.6% study participants, mouth mask is a biomedical waste and 38.8% participants use yellow colour bag for disposal of mouth mask, 10.2% dispose it in red bag and only 7.4% dispose in blue bag. 80% study participants had no habit of touching mouth mask while wearing hand gloves.

DISCUSSION:

Mouth masks are used to guard people from acquiring respiratory infection. The transmission of COVID-19 poses a risk for people who come in close contact with an infected individual, and the risk is greater among those who are in close proximity to or work near the patient, i.e., relatives and healthcare workers. In this study 99.8% participants agreed to wear mask during examination (OPD) because the main aim of preparing the masks is to protect the wearer from infectious particles. Masks not only protect the wearers but also protect the others by blocking the droplets ejected by the wearer while speaking and coughing [5]. A mixed response was noted about the usage of masks during the aerosol and non-aerosol generating procedures and 65.5% participants mentioned that N95 mask were used compared to surgical mask. In a recent systematic review and meta-analysis conducted by Johnson DF et al stated that there is no difference in the efficacy between surgical and N95 masks in preventing laboratory-confirmed influenza or respiratory viral infection [7]. the layers of, 72.7% participants mentioned that surgical mask has 3 layers. 1 layer is use only when there is no risk of blood or body splash, 2-layer mask will block aerosols of three microns or less in size, which arises from procedures such as restorative and endodontic procedures, periodontal procedures such as the use of ultrasonic scalars and air-turbine hand pieces and 3-layer mask have a high level of splash protection and are used for procedures where there is a greater risk for exposure to blood and body fluids such as surgical and trauma procedures[8]. According to 68.1% participants middle layer act as

filter and this was in accordance with Jagadeesh kumar *et al* [9], as the outer layer is hydrophobic, inner layer absorbs any kind of moisture from the air and middle layer is very important. 67.5% participants answered that surgical mask should cover nose, mouth and chin as surgical mask is designed to reduce oral entry of small airborne particles with clear filtration requirements it is important that the mask fits perfectly to seal leakage and to be effective [10]. 92.2% participants mentioned that wearing mask is necessary to prevent the spread of infections and it prevent an individual from contracting any airborne infectious microorganisms, avoid any odour. There is insufficient evidence supporting this hypothesis because along with the usage of masks, hand hygiene and infection control protocols should be followed, which may help to prevent disease transmission [8] also face masks use have shown a great potential for preventing respiratory virus transmission including COVID-19[12]. And 82.6% participant believed in N95 mask for protection from infection. This result was in contrast with, the meta-analysis where it has been stated that there were inadequate data to determine N95 mask as superior to surgical masks in protecting health care workers against transmissible acute respiratory infections in clinical settings [11]. The Face masks are used as a protective barrier to reduce the risk of transmission of microorganisms between patients, HCWs, and the environment [9]. 15.0% participants considered stated surgical mask as best protection from infection and similar result was found in the study conducted by Bhawna Sayare *et al* [13] where 72.1% participants believed that N95 mask provide best protection against infection, followed by surgical mask and cloth mask. 57.9% study participants preferred N95 mask during aerosol generation procedures and this finding is similar to a study conducted by Mingzhu Zhang *et al* [14]. 73.5% study participants had never re-used surgical mask mouth. Also, HCWs are sometimes forced to re-use mouth mask due to the increasing shortage of masks. This result was in accordance by the study conducted by Kumar J it was where 79.8% participants knew that face mask cannot be re-used [9]. In the study conducted by Bhawna Sayare *et al* contrary results were found where 55.8% participants stated that mask can be reused [13]. 83.5 % study participants found it necessary to dispose the mask immediately after removing which was similar to a study conducted by Vinita Mary *et al* [15] where 35% participant disposed mask immediately after completing the treatment. In the present study majority of study participants were confident regarding the correct steps of wearing a face mask. Mouth mask is an essential part of PPE kit and hence every healthcare worker is well aware regarding the correct steps of wearing mask. MacIntyre CR *et al.* [16] considered that medical masks i.e., N95 respirators and surgical masks are prioritized for healthcare professionals which appears to protect against the virus while in this

study use of surgical mask was more used compared to other type of mask. Long Y *et al.* [17] in his meta-analysis found that surgical masks and N95 respirators were equally effective in preventing influenzas-like illness and laboratory-confirmed influenzas among healthcare workers. Also, Ravi *et al.* [18] conducted a study and it was found that N95 type of masks was more preferred over a 3 ply mask/surgical mask. Also, it was observed that 71.4% study population changed the mouth masks for every patient which was similar to present study. Study conducted by Sarawut Sangkham [19] stated that mouth mask is a biomedical waste and this waste is placed into double yellow bags which was similar to the present study.

CONCLUSION:

In a dentistry there is always a risk for transmission of unknown pathogens which cannot be considered negligible. The findings of present study should alert dental educators about the importance of educating infection control and the science and rationale supporting recommended guidelines. Dentist themselves need to be aware and knowledgeable about best practices, use of mask. Awareness regarding these occupational hazards and implementation of preventive strategies like protective barrier can provide a safe working environment for all the dental personnel.

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