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Knowledge, Attitude and Practice of Dental surgeons in Wake of COVID-19 Pandemic: An observational cross-sectional study

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Abstract

Background: Dental surgeons are at increased risk of encountering the cross-infection because of working in close proximity with the oral mucosa and making use of high-speed rotary instruments during treatment, generating large volume of aerosols and splatter of saliva which in turn will increase the probability of nosocomial spread of COVID-19.

Aim: The aim of the current study is to evaluate knowledge, attitude and practice of dental surgeons regarding COVID -19 Pandemic.

Methodology : This observational study was conducted using google form online survey. A well-structured questionnaire composed of total 26 closed ended questions was formulated and distributed among dental surgeons practicing in India.

Results: A total of 1200 dental surgeons were contacted out of which 861 submissions were recorded with a response rate of 71.7%. Out of 861 dentist 537 were male and 324 females. Multiple linear regression analysis showed there was no significant difference in knowledge score between undergraduate and post graduate qualified dental surgeons while good attitude and practice scores were significantly associated with higher qualification. There was significant correlation between all components of knowledge, attitude and practice ($P < 0.05$) using Pearson's Correlation Coefficient.

Conclusion and Recommendations: It can be concluded from the current survey that dental surgeons were found to have good knowledge, attitude and practice scores. They should practice Tele triaging, proper screening and should

follow various guidelines provided by competent authorities.

Keywords: Covid -19, Infection control, Universal precautions, attitude, practice

Introduction

Back ground : COVID-19 pandemic is the defining global health crisis and is the greatest challenge we have ever faced since world war II. The disease is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[1] The virus is mainly transmitted by human to human through respiratory droplets, direct physical contact and contact with fomite. Also, airborne transmission is possible during aerosol generating dental procedures.[2] considering the vital role of the body's immune system, elderly patients, Infants < 1 year, persons with chronic debilitating diseases possess a higher risk of getting infected. The most commonly reported underlying conditions are chronic pulmonary disease, hypertension, cardiovascular disease, and immunosuppression[3] Dental surgeons are at increased risk of encountering the cross-infection because of working in close proximity with the oral mucosa and making use of high-speed rotary instruments during treatment, generating large volume of aerosols and splatter of saliva which in turn will increase the probability of nosocomial spread of COVID-19.[4]

Emerging from Wuhan, China the disease spread rapidly all over the world and this outbreak was declared as public health emergency of International concern (PHEIC) by WHO on 30/1/2020.[5] Later due to continual escalation in number of affected countries, cases and causalities, WHO declared COVID-19 a global pandemic on 11 March 2020.[6] Although the mortality associated with COVID-19 is low, it has a high spreading potential[7]. Owing to the fact that COVID-19 pandemic is fast and catastrophic, many countries had to implement lockdown all over the world in an attempt to control the spread of infection. Following the universal norms, societal and government advisory, most of the dental practices and hospitals across the world had closed operation in the beginning during this phase. Only emergency and urgent cases were taken up during lock down. Meanwhile WHO, CDC, various governmental and non-governmental authorities had issued several guidelines, also started online courses and training sessions to raise awareness and preparedness of dental surgeons regarding prevention and control of COVID-19. [8,9] In spite of availability of published preventive guidelines, the majority of dentists were reluctant and fearful in treating patients in such situation.[10] Assuming that these guidelines would have increased the knowledge of dental surgeons, still the extent to which knowledge can be put into practice and the extent to which this practice actually reduces COVID-19 cross-infection is unclear. Understanding dental surgeons' knowledge, attitudes, and practices (KAP) are utmost important and it's a need of an hour during this Catastrophic pandemic. This will enable us to find out possible risk factors, predict outcomes of planned behavior and also aid in providing recommendations for future pandemic situations.

Thus, the aim of the current study is to evaluate knowledge, attitude and practice of dental surgeons regarding COVID -19 Pandemic.

Objectives

-To assess knowledge of dental surgeons regarding Covid 19 Pandemic

- To assess attitude of dental surgeons regarding Covid 19 Pandemic

-To assess practice of dental surgeons regarding Covid 19 Pandemic

-To assess association between demographic variables and Dental Surgeons knowledge, attitude and practice score.

- To provide recommendations for preparedness of dentist to combat such pandemics.

Methods

Study design & setting : This observational study was conducted using Google form online survey. Dental surgeons practicing in India participated in this survey. Consent from all the participants was taken prior to the start of the survey. A well-structured questionnaire composed of total 26 Closed ended questions was formulated and validated through intra-class correlation with a strong relation of 0.74. The online survey link was circulated through social media and e-mail to dental surgeons. The questionnaire comprised of questions assessing demographics, knowledge, attitude and practice towards COVID-19. Demographic details included 4 questions on gender, qualification, work experience and work sector. Knowledge and attitude section comprised of 5 questions each, while practice section comprised of 11 questions. One question about source of information about covid-19 was asked.

Participant: This study was done on dentist practicing in India. Considering a dentist population of 2.70000 in India, which becomes population size at 5 % level of significance and 95% of confidence interval the sample size obtained, was 384. Attributing to incomplete responses or non-response to questionnaire we contacted 1200 dentist personally to participate in the survey out of which a total of 861 participants completely filled the questionnaire.

Variable

Independent variables- age, sex, qualification, specialization. Dependent variables: knowledge, attitude and practice of dentist

Statistical analysis

Data collected was entered into spreadsheets and analysed using SPSS version 21.0 (IBM; Chicago).Descriptive analysis was presented in forms of mean and standard deviation. Step wise linear regression analysis was done to determine the influence of independent variables such as gender, qualification and specialization on dependent variables of knowledge, attitude and practice score .Pearson's Correlation analysis was done to assess correlation between knowledge, attitude & practice score among dental Surgeons.

Results

A total of 1200 dental surgeons were contacted out of which 861 submissions were recorded with a response rate of 71.7%. The Demographic information of the participants is presented in Table 1. Out of a total of 861 participants, 537 were male and 324 females. By qualification maximum participants were postgraduates (81.8%) and only few (18.2 %) were undergraduates. The majority of dentists who participated (46.1%) had < 5 years of experience and belong to private practice (66.6%). (table1)

Responses to the questionnaire and the source of information regarding COVID-19

The source of information regarding COVID-19 was primarily the Internet (50.8%), followed by social media sites (31%), television (13.4%), and newspapers (4.8%). (Table 2)

Knowledge regarding COVID-19

Most of the dentist (82.1%) were aware of all possible modes of transmission of corona virus Only two third (75.5%) of the participants were fully aware of the all sign and symptoms of covid-19.On answering awareness about high risk category patients majority of the dentist were aware about the high risk category of patients and only very small number of participants (2.6%) had no knowledge about the same. Only 71 % of the dentist were updated with the current guidelines on infection control protocol and only 66.3% were aware of proper donning

and doffing of PPE which markedly makes lack in their knowledge regarding proper use of PPE and create hesitation towards performing dental treatment. (Table 3)

Attitudes regarding COVID-19: Majority of the dentist (88.8%) accepted their role in spreading awareness regarding COVID-19. 85% of the dentist think physical distancing and mask are important for patients sitting in waiting area. Huge number of the dentist (79.1%) preferred postponing elective procedure in all patients while a lesser number of dentist (20%) preferred postponing elective procedures only in suspected or COVID -19 positive patients. Around 2/3rd of the dentist (74.4%) of the dentist were afraid of doing aerosol generating procedures and 63% of the dentist were following AYUSH Guidelines for boosting their immunity.(Table 4)

Practices regarding COVID-19: Mixed responses were recorded about practices regarding Covid -19. Though most of the dentist were recording travel history and were taking informed consent from patient regarding risk of COVID-19 associated with hospital visit (85% & 82.3 %) but very few were practicing tele- triage (40%) and Only 61% of the dentist were recording Body temperature of all patients. Majority of the dentist were following universal norms like proper hand hygiene (95%), physical distancing (85%), had taken prophylactic dose of medicine to prevent Covid- 19 infection (85%) and were wearing PPE for all cases while doing treatment (85.2%). Only 35.4 percentage of dentist were disinfecting operating room after each patient and rest all dentist were disinfecting after completing all patients.90% of the dentist were taking shower and proper clothes segregation after reaching home. (Table 5)

Association between demographic variables and knowledge and practice score

The multiple linear regression model to analyze the knowledge, attitude and practice scores in relation to demographic variables revealed that there was no significant difference in knowledge score between undergraduate and post graduate qualified dental surgeons while good attitude and practice scores were significantly associated with higher qualification. (Table 6)

Relationship between knowledge, attitude and practice scores: There was significant correlation between all components of knowledge, attitude and practice ($P< 0.05$) using Pearson's Correlation Coefficient. (Table 7)

Discussion

Dentist poses a high risk of getting infected due to close proximity with the patient's oral cavity and also certain time-consuming procedures causing long hour of contact with the oral cavity putting them at high risk. [11] For dentist good knowledge, positive attitude, and good practices of following precautionary measures such as wearing gloves, protective clothing, goggles and face mask is imperative in effective dealing with patients with minimum risks.[12]

Also, ongoing pandemic nature of disease made it necessary for dentist to multiply their alarms corresponding to critical situation and to put efforts in following and implementing related hygienic conditions as well as recommendations. This survey provides an insight on level of knowledge, attitude and practice of dentist on infection control with special emphasis on COVID-19 outbreak in 2020.

The source of information regarding COVID-19 was mainly the Internet (50.8%), followed by social media sites (31%), television (13.4%), newspapers (4.8%). which is in agreement with the results obtained by Kamate et al. 2020, Gupta et al. 2015, who reported that most of the knowledge gained by the dentists is through Internet and followed by social media during Covid-19

and ZIKV pandemic respectively. [13, 14] In contrast to our study Fatiregun et al. 2011 reported television as the primary source of data (73.6%) among senior healthcare workers in Nigeria during the influenza A (H1N1) pandemic.[15]

Majority of Dental surgeons were well aware about all possible modes of transmission, Sign & symptoms of Covid-19 and our results were comparable with studies by other authors.[10,16, 17]

Two third of the dentist were fully updated with the current guidelines issued by various agencies on infection control protocols remaining dentist showing a lacuna towards updating themselves with current guidelines available , this could be possibly due to their lack of time or psychological stress due to themselves or their family members contracted covid 19. Only Approx. 33% of the dentist lack knowledge regarding proper donning and doffing of PPE which has created fear and hesitation towards performing dental treatment among dentist .In the current survey almost all dentists agreed that they could help spread awareness regarding the disease, and that physical distancing and PPE were effective in preventing COVID-19. Our results were in agreement with study by kamate et al 2020.[13] The threat of pandemic made all dentist alerted and as reported in current survey most of the dentist were afraid of doing aerosol generating procedures because such procedures poses higher risk of cross infection.[18]

Triaging is applied in disaster situations and emergency health care settings [19] Thus in current situation it has been recommended by various authors to follow tele - triage to avoid unnecessary exposure and to prioritize cases.[16] [20] Inspite of recommendations in our survey very few dental surgeons (44%) were practicing tele triage ,because in India before the Covid 19 pandemic , patients had direct access to the dentist and now in this situation dentist and the patient were slowly adapting to the tele way of communication. Recent travel history may place a patient in the high-risk category. In our survey 85 % of the dental surgeons were recording travel history. Similar results were obtained by kamate et al .[13] who found that 92.6% of dental health care professionals record travel history as a screening protocol to aid in the diagnosis and prevention of disease transmission. Majority of the dental surgeons were Using PPE During Operative Procedure. In all Patients as reported in our survey .As per the CDC guidelines on infection control protocols, universal precautions should be taken at all times irrespective of the pandemic or epidemic status. The highly contagious nature of COVID-19 warrants proper infection control protocols. The use of PPE, including N95 or FFP2/FFP3 masks, gloves, gowns, protective glasses, visors and headgear caps, is of the utmost importance during any dental procedures. [21] In current study Dental surgeons demonstrated good practice management regarding Hand washing, Physical Distancing, disinfection of operating room and taking shower and clothes segregation after reaching home.

In the current survey on establishing association between qualification and knowledge, attitude & practice score it was observed that there was no significant difference in knowledge scores among undergraduate and post graduate dental surgeon, while the dentists with higher qualifications (postgraduates) reported better and significant attitude and practice scores as compared to graduates. This can be explained by the fact that during post-graduation learning is evidence and performance based which improves attitude and quality of practice. Our results were contradicting to results of Kamate et al. 2020 during covid 19 pandemic, Gupta N et al . 2015ZIKV , who reported higher knowledge scores among higher qualified dentist. [13,14]

Limitations of the study

Despite the findings introduced here, it is important to stress that this survey had limitations of smaller sample size also we did not receive responses from all countries that have been affected by the outbreak. Hence, the generalizability of the study is limited. Moreover, this pandemic caused many to be busy taking care of personal affairs. Thus those who were active on the social media at the short period of data collection were the only ones that had the chance to participate in the study. This could result in selection bias and sampling error, which prevents the ability to generalize our results.

Conclusion and Future Recommendations

Adequate Knowledge, A Positive Attitude and evidence-based practice protocols are must for surviving in pandemics. In the present study, dental surgeons were found to obtain good knowledge, attitude and practice scores, which is important to combat COVID-19. Also it was observed that both graduate and post graduate qualified dentist carry equal knowledge scores though attitude and practice scores were more for post graduate qualified dental surgeons. From the results of current study following recommendations are provided for dental surgeons:

Dental surgeons should involve themselves in spreading awareness regarding Covid -19 through various platforms. Looking into the current pandemic scenario dental surgeons should incorporate Tele triaging in their practiced. They should screen, isolate and refer the potential cases having the symptoms of COVID-19 .Dental surgeons should be updated thoroughly with new information regarding disease and should follow CDC, WHO, MOH ,various dental association's guidelines provided during pandemic so that we as a whole (dentist, community and nation all survive and pass through this difficult phase of pandemic.

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Legend Tables

Table 1: Demographic profile of Dental Surgeons (N= 861)

Qualification	Number (N=861)	Percentage %
UG	157	18.2
PG	704	81.8
Gender		
Male	537	62.4
Female	324	37.6
Work Sector		
Govt.	292	33.9
Private	569	66.1
Work Experience		
< 5 Year	397	46.1
5-10 Year	317	36.8
>10 year	147	17.1

Table 2: Source of Information

Source of information	Internet		50 .8 %
	Social media		31%
	Television		13.4%
	News papers		4.8%

Table 3: Knowledge among dental surgeons

Knowledge	Option	Number	Percentage
Are you aware of all possible modes of transmission of corona virus	Yes	707	82.1
	No	4	0.5
	Not fully aware	150	17.4
Are you aware of the sign and symptoms of Covid-19.	Yes	650	75.5
	No	35	4.1
	Not fully aware	176	20.4
Are you aware of the high risk category of patients in concern of Covid -19	Yes	639	74.2
	No	22	2.6
	Not fully aware	200	23.2
Are you updated with the current guidelines on infection control protocol	Yes	617	71.7
	No	28	3.3
	Not fully aware	216	25.1
Are you aware of proper donning and doffing of PPE	Yes	571	66.3

	No	137	15.9
	Not fully aware	153	17.8

Table 4: Attitude regarding COVID-19 among dental Surgeons

Attitude	Option	Number	Percentage
Do You Think That Doctors Can Play Role In Spreading Awareness Regarding COVID-19	Yes	764	88.7
	No	11	1.3
	May Be	86	10.0
Do You Think Physical Distancing And Mask Are Important For Patients Sitting In Waiting Area	Yes	740	85.9
	No	6	0.7
	May be	115	13.4
Do you think that PPE is effective in preventing Covid 19 infection	Yes	681	79.1
	No	143	16.6
	May be	37	4.3
Are You Afraid Of Doing Aerosol Generating Procedures	Yes	641	74.4
	No	174	20.2
	Sometimes	46	5.3
Are You Following AYUSH Guidelines For Boosting Your Immunity	Yes	546	63.4
	No	186	21.6
	Sometime	129	15.0

Table 5: Practice regarding COVID-19 among dental Surgeons

Practice	Option	Number (N)	Percentage (%)
Are You Practicing Tele Triage	1	348	40.4
	2	456	53.0
	3	57	6.6
Are You Taking Travel History From Each Patient	1	732	85.0
	2	44	5.1
	3	85	9.9
Are You Recording Body Temperature Of All Patients	1	525	61.0
	2	329	38.2
	3	7	0.8
Are You Taking Informed Consent From Patients Regarding Risk Of COVID-19 Associated With Their Hospital Visit	1	709	82.3
	2	124	14.4
	3	28	3.3
Do You Ensure Hand washing / Sanitization of Patients Visiting To Hospital	Yes		95.0%
	No		1.0%

	Sometimes		4%
Are You Maintaining Appropriate Physical Distance In Your Waiting Area	Yes		85.0
	No		5.1
	Sometimes		9.9
Are You Using PPE During Operative Procedure In All Patients	Yes		85.2%
	No		24.8%
Have You Taken Prophylactic medication to prevent COVID-19	YES		85.0
	No		15.0
When Do You Disinfect Your Operating Room	1-After Each Patient		35.4
	2- Once Every day After Finishing All Patients		64.6
Do You Take Shower And Proper Clothes Segregation after Reaching Home	yes		90 %
	No		1%
	Some time		8%

Table 6: Association between demographic variables and Dental Surgeons knowledge, attitude and practice score.

	Predictor	Coefficient	SE	't' Value	p-Value
Knowledge	(Constant)	5.261	.357	14.754	0.001(HS)
	work sector	1.253	.206	6.066	0.001(HS)
Attitude	(Constant)	6.441	.371	17.356	0.001(HS)
	work experience	-.459	.093	4.958	0.001(HS)
	qualification	.499	.177	2.812	0.005
Practice	(Constant)	6.271	.283	22.171	0.001(HS)
	qualification	-.442	.115	-3.859	0.001(HS)
	work experience	-.236	.060	-3.927	0.001(HS)
	work sector	.273	.094	2.911	0.004(HS)

Table 7: Pearson's Correlation Coefficient between knowledge, attitude & practice score among dental Surgeons

	Pearson's Correlation Coefficient (r)	Significance 'p' Value	
Knowledge * Attitude	0.349**	0.001(HS)	Positive Moderate Correlation
Knowledge * Practice	0.321**	0.001(HS)	Positive Moderate Correlation
Attitude * Practice	0.298**	0.001(HS)	Positive Weak Correlation

**. Correlation is significant at the 0.01 level (2-tailed).