European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 07, Issue 01, 2020

Knowledge, Attitude And Practise Of Dentists Towards Management Of Patients During Covid-19 Pandemic - A Questionnaire Survey

Sudarsan R[1] , Surendar Sugumaran2, Anjaneyulu K[1]

[1]Saveetha Dental College and Hospitals,Saveetha Institute of Medical and Technical Sciences,Saveetha University,Chennai - 77
[2]Senior lecturer,Department of Conservative Dentistry and Endodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical and Technical Sciences,Saveetha University,Chennai - 77 [3]Reader,Department of Conservative Dentistry and Endodontics,Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences,SaveethaUniversity,Chennai– 77

EMAIL: [1]151701008.sdc@saveetha.com [2]kanjaneyulu.sdc@saveetha.com
[3]ssurendar.sdc@saveetha.com

ABSTRACT: The Coronavirus disease 2019 (COVID-19) epidemic has become a growing public health challenge for countries across the world. The risk of cross infection can be high between patients and dental practitioners due to the characteristics of the dental setting. Dentists should constantly be aware of such infectious threats that challenge the routine infection control regimen. The aim of this study was to assess the Knowledge, Attitudes and Practices (KAP) regarding the COVID-19 pandemic among dental undergraduate students. An online questionnaire that consisted of a series of questions regarding dentists' demoFigureic details; their knowledge about the incubation period, the symptoms, mode of transmission and infection control measures for prevention of COVID-19; and their attitude toward treating patients with COVID-19 was used. The study was conducted among undergraduate students of a private dental institute. Data was collected from filled questionnaires and analysed using SPSS software. A total of 209 undergraduate dental students participated in the online survey. A majority of students (96.7%) believe that transmission of COVID-19 can be prevented by using standard and isolation precautions given by CDC, WHO, ICMR and 73.2% were aware of the guidelines to be followed during the COVID-19 lockdown. 92.3% had not undergone any online training for management of patients during COVID-19. Study participants (62.7%) also expressed a positive attitude towards willingness to perform emergency dental procedures. Almost half the study population refused to perform their clinical rotation in a hospital without clear COVID-19 infection control isolation policy. Majority of the participants had sufficient knowledge regarding transmission and risk of spread of COVID-19 in dental settings. Students also demonstrated a positive attitude toward performing dental treatment provided adequate guidelines were followed in the hospital.

KEYWORDS: Awareness; COVID-19; dental treatment; dentists

1. INTRODUCTION

In December 2019, Wuhan, Hubei, China experienced a series of pneumonia outbreaks of unknown origin. Almost a month later, scientists isolated a novel coronavirus as the cause and discovered that it was severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) differing from SARS-CoV, MERS-CoV, avian influenza, among other common viruses that cause respiratory illness (Guo et al., 2020). It appears that the rapidly spreading coronavirus is more contagious than diseases like SARS-CoV and MERS-CoV(Meng et al., 2020). COVID-19 is structurally an ss-RNA, enveloped virus and it has a size of ~350 kilobase-pair (kbp) (Chen et al., 2020). Usually the infected person presents with an upper respiratory tract infection (RTI) and typical complaints of fever (high grade), dry cough and dyspnea (Guan et al., 2020). Suspected individuals are recommended to be kept in self-isolation/quarantine. Such individuals remain under observation until investigation by the real-time polymerase chain reaction (RT-PCR) can be done (Corman et al., 2020). Unfortunately, an antiviral vaccine is yet to be made available on the market, but clinical trials have been initiated by some countries (Khurshid et al., 2020). Patients unfortunately have to rely on supportive therapy for the time being; such as vitamin supplements (A, C and D), chloroquine phosphate and supportive healthcare till the body's immune system is capable of eradicating the infection (Zhang and Liu, 2020). Since the body's immune system is vital to combat this disease, elderly patients with underlying chronic debilitating disease are at a higher risk of being infected in comparison to young and healthy individuals who have a strong immune system (Wu et al., 2020). Even though the mortality rate associated with COVID-19 is low (close to 4 million worldwide as of June 2020) , its transmission potential is high (Chen, 2020).

The routes that are said to cause human-to-human transmission are through airborne droplets, either touching or coming into direct contact with an infected person or a contaminated surface. Since these routes of transmission are highly likely in the dental setting, it raises the concern about a similar route of spread for COVID-19 (Ibrahim et al., 2017). A huge number of medical staff reported while working with infected individuals that they had acquired the disease. And the dental clinic is no exception for a similar occurrence for transmitting and contracting the infection between staff or individuals. Moreover, the close contact with patients due to the nature of dental treatment makes the dental clinic a riskier environment for the spread of infection (Zemouri et al., 2017). Ideally patients who are diagnosed with COVID-19 are not supposed to receive dental treatments, however dental emergencies can arise, and such situations demand dental treatment and makes close contact unavoidable. Dentists specifically perform dental treatment in close contact with patients all the while being exposed to aerosol and droplets escaping out of the patient's oral cavity (Ather et al., 2020; Meng et al., 2020). Therefore, dentists are at a higher risk of acquiring the disease from infected patients and become potential carriers and possibly transmit the infection to other members of their dental team, their families, and also other patients (Ahmed et al., 2020) The

median incubation period, before the patient exhibits any symptoms, was determined to be 5.1 days(Lauer et al., 2020) or up to 14 days in some cases (Backer et al., 2020; Li et al., 2020). What makes the disease challenging to recognise by the medical staff for the existence of COVID-19 is due to the relatively prolonged incubation period of the disease in addition to the postinfection period that could result in increase in the transmission of the disease during these lay periods. Hence, patients infected with COVID- 19, that are asymptomatic, are considered a great threat to dentists and also other members in the dental team. Therefore dentists in general should possess an adequate level of awareness to deal with this disease and be better equipped to control and manage its spread.

Centers for Disease Control and Prevention (CDC), the American Dental Association (ADA), and the World Health Organization have recommended practical guidelines for dentists and dental staff to follow to control the spread of COVID-19 (for Disease Control et al., 2020; Organization and Others, 2020). These recommendations, like with other infectious diseases, include hand washing, detailed patient history and evaluation, personal protective equipment (PPE), isolation with rubber dam, use of anti retractionhandpiece, mouth rinsing before performing dental procedures, and disinfection of the dental clinic. In addition to these guidelines, reports have provided helpful information regarding the cause, signs and symptoms of the disease, modes of transmission, and referral mechanisms that can effectively increase dentists' knowledge and also their prevention practices. This in turn will help dentists contribute in disease control and prevention at a population level (Meng et al., 2020; Organization and Others, 2020).

Despite the prevention guidelines and recommendations on disease control being made available, low interest in taking the mandatory precautions have resulted in many dental practices to lack the minimum requirements in terms of infection control. This extra effort by dental facilities that is essential but neglected due to a lack of interest could be due to a high volume of patients attended to a clinic, particularly those which charge a nominal fee (Matsuda et al., 2011; Mehtar et al., 2007). In recent times the research in dentistry is on newer preventive (Nandakumar and Nasim, 2018) and diagnostic aids (Janani et al., 2020; Teja et al., 2018), and development in treatment modalities (Jose and Subbaiyan, 2020; Kumar and Antony, 2018; Ravinthar and Others, 2018; Teja and Ramesh, 2019), instrumentation (Ramamoorthi et al., 2015; Ramanathan and Solete, 2015) and analysis of dental materials (Hussainy et al., 2018; Manohar and Sharma, 2018; Noor and Others, 2016; Rajakeerthi and Ms, 2019; Rajendran et al., 2019; Siddique et al., 2019). However a shift in focus of research to better equip dentists in situations similar to this pandemic is imminent. Countries like India are likely affected by situations like these, as they consist of clinics that apply proper safety and prevention measures in their practise and clinics that poorly follow infection control protocol. Thus it is imperative to implement adequate guidelines and preventive measures in dental establishments to increase the level of awareness among dentists. Hence, this study aimed to assess the level of awareness, perception, attitude and practices regarding COVID-19 among dental students.

2. MATERIALS AND METHODS

This was an online questionnaire-based study which was conducted among the undergraduate students from a private dental college, Chennai. The study was approved by the Institutional Ethics Committee. Students who were willing to participate in the study were included. The questions were developed after reviewing relevant literature and international guidelines (for Disease Control et al., 2020; Meng et al., 2020; Organization and Others, 2020). The questionnaire consisted of 21 questions which included demographic details, and questions regarding their knowledge and awareness regarding COVID-19 and attitude and perception towards management of patients with COVID-19 (Khader et al., 2020).

First part of the questionnaire was regarding the demographic details of the study participant such as age, gender, qualification and years of clinical experience. The second part consisted of 12 questions regarding their knowledge about COVID-19, such as awareness of various modes of transmission, high risk groups for contracting the disease, importance of travel history, infection control measures, guidelines in treating patients with COVID-19, and nature of practice during COVID-19 lockdown. The third part assessed the attitude and perception of dentists in treating patients during the COVID-19 pandemic. 5 statements were listed addressing the primary mode of spread in a dental setting, importance of educating patients, preference ,risks and infection protocol in performing emergency dental procedures and the responses were evaluated by a 5-point Likert scale rating ranging from strongly disagree (score 1) to strongly agree (score 5).

The data was collected from the filled questionnaires and was entered in Microsoft Excel spreadsheet. The statistical program SPSS was used for data management and analysis. Descriptive statistics was computed. The frequency for each domain of knowledge, attitude, and practice was calculated after giving weightage for each option. Statistical chi-square test was used to analyze the significance in the knowledge, attitude, and practice between various factors. A $P < 0.05$ was considered to be statistically significant.

3. RESULTS AND DISCUSSION

A total of 209 students participated in this study and the response rate was 60.10% (125/209) among female students and 39.90% (84/209) among male students. The demographic data is represented in Table 1 and graph 1-3. A majority (97.12%) thought transmission of COVID-19 can be prevented by using standard and isolation precautions given by CDC, WHO, ICMR (graph 4). Among the kind of patients at the dental hospitals, 40.87% of the study population thought High-risk groups included patients with chronic lung disease (graph 5). 73.56% of the students were aware of the guidelines to be followed by dentists during the COVID-19 lockdown (graph 6), even though almost the entire population (92.79%) had received no online training by WHO for management of patients during COVID-19 (graph 7). 92.79% received calls from your patients during this lockdown (graph 8). Almost half the study population (57.21%) preferred on-call consultation rather than in house for managing patients with dental problems (graph 9). Pain and swelling being the most frequent (32.69%) chief

complaint (graph 10). Majority of the participants did not routinely assess travel history for the patient before scheduling an appointment during the emergencies (54.33%) (graph 11). Nature of practise of about 62.50% of the dentists was restricted practise handling emergency dental treatment (graph 12). Although 41.35% still performed routine dental treatment (graph 13), 99.90% of the dentists were found to not procure the Personal Protective Equipment (PPE) for emergency dental treatment (graph 14). More than half the study participants were not aware of any guidelines to prescribe ibuprofen (72.12%) (graph 15).

Majority of the dentists (51.92%) agreed that the primary spread of COVID-19 infection is through aerosols from dental procedures (graph 16). Educating patients about COVID-19 was thought of as an important step by 45.67% of the dentist to prevent the spread of the disease (graph 17). More than half the study population agreed that it is mandatory to perform emergency dental procedures to address patients with dental problems (62.98%) (graph 18) and that they're at risk of becoming a potential carrier of COVID-19 by performing routine dental treatment (63.48%) (graph 19). Almost more than half of the study participants (63.48%) did not want to perform their clinical rotation in a hospital without a clear COVID-19 infection control isolation policy (graph 20).

On comparison of responses based on gender, a few significant associations were noticed. Majority of females had responded to not having undergone online training by WHO (53.85%) when compared to males (graph 21). Majority of males did not assess travel history (31.73%) whereas the majority of females routinely assessed travel history (37.50%) (graph 22). Majority of females had responded to not procuring PPE for emergency treatment (50.48%) when compared to males (graph 23). Majority of females strongly agree (8.17%) and agree (32.69%) to this statement when compared to males (graph 24). Majority of females chose restricted dental practise handling only emergencies (54.33%) whereas males chose regular practise (31.73%) (graph 25).

Participants of the current study had a good knowledge overall regarding COVID-19. This is similar to studies that concluded good knowledge scores in treating patients during COVID-19 pandemic (Bhagavathula et al., 2020; Cagetti et al., 2020; Duruk et al., 2020; Gambhir et al., 2020; Huynh et al., 2020; Kamate et al., 2020; Quadri et al., 2020). On the contrary, there are studies performed among dental health care workers previously that indicate inadequate knowledge on the standard precautions to be followed for other infectious diseases and their transmission (Haridi et al., 2016; Kochlamazashvili et al., 2018). There is adequate knowledge among the dentists of the current study regarding guidelines recommended by WHO,CDC and ICMR. However most of the participants had undergone no online training of the same guidelines prescribed by WHO to manage patients in a clinical setting. This is in accordance to a previous study among dentists in Turkey and indicates a need for mandatory participation in online training and an increase in the number of online training courses regarding WHO,CDC recommended guidelines as these current levels are too low for dentists who are high risk individuals for contracting COVID-19 (Duruk et al., 2020). The number of these meetings should be increased, and participation in meetings should be mandatory for dentists.The students similarly were unaware of the guidelines to prescribe ibuprofen to

patients. Dentists were also aware that the primary source of spread in infection is through aerosols. The spread of COVID-19 poses a threat for those people who come in close contact with an individual who is already infected with the disease. The risk is significantly higher among those individuals who are in close proximity (relatives,caretakers) or work near the patient (healthcare workers). The distance between the dentist and working field is about 35 to 40 cm, with certain procedures being very time-consuming. This puts the dentist at a comparatively higher risk of contracting the COVID-19 disease (Meng et al., 2020; Pîrvu et al., 2014).

Majority of the study participants chose patients with underlying chronic lung disease as high risk individuals implying they are aware that these patients are at a comparatively higher risk of infection and mortality. This finding was similar to some previous studies regarding COVID-19 in Vietnam and China (Carlos et al., 2020; Huynh et al., 2020; Phan et al., 2020). This shows that dental HCWs need to practise caution in patients with underlying chronic diseases as these patients are more likely to be affected greatly by the illness. The nature of practise of most of the dentists was restricted practise with the students performing only emergency dental treatment and the calls received by the dentists were also predominantly for emergency purpose like pain and swelling. This restriction to perform only emergency dental treatment holds true to many countries to possibly reduce community spread of the disease and also due to the high risk involved with performing dental treatment.

They also showed a positive attitude in treating patients during the lockdown and felt emergency dental treatments are mandatory even in a pandemic situation, given that proper infection control policies are followed in the hospital. The students believed educating the patients to be an important step in preventing further spread of the disease. This is in accordance with a previous study where dentists had chosen educating the patients regarding COVID-19 as the most important variable (Duruk et al., 2020). However participants of this study expressed concern over becoming potential carriers of the disease when performing routine dental treatment. Similar fear of risk of becoming a potential carrier of the disease was reported in previous studies (Duruk et al., 2020; Huynh et al., 2020). Studies have also reported that dentists are apprehensive in treating patients with infectious diseases and exhibited higher psychological distress (Ahmed et al., 2020; Khader et al., 2020; Shacham et al., 2020).

Although participants were aware of the risk of transmission and the need for emergency dental treatment, their practise lacked proper protocol, such as neglect in assessing travel history that is vital to trace source of spread and possible community spread of the infection and procuring PPE prior to performing emergency dental treatment.This is in contrast to studies which show a majority of dentists include travel history while recording patient history prior to addressing their dental concerns (Bhagavathula et al., 2020; Kamate et al., 2020). A previous study showed that one third of dentists are unaware about the need for PPE (Gambhir et al., 2020). Dentists, in many countries, however in many countries did not procure PPE (Duruk et al., 2020; Khader et al., 2020). Unfortunately, this has turned out to be a common problem owing to the rising demand for PPE and the growing number of cases.

Thus the number of manufacturing companies of PPE should be promptly increased, and the cost of these products should be reduced.

4. CONCLUSION

A well-informed dental health care professional on COVID-19 can not only be a reliable source to impart correct knowledge and spread awareness in the community but also help create a safe environment to work for colleagues and patients. In the present study, the majority of dentists had adequate knowledge and positive attitude toward treating patients during COVID- 19 lockdown. There is however a decline in following the necessary guidelines for infection control in clinical practise. Dentists should be mandatorily made aware of the guidelines during a crisis, including the COVID-19 pandemic and made sure that they employ them in clinical practise to minimise risk of transmission and ensure optimal treatment in the present situation.

Authors Contribution
All authors have equal contribution in bringing out this research work.

Conflict Of Interest
Authors declare no potential conflict of interest.

REFERENCES

[1] Ahmed, M.A., Jouhar, R., Ahmed, N., Adnan, S., Aftab, M., Zafar, M.S., Khurshid, Z., 2020.Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak. Int. J. Environ. Res. Public Health 17, 2821.

[2] Ather, A., Patel, B., Ruparel, N.B., Diogenes, A., Hargreaves, K.M., 2020. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. J. Endod. 46, 584–595.

[3] Backer, J.A., Klinkenberg, D., Wallinga, J., 2020.Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20–28 January 2020.Eurosurveillance 25, 2000062.

[4] Bhagavathula, A.S., Aldhaleei, W.A., Rahmani, J., 2020. Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey on Healthcare workers. MedRxiv.

[5] Cagetti, M.G., Cairoli, J.L., Senna, A., Campus, G., 2020. COVID-19 Outbreak in North Italy: An Overview on Dentistry. A Questionnaire Survey. Int. J. Environ. Res. Public Health 17.

[6] Carlos, W.G., Dela Cruz, C.S., Cao, B., Pasnick, S., Jamil, S., 2020.Novel Wuhan (2019-nCoV) Coronavirus. Am. J. Respir. Crit. Care Med. 201, P7–P8.

[7] Chen, J., 2020. Pathogenicity and transmissibility of 2019-nCoV—A quick overview

and comparison with other emerging viruses. Microbes Infect. 22, 69–71.

[8] Chen, Y., Liu, Q., Guo, D., 2020. Emerging coronaviruses: Genome structure, replication, and pathogenesis. J. Med. Virol. 92, 418–423.

[9] Corman, V.M., Landt, O., Kaiser, M., Molenkamp, R., Meijer, A., Chu, D.K.W., Bleicker, T., Brünink, S., Schneider, J., Schmidt, M.L., Mulders, D.G., Haagmans, B.L., van der Veer, B., van den Brink, S., Wijsman, L., Goderski, G., Romette, J.-L., Ellis, J., Zambon, M., Peiris, M., Goossens, H., Reusken, C., Koopmans, M.P.G., Drosten, C., 2020. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR.Eurosurveillance 25, 2000045.

[10] Duruk, G., Gümüşboğa, Z.Ş., Çolak, C., 2020. Investigation of Turkish dentists' clinical attitudes and behaviors towards the COVID-19 pandemic: a survey study. Braz. Oral Res. 34, e054.

[11] for Disease Control, C., Prevention, Others, 2020. CDC recommendation: postpone non-urgent dental procedures, surgeries, and visits.

[12] Gambhir, R.S., Dhaliwal, J.S., Aggarwal, A., Anand, S., Anand, V., Bhangu, A.K., 2020. COVID- 19: A SURVEY ON KNOWLEDGE, AWARENESS AND HYGIENE PRACTICES AMONG DENTAL HEALTH PROFESSIONALS IN AN INDIAN SCENARIO. Rocz.Panstw.Zakl.Hig. 71.

[13] Guan, W.-J., Ni, Z.-Y., Hu, Y., Liang, W.-H., Ou, C.-Q., He, J.-X., Liu, L., Shan, H., Lei, C.-L., Hui, D.S.C., Du, B., Li, L.-J., Zeng, G., Yuen, K.-Y., Chen, R.-C., Tang, C.-L., Wang, T., Chen, P.-Y., Xiang, J., Li, S.-Y., Wang, J.-L., Liang, Z.-J., Peng, Y.-X., Wei, L., Liu, Y., Hu, Y.-H., Peng, P., Wang, J.-M., Liu, J.-Y., Chen, Z., Li, G., Zheng, Z.-J., Qiu, S.-Q., Luo, J., Ye, C.-J., Zhu, S.-Y., Zhong, N.-S., 2020. Clinical Characteristics of Coronavirus Disease 2019 in China. N. Engl. J. Med. 382, 1708–1720.

[14] Guo, H., Zhou, Y., Liu, X., Tan, J., 2020. The impact of the COVID-19 epidemic on the utilization of emergency dental services.Journal of Dental Sciences.

[15] Haridi, H.K., Al-Ammar, A.S., Al-Moazzy, I.M., 2016.Knowledge of dental health care workers about standard precautions guidelines at health care facilities in Hail Region, Saudi Arabia. International Journal of Advanced Research (IJAR) 4, 1375–1385.

[16] Hussainy, S.N., Nasim, I., Thomas, T., Ranjan, M., 2018. Clinical performance of resin-modified glass ionomer cement, flowable composite, and polyacid-modified resin composite in noncarious cervical lesions: One-year follow-up. J. Conserv. Dent. 21, 510–515.

[17] Huynh, G., Nguyen, T.N.H., Tran, V.K., Vo, K.N., Van Tam, V., Pham, L.A., 2020. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City.Asian Pac. J. Trop. Med. 13, 260.

[18] Ibrahim, N.K., Alwafi, H.A., Sangoof, S.O., Turkistani, A.K., Alattas, B.M., 2017. Cross-infection and infection control in dentistry: Knowledge, attitude and practice of patients attended dental clinics in King Abdulaziz University Hospital, Jeddah, Saudi Arabia. J. Infect. Public Health 10, 438–445.

[19] Janani, K., Palanivelu, A., Sandhya, R., 2020. Diagnostic accuracy of dental pulse oximeter with customized sensor holder, thermal test and electric pulp test for the

evaluation of pulp vitality: an in vivo study. Brazilian Dental Science 23, 8.

[20] Jose, J., Subbaiyan, H., 2020. Different Treatment Modalities followed by Dental Practitioners for Ellis Class 2 Fracture–A Questionnaire-based Survey. Open Dent. J.

[21] Kamate, S.K., Sharma, S., Thakar, S., Srivastava, D., Sengupta, K., Hadi, A.J., Chaudhary, A., Joshi, R., Dhanker, K., 2020. Assessing Knowledge, Attitudes and Practices of dental practitioners regarding the COVID-19 pandemic: A multinational study. Dent Med Probl 57, 11–17.

[22] Khader, Y., Al Nsour, M., Al-Batayneh, O.B., Saadeh, R., Bashier, H., Alfaqih, M., Al-Azzam, S., AlShurman, B.A., 2020. Dentists' Awareness, Perception, and Attitude Regarding COVID-19 and Infection Control: Cross-Sectional Study Among Jordanian Dentists. JMIR Public Health Surveill 6, e18798.

[23] Khurshid, Z., Asiri, F.Y.I., Al Wadaani, H., 2020. Human Saliva: Non-Invasive Fluid for Detecting Novel Coronavirus (2019-nCoV). Int. J. Environ. Res. Public Health 17, 2225.

[24] Kochlamazashvili, M., Kamkamidze, G., McNutt, L.-A., DeHovitz, J., Chubinishvili, O., Butsashvili, M., 2018. Knowledge, attitudes and practice survey on blood-borne diseases among dental health care workers in Georgia. J. Infect. Dev. Ctries. 12, 864–870.

[25] Kumar, D., Antony, S., 2018.Calcified Canal and Negotiation-A Review.Research Journal of Pharmacy and Technology 11, 3727–3730.

[26] Lauer, S.A., Grantz, K.H., Bi, Q., Jones, F.K., Zheng, Q., Meredith, H.R., Azman, A.S., Reich, N.G., Lessler, J., 2020. The incubation period of coronavirus disease 2019 (COVID-19) from publicly reported confirmed cases: estimation and application. Ann. Intern. Med. 172, 577–582.

[27] Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K.S.M., Lau, E.H.Y., Wong, J.Y., Xing, X., Xiang, N., Wu, Y., Li, C., Chen, Q., Li, D., Liu, T., Zhao, J., Liu, M., Tu, W., Chen, C., Jin, L., Yang, R., Wang, Q., Zhou, S., Wang, R., Liu, H., Luo, Y., Liu, Y., Shao, G.,

[28] Li, H., Tao, Z., Yang, Y., Deng, Z., Liu, B., Ma, Z., Zhang, Y., Shi, G., Lam, T.T.Y., Wu, J.T.,

[29] Gao, G.F., Cowling, B.J., Yang, B., Leung, G.M., Feng, Z., 2020. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia. N. Engl. J. Med. 382, 1199–1207.

[30] Manohar, M.P., Sharma, S., 2018. A survey of the knowledge, attitude, and awareness about the principal choice of intracanal medicaments among the general dental practitioners and nonendodontic specialists.Indian J. Dent.Res. 29, 716.

[31] Matsuda, J.K., Grinbaum, R.S., Davidowicz, H., 2011. The assessment of infection control in dental practices in the municipality of São Paulo. Braz. J. Infect. Dis. 15, 45–51.

[32] Mehtar, S., Shisana, O., Mosala, T., Dunbar, R., 2007. Infection control practices in public dental care services: findings from one South African Province. J. Hosp. Infect. 66, 65–70.

[33] Meng, L., Hua, F., Bian, Z., 2020. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. J. Dent. Res. 99, 481–487.

[34] Nandakumar, M., Nasim, I., 2018. Comparative evaluation of grape seed and cranberry extracts in preventing enamel erosion: An optical emission spectrometric analysis. J. Conserv. Dent. 21, 516– 520.
[35] Noor, S., Others, 2016.Chlorhexidine: Its properties and effects. Research Journal of Pharmacy and Technology 9, 1755–1760.
[36] Organization, W.H., Others, 2020. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance, 13 March 2020. World Health Organization.
[37] Phan, L.T., Nguyen, T.V., Luong, Q.C., Nguyen, T.V., Nguyen, H.T., Le, H.Q., Nguyen, T.T., Cao, T.M., Pham, Q.D., 2020. Importation and Human-to-Human Transmission of a Novel Coronavirus in Vietnam. N. Engl. J. Med. 382, 872–874.
[38] Pîrvu, C., Pătraşcu, I., Pîrvu, D., Ionescu, C., 2014. The dentist's operating posture - ergonomic aspects. J. Med. Life 7, 177–182.
[39] Quadri, M.F.A., Jafer, M.A., Alqahtani, A.S., Al Mutahar, S.A.B., Odabi, N.I., Daghriri, A.A., Tadakamadla, S.K., 2020. Novel corona virus disease (COVID-19) awareness among the dental interns, dental auxiliaries and dental specialists in Saudi Arabia: A nationwide study. J. Infect. Public Health.
[40] Rajakeerthi, R., Ms, N., 2019. Natural Product as the Storage medium for an avulsed tooth--A Systematic Review.Cumhuriyet Dental Journal 22, 249–256.
[41] Rajendran, R., Kunjusankaran, R.N., Sandhya, R., Anilkumar, A., Santhosh, R., Patil, S.R., 2019. Comparative Evaluation of Remineralizing Potential of a Paste Containing Bioactive Glass and a Topical Cream Containing Casein Phosphopeptide-Amorphous Calcium Phosphate: An in Vitro Study. Pesqui.Bras.OdontopediatriaClin. Integr. 19.
[42] Ramamoorthi, S., Nivedhitha, M.S., Divyanand, M.J., 2015. Comparative evaluation of postoperative pain after using endodontic needle and EndoActivator during root canal irrigation: A randomised controlled trial. Aust. Endod. J. 41, 78–87.
[43] Ramanathan, S., Solete, P., 2015. Cone-beam Computed Tomography Evaluation of Root Canal Preparation using Various Rotary Instruments: An in vitro Study. J. Contemp. Dent. Pract. 16, 869–872.
[44] Ravinthar, K., Others, 2018. Recent Advancements in Laminates and Veneers in Dentistry. Research Journal of Pharmacy and Technology 11, 785–787.
[45] Shacham, M., Hamama-Raz, Y., Kolerman, R., Mijiritsky, O., Ben-Ezra, M., Mijiritsky, E., 2020. COVID-19 Factors and Psychological Factors Associated with Elevated Psychological Distress among Dentists and Dental Hygienists in Israel. Int. J. Environ. Res. Public Health 17.
[46] Siddique, R., Sureshbabu, N.M., Somasundaram, J., Jacob, B., Selvam, D., 2019. Qualitative and quantitative analysis of precipitate formation following interaction of chlorhexidine with sodium hypochlorite, neem, and tulsi. J. Conserv. Dent. 22, 40–47.
[47] Teja, K.V., Ramesh, S., 2019. Shape optimal and clean more. Saudi Endodontic Journal 9, 235.
[48] Teja, K.V., Ramesh, S., Priya, V., 2018. Regulation of matrix metalloproteinase-3 gene expression in inflammation: A molecular study. J. Conserv. Dent. 21, 592–596.
[49] Wu, P., Hao, X., Lau, E.H.Y., Wong, J.Y., Leung, K.S.M., Wu, J.T., Cowling, B.J.,

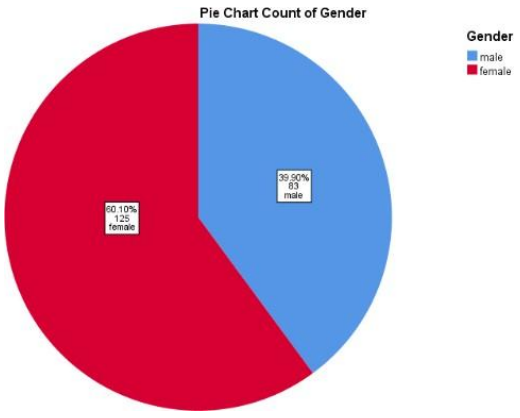
Leung, G.M., 2020.Real-time tentative assessment of the epidemiological characteristics of novel coronavirus infections in Wuhan, China, as at 22 January 2020.Eurosurveillance 25, 2000044.

[50] Zemouri, C., de Soet, H., Crielaard, W., Laheij, A., 2017.A scoping review on bio-aerosols in healthcare and the dental environment.PLoS One 12.

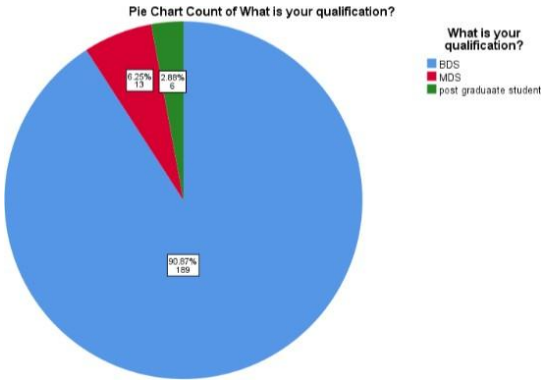
[51] Zhang, L., Liu, Y., 2020. Potential interventions for novel coronavirus in China: A systematic review. J. Med. Virol. 92, 479–490.

Characteristics	**Value** ***n***
Age (mean)	22
Gender	
Male	40.2%
Female	59.8%
Qualification	
BDS	90.4%
MDS	6.7%
Post graduate student	2.9%
Years of clinical experience	
0-5 years	99.5%
More than 5 years	0.5%

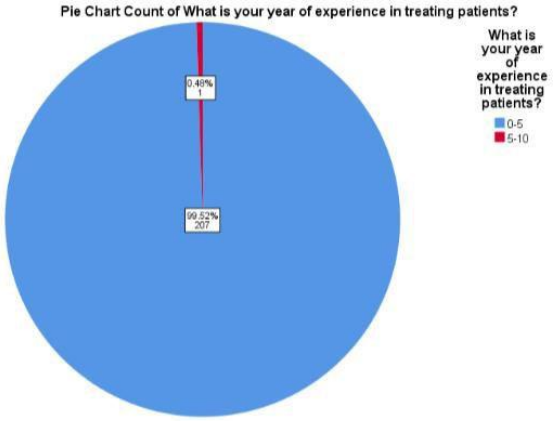
Table 1: Table representing the demographic details of the study population



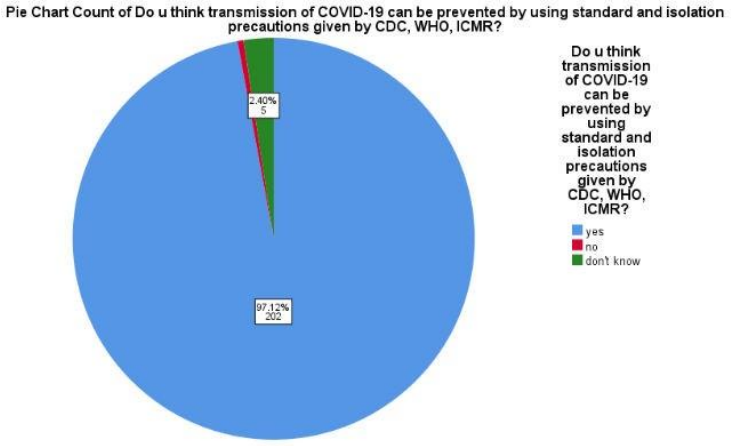
Graph 1:Pie chart represents frequency distribution of respondents based on gender. Color red and blue denotes female and male participants respectively. Majority of the participants were female (60.10%) and the remaining were male (39.90%).



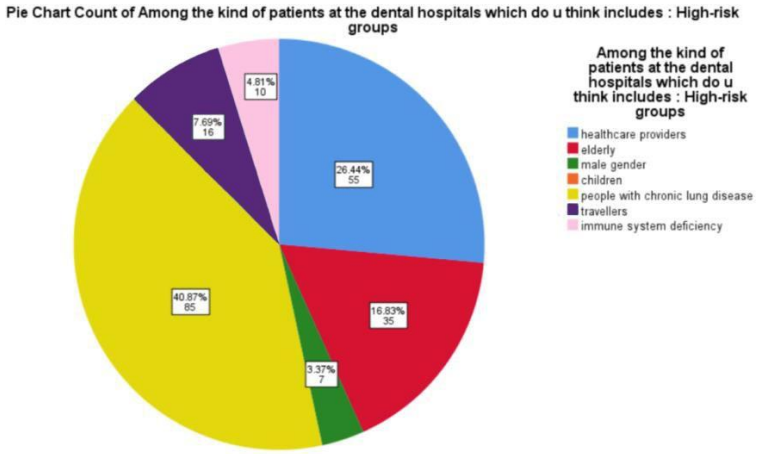
Graph 2: Pie chart representing the frequency distribution of responses to the question “What is your qualification”. Color blue represents BDS students, red represents MDS students and green represents Postgraduate students. Majority of the participants were BDS students (90.87%) and the remaining were MDS (6.25%) and postgraduate (2.88%) students.



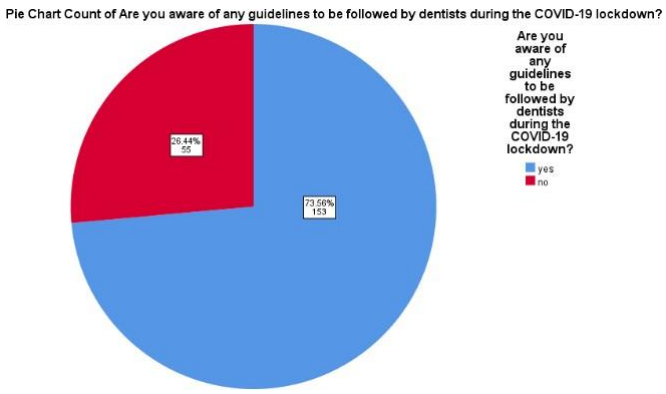
Graph 3:Pie chart represents frequency distribution of respondents to the question “What is your year of clinical experience in treating patients”. Color blue and red denotes 0-5 years and 5-10 years respectively. Majority of the participants had 0-5 years experience (99.52%) and the remaining had 5-10 years experience (0.48%).



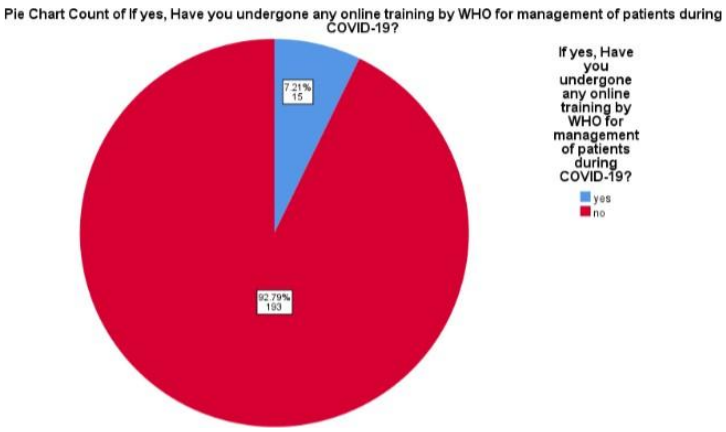
Graph 4:Pie chart represents frequency distribution of respondents to the question "Do you think transmission of COVID-19 can be prevented by using standard and isolation precautions given by CDC, WHO, ICMR". Color blue yes, red denotes no and green denotes don't know. Majority of the participants thought transmission of COVID-19 can be prevented by using standard and isolation precautions given by CDC, WHO, ICMR (97.12%).



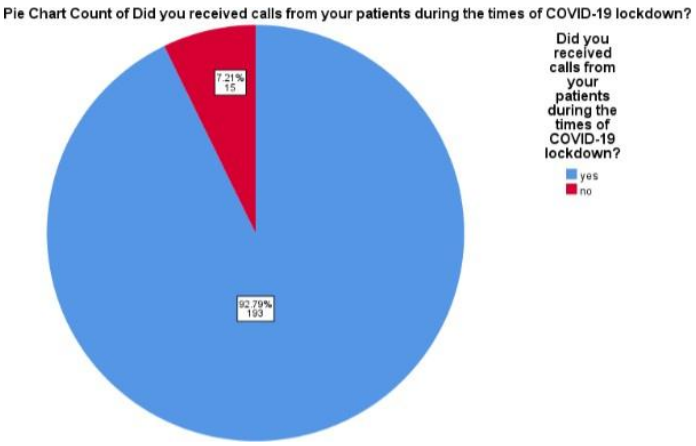
Graph 5:Pie chart represents frequency distribution of respondents to the question "Among the kind of patients at the dental hospitals which do u think includes : High-risk groups". Color blue denotes healthcare providers, red denotes elderly, green denotes male gender, yellow denotes people with chronic lung disease, violet denotes travellers and pink denotes people with immune system deficiency. Majority of participants chose people with chronic lung disease as a high risk individual for COVID-19 (40.87%).



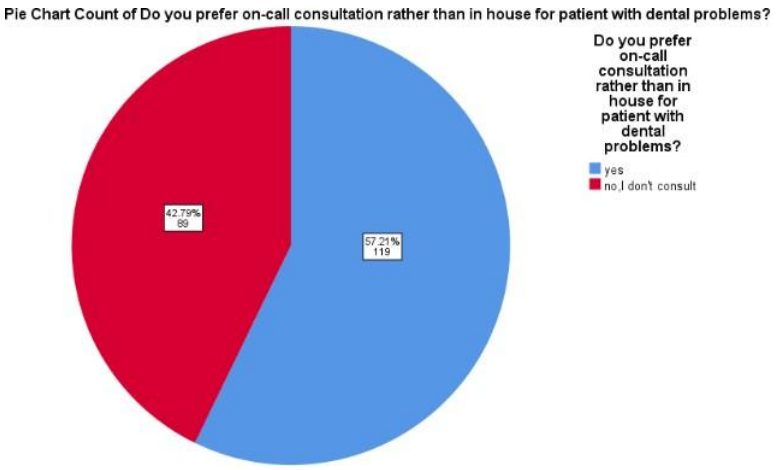
Graph 6:Pie chart represents frequency distribution of respondents to the question "Are you aware of any guidelines to be followed by dentists during the COVID-19 lockdown". Color blue and red denotes yes and no responses respectively. Majority of the participants were aware of the guidelines to be followed by dentists during the COVID-19 lockdown (73.56%).



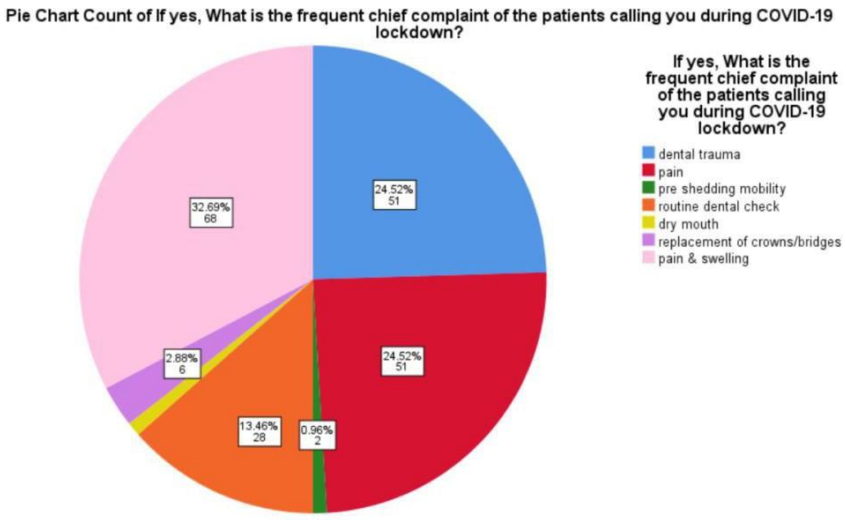
Graph 7:Pie chart represents frequency distribution of respondents to the question "If Yes, Have you undergone any online training by WHO for management of patients during COVID-19". Color blue and red denotes yes and no responses respectively. Majority of the participants had not undergone any online training by WHO for management of patients during COVID-19 (92.79%).



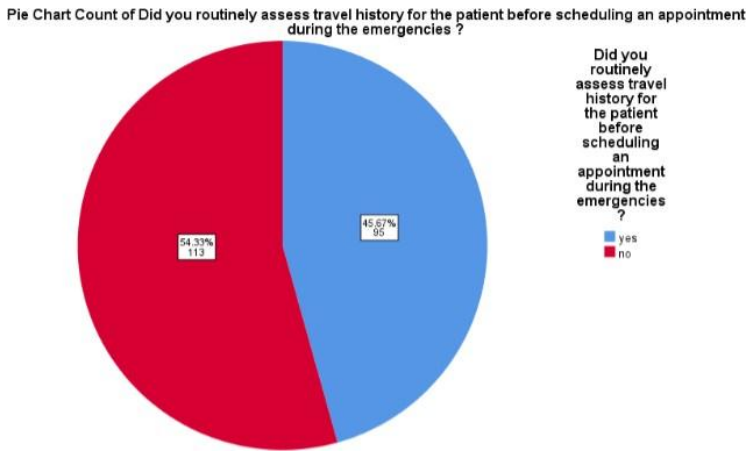
Graph 8:Pie chart represents frequency distribution of respondents to the question "Did you received calls from your patients during the times of COVID-19 lockdown". Color blue and red denotes yes and no responses respectively. Majority of the participants received calls from their patients during the times of COVID-19 lockdown (92.79%).



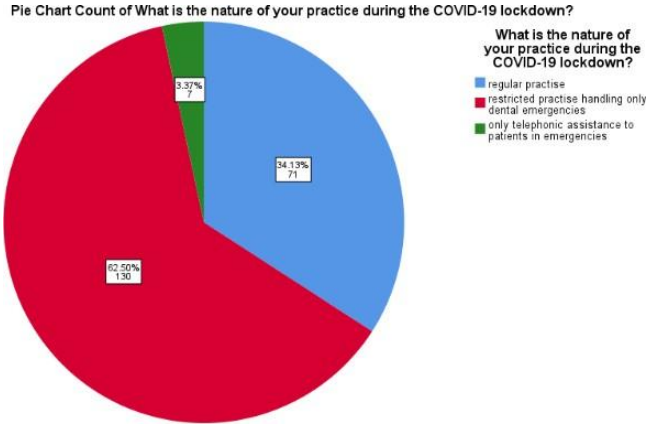
Graph 9:Pie chart represents frequency distribution of respondents to the question "Do you prefer on-call consultation rather than in house for patients with dental problems". Color blue and red denotes yes and no responses respectively. Majority of the participants prefer on-call consultation rather than in house for patients with dental problems (57.21%).



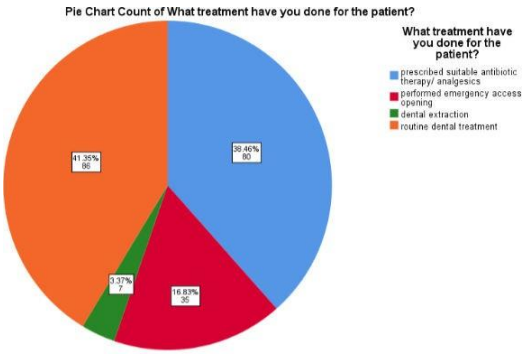
Graph 10:Pie chart represents frequency distribution of respondents to the question "If Yes, What is the frequent chief complaint of the patients calling you during COVID-19 lockdown". Color blue denotes dental trauma, red denotes pain, green denotes pre-shedding mobility, orange denotes routine dental check up, yellow denotes dry mouth, violet denotes replacement of crowns/bridges and pink denotes pain and swelling. Majority of participants chose pain and swelling as the frequent chief complaint of the patients calling you during COVID-19 lockdown (32.69%).



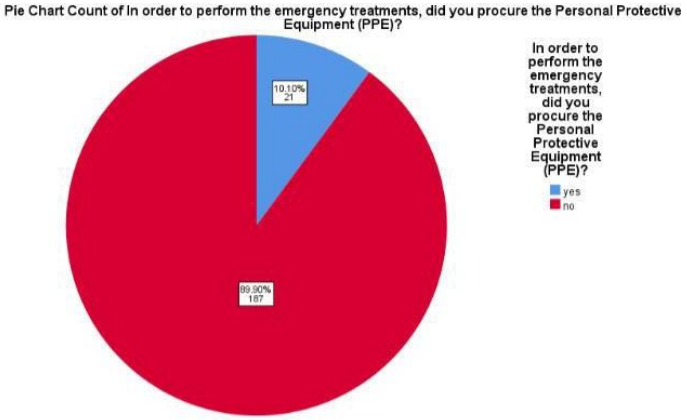
Graph 11:Pie chart represents frequency distribution of respondents to the question "Did you routinely assess travel history for the patient before scheduling an appointment during the emergencies". Color blue and red denotes yes and no responses respectively. Majority of the participants did not routinely assess travel history for the patient before scheduling an appointment during the emergencies (54.33%).



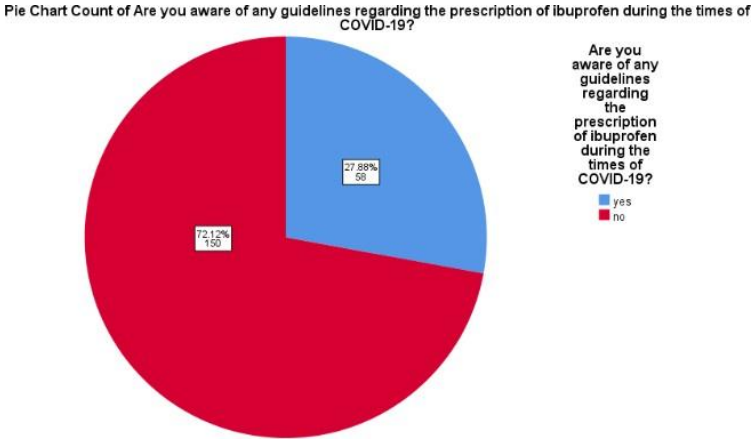
Graph 12:Pie chart represents frequency distribution of respondents to the question "What is the nature of your practice during the COVID-19 lockdown". Color blue represents regular practise, red represents restricted practise handling only dental emergencies and green represents only telephonic assistance for patients in emergencies. Majority of participants followed restricted practise handling only dental emergencies (62.50%).



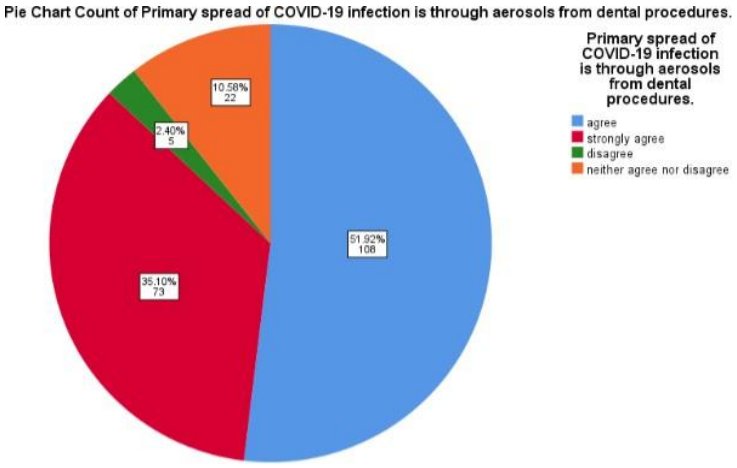
Graph 13:Pie chart represents frequency distribution of respondents to the question "What treatment have you done for the patient". Color blue denotes prescribed suitable antibiotic therapy/analgesics, red denotes performed emergency access opening, green denotes dental extraction and orange denotes routine dental treatment. Majority of participants chose routine dental treatment as the most performed treatment for patients (41.35%).



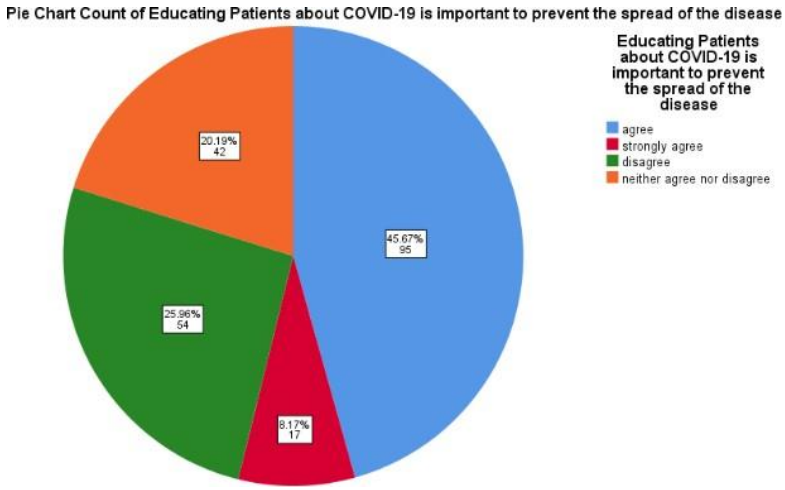
Graph 14:Pie chart represents frequency distribution of respondents to the question "In order to perform the emergency treatments, did you procure the Personal Protective Equipment (PPE)". Color blue and red denotes yes and no responses respectively. Majority of the participants did not procure the Personal Protective Equipment (PPE) (99.90%).



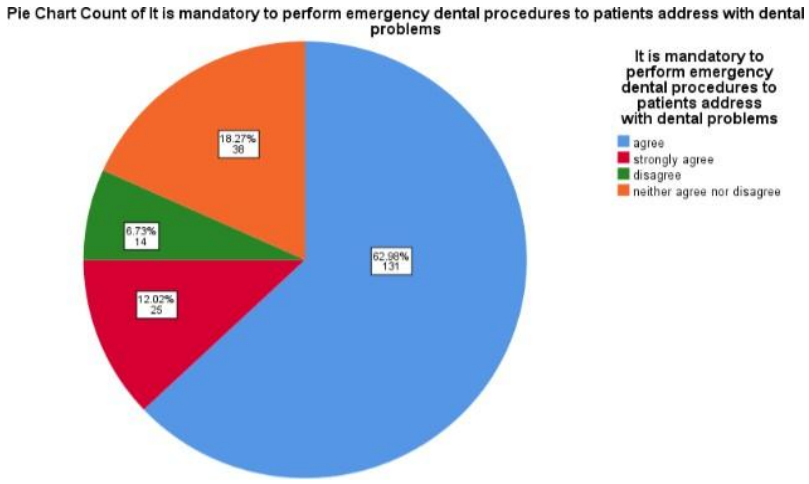
Graph 15:Pie chart represents frequency distribution of respondents to the question "Are you aware of any guidelines regarding the prescription of ibuprofen during the times of COVID-19". Color blue and red denotes yes and no responses respectively. Majority of the participants were not aware of any guidelines regarding the prescription of ibuprofen during the times of COVID-19 (72.12%).



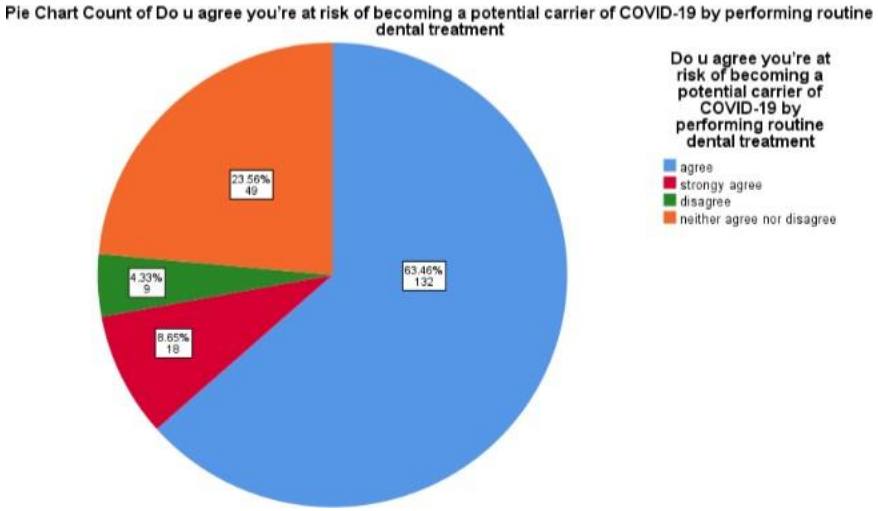
Graph 16: Pie chart represents frequency distribution of respondents to the statement "Primary spread of COVID-19 infection is through aerosols from dental procedures.". Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response. This statement was strongly agreed by 36.10% and agreed by 51.92%.



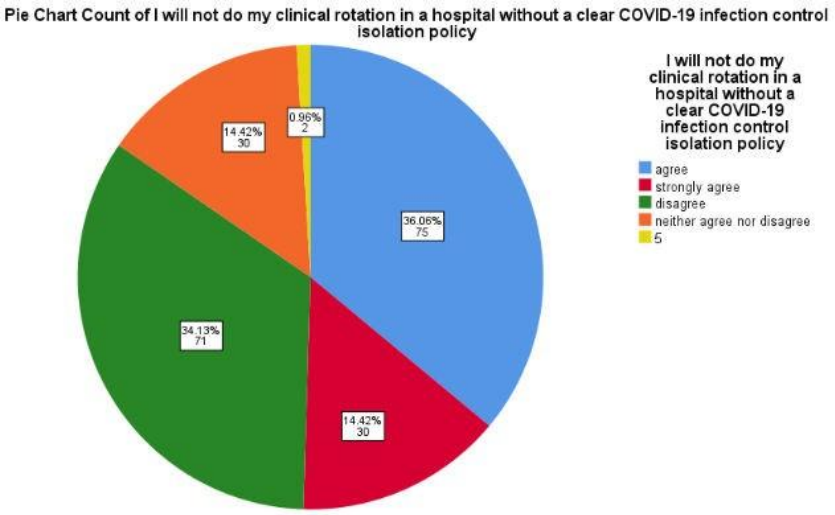
Graph 17: Pie chart represents frequency distribution of respondents to the statement "Educating Patients about COVID-19 is important to prevent the spread of the disease". Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response.This statement was strongly agreed by 8.17% and agreed by 45.67%.



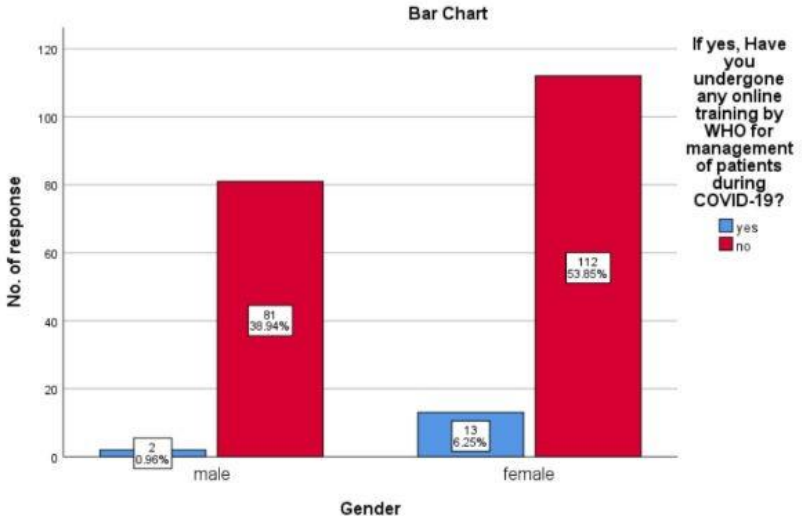
Graph 18: Pie chart represents frequency distribution of respondents to the statement "It is mandatory to perform emergency dental procedures to patients address with dental problems". Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response.This statement was strongly agreed by 12.02% and agreed by 62.98%.



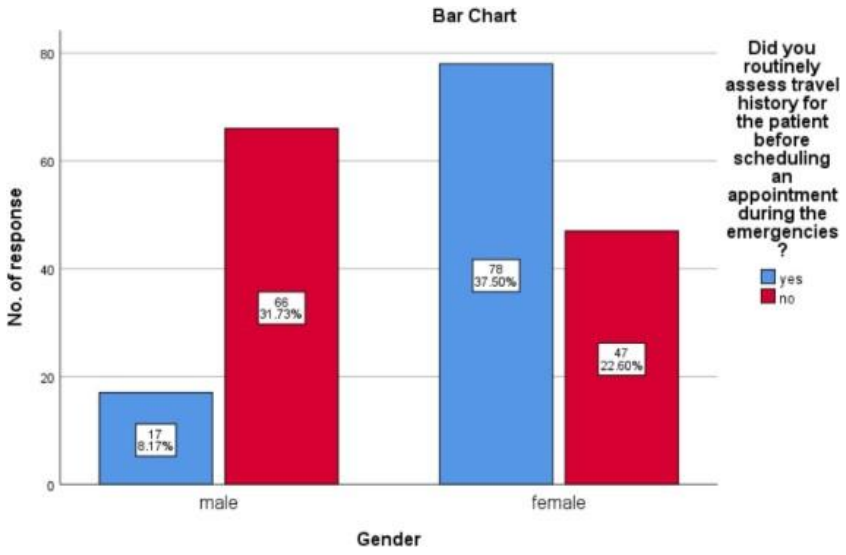
Graph 19: Pie chart represents frequency distribution of respondents to the question "Do you agree you're at risk of becoming a potential carrier of COVID-19 by performing routine dental treatment". Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response.This statement was strongly agreed by 8.65% and agreed by 63.48%.



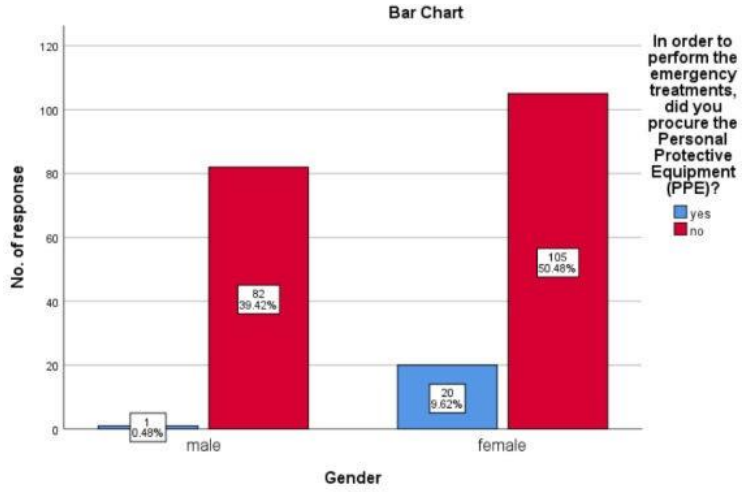
Graph 20: Pie chart represents frequency distribution of respondents to the statement "I will not do my clinical rotation in a hospital without a clear COVID-19 infection control isolation policy". Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response. This statement was strongly agreed by 8.65% and agreed by 63.48%.



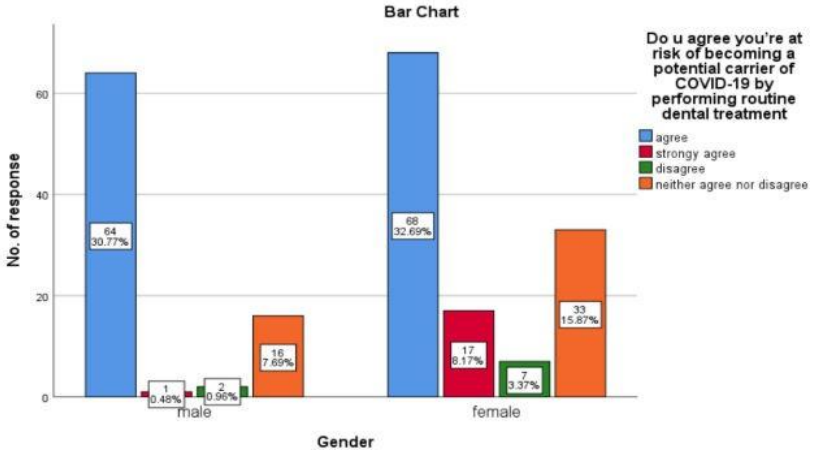
Graph 21: Bar graph representing comparison of responses based on gender to the question "Have you undergone any online training by WHO for management of patients during COVID-19". X- axis denotes the gender of respondents, Y-axis denotes the number of responses. Color blue represents yes response and red represents no response. Majority of female participants had responded to not having undergone online training by WHO (53.85%) when compared to male participants.(Chi squared test; p-value = 0.029 - statistically significant)



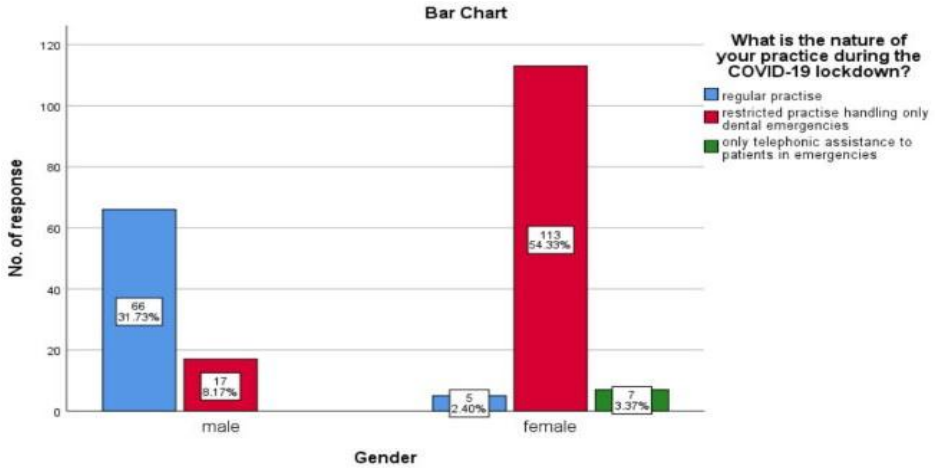
Graph 22: Bar graph representing comparison of responses based on gender to the question "Did you routinely assess travel history for the patient before scheduling an appointment during the emergencies". X- axis denotes the gender of respondents, Y-axis denotes the number of responses. Color blue represents yes response and red represents no response. Majority of male participants did not assess travel history (31.73%) whereas the majority of female participants routinely assessed travel history (37.50%), which was statistically significant. (Chi squared test; p-value = 0.000 - statistically significant)



Graph 23: Bar graph representing comparison of responses based on gender to the question "In order to perform the emergency treatments, did you procure the Personal Protective Equipment (PPE)". X- axis denotes the gender of respondents, Y-axis denotes the number of responses. Color blue represents yes response and red represents no response. Majority of female participants had responded to not procuring PPE for emergency treatment (50.48%) when compared to male participants, which was statistically significant. (Chi squared test; p-value = 0.001 - statistically significant)



Graph 24: Bar graph representing comparison of responses based on gender to the statement "Do you agree you're at risk of becoming a potential carrier of COVID-19 by performing routine dental treatment". X- axis denotes the gender of respondents, Y-axis denotes the number of responses. Color blue denotes agree response, red denotes strongly agree response, green denotes disagree response and orange denotes neither agree nor disagree response. Majority of female participants strongly agree (8.17%) and agree (32.69%) to this statement when compared to male participants, which was statistically significant. (Chi squared test; p-value = 0.002 - statistically significant)



Graph 25: Bar graph representing comparison of responses based on gender to the question "What is the nature of your practice during the COVID-19 lockdown". X- axis denotes the gender of respondents, Y- axis denotes the number of responses. Color blue represents regular practise, red represents restricted practise handling only dental emergencies and green represents only telephonic assistance for patients in emergencies. Majority of female participants chose restricted dental practise handling only emergencies (54.33%) whereas male participants chose regular practise (31.73%), which was statistically significant. (Chi squared test; p-value = 0.000 - statistically significant)