International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'

www.ijbpas.com

KNOWLEDGE ATTITUDE AND PRACTICE REGARDING COVID-19 AND INFECTION AND CONTROL AMONG DENTAL STUDENTS

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ABSTRACT

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 or COVID-19) continues to spread globally. It has become a major cause of concern for health care professionals all over the world. The aim of this study was to assess knowledge, awareness and hygiene practices regarding COVID-19 among dental students practicing in Chennai. A self administered questionnaire consisting of 10 questions regarding knowledge attitude and practice regarding COVID-19 and infection control among dental students . Data was collected through google forms. responses were analysed and statistical analysis is done using spss software. Chi square test was used to assess the association between the gender and the responses In the present survey 68% of the participants are able to identify all the main symptoms of covid 19 whereas 32% did not select all the symptoms. Two third of the study population selected RT-PCR as the gold standard test for the diagnosing covid 19 chi square p value = 0.704 Chi square test shows no statistical difference in responses between gender. . The findings of the present study showed that there is average knowledge regarding COVID 19 but there are some notable deficiencies in

knowledge existing among dental professionals regarding some vital aspects of COVID-19. Therefore, there is an urgent need for improving dentists' knowledge via health education and training programs.

Keywords: Pandemics; COVID-19; rt-pcr; igG-igM antibody testing; dental emergencies

INTRODUCTION

In late December 2019, a novel coronavirus disease was identified and responsible for the new cases of pneumonia in Wuhan, China. The virus was initially named as 2019 novel coronavirus (2019-nCOV) by the WHO, then was later on updated as SARS-CoV-2 and the name of the disease as coronavirus disease 2019 (COVID-19). On the 11th of March 2020, the WHO declared COVID-19 as a global pandemic and almost all of the countries worldwide have registered COVID-19 cases. The SARS-CoV-2 is an enveloped non-segmented positive sense RNA virus [1–3]. Around six coronaviruses have been identified to infect humans namely the α-CoVs HCoV-229E, HCoV-NL63, β-CoVs HCoV-HKU1 and HCoV-OC43 responsible to cause mild respiratory symptoms similar to that associated with the common cold, while SARS-CoV-2, SARS-CoV, and MERS-CoV are implicated to cause lethal respiratory infections [4]. The origin of COVID-19 stuck to a food market in Wuhan, China [1, 5] where bats were proposed to be implicated to be the source of SARS-CoV-2 based on its 96.2% genomic similarity with the bat coronavirus COV RaTG137. SARS-

CoV-2 invades lower respiratory tract cells using the angiotensin-converting enzyme 2 (ACE2) receptor [6]. The site of infection determines the route of transmitting the virus among people directly via the respiratory droplets and secretion and indirectly through contaminated inanimate surfaces [7]. Based on the epidemiological investigations, the incubation period of the SARS-CoV-2 is between 1-14 days and the virus has been found to be contagious in the asymptomatic patients [8]. The COVID-19 infection is more prominent in the elderly people with underlying diseases [9, 10], and the clinical presentations include fever, cough, malaise and acute respiratory distress syndrome in few patients which may eventually lead to death. However, in adults and youngsters the disease is typically presented with mild flu-like illness [11]. Rapid respiratory transmission of the disease necessitates the practice of strict respiratory precautions for its prevention. Health care workers are amongst the most vulnerable group who have the greatest risk of getting infected. There have been reports of medical staff acquiring the disease while taking care and treating

infected individuals **[12]**. The dental operator poses a riskier environment because of the high possibility of cross-infection between dental practitioners and patients. Although most of the dental clinics are closed during these times, however dental emergencies do come and it's our moral duty to treat them thereby establishing a close contact **[13]**. A COVID-19 positive case can go symptomless for many days, therefore various guidelines are recommended by the Centre for Disease Control and Prevention (CDC) and World Health Organization (WHO) for dental health care workers that adequate precautions can be taken **[14, 15]**. Still, the exact behaviour of the virus is not fully understood by the scientists, making it even more risky for a health practitioner. Therefore, the present questionnaire survey was carried out to assess the basic essential knowledge, awareness and hygiene practices among dental students regarding COVID-19 and infection control. Previously our team had conducted numerous types of studies such as clinical trials, in vitro studies and review articles **[16–30]** over the past 5 years now we are focussing on surveys the idea of this survey stemmed from the current interest in our community. The aim of the study is to evaluate the knowledge attitude and practice

regarding covid 19 among dental students in Chennai.

MATERIALS AND METHODS

This cross-sectional study was conducted under a hospital based university setting. An online survey was done with the structured questionnaire based on knowledge, attitude, practice survey among the dental students about covid-19 and infection control

Ethical approval

Ethical permission and approval for the project was obtained from the Institutional Review Board of Saveetha Institute of Medical and Technical Sciences, Chennai, India on Date 25/04/2020.

Sampling and data collection

This cross sectional survey was conducted among 100 dental undergraduate students. A snowball sampling was followed. A structured questionnaire consisting of 10 questions was shared online and 100 responses were obtained. Data entry was made in the Excel sheet, SPSS software was used to analyze the data. The advantages of online surveys is that it was economical, easy to create, wide reach and disadvantage is repeated and incomplete answers

Statistical analysis

The descriptive statistics were used to determine the responses given by the participants. Statistical analysis, Chi square

test was used to assess the association between the year of study and the responses. And the results are depicted in the form of a bar chart **[Figure 1-11]**.

RESULTS & DISCUSSION

In the present survey of the total 100 participants **[Figure 1]** there are 33 males and 67 females **[Figure 2]**. 78% of the participants are aware of the fact that incubation period of the covid 19 is 14 days **[Figure 3]**. 68% of the participants are able to identify all the main symptoms of covid 19 whereas 32% did not select all the symptoms **[Figure 4]**. Two third of the study population selected RT-PCR as the gold standard test for the diagnosing covid 19 **[Figure 5]**. 88% of the study participants said they will wear personal protective equipment once the hospitals are reopened. Whereas 12%

disagreed to wearing ppe **[Figure 6]**. 89% of the subjects were aware of the fact that coronavirus gets transmitted in the form of aerosols **[Figure 7]**. Nearly two third of the study population agreed to the fact that wearing an n95 mask will protect them from getting infected **[Figure 8]**. 76% of the subjects agreed to the fact that patients cured from corona can get reinfected **[Figure 9]**. 78% o the students are worried about the asymptomatic carrier patients visiting their clinic **[Figure 10]**. 72% of the students acknowledged that they can identify the symptoms of the suspected coronavirus patient **[Figure 11]**. 90% of the students said they were aware of the modes of transmission and measures to be taken to contain the spread of the virus.
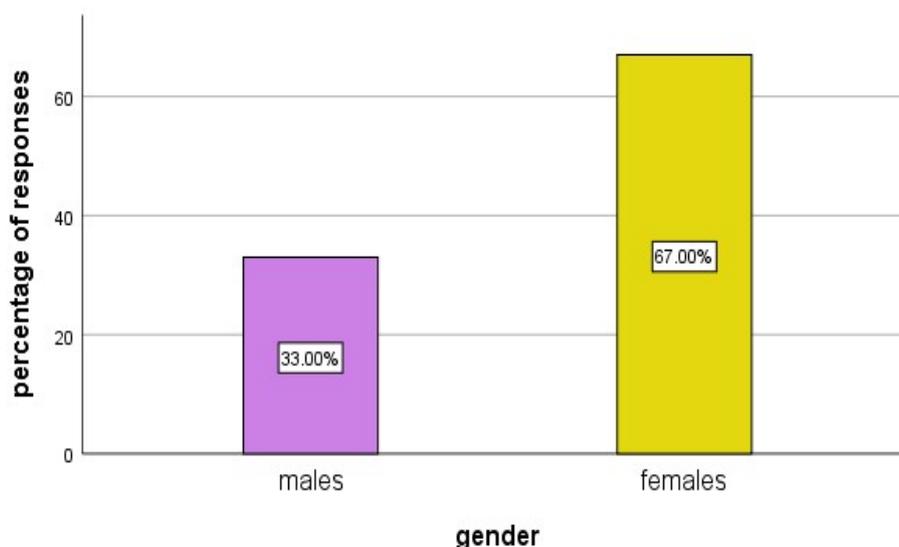

Fig 1: bar graph represents distribution of gender and frequency. X axis represents gender and y axis represents percentage of responses out of 100 respondents 33% (pink) are male and 67% (yellow) are female.
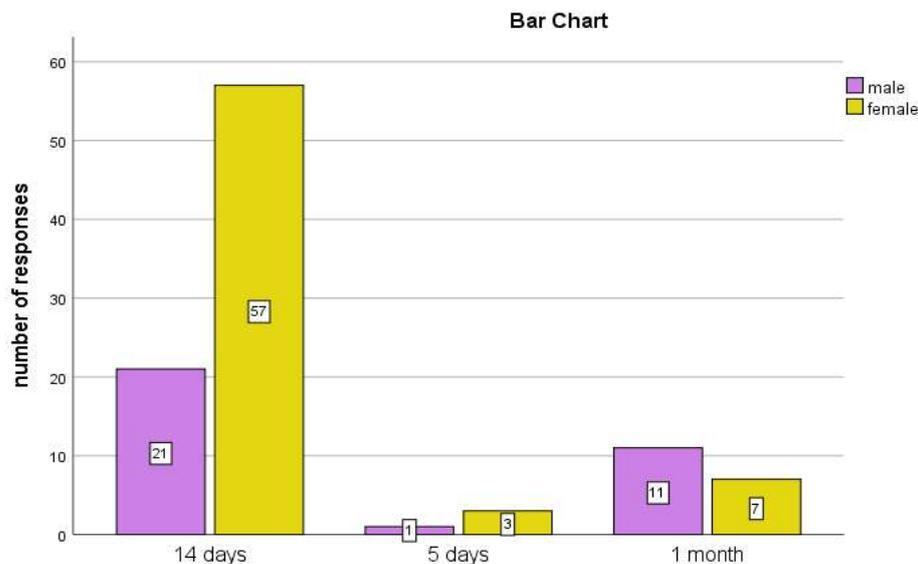
Fig 2: Bar graph represents the distribution of responses between male and female. X axis represents gender and Y axis represents no of responses. When asked "What is the incubation period of covid 19" higher number of females (yellow) have responded 14 days. . Pearson chi square test was done and it gave a p value was 0.020 which is <0.05 hence the results were statistically significant. proving males have better awareness than females.
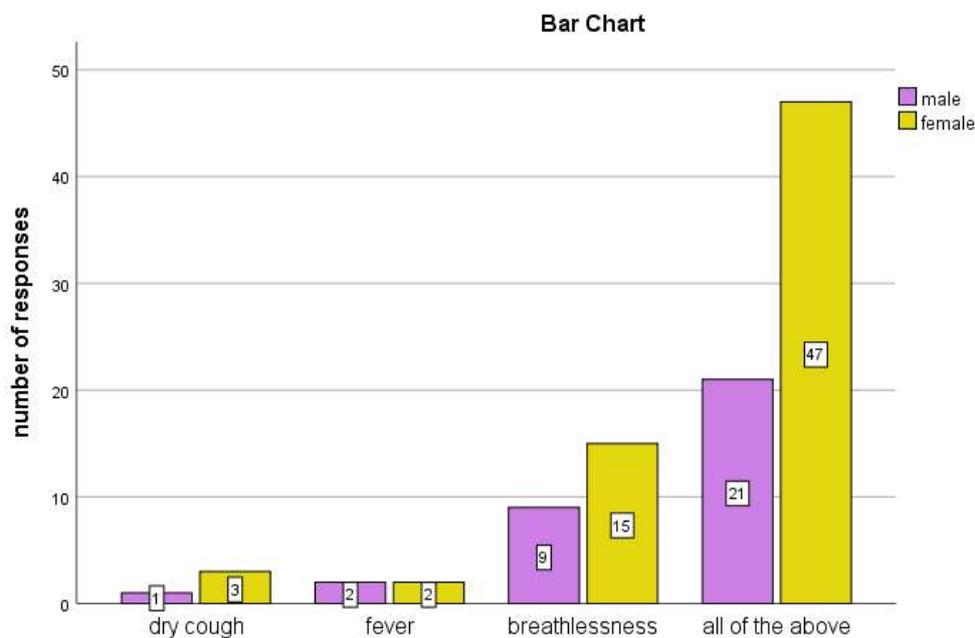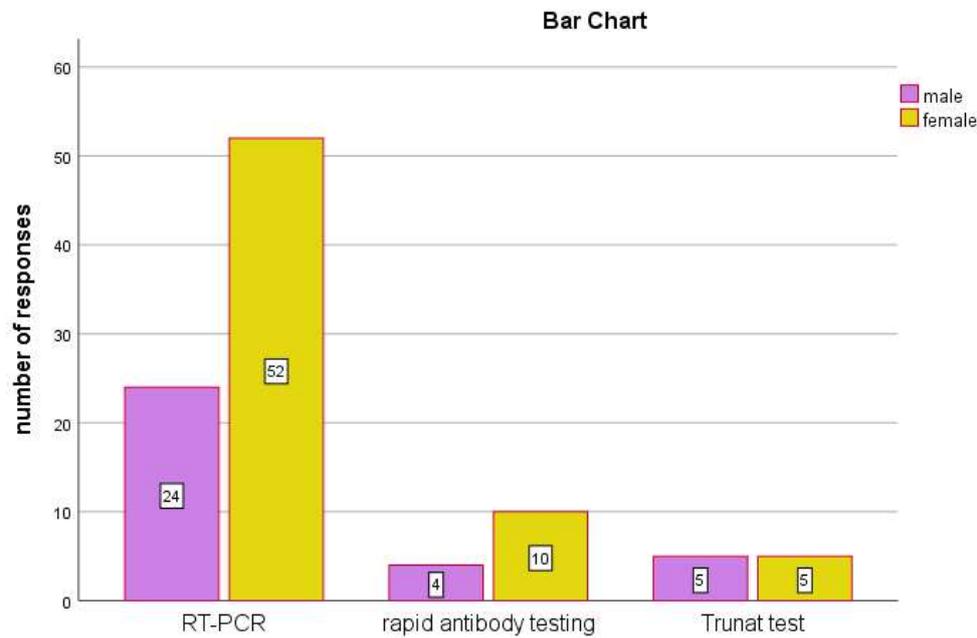

Fig 3: Bar graph represents the distribution of responses between male and female. X axis represents gender and Y axis represents no of responses. When asked "What are the main symptoms of covid 19" higher number of females (yellow) have responded "all the above" . Pearson chi square test was done and it gave a p value was 0.802 which is >0.05 hence the results were not statistically significant.

Fig 4: Bar graph represents the distribution of responses between male and female. X axis represents gender and Y axis represents no of responses. When asked "What is the gold standard test for covid 19" higher numbers of females (yellow) have responded RT-PCR . Pearson chi square test was done and it gave a p value was 0.704 which is >0.05 hence the results were not statistically significant
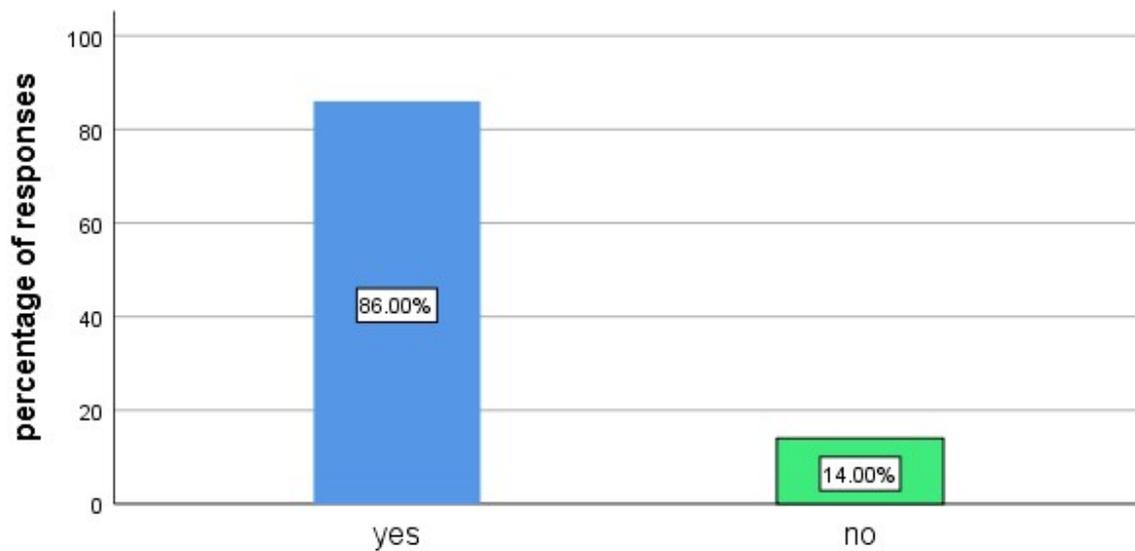

Fig 5: Bar graph represents distribution of responses for the question "Will you wear personal protective equipment once the hospitals get reopened" (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (86%) said yes (blue) .
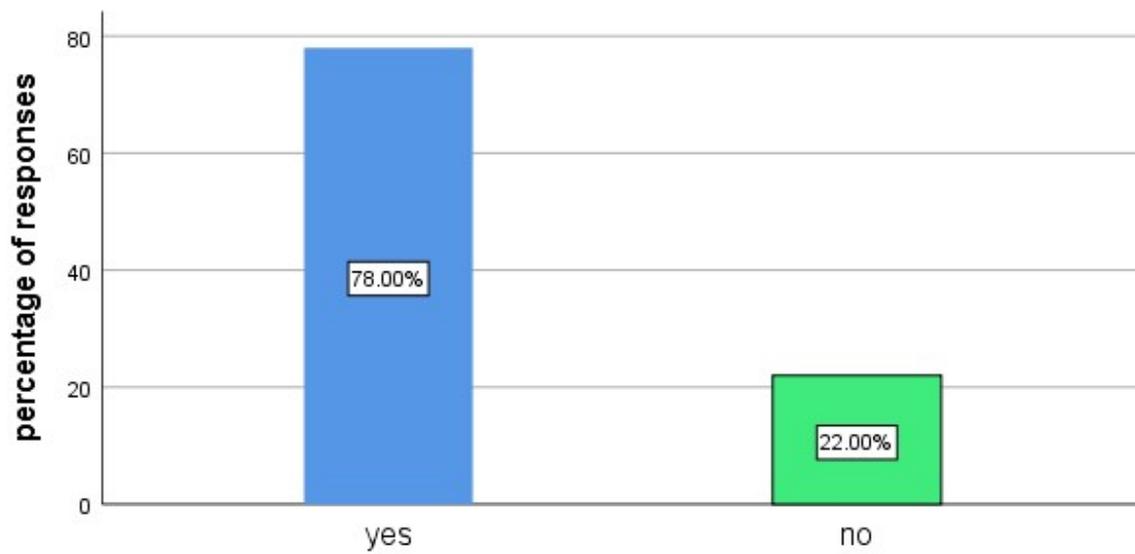
Fig 6: Bar graph represents distribution of responses for the question "Do you think that the coronavirus gets transmitted in form of aerosols "" (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (78%) said yes(blue) .
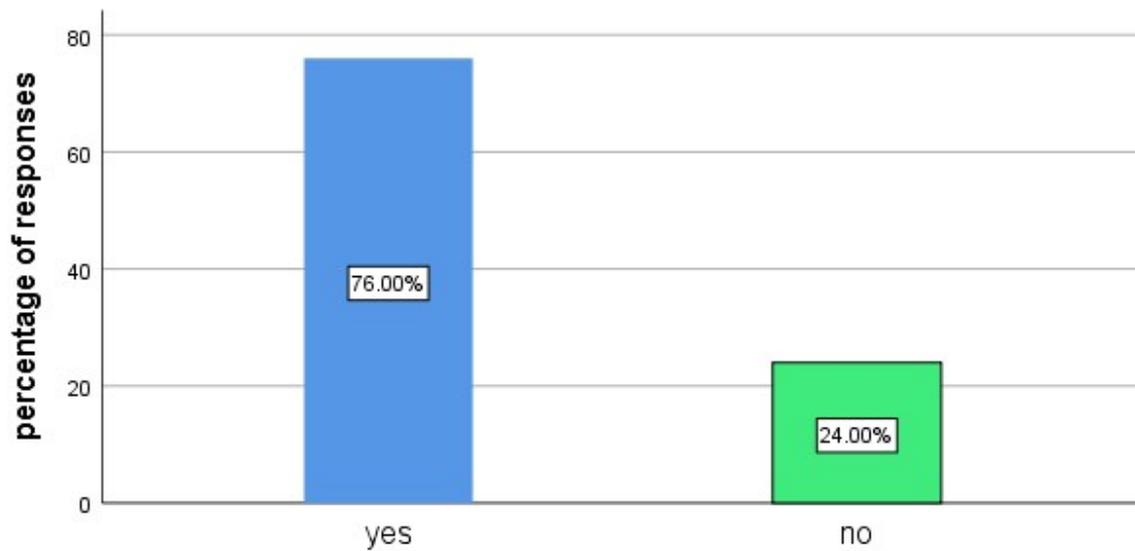

Fig 7: Bar graph represents distribution of responses for the question "Wearing an N95 mask will protect you from getting infected from covid 19 " (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (76%) said yes (blue) .
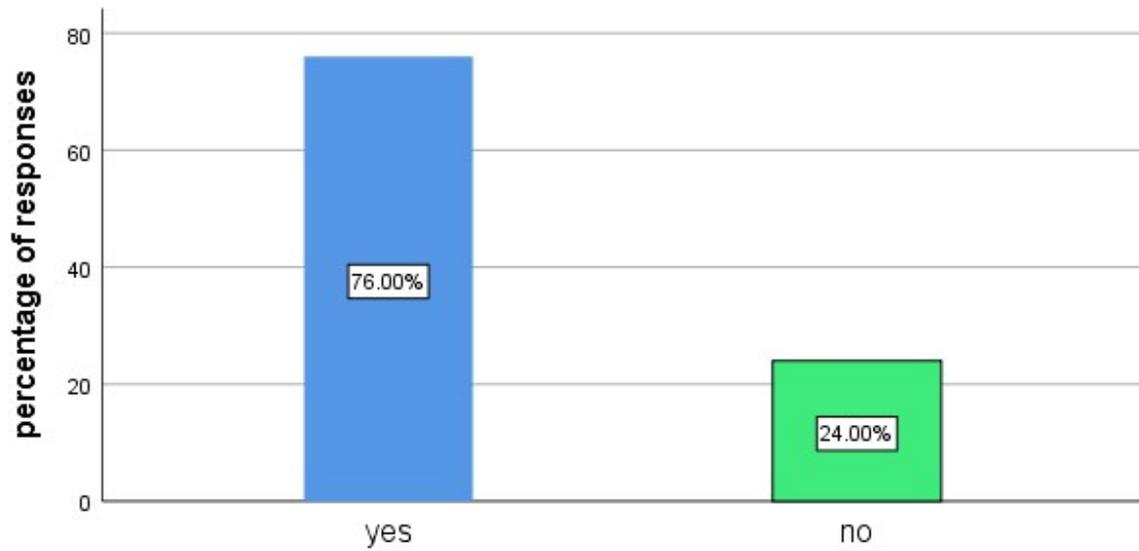
Fig 8: Bar graph represents distribution of responses for the question "Patient cured from corona virus can get reinfected " (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (76%) said yes (blue) .
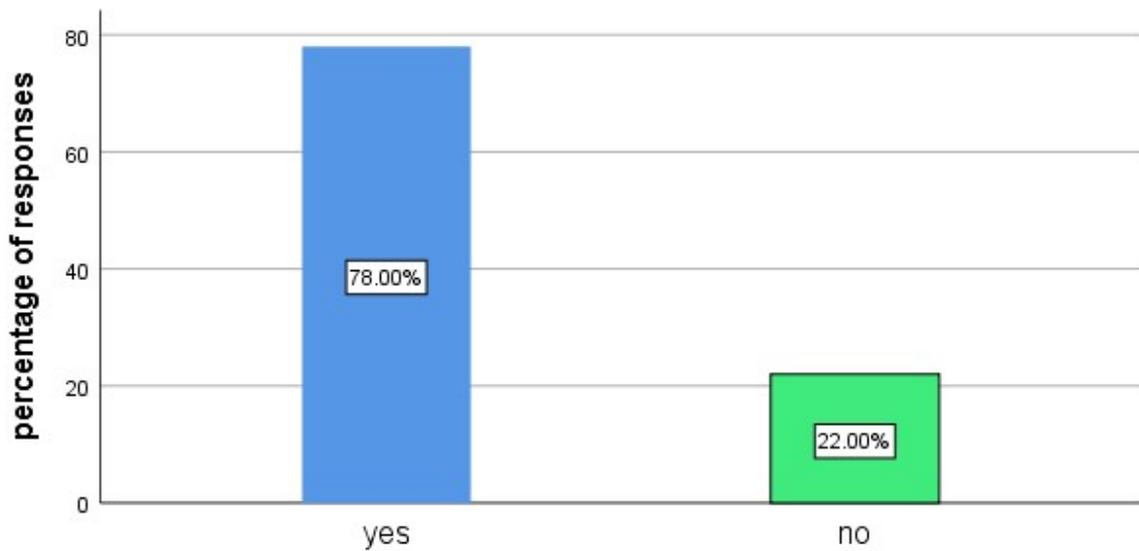

Fig 9: Bar graph represents distribution of responses for the question "Are you worried about the asymptomatic carrier patients visiting your clinic" (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (78%) said yes (blue)
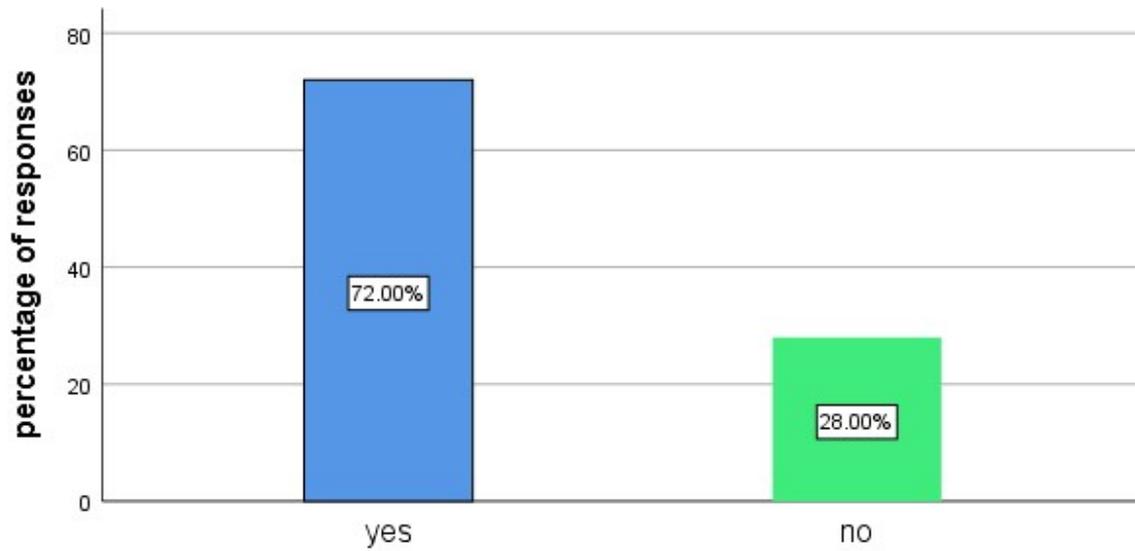
Fig 10: Bar graph represents distribution of responses for the question "Were you aware of covid symptoms and ways of identifying patient at risk of having covid " (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (72%) said yes (blue).
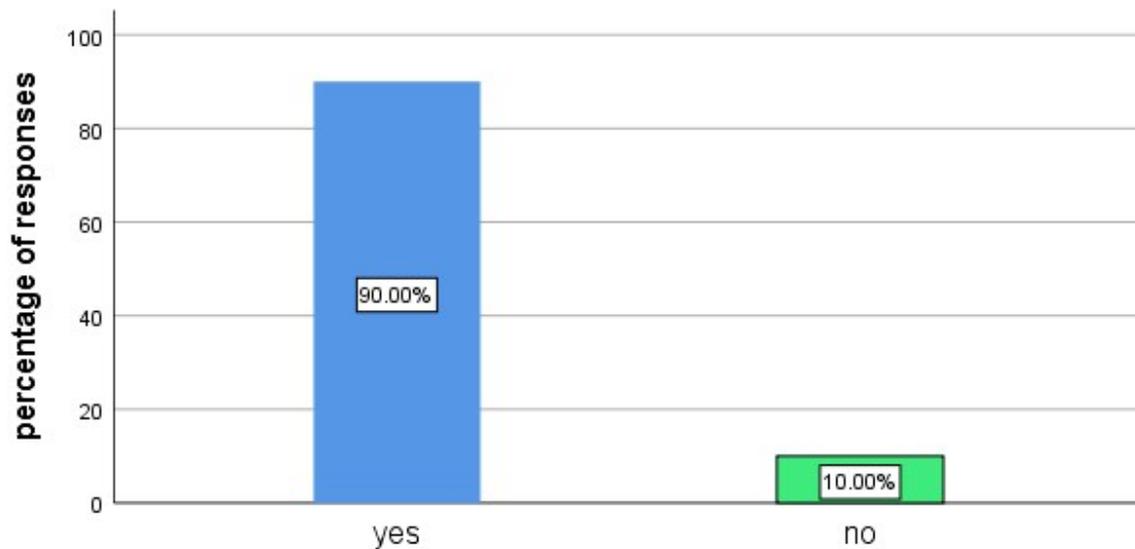

Fig 11: Bar graph represents distribution of responses for the question "Were you aware about the modes of transmission and precautionary measures to be taken in controlling the spread of virus" (X axis represents gender and Y axis represents percentage of responses) higher percentage of respondents (90%) said yes (blue)

The pandemic spread by COVID-19 has put the whole world in a state of emergency as thousands of individuals are losing their lives every day because of this life threatening disease [31] To the best of our knowledge, the present study is first of its kind in the Indian subcontinent examining the knowledge and awareness of dental health professionals regarding this deadly disease. A close ended questionnaire was used in the study in order to achieve a quicker response from the subjects in this state of crisis [32]. It was observed in the study that the majority of the subjects had fair knowledge regarding COVID-19 and there were noteworthy deficiencies in some of the important aspects. Recent research has observed that asymptomatic patients and patients in their incubation period are also carriers of this particular virus which can lead to disease transmission [33] More than 80% of subjects were aware of this fact in the present study which is in congruence to findings of some other study as well [11]. The use of PPE, like masks (N-95), gloves, gowns, and goggles or face shields, is recommended to protect skin and mucosa from (potentially) infected blood or respiratory secretions [34]. Appropriate use significantly reduces risk of viral transmission.

Astonishingly, one third of subjects in the present study were not fully aware regarding mandatory PPE which is in contrast to findings of some other studies [11, 35] Following the pandemic alert by WHO, Government of India provided diagnostic facilities for novel coronavirus testing for suspected cases at designated centres throughout the country [36]. The most effective and economical means to prevent and control infectious diseases is through vaccines. While most of the vaccines against COVID-19 are under design and preparation, there are some that have entered efficacy evaluation in animals and initial clinical trials [31]. Dental emergencies can occur and exacerbate in a short period and therefore need immediate treatment. Till now, there has been no consensus on the provision of dental services during the current pandemic [31]. Currently there is no specific treatment available to treat COVID-19, so the management of COVID-19 has been largely supportive that includes infection prevention and control measures to lower the risk of transmission and isolation [13, 30]. Two-third of the subjects in our study agreed to this fact which is in contrast to findings of a recent study conducted on health care workers in China [37].

Hand hygiene has been considered the most vital measure for minimizing the risk of transmitting microorganism to patients **[10]**. More than 90% of subjects used alcohol rub or soap and water to clean their hands after treating patients in our study. Coronavirus-2 can persist on surfaces for a few hours or up to several days, depending on the nature of surface, the temperature, or the humidity of the environment **[31]**. Fumigation of the dental operatory with drawers open should be done at least once a week to make the operating area completely sterile. However, hardly one-third of subjects fumigated their clinics in this study. The present study had few limitations as well. The sample size utilized in the study is small because the whole city is under 'Lockdown' as panic created by the pandemic has kept the people homebound who are busy managing their personal affairs. As a result, certain aspects related to COVID-19 could have been possibly left behind. Moreover, the study relied upon self-reported data, which is dependent upon subjects' honestly and recall ability. Thus it may give rise to recall bias.

CONCLUSION

The present study concluded that most of the subjects had fair knowledge regarding COVID-19, yet there were significant knowledge gaps in some of the important aspects like knowledge regarding PPE, vaccine trials etc. These findings clearly indicate the importance of improving subjects' COVID-19 knowledge via health education and training programs through webinars on infection control and hygiene practices for COVID-19 across all healthcare professions.

REFERENCES

[1] Paraskevis D, Kostaki EG, Magiorkinis G, Panayiotakopoulos G, Sourvinos G, Tsiodras S. Full-genome evolutionary analysis of the novel corona virus (2019-nCoV) rejects the hypothesis of emergence as a result of a recent recombination event. Infect Genet Evol. 2020 Apr;79:104212.

[2] Riou J, Althaus CL. Pattern of early human-to-human transmission of Wuhan 2019 novel coronavirus (2019-nCoV), December 2019 to January 2020. Euro Surveill [Internet]. 2020 Jan;25(4). Available from: http://dx.doi.org/10.2807/1560-7917.ES.2020.25.4.2000058

[3] Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, *et al.* A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med. 2020 Feb 20;382(8):727–33.

[4] Zhou P, Yang X-L, Wang X-G, Hu B, Zhang L, Zhang W, *et al.* A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020 Mar;579(7798):270–3.

[5] Giovanetti M, Benvenuto D, Angeletti S, Ciccozzi M. The first two cases of 2019-nCoV in Italy: Where they come from? J Med Virol. 2020 May;92(5):518–21.

[6] Fang L, Karakiulakis G, Roth M. Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection? Lancet Respir Med. 2020 Apr;8(4):e21.

[7] Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, *et al.* Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. N Engl J Med. 2020 Mar 26;382(13):1199–207.

[8] Jin Y-H, Cai L, Cheng Z-S, Cheng H, Deng T, Fan Y-P, *et al.* A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). Mil Med Res. 2020 Feb 6;7(1):4.

[9] Guan W-J, Ni Z-Y, Hu Y, Liang W-H, Ou C-Q, He J-X, *et al.* Clinical characteristics of 2019 novel coronavirus infection in China. medRxiv. 2020 Feb 9;2020.02.06.20020974.

[10] Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, *et al.* Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. 2020 Feb 15;395(10223):507–13.

[11] Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, *et al.* Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020 Feb 15;395(10223):497–506.

[12] Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, *et al.* COVID-19 Awareness Among Healthcare Students and Professionals in Mumbai Metropolitan Region: A Questionnaire-Based Survey. Cureus. 2020 Apr 2;12(4):e7514.

[13] Khader Y, Al Nsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, *et al.* Dentists' Awareness, Perception, and Attitude Regarding COVID-19 and Infection

Control: Cross-Sectional Study Among Jordanian Dentists. JMIR Public Health Surveill. 2020 Apr 9;6(2):e18798.

[14] CDC Releases Interim Reopening Guidance for Dental Settings [Internet]. 2020 [cited 2020 Jun 5]. Available from: https://www.cdc.gov/oralhealth/infe ctioncontrol/statement-COVID.html

[15] Clinical management of COVID-19 [Internet]. [cited 2020 Jun 5]. Available from: https://www.who.int/publications/i/i tem/clinical-management-of-covid-19

[16] Jesudasan JS, Wahab PUA, Sekhar MRM. Effectiveness of 0.2% chlorhexidine gel and a eugenol-based paste on postoperative alveolar osteitis in patients having third molars extracted: a randomised controlled clinical trial. Br J Oral Maxillofac Surg. 2015 Nov 1;53(9):826–30.

[17] Christabel A, Anantanarayanan P, Subash P, Soh CL, Ramanathan M, Muthusekhar MR, *et al.* Comparison of pterygomaxillary dysjunction with tuberosity separation in isolated Le Fort I osteotomies: a

prospective, multi-centre, triple-blind, randomized controlled trial. Int J Oral Maxillofac Surg. 2016 Feb 1;45(2):180–5.

[18] Marimuthu M, Andiappan M, Wahab A, Muthusekhar MR, Balakrishnan A, Shanmugam S. Canonical Wnt pathway gene expression and their clinical correlation in oral squamous cell carcinoma. Indian J Dent Res. 2018 May;29(3):291–7.

[19] Packiri S, Gurunathan D, Selvarasu K. Management of Paediatric Oral Ranula: A Systematic Review. J Clin Diagn Res. 2017 Sep;11(9):ZE06–9.

[20] Mp SK. Relationship between dental anxiety and pain experience during dental extractions. Asian J Pharm Clin Res. 2017;10(3):458–61.

[21] Patil SB, Durairaj D, Suresh Kumar G, Karthikeyan D, Pradeep D. Comparison of Extended Nasolabial Flap Versus Buccal Fat Pad Graft in the Surgical Management of Oral Submucous Fibrosis: A Prospective Pilot Study. J Maxillofac Oral Surg. 2017 Sep;16(3):312–21.

[22] Rao TD, Kumar MP. Analgesic Efficacy of Paracetamol Vs

Ketorolac after Dental Extractions. Research Journal of Pharmacy and Technology. 2018;11(8):3375–9.

[23] Abhinav RP, Selvarasu K, Maheswari GU, Taltia AA. The Patterns and Etiology of Maxillofacial Trauma in South India. Ann Maxillofac Surg. 2019 Jan;9(1):114–7.

[24] Mp SK. The emerging role of botulinum toxin in the treatment of orofacial disorders: Literature update. Asian J Pharm Clin Res. 2017;10(9):21–9.

[25] Rahman R, Mp SK. KNOWLEDGE, ATTITUDE, AND AWARENESS OF DENTAL UNDERGRADUATE STUDENTS REGARDING HUMAN IMMUNODEFICIENCY VIRUS/ACQUIRED IMMUNODEFICIENCY SYNDROME PATIENTS. Asian J Pharm Clin Res. 2017;10(5):175–80.

[26] Kumar S, Snena S. Knowledge and awareness regarding antibiotic prophylaxis for infective endocarditis among undergraduate dental students. Asian J Pharm Clin Res. 2016;9:154–9.

[27] Patturaja K, Pradeep D. Awareness of Basic Dental Procedure among General Population. Research Journal of Pharmacy and Technology. 2016;9(9):1349–51.

[28] Jain SV, Muthusekhar MR, Baig MF, Senthilnathan P, Loganathan S, Wahab PUA, et al. Evaluation of three-dimensional changes in pharyngeal airway following isolated lefort one osteotomy for the correction of vertical maxillary excess: a prospective study. J Maxillofac Oral Surg. 2019;18(1):139–46.

[29] Mp SK. Knowledge, attitude and practices of dental students toward dental management of patients on antiplatelet therapy. Asian J Pharm Clin Res. 2016;9(3):270–6.

[30] Mp SK, Rahman R. Knowledge, awareness, and practices regarding biomedical waste management among undergraduate dental students. Asian J Pharm Clin Res. 2017;10(8):341–5.

[31] Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. J Dent Res [Internet]. 2020; Available

from:
https://journals.sagepub.com/doi/abs/10.1177/0022034520914246

[32] Fan Y, Zhao K, Shi Z-L, Zhou P. Bat Coronaviruses in China. Viruses [Internet]. 2019 Mar 2;11(3). Available from: http://dx.doi.org/10.3390/v11030210

[33] Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, *et al.* Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. JAMA [Internet]. 2020; Available from: https://jamanetwork.com/journals/jama/article-abstract/2761044

[34] Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci. 2020 Mar 3;12(1):9.

[35] Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, *et al.* Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. JAMA [Internet]. 2020 Mar 4; Available from: http://dx.doi.org/10.1001/jama.2020.3227

[36] Bin SY, Heo JY, Song M-S, Lee J, Kim E-H, Park S-J, *et al.* Environmental Contamination and Viral Shedding in MERS Patients During MERS-CoV Outbreak in South Korea. Clin Infect Dis. 2016 Mar 15;62(6):755–60.

[37] Fehr AR, Perlman S. Coronaviruses: an overview of their replication and pathogenesis. Methods Mol Biol. 2015;1282:1–23.