

KNOWLEDGE, AWARENESS AND PRACTICE OF COVID-19 PROTOCOLS AMONG DENTAL PRACTITIONERS - A SURVEY

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Running title: Drug induced gingival enlargement

Type of study: Retrospective study

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ABSTRACT:

AIM: The aim of the study is to assess the knowledge, awareness and practice of COVID-19 protocols among dental practitioners of Chennai, India and evaluate if the level of awareness is significant.

OBJECTIVE: COVID-19 was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. COVID-19 had spread to 216 countries as of July 6, 2020, causing 11,496,926 confirmed cases and more than 535,390 deaths. Indonesia reported its first two cases on March 2, 2020, by July 6, the number of cases reported increased to 63,749 cases and 3,171 deaths. Currently Indonesia has the highest COVID-19-related mortality rate in Southeast Asia.

BACKGROUND: Due to the involvement of aerosol generating procedures, the dental profession is regarded as the occupation with the highest risk of acquiring SARS-CoV-2 infection. Therefore, the risk of transmission through dental procedures is critical and should be minimized through proper understanding of the nature of spread and through actions that decrease the spread of infection. Dentists should be completely aware of the characteristics of SARS-CoV-2 and new infection control standards.

RESULT: The type of study includes a survey which was done among 100 private dental practitioners. From the survey it can be concluded that there is insufficient knowledge and awareness among the dental practitioners regarding the spread of COVID-19 disease. The protocols followed were satisfying as almost 98% of the respondents have suggested that the use of personal protective equipment such as N95 respirator mask, gloves, goggles, face shield have drastically reduced the spread of infection among dental practitioners. The other protocols followed also include frequent washing of hands(11%), thorough history of patients(64%), temperature check for every patient before entering the clinic(93%), use of antimicrobial mouth rinses(25%). Awareness is still necessary in order to minimize the pandemic and to improve the safety of the dental practitioners towards COVID-19 disease.

KEYWORDS: Dental practitioners, COVID-19 virus, Aerosol, Droplet infection, Awareness, Vaccine schedule, Covaxin, Covid shield.

INTRODUCTION

A novel disease of major global concern that has evolved rapidly into a public health crisis is the Coronavirus disease 2019 (COVID-19). Since its inception, it has increased globally at an alarming rate and has elicited severe morbidity and mortality. It is caused by severe acute respiratory syndrome coronavirus 2 which is a single-stranded RNA virus of 60–140 nm, belonging to the β -Coronavirus genus [1,2]. The virus tends to take control over the angiotensin-converting enzyme 2 receptor, which is located in the lower respiratory tract. Transmission of virus is via droplets which is elicited by coughing, sneezing and contamination of saliva. Not all the infected patients exhibit signs and symptoms of the Coronavirus. The propagation is through infected droplets that occur, via contact with infected patients. There are many observational studies that demonstrate that even asymptomatic patients in the incubation phase or healthy carriers can spread the disease [3]. Globally, a humongous amount of infected cases have been reported and are still continuing to peak due to the human-to-human transmission. There are a lot of main causes for this and some of them include inadequate follow up of covid-19 protocols. Inhalation or ingestion or direct mucous contact with saliva droplets, respiratory fluids and aerosols of an infected patient represents the common mode of viral transmission [4,5]. The virii can also thrive on surfaces, objects which are elicited to infected body fluids. Human saliva is the potential source of infection due to high viral load presence. Dental procedures and treatments deal with a lot of intraoperative procedures of the oral dentition. This in turn poses a great risk for dental practitioners. Therefore, dentists are almost always in close proximity with patients compared to general physicians and doctors. American Dental Association put forth necessary precautions and guidelines to be followed by the dental practitioners. Dentists have been advised to follow personal protection measures and avoid or lessen aerosol generating operations to reduce the spread of infection [6].

In India, many active cases and deaths have been reported. The data of fatalities is increasing at an alarming rate every day. The current devised method of disease control is based on containment measures. Henceforth, several countries, including India have instilled a complete lockdown approach to elicit the prevention of virus spread and promote cessation of transmission from person to person. Hence, the current study aimed to assess the level of awareness regarding, COVID-19 and infection control measures among dental practitioners [7]. Covid-19 virus was first reported in the city of Wuhan, Hubei Province, Central China in the month of December 2019. Since then, the coronavirus disease 2019 (COVID-19) has become a major health concern globally. COVID-19 is caused by a coronavirus also called as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which causes acute pneumonia, with symptoms ranging from mild to deadly. SARS-CoV-2 infection can cause an acute inflammatory response (cytokine storm) and respiratory failure [8,9].

The risk of viral transmission is greater for those who work close to patients, especially dentists. To assess the preparedness of dentists to manage the pandemic, many researchers around the globe are trying to evaluate their knowledge of COVID-19. In this study, we included the knowledge of dentists and their awareness so that the challenge involved in facing the pandemic would be minimized. In the Indonesian context, many dentists, particularly in the private practice have opted to perform only emergency procedures during the pandemic. Thus, dental pain of the patients has been managed with prescription of analgesics such as ibuprofen. In order to enhance knowledge on COVID-19 and the management of dental patients during the pandemic, Indonesian Oral Biology Association organized a series of webinars through Zoom platform [10,11]. However, there are no studies which have assessed the knowledge, perception, and attitude of Indonesian dentists on COVID-19. Considering this research gap, in the present study we evaluated the level of knowledge on SARS-CoV-2 and COVID-19 among dental professionals.

MATERIALS AND METHODS:

Sampling: The sampling method includes random selection of 100 private dental practitioners in Chennai and surveying them with a questionnaire study consisting of various subjects related to the knowledge, awareness and practice of COVID-19 protocols in order to estimate the significant relationship between the spread of disease and the existing awareness among dentists.

Ethical approval: Ethical approval was obtained from the scientific review board [SRB] of Saveetha Dental College.

Data Collection and Methodology: The data reports were collected from October 2020 to January 2021 after surveying 100 private dental practitioners on their knowledge, awareness and practice of COVID-19 protocols. Private dental practitioners with greater than 1 year experience were included under the inclusion criteria and the exclusion criteria includes dental auxiliaries such as assistant, nurse etc other than dentists. The survey consisted of 20 questions under three categories. The knowledge about the virus and its characteristics were included under the first category, the second category includes the awareness of the spread of disease and the third category includes practice of prevention protocols and significance of vaccination. The data was collected and tabulated in the excel sheet and imported to spss software for statistical analysis. The statistical analysis done was the Chi-square analytical test in order to obtain p value and to estimate if there is a significant knowledge and awareness among dental practitioners about COVID-19 disease.

Statistical analysis: The data was imported to spss software by IBM version 25.0 for Windows OS in which the output variables were defined and statistical mean value was obtained. The statistical test used was the Chi-square analytical test to establish the results.

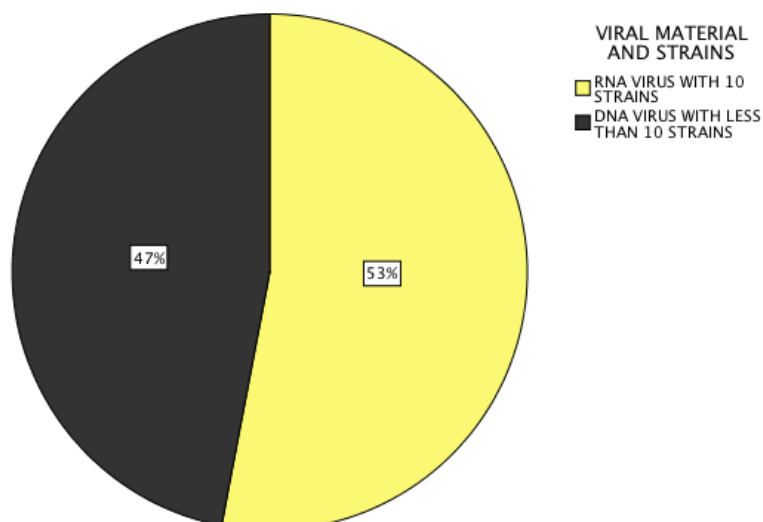
FIGURES:

Figure I indicates the knowledge among the respondents about the type of viral material and number of existing viral strains. About 53% have responded that COVID-19 is a RNA virus with 10 strains and the others seemed to have lack of sufficient knowledge about the viral material and the number of strains existing at present.

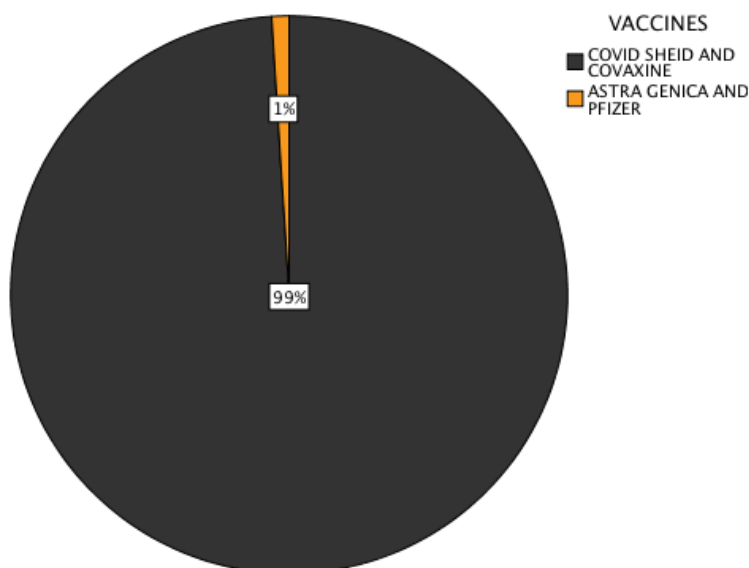


Figure II indicates the awareness about vaccines among which 99% of the dentists were only aware of Covid shield and Covaxin. Only 1% of the respondents were aware about other vaccines such as Pfizer and Astra genica.

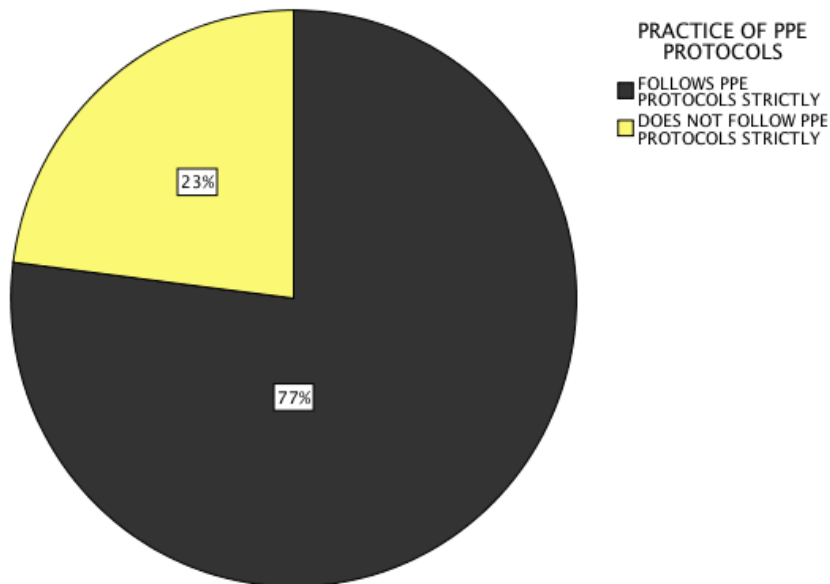


Figure III indicates the practice of protocols such as the use of personal protective equipment such as N95 respirator mask, gloves, goggles, face shield. Only 77% of the dentists have responded to strictly follow the above mentioned PPE protocols and the remaining 23% does not follow the protocols strictly.

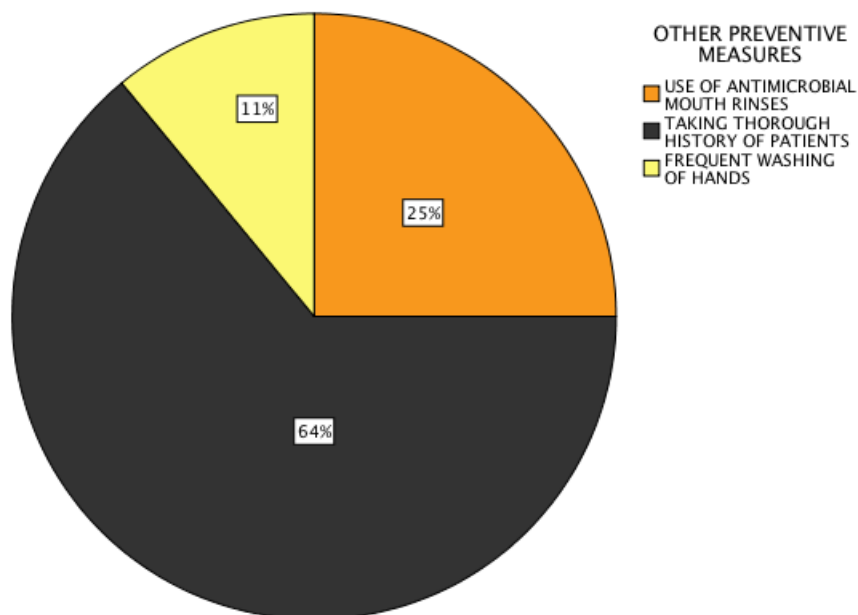


Figure IV indicates the use of other protective measures other than the use of personal protective equipment among which 64% have responded on taking a thorough history of patients, 25% have responded on the use of antimicrobial mouth rinses and 11% have responded on frequent washing of hands.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.382 ^a	1	.066		
Continuity Correction ^b	.416	1	.519		
Likelihood Ratio	2.973	1	.085		
Fisher's Exact Test				.230	.230
Linear-by-Linear Association	3.348	1	.067		
N of Valid Cases	100				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .23.

b. Computed only for a 2x2 table

Chi square test was done to estimate the level of knowledge and awareness among dental practitioners about COVID-19 and p value obtained was 0.230 ($p < 0.05$) which indicates that there is a lack of significant knowledge and awareness about the disease.

RESULTS AND DISCUSSION:

The type of study includes a survey which was done among 100 private dental practitioners. The questionnaire based survey consisted of 20 questions under three categories as discussed earlier. The knowledge about the virus and its characteristics were included under the first category, the second category includes the awareness of the spread of disease and significance of vaccination. The third category includes practice of prevention protocols. The data was collected and tabulated in the excel sheet and imported to spss software for statistical analysis. Considering the knowledge about COVID-19 viral disease, about 53% of the participants have responded that it's a RNA virus with almost 10 strains of virii circulating among the human population. Majority of the participants responded that patients who are symptomatic to COVID-19 disease showed symptoms such as fever, cold, cough and sneeze. The virus mainly affects the lungs, the CT scan of the lungs gives a clear idea about the severity of the infection and the virulence of the viral strain affecting the individual. Regarding the CT changes of the lungs, among 45% of dentists have responded the CT lungs show ground glass appearance and infiltrated areas and 55% of the dentists have responded to the presence of radiolucency in the base of the lungs. Evaluating the level of awareness among dentists about the spread of infection, there seemed to be a lack of overall awareness about the spread of the virus as almost 58% of the dentists have responded that the infection spreads through aerosol and many seemed to be clueless about the other modes of transmission about the virus. 63% had responded that the cytokine storm responsible for the severity of the disease is due to the increase in IL2, IL7, TNF alpha. The response to the vaccines also gives us a clear picture that the level of awareness seemed to be insufficient with regard to vaccination among dentists. Almost 99% were aware of only Covidshield and covaxin and only 1% were aware of other vaccines such as astra genica and pfizer. 80% of the respondents have responded that covaxin is more effective than covid shield among the vaccines available in India. 98% of the respondents have suggested that the use of personal protective equipment such as N95 respirator masks, gloves, goggles and face shield have drastically reduced the spread of infection among dental practitioners. Only 77% of the dentists have responded to strictly follow the above mentioned PPE protocols and the remaining 23% do not follow the protocols strictly. Although the majority of respondents follow these protocols it has to be ensured that almost every single dentist understands the importance of following these measures to protect themselves from the virus. The other protocols followed also include frequent washing of hands(11%), thorough history of patients(64%), temperature check for every patient before entering the clinic(93%), use of antimicrobial mouth rinses(25%) and use of hydrogen peroxide and sodium hypochlorite as it can kill the virus in less than a minute(67%). Only 40% of the respondents had a thorough knowledge and awareness about the WHO protocols and the others were not much aware other than the above mentioned basic protocols. Chi square test was done to estimate the level of knowledge and awareness among dental practitioners and p value obtained was 0.230 which indicates that there is a lack of significant knowledge and awareness about the disease. Though the protocols followed seem satisfying, there has to be thorough knowledge and awareness about Covid-19 among dental practitioners as they top the list of occupations that are most affected. Dentists must be encouraged to take up the vaccination and must follow the protocols even after vaccination to ensure maximum safety and prevent the spread of infection.

Dentists are at a high risk of acquiring the disease due to the clinical environment they work in and due to their close contact with the patient's saliva and oral cavity thus making them prone to aerosol and droplet infection. Sabino Silva R et al in their study have indicated the spread of virus mainly through droplets, saliva and direct contact[12]. This is in correlation with our study wherein 58% have responded to the spread of infection through droplets. In a study by Ahmed et.al almost 85% of the participants have insisted on the use of N95 masks rather than a regular surgical mask[13]. This study is in correlation with our study in which about 99% of the participants have insisted on the use of N95 masks, goggles and face shields. Gambhir et al in their studies have indicated that most of the Indian dentists had a very low level of knowledge about COVID-19(38.1%)[14]. This is in coincidence with our study wherein almost 40% of the respondents did not have significant knowledge and awareness about the prevalence of COVID-

19 disease. A study by Kamate et al has indicated that dentists had a very high knowledge about COVID-19(93%) which is contradictory to our study[15]. Wang D et al in their study have indicated the clinical and radiographic characteristics of COVID-19 in which the radiological changes mentioned are coincident with our study[16]. A study by Eggers M et al have mentioned the use of mouth gargle as a method of infection control during dental procedures(43%)[17]. In our study 25% of the dentists have responded to the use of mouth gargle as a preventive measure.

CONCLUSION:

Dental schools and hospitals, as well as research laboratories have also been reported to be significantly affected by the pandemic. As a consequence of that, most of the research work has been stopped or has undergone certain changes with a few limitations. These difficulties are mainly due to the absence of technical support as some experienced laboratory personnel belong to high-risk groups and containment zones that are highly affected by the spread of infection. However, this challenging COVID situation has given us an opportunity to re-evaluate our knowledge and understanding of the infection control measures related to the field of dentistry and formulate new strategies in the post-COVID era so that the risk of occupational hazard can be significantly minimized. In this study, we highlighted the most important research questions concerning the knowledge of the virus, the pathogenesis as well as the virus detection, vaccination and infection control of COVID-19. Thereby we conclude that further more studies are needed to improve the awareness of the dentists in order to control the spread of pandemic and stress on the significance of vaccination thus ensuring every dentist is vaccinated to protect them from the present and future viral mutants.

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