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Knowledge and Awareness of Oral Health Care Professionals Regarding Practices and Controls in Dental Practice Following the COVID-19 Outbreak in the State of Telangana-A Questionnaire Study

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Abstract:-

- ***Background***

As India braces for the Coronavirus disease 2019 (COVID-19) pandemic; Oral healthcare professionals, on the frontlines form a significant risk group and are supposed to take all transmission-based precautions to prevent its nosocomial spread. A poor understanding and preparedness for the disease may result in deadly spread of infection. This questionnaire study was designed to assess the knowledge and awareness of Oral health care professionals regarding practices and controls in dental practice following the COVID-19 outbreak.

- ***Materials And Methods***

A cross-sectional study was conducted among the Oral healthcare professionals across the state of Telangana.14 questions evaluating demographic variables, knowledge and awareness towards COVID-19 were included in the questionnaire and distributed to dentists through the electronic mode. Data was collected from 343 dentists and statistically analysed.

- ***Results***

In the present study, 75th Percentile of the dentists have a knowledge score of 11 out of 14. The mean knowledge score was analysed among dental professionals pertaining to BDS (Bachelor of Dental Surgery), MDS (Master of Dental Surgery) and PhD (Doctor of Philosophy) and there was no statistically significant difference between them.

- ***Conclusion***

The study highlights gaps in specific aspects of knowledge of Oral health care professionals and recommends to improvise/upgrade the knowledge of Oral health care professionals on specific infection control protocols.

Keywords:- *Awareness, COVID-19, Knowledge, Oral Healthcare Professionals.*

I. INTRODUCTION

At the dawn of a new decade, on 30th January, 2020, the World Health Organization (WHO) declared a global public health emergency against the outbreak of coronavirus disease, which is termed as Coronavirus Disease 2019 (COVID-19), and the virus that causes COVID -19 was initially called as 2019-nCoV and was then termed as syndrome coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses (ICTV)[1]. Since, its inception it has spread globally at an exponential rate and has been the source of severe illness and death worldwide. With the advancing stage of the pandemic, the world has endorsed the slogan of "stay home–stay safe". On the contrary, there are health care professionals (HCPs) who have choosed to remain on the frontline to challenge the disease. Given the ubiquitous transmission of the disease and reports of its spread to health care providers, dental professionals are at increased risk for hospital acquired infection and may possibly become the carriers of the disease. These risks can be accredited to the unique nature of dental procedures, which comprise of aerosol generation, dealing with the sharps, and proximity of the dentist to the patient's oropharyngeal region. In addition, if sufficient precautionary measures are not taken, the dental office can likely be a room for cross infection. By following proper guidelines, dental professionals can prevent the possible spread of the disease and protect the entire community from its devastating consequences. This study was designed to assess the Knowledge and awareness of Oral health care professionals regarding practices and controls in dental practice following the COVID-19 outbreak and deficiencies faced by the dental profession in the practical application of their knowledge in today's changing scenario.

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II. MATERIALS AND METHODS

The survey was designed in the form of an questionnaire (google form) and was circulated among Dental professionals of various healthcare institutions and dental clinicians in the state of Telangana, India.

The self-administered questionnaire consists of 14 questions pertaining to knowledge and awareness related to COVID-19 disease in the dental setting which were adapted from **Covid-19 guidelines for dental colleges, dental students and dental professionals by dental council of India (advisory)** dated the 16th April, 2020.[2-10]

The source to collect data was an online questionnaire using Google forms and it is available at: https://forms.gle/d6N7WVJY6QAtm9US6. Convenient sampling method was used to collect the data and distribution of the responses was displayed as frequencies and percentages. Sub-groups were classified based on gender, age (<25, 25-35, 36-45, and >45 years), educational qualification (BDS, MDS/Diploma and PhD) and period of practice. Data was tabulated in excel, We analyzed the data from about 343 dentists using the statistical package of social sciences (SPSS) v.25.0. Descriptive statistics, Student's t test was carried out. Confidence interval was set at 95%. P value < 0.05 was considered statistically significant.

III. RESULTS

A total of 343 dental professionals from various healthcare institutions in the state of Telangana, India, responded to the survey. Majority of the responses were from the age group of 25-35 years, which is about 52.8%, followed by <25 years which is about 39.6%. And among all the responders, 73.2% were females, 26.8% were males and 56.3% were BDS, 43.7% were MDS/Diploma and none of the PhD dentists responded. Majority of the responders had an experience of 0-5 years (51.0%), followed by BDS with 0 years of experience (31.2%), 5-10 years of experience (14.9%), >10 years of experience (2.9%).

Knowledge and awareness of dentists regarding COVID-19:

Among 343 dentists, 61.8% of dentists were aware that the virus causing COVID-19 is SARS-CoV-2, 94.5% of the dentists agreed that Cold/Cough, Fever and Shortness of breath are the most common symptoms of COVID-19, 82.2% were aware that the Novel Coronavirus is transmitted from person to person by means of contact transmission, droplet transmission and aerosol transmission, regarding knowledge about the incubation period of the virus, 79.0 % of the dentists answered this correctly as 2–14 days, 96.2% of the dentists were aware that asymptomatic carriers can also shed the virus and infect the people nearby, 92.7% of the dentists agreed that pre-viewing and triage area is mandatory for every dental setting, 75.8% of the dentists have the knowledge that Primary care dental triage should focus on advice, analgesia and Antimicrobials (where appropriate), only 39.1% of the dentists had the knowledge of right sequence for putting on personal protective equipment (PPE) as advised by Centre for Disease Control and Prevention, only 22.2% of dentists were aware that 1.5% hydrogen peroxide is recommended as a pre-procedural mouth rinse to reduce the viral load, 79.6% of the dentists believed that patients should be scrubbed with Iso Propyl alcohol extra orally prior to any dental procedure to minimize infection, 56.3% of the dentists agreed that hand instrumentation should be prioritized over ultrasonic instrumentation to minimize the transmission of COVID-19, 55.1% of the dentists accepted that 4-handed technique should be preferred over 2-handed technique for controlling infection, 83.4% of dentists have the knowledge of usage of High-volume suction, Rubber dams and Saliva ejectors if an aerosol-generating procedure is being carried out to help minimize aerosol or spatter, 68.5% of the dentists accepted that after the outbreak/lockdown of COVID-19, all elective dental procedures cannot be performed and only dental emergencies should be attended.

Comparison of knowledge score between BDS and MDS/DIPLOMA participants regarding COVID-19:

The mean knowledge score among DIPLOMA/MDS (9.97±2.088), which is slightly higher than the mean knowledge score among BDS (9.81±1.803) with the p value of 0.43, which is not statistically significant **(**Figure 1), (Table1).

Comparison of knowledge score between males and female dentists regarding COVID-19:

The mean knowledge score among females (9.94±1.79), which is slightly higher than the mean knowledge score of males (9.73 ±2.28), with the p value of 0.38, which is not statistically significant **(**Figure 2), (Table2).

Knowledge scores of the all the dentists regarding COVID-19:

In the present study, 75th Percentile of the dentists have a knowledge score of 11 out of 14, which is considered as a good knowledge score, 50th and 25th Percentile of the dentists have a knowledge score of 10 and 9 respectively (Figure3). The mean knowledge score among DIPLOMA/MDS (Master of Dental Surgery) is 9.97±2.088, BDS(Bachelor of Dental Surgery) is 9.81±1.803 with the p value of 0.43 (Table 1) and mean knowledge score among males is 9.73 ±2.28, females is 9.94±1.79 with the p value of 0.38 (Table 2),which were not statistically significant.

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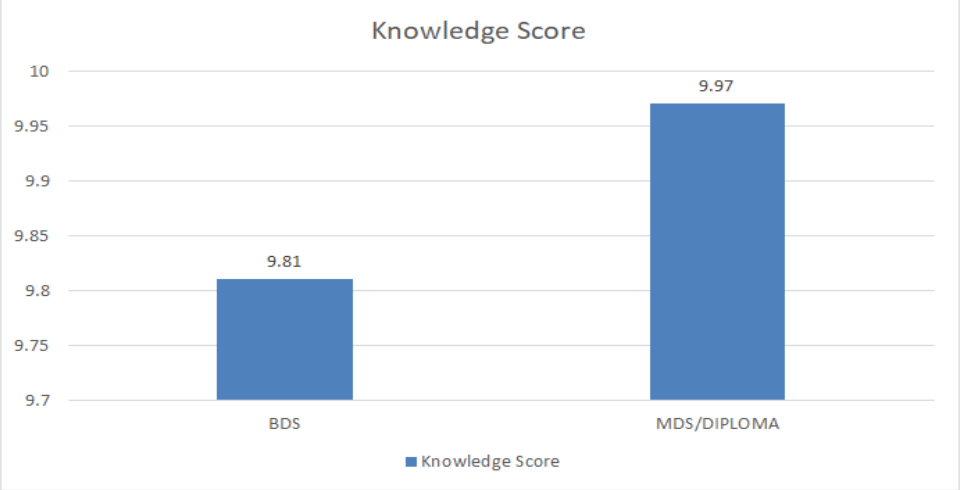

Figure 1: Graph shows the comparison of knowledge score between BDS and MDS/DIPLOMA participants.

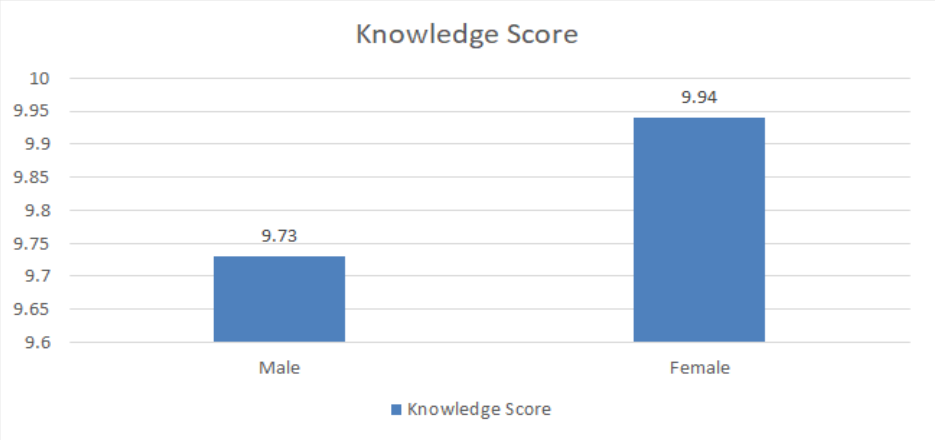

Figure 2: Graph shows the comparison of knowledge score between male and female dentists

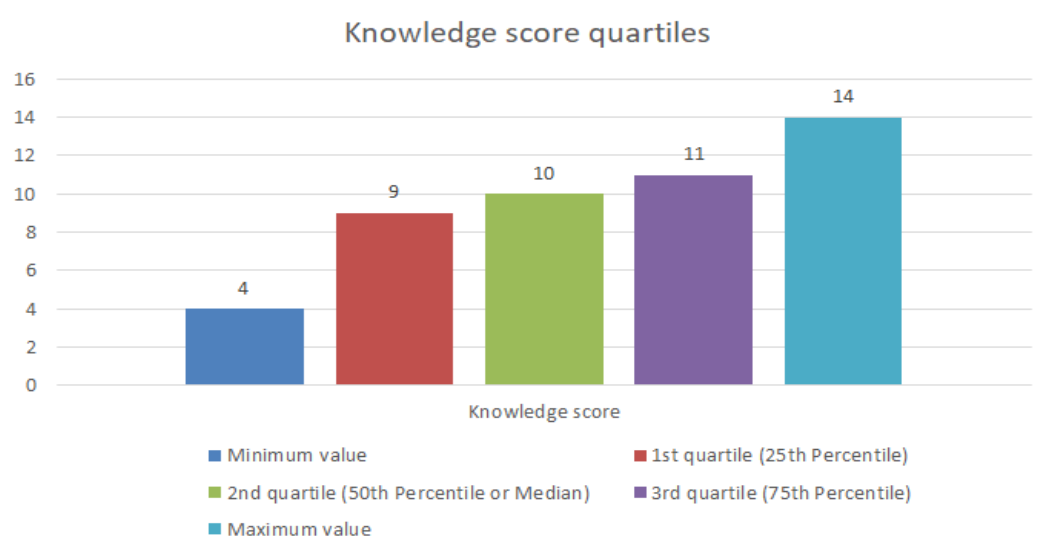

Figure 3: Distribution of study participants based on knowledge score quartiles

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Table 1: Comparison of knowledge score between BDS and MDS/DIPLOMA

Knowledge Score	BDS		MDS/DIPLOMA		t value	P value
	Mean	SD	Mean	SD		
	9.81	1.803	9.97	2.088	-0.79	0.43 (NS)

NS-Not Significant

Table 2: Comparison of knowledge score between males and female dentists

Knowledge Score	Male		Female		t value	P value
	Mean	SD	Mean	SD		
	9.73	2.28	9.94	1.79	-0.88	0.38 (NS)

NS-Not Significant

IV. DISCUSSION

The pandemic of Coronavirus disease (COVID-19) has surged as a global calamity that is agonizing the mankind. With the current insight on disease process, we suppose it will remain in an active state of transmission for a long time. Thus, it is sensible to endorse the disease's prevention protocol in our day-to-day and work routine.[11]

According to CDC, in most of the dental clinical setups, providing care for patients needing transmission based precautions is not possible as they are not designed for or equipped to provide this standard of care due to their lacking on airborne infection isolation rooms(AIIRs) or single patient rooms, a respiratory protection program and N95 respirators.[12] During this period of the utmost shortage of PPEs, controlling exposures to occupational infections is a elementary method of protecting health care professionals and avert its spread.

This survey furnishes an insight on the degree of awareness and knowledge of the dental professionals regarding practices and controls in dental practice following the COVID-19 pandemic. In this study 75th Percentile of the dentists have a knowledge score of 11(78.57%) out of 14(100%) which is considered as a good knowledge score and is in accordance with the results of previous studies among health care workers (HCW)[13.]

In this study postgraduates reported slightly higher knowledge scores as compared to graduates, though the difference is not statistically significant. These findings are in line with the study conducted by S.K. Kamate, et al.[14] who observed that the dentists with higher qualifications (postgraduates) displayed better and significant knowledge scores in comparison with graduates. The possible explaination might be that postgraduates keep updating their knowledge reviewing recent guidelines and evidence-based practice. On the other hand, Harapan et al. reported that general practitioners had a higher or of having a good knowledge as related to specialist doctors.[15] The possible reasoning might be the global disproportion in the dental curriculum and attitudes of the dental faculty authorities toward motivation, encouragement, inclination, and providing assistance to undergraduates in any kind of scientific research projects.[15]

The mean knowledge score among female dentists (9.94±1.79), is slightly higher than the mean knowledge score of male dentists (9.73 ±2.28) though the difference was not significant. These findings are consistent with the findings of study conducted by Arora et al.[16] and N.K. Ibrahim et al[17]. However this finding is not in line with the study conducted by Putrino et al in which males were more aware of the disease as related to female participants.[18]

Among 343 dentists, 61.8% of dentists were aware that the virus causing COVID-19 is SARS-CoV-2, Nearly 94.5% of the dentists were well informed about the most common symptoms of COVID-19 disease as cold/cough, fever and shortness of breath, which is of utmost importance for the timely detection of the suspected positive patients, these findings are in line with the findings of study conducted by Ruba M. Mustafa et.al., among the Saudi dental professionals.[19] On the contrary, the asymptomatic carriers constitute the actual problem as they have no or very mild symptoms which can be superposed with various viral infections like common cold, flu etc. Thus urging the dentists consider every patient as COVID-19 positive and take all the necessary precautions as such patients could sometimes be misconceived as normal patients (without COVID19).[16]

In the present study, 96.2% of the dentists were well informed that asymptomatic carriers can also shed the virus and infect the people nearby. 82.2% were aware that the Novel Coronavirus is transmitted from person to person by means of contact transmission, droplet transmission and aerosol transmission and considered to have good knowledge on modes of transmission of COVID-19 which is comparable with the findings of study conducted in Qassim University College of Dentistry where the study participants showed excellent knowledge (between 98% to 80%) regarding mode of transmission, urgent dental care procedures, importance of

PPE while patient examination, use of high volume suction and WHO guidelines in regard to hand hygiene.[20]

79.0% of the dentists were able to determine the correct incubation period for the virus. This is not in line with the result of a recent study carried out for assessment of knowledge of Jordanian and Saudi Arabian dentists regarding SARSCoV-2 virus, in which only 36.1% and 43.9% respectively identified the correct incubation period [19,21]. It is important to have knowledge about the right incubation period because of its role in deciding the safe time period to treat suspected patients[22]. However, it is imperative for health professionals to carry out preventive measures for all their patients, all the time.[21] 92.7% of the dentists agreed that pre-viewing and triage area is mandatory for every dental setting. 75.8% of the dentists have the knowledge that Primary care dental triage should focus on advice, analgesia and Antimicrobials (where appropriate)

Besides being mindful about the significance of PPE, it is also crucial to have knowledge in regard to right sequence of "donning and doffing" of PPE[23]. only 39.1% of the dentists in the present study had the knowledge of right order for donning of PPE as advised by Centre for Disease Control and Prevention. Pre-procedural antimicrobial mouth rinse could bring down the microbial count in the oral cavity (Kohn et al. 2003; Marui et al. 2019)[24]. During the COVID-19 pandemic, 1.5% hydrogen peroxide-containing mouth rinses are recommended as a pre-procedural mouth rinse[25,26,27]. A very low percentage of the dentists (22.2%) have knowledge regarding this, indicating insufficient knowledge in the particular field. 79.6% of the dentists believed that patients should be scrubbed with Iso Propyl alcohol extra orally prior to any dental procedure to minimize infection, 56.3% of the dentists agreed that hand instrumentation should be prioritized over ultrasonic instrumentation to minimize the transmission of COVID-19.

The 4-handed dentistry is beneficial for controlling infection. The usage of saliva ejectors with high or low volume can lower the generation of droplets and aerosols (Kohn et al. 2003[28]; Li et al. 2004[29]; Samaranayake and Peiris 2004[30]), only 55.1% of the dentists accepted that 4-handed technique should be preferred over 2-handed technique for controlling infection, 83.4% of dentists have the knowledge of usage of High-volume suction, Rubber dams and Saliva ejectors if an aerosol-generating procedure is being carried out to help minimize aerosol or spatter.[24] The extremely infectious nature of SARS CoV-2 made the global health organization to publish recommendations, wherein initially only emergent dental treatments were carried out[24]. In the present study, 68.5% of the dentists agreed that not all elective dental procedures can be performed after the outbreak/lockdown of COVID-19 and only dental emergencies must be addressed. Later when ease in restrictions was imposed, even elective treatment was allowed ensuing precise infection control protocols. To date, it is instructed to schedule the cases for radiographic evaluation on appointment basis[31]. The central idea behind limiting the delivery of the treatment was to curtail over-crowding, which if not taken care of can lead to brisk increase in spread of COVID-19. Concurrently, we must as well be mindful that the health care delivery mechanism forms the bedrock of any nation to flourish and it should not be paralysed at the expense of anything .[11]

V. CONCLUSION

The study highlights gaps in specific facets of knowledge of dental professionals. The dentists of the state of Telangana were well informed about the virus causing COVID-19, its symptoms, mode of transmission, incubation period, asymptomatic carriers, Pre-viewing and triage area, focus of dental triage and how to minimize aerosol/ spatter but partially lacked knowledge on sequence of putting on PPE, use of pre-procedural mouth rinse, prioritizing hand instrumentation and preferring 4-handed technique to limit the exposure rate. The findings demonstrated limited/confined knowledge of the dentists regarding auxillary precautionary measures that protects them and their patients from COVID-19. In conclusion the study recommends to improvise/upgrade the knowledge of oral health care professionals on specific infection control protocols and to attend the training programs on precautionary and preventive measures of COVID-19, so as to survive the phenomenal circumstances which are presumed to breath with us for the coming years.

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