

Awareness And Attitude Towards Preventive Measures Of Covid 19 Transmission In Dental Practice Among Delhi – NCR (India) Dental Surgeons: A Cross Sectional Survey

Research Article

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Abstract

Aim & Objective: In spite of the growing risk of transmission of COVID 19, this study assesses the level of awareness and attitude of various dental professionals in the Delhi – NCR region (India) towards the preventive measures of COVID 19 transmission in their day to day clinical practice.

Method: The study population included dental surgeons who work in university dental clinics, private sector and government sector in Delhi – NCR (India) region. An online questionnaire was sent to a sample of Delhi NCR (India) dental surgeons in October 2020. The questionnaire comprised of a series of questions about their demographic data, their awareness about the incubation period of COVID-19, infection control measures to prevent cross infection in dental settings and their attitude towards the patients while treating to prevent the risk of transmission of COVID 19.

Result: This study included 128 dental surgeons aged 22 to 73 years. A total of 65(51.2%) dental surgeons were working in university dental clinics, 46(36.2%) in private clinics and 16(12.6%) in government set ups. A total of 83 (65.4%) dental surgeons reported that the incubation period of COVID 19 is 2-14 days. Majority of dental surgeons working in the university, private and government set ups were well aware about the prevention protocols to avoid the risk of transmission of COVID 19 like the anti retraction hand piece preventive used to avoid the dental operatory water unit contamination, pre procedural mouth rinses and surface disinfection. A total of 72 (58.1%) dental surgeons were using Grade 3 Personal Protective Equipment (PPE) protocol even for non – aerosol generating procedures. They were using HEPA filters for reducing aerosol transmission inside the operatory and scheduling the aerosol procedures as the last procedure of the day.

Conclusion: Irrespective of the University, private and government dental clinics, Delhi - NCR (India) dental surgeons were well aware about the COVID 19 mode of transmission, infection control and appropriate measures to be taken to prevent the transmission of COVID 19 in their dental practices.

Keywords: COVID 19; Infection Control; Dental Surgeons; PPE; Transmission; nCoV; Coronavirus; SARS - CoV-2.

Introduction

The present outbreak of COVID-19 (Corona Virus Disease 2019) is a global concern constituting public health emergency. It was first reported in the sea food markets of Hubei province of Wuhan, China, in December 2019, which was later spread globally [1]. COVID-19 has seen a violent and fast-spreading virus

around the world, which led to the declaration of a pandemic outbreak of coronavirus by World Health Organization (WHO) in March 2020. As the exact nature of the disease is still unknown, it is believed to spread through direct/indirect human to human transmission or through body fluids, including saliva [2].

Since December 2019, various unexplained cases of pneumonia-

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like symptoms were reported in China. This SARS-CoV-2 came to be known as COVID-19 (COrona VIRus Disease 2019) by WHO in February 2020 [3]. The virus was suspected to begin its spread from the Huanan seafood wholesale market of Wuhan, China, with the possibility that an animal carrying the virus was brought and sold into the market. However, the most likely possibility is that virus originated from bats and pangolins [4].

Globally, more than 58 million people are confirmed with cases of COVID-19 so far [5]. As the first case was reported in Wuhan, a city in Hubei Province of China on 18 December 2019, till the end of 2019, all the continents were affected by this disease except Antarctica [5]. In India, first COVID case was reported on 30 January, 2020 with the largest number of cases among Asian countries and second largest number of cases in the world after USA [6].

It has been seen that COVID positive patients can show symptoms after an incubation period of about 2 to 14 days which depends on patient's age, past medical history and immune status. [7]. The most common symptoms seen in this disease are fever, cough, fatigue, shortness of breath being the pathognomic sign while the patient can also present with cough, headache, diarrhoea, lymphopenia and dyspnoea which truly depicts the multifaceted nature of the virus [8].

COVID 19 and Dental Treatment

Due to the inherent characteristics of dental clinics as well as the involvement of blood, saliva and aerosol production during the dental procedures, usually seen a greater risk of cross contamination between the dental surgeons and the patients [9][10]. COVID 19 can spread through the inhalation of aerosols from COVID positive patients as well as the direct or indirect contact of mucous membrane and contaminated instruments of infected patients [10, 12]. Given the exposure risk for various working categories, dental practitioners are categorized as the first line warriors keeping in view the greatest risk of COVID 19 transmission. This poses a great challenge for the dental clinicians to continue their practices in these tough times.

Due to the distinct characteristics of various dental procedures, large number of droplets and aerosols are produced which cannot be avoided from standard protocols in day to day practice. Dental health care workers are therefore required to upgrade their knowledge and skills in relation to the new patient management approaches and infection control measures in their daily dental

practices. In addition to this, dental surgeons are requested to follow the protocols recommended by higher authorities in order to prevent or reduce the risk of cross contamination.

Hence, this study focuses on assessing the levels of awareness and attitude of various dental professionals in the Delhi – NCR region (India) towards the preventive measures of COVID 19 transmission in their day to day practice.

Material And Method

Study Population

The study population comprised of dental surgeons who worked in Delhi NCR region (India) regardless of whether they work in private, university or government dental clinics. This survey was conducted in October 2020 after taking the ethical clearance from Santosh Deemed to be University, Ghaziabad, India. An online questionnaire using Google form was used to collect the data. The samples of dental surgeons were selected from the facebook groups and were sent the questionnaire accordingly. Selected dental surgeons were requested to participate voluntarily after explanation of the purpose of the study and confidentiality of the responses was assured.

Survey Tool

A self explanatory close ended questionnaire was administered with a total of 16 questions pertaining to sociodemographic data of the dental surgeons, their knowledge regarding COVID 19 and attitude towards the prevention of transmission of COVID 19. The survey comprised of multiple choice questions in the questionnaire further divided into three sections: dental surgeons demographic data, awareness towards the incubation period of COVID 19, concentration of hypochlorite used as a disinfectant, methods to prevent cross contamination and attitude towards the risk of cross contamination of aerosol production and its prevention, n95 masks and Personal Protective Equipment (PPE).

Results

Statistical Analysis

The categorical variables were presented as absolute numbers and percentage. The software used for the statistical analysis was SPSS (Statistical Package for Social Sciences) version 25.0. The test of significance used in this study was chi-square test to compare two

Table 1. Dental surgeon's demographic data.

		Frequency	Percentage
Designation	PG student	46	35.90%
	Private Clinic	27	21.10%
	UG student	55	43.00%
Age	30-60 years	11	8.60%
	Less than 30 years	117	91.40%
Currently working in	Government sector	16	12.50%
	Private sector	47	36.70%
	University Clinics	65	50.80%

groups of dental surgeons working in university dental clinics and private clinics.

Participant’s Characteristics

The study included 128 participants aged 22 to 73 years where maximum participating dental surgeons (93%) were included under the age of 30 years. A total of 65(51.2%) were working in university dental clinics, 46(36.2%) in private clinics and 16(12.6%) in government set ups.

Awareness Among Dental Surgeons About Transmission Of Covid 19

No significant difference was found in relation to the comparison of incubation period of COVID-19. Hand piece is recommended to prevent cross contamination in dental settings, concentration of sodium hypochlorite used as a surface disinfectant as well as disinfection of water lines and concentration of hydrogen peroxide used for pre-procedural rinse to minimize the bacterial load between University dental clinics and private sector. People working in both sectors were well aware of all the Standard Operating Protocols (SOP’s).

Dental surgeons working in both sectors were well aware about the

methods of prevention of cross contamination namely rubber dam, dental aerosol reduction test as well as extra oral suction. About 79 % (102) of the dental surgeons gave the right answer and most of the dental surgeons (50%) did not reuse the masks or if required, used them only three times daily.

Attitude Of Dental Surgeons Towards The Prevention Of Covid 19 Transmission

Dental surgeons in both sectors were well educated and aware about the COVID 19 transmission risks and their prevention. Most of them implemented HEPA filters (24%) and exhaust fans (20%) in their clinics to prevent the aerosol transmission.

Most of the dental surgeons kept their aerosol producing appointment as the last appointment of the day. Most of the dental surgeons (57%) were using Grade 3 PPE protocol even to treat non aerosol generating procedures. Moreover, many of them were changing sleeves while using RVG and disinfecting them with 70% isopropyl alcohol after every patient.

Most of the dental surgeons kept their aerosol producing appointment as the last appointment of the day. Most of the dental surgeons (57%) were using Grade 3 PPE protocol even to treat non aerosol generating procedures. Moreover, many of them were

Table 2. Dental Surgeon’s awareness towards COVID 19 transmission risks in dental clinics and its prevention.

		Designation		Total	Chi-square value	p-value
		University Clinics	Private sector			
Incubation Period of COVID 19	2 -14 days	38 37.60%	6 22.20%	44 34.40%	2.24	0.134
	Correct	63 62.40%	21 77.80%	84 65.60%		
Hand piece recommended to prevent cross infection in dental settings?	Anti-retraction Hand piece	54 53.50%	16 59.30%	70 54.70%	0.289	0.591
	Correct	47 46.50%	11 40.70%	58 45.30%		
What concentration of sodium hypochlorite is used as a surface disinfectant?	1.00%	41 40.60%	14 51.90%	55 43.00%	1.102	0.294
	Correct	60 59.40%	13 48.10%	73 57.00%		
What concentration of hydrogen peroxide is used for pre-procedural rinse to minimize the bacterial load?	1% hydrogen peroxide or 0.2% povidone – iodine	72 71.30%	21 77.80%	93 72.70%	0.452	0.501
	Correct	29 28.70%	6 22.20%	35 27.30%		
During cavity preparation, which jaw region produces highest bio aerosols?	Mandibular posterior	49 48.50%	11 40.70%	60 46.90%	3.042	0.551
	Incorrect	52 51.50%	16 59.30%	68 53.00%		
At what percentage sodium hypochlorite is recommended for disinfection of dental unit water lines?	0.01%	39 38.60%	9 33.30%	48 37.50%	3.655	0.301
	Incorrect	62 61.40%	18 66.70%	80 62.50%		

Table 3. Dental surgeon’s awareness about the methods of cross contamination & use of masks.

		Designation		Total	Chi-square value	p-value
		University Clinics	Private sector			
Which of the following method you think can prevent cross contamination?	All	21	7	28	0.329	0.567
		20.80%	25.90%	21.90%		
	Correct	80	20	100		
		79.20%	74.10%	78.10%		
If you plan to re - use your N95/FFP2/respirator after a 4 day period of self-disinfection using a paper bag, how many times it can be re-used?	3 times	24	4	26	1.262	0.532
		23.80%	14.80%	20.30%		
	Correct	77	23	100		
		76.20%	85.20%	78.10%		

Table 4. Measures taken by dental surgeons to reduce the aerosols production in Dental practice/operatory.

What type of workplace controls have you implemented in your clinical practice to reduce the aerosol inside the operatory?	Designation		Total	Chi-square value	p-value
	University Clinics	Private sector			
None	23	2	25		
	22.80%	7.40%	19.50%		
Exhaust fans	23	6	26		
	22.80%	22.20%	20.30%		
HEPA filters	23	8	31	4.797	0.441
	22.80%	29.60%	24.20%		
Negative pressure rooms	13	5	18		
	12.90%	18.50%	14.10%		
UV radiation devices	19	4	23		
	18.80%	14.80%	18.00%		

Table 5. Dental surgeon’s attitude towards the prevention of COVID 19 crosses contamination.

		Designation		Total	Chi-square value	p-value
		University Clinics	Private sector			
How do you schedule your aerosol generating appointments?	Correct	46	19	65	6.016	0.049*
		45.50%	70.40%	50.80%		
	Last appointment of the day	55	8	56		
		50.00%	29.60%	43.80%		
In your opinion, what should be the PPE protocol undertaken for non - aerosol generating clinical procedures?	Face / eye shields, surgical latex gloves and N95/ FFP3 respirators.	6	4	7		
		5.90%	14.80%	5.50%		
	Grade 1 (Head cap, surgical mouth masks, surgical latex gloves, face shield)	13	3	16		
		12.90%	11.10%	12.50%		
Grade 2 (Head cap, N95 respirators, surgical latex gloves, face/ eye shields)	24	5	29			
	23.80%	18.50%	22.70%			
Grade 3 (Head cap, N95 respirators/ higher or equivalent, isolation gowns with hood and shoe covers, face / eye shields)	58	15	73			
	57.40%	55.60%	57.00%			
What are you using to disinfect RVG sensors after every patient?	70% Isopropyl alcohol	32	6	38	4.487	0.344
		31.70%	22.20%	29.70%		
	Changing the RVG sleeves	45	14	56		
		44.60%	51.90%	43.80%		
No RVG use	13	6	19			
	12.90%	22.20%	14.80%			
Ultra violet radiations	9	1	10			
	8.90%	3.70%	7.80%			

changing sleeves while using RVG and disinfecting them with 70% isopropyl alcohol after every patient.

Discussion

This survey provides an insight on the level of awareness as well as the attitude of Delhi - NCR (India) dental surgeons against COVID 19 at the time of outbreak in 2020. This survey included a sample of dental surgeons practicing mainly in the Delhi – NCR region (India).

The estimated incubation period of COVID 19 is 2- 14 days [7]. Dental surgeons in this study had varied knowledge about the incubation period but ideally they are expected to know the right incubation period because of its importance in determining the safe period to treat patients [13]. Hence, the current approach to prevent COVID 19 includes practicing proper sanitization protocols as every patient is considered a potential carrier and even to practice measures to prevent cross contamination [14]. In spite of the evidence based studies, the dental surgeons had lower level of knowledge about respiratory diseases and infection control [15, 16]. But according to our survey study, Dental surgeons in Delhi-NCR (India) are very well aware about the preventive measures and sanitization protocols to be practiced in these turbulent times. Majority of the dental surgeons (n= 86/128, 66%) participated in this study irrespective of whether they were working in university dental clinics, private clinics or government set ups were well aware about the incubation period of the disease. About half of the dental surgeons (n= 75/128, 57,7%) knew about the concentration of sodium hypochlorite to be used as a surface disinfectant as well as to clean dental unit water lines [17]. Many dental surgeons recommended anti retraction hand pieces (n= 58/128, 44.6%) to prevent cross contamination as they are designed with anti-retraction valves which are effective in preventing droplets and aerosol transmission [18]. Pre-operative antimicrobial mouth rinses are recommended to reduce the microbial load in the oral cavity [19]. Oxidative agent containing mouth rinses with 1% hydrogen peroxide or 0.2% povidone-iodine is encouraged as it might reduce the load of corona virus in saliva [20]. Almost every dental surgeon (n=102/128, 80%) believed that rubber dam, dental aerosol reduction test and high volume suction were capable of removing droplets in the oral cavity and should be used to minimize the aerosol spatter in dental settings [21].

While assessing the attitude of Delhi - NCR (India) dental surgeons against COVID 19 prevention, it has been seen that either they are using N95 masks one time or maximum up to 3 times in a day [22]. Most of the dental surgeons are even using UV radiation devices (n= 232, 18.4%), HEPA filters (n=31, 25%) and exhaust fans (n=26,21%) to improve the ventilation and ultimately removing the aerosols from the dental office [23, 24]. More than half of the dental surgeons (n= 75, 59%) used Grade 3 PPE protocols for managing non aerosol generating procedures [22]. Due to the various disinfection protocols, about half of the participating dental surgeons scheduled aerosol procedure as the last procedure of the day [25].

The present questionnaire was designed to assess the knowledge as well as the measures taken by Delhi NCR (India) dental surgeons to combat COVID 19 in this pandemic outbreak era by asking a limited number of simple and clear questions. In this

survey, all questions were answered and the results were not contradictory, showing an overall good compliance from the dental practitioners of Delhi NCR region (India).

Conclusion

Irrespective of the university dental clinics, private clinics and government set ups, Delhi – NCR (India) dental surgeons were well aware about the COVID 19 mode of transmission, infection control and measures taken to prevent transmission of COVID 19 in their dental practices. They were properly following all the standard operating protocols as governed by the concerned authorities.

As per the current clinical recommendations, it is expected that dental surgeons should be made fully aware about the various risks of transmission, the ability to identify patients with infections, and providing self-protection against 2019-novel CoV. They should treat every patient as a potential carrier of COVID 19 infection and should accordingly take effective infection control measures to control the spread of the disease and ensure safety of themselves, their team as well as the patients to prevent cross contamination and practicing dentistry in the safest possible manner in these turbulent times.

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