RESEARCH ARTICLE

Awareness and Attitude of Public towards Dental Procedures and Safety Protocols in COVID-19 Scenario: A Cross-sectional Study

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Abstract

Aim: To assess the awareness and attitude of public toward dental procedures and safety protocols in COVID-19 scenario in India

Materials and methods: A cross-sectional survey was conducted among people from various regions of India in questionnaire format. It comprised 22-variable, structured, close-ended questions, and the respondents were divided based on their age, sex, educational qualification, and region. Data were analyzed using SPSS software version 20.0.

Results: In total, 1064 people participated from various regions of India. Most of the participants were postgraduates, and male-to-female ratio was almost equal. The major proportion of age group who responded was below 45 years. Almost 88.6% of the participants were aware that dentists are at higher risks and 87.6% of the people expect their dentists to wear personal protective equipment (PPE) during treatment procedures. 81.8% of the people preferred cashless transaction as a modality of payment option in dental office. 66.8% of the people irrespective of their education level opted newspaper and print media as their major source of information for updating themselves and 83.3% of the participants opted online or telephonic appointment prior to visiting their dentists.

Conclusion: We dentists being the healthcare professionals are at higher risks to various infectious diseases. So we should not panic and should continue our services toward the public health. We should also ensure that our practice is up-to-date to manage this pandemic crisis.

Clinical significance: To give an insight into dental practitioners about prevailing awareness and understanding of public and their response in accepting dental care in this COVID pandemic scenario.

Keywords: Attitude, Coronavirus, COVID-19, Cross-sectional study, Dental practice, Knowledge, Pandemic, Questionnaire-based study.

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Introduction

The novel coronavirus, COVID-19, is the serious threat to the society's overall health and prosperity and has nearly recorded 937,391 deaths globally and 83,198 deaths in India (WHO Coronavirus Disease (COVID-19) Dashboard September 17, 2020) up-to-date. This viral infection is believed to be originated from the biggest seafood and live animal market present in Wuhan city of Hubei Province in Central China with a population over 11 million. It has been declared as Pandemic by WHO in the month of January 2020.

It is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), a new emergent first recognized in Wuhan wet market in December 2019. Genetic sequencing of the virus suggests that it is a betacoronavirus closely linked to the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-1) and Middle East Respiratory Syndrome-related Coronavirus (MERS-CoV), which resulted in higher mortality rates.

The COVID-19 is identified in saliva of infected patients, and it shows that saliva can play a vital role in human-to-human transmission that remains the main mode of spread.[1] This is through (1) respiratory droplets released via coughing or sneezing; (2) aerosol, typically during aerosol generating clinical procedures; and (3) mucosal membrane contact with fomites.[2,3] Feco-oral transmission has been speculated,[4] given the detection of viral RNA in stools, reported gastrointestinal (GI) symptoms, and Angiotensin-converting Enzyme II (ACE2) expression along the GI-tract.[5] Now evidence of in utero or transplacental transmission has been reported.[6]

Symptoms of COVID-19 include fever, cough, and acute respiratory disease, with severe cases leading to multiorgan failure and comorbid factors leading to death. Clinical and virological studies that have collected repeated biological samples from confirmed patients demonstrate that shedding of SARS-CoV-2 is highest in upper respiratory tract (URT) early in the course of the disease, within the first 3 days from onset of symptoms.

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The incubation period is on an average of about 5 to 6 days, but can be up to 14 days. During this period, also known as "presymptomatic period," some infected persons can be contagious from 1 to 3 days before symptom onset. It is important to recognize that presymptomatic transmission still requires the virus to be spread via infectious droplets or by direct/indirect contact with body fluids from an infected person. An asymptomatic case is a person with SARS-CoV-2 who does not develop any symptoms.[7]

Among the healthcare professions, dental professionals are particularly at higher risk due to the possibility of aerosols produced by saliva droplets that can be inhaled. When it comes in contact with skin and mucous membrane or when it gets dislodged on the surface of dental office or on any other materials that is used during dental procedures, it will cause contamination. Aerosols that becomes the main source of transmission of microorganisms are differentiated based on particle size as spatter (>50 µm), droplets (≤50 µm), and droplet nuclei (≤10 µm).[9–11] In dental settings, 90% of the aerosols produced are extremely small (<5 µm).[11] Spatter, being large particle, will fall until it contacts other objects. Example: floor, countertop, sink, bracket, table, computer, patient, or operator.[9,12]

Droplets remain suspended in the air until they evaporate, leaving droplet nuclei that contain microorganisms related to respiratory infections.[7,8] Droplet nuclei can contaminate surfaces in a range of 3 ft and may remain airborne for 30 minutes to 2 hours.[7,10,11] Furthermore, the susceptibility of developing this COVID-19 infection is influenced by virulence, viral load (dose), and pathogenicity of microorganisms, along with the host's immune response.

To manage the threat of the continuing SARS-CoV-2 infection and risk to public health caused by COVID-19, oral health professionals need themselves to be updated about the latest information and guidelines in dental practice. On the contrary, it is the duty of every person seeking dental treatment to follow certain safety measures and protocols to prevent the exposure and spread of infection during dental treatment procedures.

This present study was undertaken to assess the awareness and attitude of public toward dental procedures and safety protocols during this pandemic spread of SARS-CoV-2.

Materials and Methodology

The present cross-sectional survey was done on 1064 people from various regions of India to assess the information mainly regarding the knowledge and attitude of public toward dental procedures and safety protocols that are expected to be followed during this life-threatening situation. The information was collected during the period of lockdown from 15 May to 15 June (sample size of 1000 was calculated to avoid sampling errors). Expecting a high response rate, this questionnaire was sent to 1200 people out of whom 1064 people responded.

The questionnaire was created using Google forms and sent to people via various social media platforms all over India. People voluntarily willing to participate in the study are included in the study, whereas those who refused to participate or who could not understand or answer the questionnaire were excluded from the study.

A 22-variable, structured, close-ended questionnaire in English language was created and circulated among the participants through various social media platforms. A 3-point Likert scale is used for recording the response. These responses were kept confidential and anonymous to encourage honest responses. The data were entered into SPSS v20.0 software, percentage was calculated, and Chi-squared test was applied. The level of significance was kept at $p < 0.05$.

Results

A cross-sectional survey was done to assess the knowledge and attitude of general public and dentistry in COVID-19 scenario.

Of which, 50.5% (536) were male and 49.5% (526) were females, majority of the participants were postgraduates (51.5%), followed by professional degree (31.5%), high school certified (10.9%), and primary school certified (6.4%) (Table 1). The major proportion of age group who responded to the survey was below 45 years.

Showing the awareness, among 66.8% were using newspaper/television as their main source of information regarding COVID-19 and Aarogya Setu application (7.0%) being the least. Regarding the incubation period, around 86.4% were aware of it. Almost 88.6% of the participants have the opinion that dentists are at higher risks and 87.6% of the participants expect their dentists to wear PPE during treatment procedures. Response of people regarding the quality of masks stated that 38% opted N95 masks, whereas 27% opted surgical masks. 55.1% were aware that cost of dental treatment may rise after COVID-19 outbreak and so 81.8% of the people preferred cashless transaction for payment in dental office (Table 2).

Table 3 depicts gender-wise representation of response to the study. Females were more aware and more protective when compared to male population and even most of the females had opted for cashless payment mode.

Table 4 depicts the association of awareness and attitude with respect to education. It is found that irrespective of their education levels, people are still using newspaper or television as their trusted device for updating themselves. And people from each group stated that they were aware that dental procedures are capable of spreading COVID-19 infection via aerosols of infected person and above 60% of the people wanted their dentist to wear PPE during dental treatment.

Table 1: Sociodemographic data

Characteristics	*Number*	*Percentage*
Age		
Below 45 years	780	73.4
45–65 years	218	20.5
Above 65 years	64	6.0
Sex		
Female	526	49.5
Male	536	50.5
Educational qualification		
Professional degree	335	31.5
Graduate/postgraduate	543	51.1
High school certified	116	10.9
Primary school certified	68	6.4
Region		
North	123	11.6
South	609	57.3
Central	61	5.7
East	119	11.2
West	150	14.1

Table 2: General awareness and attitude

	Number	*Percentage*
Aware of coronavirus before Wuhan outbreak		
No	785	73.9
Yes	277	26.1
Aware that COVID-19 may be asymptomatic?		
May be	149	14.0
No	204	19.2
Yes	709	66.8
Source of information on COVID-19		
Aarogya Setu application	74	7.0
Friends/neighbors/doctors	126	11.9
Newspaper/television	709	66.8
WHO Website	153	14.4
Incubation period (period the virus stays in human body) of COVID-19		
14 days	918	86.4
21 days	92	8.7
7 days	52	4.9
Seek dental treatment if you are affected by common cold		
May be	147	13.8
No	786	74.0
Yes	129	12.1
Aware that dental procedures are capable of spreading COVID infection		
May be	92	8.7
No	139	13.1
Yes	831	78.2
Seek dental treatment other than emergency procedures during this pandemic		
May be	119	11.2
No	766	72.1
Yes	177	16.7
Aware that you are supposed to wear mouth mask while meeting your dentist		
May be	19	1.8
No	37	3.5
Yes	1006	94.7
Aware that dentists are at high risk in treating COVID-19-positive patients		
May be	50	4.7
No	71	6.7
Yes	941	88.6
Aware that you are supposed to wash/sanitize your hands before entering the dental operatory		
May be	21	2.0
No	36	3.4
Yes	1005	94.6
Type of mask you think is affordable to wear during dental office visit		
Cloth mask	255	24.0
N95	404	38.0
N95 respirator	116	10.9
Surgical mask	287	27.0
Take prior appointments online/telephonic before you visit your dentist		
May be	61	5.7
No	116	10.9
Yes	885	83.3
Seek phone or online consultation from your dentist		
May be	132	12.4
No	190	17.9
Yes	740	69.7
Inform your dentist about your travel and medical history before starting any procedures		
May be	48	4.5
No	44	4.1
Yes	970	91.3
Expect your dentist should use PPE during dental treatment		
I don't know	90	8.5
No	42	4.0
Yes	930	87.6
Aware that the cost of dental treatment may rise after COVID-19 outbreak		
May be	304	28.6
No	173	16.3
Yes	585	55.1
Follow the appointment scheduled by your dentist		
May be	66	6.2
No	83	7.8
Yes	913	86.0
Aware that only emergency dental procedures will be performed until this pandemic is successfully dealt with		
May be	81	7.6
No	115	10.8
Yes	866	81.5
Prefer cashless payment		
May be	109	10.3
No	92	8.7
Yes	861	81.1
Aware that any ulcer or fluid-filled swelling in your mouth can be related to manifestations of COVID-19		
May be	252	23.7
No	496	46.7
Yes	314	29.6
Think that dentists play a main role in educating the public and increasing awareness about the pandemic COVID-19		
May be	188	17.7
No	95	8.9
Yes	779	73.4
Follow the instructions and safety protocols prescribed by your dentist		
May be	24	2.3
No	22	2.1
Yes	1016	95.7

Contd…

Table 3: Gender-wise representation of response

	Sex				
	Female	*Male*	*χ^2 value*	*p-value*	*Remarks*
Aware of coronavirus before Wuhan outbreak					
No	383	402	0.66	0.42	Not significant
Yes	143	134			
Aware that COVID-19 may be asymptomatic?					
May be	67	82	12.1	0.002	Significant
No	82	122			
Yes	377	332			
Source of information on COVID-19					
Aarogya Setu application	29	45	14.5	0.002	Significant
Friends/neighbors/ doctors	46	80			
Newspaper/television	373	336			
WHO Website	78	75			
Incubation period (period the virus stays in human body) of COVID-19					
14 days	448	470	2.64	0.27	Not significant
21 days	53	39			
7 days	25	27			
Seek dental treatment if you are affected by common cold					
May be	68	79	11.8	0.003	Significant
No	411	375			
Yes	47	82			
Aware that dental procedures are capable of spreading COVID infection					
May be	45	47	6.5	0.04	Significant
No	55	84			
Yes	426	405			
Seek dental treatment other than emergency procedures during this pandemic					
May be	48	71	9.03	0.01	Significant
No	401	365			
Yes	77	100			
Aware that you are supposed to wear mouth mask while meeting your dentist					
May be	7	12	4.5	0.1	Not significant
No	13	24			
Yes	506	500			
Aware that dentists are at high risk in treating COVID-19-positive patients					
May be	26	24	5.1	0.08	Not significant
No	26	45			
Yes	474	467			
Aware that you are supposed to wash/sanitize your hands before entering the dental operatory					
May be	11	10	7.09	0.03	Significant
No	10	26			
Yes	505	500			

Contd…

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	Sex				
	Female	*Male*	*χ^2 value*	*p-value*	*Remarks*
Type of mask you think is affordable to wear during dental office visit					
Cloth mask	126	129	6.68	0.08	Not significant
N95	182	222			
N95 respirator	64	52			
Surgical mask	154	133			
Take prior appointments online/telephonic before you visit your dentist					
May be	27	34	13.11	0.001	Significant
No	40	76			
Yes	459	426			
Seek phone or online consultation from your dentist					
May be	61	71	9.24	0.01	Significant
No	77	113			
Yes	388	352			
Inform your dentist about your travel and medical history before starting any procedures					
May be	26	22	3.52	0.17	Not significant
No	16	28			
Yes	484	486			
Expect your dentist should use PPE during dental treatment					
I don't know	46	44	11.58	0.003	Significant
No	10	32			
Yes	470	460			
Aware that the cost of dental treatment may rise after COVID-19 outbreak					
May be	143	161	1.64	0.44	Not significant
No	83	90			
Yes	300	285			
Follow the appointment scheduled by your dentist					
May be	24	42	9.96	0.007	Significant
No	32	51			
Yes	470	443			
Aware that only emergency dental procedures will be performed until this pandemic is successfully dealt with					
May be	43	38	10.06	0.007	Significant
No	41	74			
Yes	442	424			
Prefer cashless payment					
May be	59	50	1.03	0.59	Not significant
No	45	47			
Yes	422	439			
Aware that any ulcer or fluid-filled swelling in your mouth can be related to manifestations of COVID-19					
May be	112	139	16.01	0.0003	Significant
No	278	218			
Yes	135	179			

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	Sex				
	Female	*Male*	*χ^2 value*	*p-value*	*Remarks*
Think that dentists play a main role in educating the public and increasing awareness about the pandemic COVID-19					
May be	97	88	5.85	0.054	Not significant
No	36	59			
Yes	392	387			
Follow the instructions and safety protocols prescribed by your dentist					
May be	12	12	6.45	0.04	Significant
No	5	17			
Yes	509	507			

Discussion

Novel coronavirus that has been detected in December 2019 has grown into global pandemic. Indian Government had imposed *Janata* curfew, lockdown, and several other methods to restrict public movement and break the chain. Since India has announced unlocking of economic activity, as the dental offices started providing service, there is a need to analyze the public awareness, attitude, and their preparedness toward receiving dental treatment. In this scenario of reopening of the dental offices, the present survey helps the Indian dental professionals with people's feedback, so that they will know the prevailing level of public awareness and their mind-set toward dental office visits. To obtain COVID-related information, 66.8% of the participants were using television, newspaper, and other print media, which clearly states that media still plays a major role in providing current information. Media should provide not only high TRP-rated and sensational news but

Table 4: Awareness and attitude with respect to education

	Educational qualification					
	Graduate/postgraduate	*High school certified*	*Primary school certified*	*Professional degree*	*χ^2 value*	*p-value*
Aware of coronavirus before Wuhan outbreak						
No	395	101	67	222	42.3	<0.0001
Yes	148	15	1	113		
Aware that COVID-19 may be asymptomatic?						
May be	80	17	7	45	182.7	<0.0001
No	61	32	53	58		
Yes	402	67	8	232		
Source of information on COVID-19						
Aarogya Setu application	39	8	6	21		
Friends/neighbors/doctors	45	15	20	46	33.65	<0.0001
Newspaper/television	377	77	40	215		
WHO Website	82	16	2	53		
Incubation period (period the virus stays in human body) of COVID-19						
14 days	472	99	64	283	20.59	0.002
21 days	56	7	3	26		
7 days	15	10	1	26		
Seek dental treatment if you are affected by common cold						
May be	88	17	4	38	19.9	0.003
No	402	82	47	255		
Yes	53	17	17	42		
Aware that dental procedures are capable of spreading COVID infection						
May be	49	18	4	21	20.53	0.002
No	72	23	11	33		
Yes	422	75	53	281		
Seek dental treatment other than emergency procedures during this pandemic						
May be	69	17	8	25	17.3	0.008
No	392	82	55	237		
Yes	82	17	5	73		
Aware that you are supposed to wear mouth mask while meeting your dentist						
May be	7	4	3	5	6.9	0.32
No	17	6	3	11		
Yes	519	106	62	319		

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	Educational qualification					
	Graduate/postgraduate	*High school certified*	*Primary school certified*	*Professional degree*	*χ^2 value*	*p-value*
Aware that dentists are at high risk in treating COVID-19-positive patients						
May be	19	17	6	8	44.23	<0.0001
No	31	14	7	19		
Yes	493	85	55	308		
Aware that you are supposed to wash/sanitize your hands before entering the dental operatory						
May be	10	2	2	7	5.6	0.47
No	16	1	4	15		
Yes	517	113	62	313		
Type of mask you think is affordable to wear during dental office visit						
Cloth mask	128	32	11	84	15.7	0.07
N95	200	40	38	126		
N95 respirator	63	7	5	41		
Surgical mask	152	37	14	84		
Take prior appointments online/telephonic before you visit your dentist						
May be	34	3	2	22	213.04	<0.0001
No	35	22	42	17		
Yes	474	91	24	296		
Seek phone or online consultation from your dentist						
May be	66	18	8	40	111.2	<0.0001
No	80	25	43	42		
Yes	397	73	17	253		
Inform your dentist about your travel and medical history before starting any procedures						
May be	29	4	5	10	11.7	0.07
No	19	4	7	14		
Yes	495	108	56	311		
Expect your dentist should use PPE during dental treatment						
I don't know	30	27	21	12	98.4	<0.0001
No	15	5	3	19		
Yes	498	84	44	304		
Aware that the cost of dental treatment may rise after COVID-19 outbreak						
May be	124	53	48	79	96.5	<0.0001
No	100	19	9	45		
Yes	319	44	11	211		
Follow the appointment scheduled by your dentist						
May be	41	12	6	7	179.6	<0.0001
No	21	12	32	18		
Yes	481	92	30	310		
Aware that only emergency dental procedures will be performed until this pandemic is successfully dealt with						
May be	42	11	8	20	31.9	<0.0001
No	50	20	18	27		
Yes	451	85	42	288		
Prefer cashless payment						
May be	42	25	16	26	81.5	<0.0001
No	29	10	19	34		
Yes	472	81	33	275		
Aware that any ulcer or fluid-filled swelling in your mouth can be related to manifestations of COVID-19						
May be	105	44	38	64	68.12	<0.0001
No	261	51	25	159		
Yes	176	21	5	112		

Contd…

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	Educational qualification					
	Graduate/postgraduate	*High school certified*	*Primary school certified*	*Professional degree*	χ^2 *value*	*p-value*
Think that dentists play a main role in educating the public and increasing awareness about the pandemic COVID-19						
May be	97	16	12	63	11.9	0.06
No	57	5	1	32		
Yes	389	95	55	240		
Follow the instructions and safety protocols prescribed by your dentist						
May be	12	3	3	6	9.74	0.14
No	7	1	1	13		
Yes	524	112	64	316		

also valuable professional expert-related articles, with valid and truthful information to the general public. Aarogya Setu app though promoted by the Government of India, least number of participants opted for it, maybe due to fear of disclosing their personal identity and personal information. Around 3.5% of the participants were unaware of using mouth masks, so dental professionals and office team should make all efforts in educating patients who visit the dental office and impose the measures to implement wearing of masks.

A total of 83.3% of the participants preferred online or telephonic appointment prior visiting the dentist which will avoid accumulation of people in groups, thereby ensuring the safety of the patients and over 69.7% of the people showed a positive response to teledentistry, which can be connected through appropriate applications with the clinicians and seek an appointment through phone if further treatment is required. Dentists can prescribe medications in a fixed format to treat symptomatically.

Number of cashless transactions shot up after currency note ban and remained high till March 2017 and had gradually come down. COVID-19 global pandemic has fast-tracked mobile payments (FinTech Analyst at S&P Global Market Intelligence). 81.1% of the participants preferred cashless payment so appropriate methods to receive contactless payments should be installed in every dental office for the convenience of the patients. Digital paperwork will reduce contact between the dentist and patients. This shall make the transactions and data sharing more effective.

About 58.7% of the people with graduation and 62.9% of the people with professional qualification were aware of an increase in the treatment cost of dental procedures. In the dental office, the preventive protocols like wearing PPE by dentists and staff, protective disposable wears to patients, sanitization measures, infrastructure modifications like high vacuum extraoral suction, UV light sanitizations, office HEPA filters are adding to the cost of treatment.

Conclusion

"Stop Cursing Darkness and Start Lighting a Candle"

We dentists as a frontline healthcare professionals are at a higher risk due to the nature of treatment protocols, so we should abide by this philosophy whenever such an uncertain and challenging situation arises. In the past also, we have successfully dealt with other life-threatening infections like hepatitis, SARS, HIV, and various other fatal diseases.

We shall strive hard to elicit fear and misconception regarding this viral disease and dental practice among people. So as a professional, we stop panicking and should start our lives by taking proper preventive measures and safety protocols. Patients should be informed and educated about the expected changes in dental office protocols, cost, time, etc.

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