

Impact of Covid-19 pandemic among Dental Practitioner's in Patna, Eastern India

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Abstract

Introduction: The highly contagious nature of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), besides those dental procedures commonly generate blood and saliva droplets that could lead to the contagion have resulted in the closure of many dental clinics. So, this study evaluates the impact of Covid-19 pandemic on dental practice among practitioners in Patna, Eastern India.

Methods: A cross-sectional questionnaire-based survey was conducted among dental Practitioners in Patna. The survey included questions that evaluate the dentist's perceptions and attitudes toward the Covid-19 pandemic

and its effect on their personal life, financial status and the quality of dental services.

Results: A total of 150 available dentists participated in this study. A majority of 70% subjects did not perform non-emergency procedures during the pandemic. The dental practitioners have suggested several strategies to decrease the risk of contagion, such as reducing treatment sessions (37%) and using personal protective equipment (45%). Moreover, 97% of the participants reported that they encountered a decrease in their financial income since the start of this pandemic.

Conclusion: Dental health care workers are at the highest risk of contracting COVID-19 virus. Thus, dental practitioners are made aware to follow the

standard protocols more cautiously and also lower their work hours and limit dental procedures to emergency treatments to reduce the risk of COVID-19 transmission.

Keywords: COVID-19, Dental practice, Dentistry, Pandemic

Introduction

We all know that the mouth is a window into the health of the body and to maintain good health we need to maintain good oral health and for that we need dental care services which are affordable and easily available. Dental surgeons are at the highest risk of contracting and transmitting the Coronavirus, alongside paramedics, nurses, and other healthcare workers.¹

An emergent pneumonia outbreak originated in Wuhan City, in the late December 2019. The pneumonia infection has rapidly spread from Wuhan to most other provinces and other 190 countries. World Health Organization declared a public health emergency of international concern over this global pneumonia outbreak on 30th January 2020. The typical clinical symptoms of the patients who suffered from the novel viral pneumonia were fever, cough, and myalgia or fatigue with abnormal chest CT, and the less common symptoms were sputum production, headache, haemoptysis, and diarrhoea. This new infectious agent is more likely to affect older males to cause severe respiratory diseases. Some of the clinical symptoms were different from the severe acute respiratory syndrome (SARS) caused by SARS coronavirus (SARS-CoV) that happened in 2002–2003, indicating that a new person-to-person transmission infectious agent has caused this emergent viral pneumonia outbreak. On 11th February 2020, WHO named the novel viral pneumonia as “Corona Virus Disease (COVID-19)”, while the international Committee on Taxonomy of Viruses (ICTV) suggested this novel coronavirus name as

“SARS-CoV-2” due to the phylogenetic and taxonomic analysis of this novel coronavirus.³

The first case of COVID-19 in India was reported on January 30, 2020 and the first case of a novel coronavirus in Bihar was reported on March 22, 2020. As of November 28, 2021, according to the Ministry of Health and Family Welfare (MoHFW), a total of 144845 active COVID-19 cases have been reported from 32 states/union territories.

Certain factors, although hypothetical, do favour a limited spread of COVID-19 pandemic in India, notably, the ambient tropical temperatures, malarial endemicity, universal BCG (Bacillus Calmette-Guerin) vaccination, and the age-old Indian tradition of greeting by namaste as opposed to handshake.² Like all the other professions, it has severely hit the oral health-care sector, bringing all routine dental health care and dental education to a halt. Oral health-care providers are at a massive risk of transmitting and contracting this disease mainly because of the proximity of the care provider to the patient’s oropharyngeal region, exposure to saliva and blood, a lot of aerosol-generating procedures involved and a fear of cross-contamination among patients. Majority of the routine and emergency dental procedures starting from the oral examination, use of three-way syringes, tooth cleaning by ultrasonic scalers, cutting of tooth structure during cavity preparation, crown and bridge preparation with high-speed air-rotors, root canal treatment, irrigation of infected/purulent abscess areas, electrocautery, periodontal and oral surgical procedures, implant procedures, etc., generate a considerable amount of aerosol. The most common route of infection of SARS-CoV-2 is either through direct transmission or inhalation of droplets.³

Due to the nature of risk of transmission in dental care settings, Dental Council of India directed to provide only

emergency dental treatments. With the nationwide shutdown, dental professionals chose to shut down their practices. To reopen the dental practice, dental practitioners had to redesign and renovate the dental clinic set up in order to prevent risk of transmission and cross contamination. This required purchase of inventory, additional personal protective equipment's and so on. With all these developments dental practice before COVID-19 pandemic and at present has seen several changes.⁴

The expense of protective gear per patient will be reasonably high and will add to the treatment cost. Furthermore, methods of aerosol reduction such as an extra-oral high-volume suction and those of air disinfection such as high-efficiency particulate air pre-filters, and ultra-violet radiation 250–265 nm (UV-C) are advisable for filtration and destruction of virus, respectively. These methods do ensure protection but come with an added cost.

The dental procedures involve the use of many instruments, namely, hand instruments, endodontic files and reamers, scalers, extraction forceps, handpieces, burs, and impression trays. Thus, though compulsory disinfection and sterilization of each instrument each time is not an easy task to do, and needs to be monitored closely. The oral health-care providers should educate and instruct patients regarding the importance of preventive home care methods for maintaining good oral health during COVID-19 pandemic. Biggest challenge in providing dental treatment as compared to any other health-care service is that a dentist has to work near patient's open mouth.³

Till now, no studies have been conducted concerning the impact of COVID-19 pandemic on dental practice in Patna, Bihar. Hence due to dearth of literature and keeping in mind the background of this field, the present

study was conducted with the aim to analyse the impact of Covid-19 pandemic among dental practitioners in Patna, Eastern India.

Materials and methods

A descriptive Cross- Sectional study was conducted over a period of 2 months, i.e., September 2021 - October 2021 among dental practitioners of Patna city, Bihar. The proposed study was reviewed by the Ethical committee of Buddha Institute of Dental Sciences and Hospital, Patna and the required clearance was obtained. A total of 150 available dentists, registered with Bihar State Dental Council were included in the study. A simple random sampling method was used to obtain the study sample. Informed consent was obtained from each participating dentists involved in the study. Each of the participating dentists were briefed about purpose of the study and the questionnaire was distributed the same day. The completed questionnaire was collected the following day. This was done understanding their busy schedule with patients. The questionnaire used were checked for clarity, validity and content before distributing it to the participating dentists which was done under the supervision of Professor, Department of Public Health Dentistry, Buddha Institute of Dental Sciences and Hospital, Patna. The data was collected using a close-ended questionnaire. The participants were requested to answer sincerely with their clear opinion. The questionnaire consisted of 3 major sections: demographic details, 20 questions based on the Dentists' viewpoints regarding the effects of Covid-19 pandemic on dental practices and 6 questions related to Dentists' experiences during the Covid-19 pandemic

Statistical Analysis

The data so obtained was compiled systematically. A master table was prepared in MS excel worksheet and the total data was subdivided and distributed

meaningfully and presented as individual tables. Data was analyzed using IBM SPSS, Statistics Windows, and version 22(Armonk, NY: IBM Corp). For the comparison of proportions, Chi-square test was used with continuity correction whenever appropriate. 'P' value of <0.05 was taken to be statistically significant for the purpose of analysis.

Result

The present study was conducted among 150 dental surgeons who were practicing dentistry in Patna city, Eastern India, of which 70% were males and the rest 30% were females and mean age group was 34.89, age ranged between 23-56 years (Table 1).

Dentist's viewpoint regarding the effect of covid 19 pandemic on dental practices

The result showed that, an overall majority of 93.3% considered Covid 19 pandemic as a serious global health problem and 60.6% of the subjects considered taking Covid-19 test for patients should be a routine. When the results of above questions were compared with gender, it was found to be statistically significant with p value <0.05. While for questions like, are you facing financial problems because of the COVID-19 pandemic; do you feel wearing PPE (Personal Protective Equipment)

guarantees you protection against the virus; do you feel charging patients an extra amount for PPE and other precautionary accessories is acceptable; it was found to be statistically not significant when gender were compared with p value > 0.05(Table-2).

Dentists' experiences during the Covid-19 pandemic

The result shows that an overall majority of 36.7% of the subjects had cancelled all treatment until the end of the alert phase of the pandemic and 29.3% does only initial examination. 41% subjects opinioned they had a scare time during COVID-19 in finding all the mentioned equipment's. When the results of above questions were compared with gender, it was found to be statistically not significant with p value >0.05 (Table-2).

Graph 1: shows the distribution of the study population according to Age and Gender

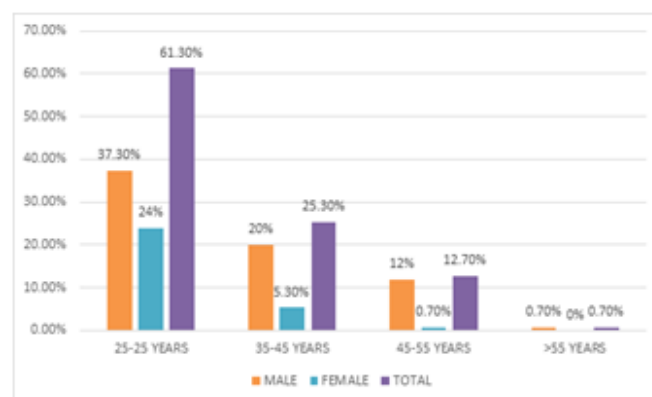


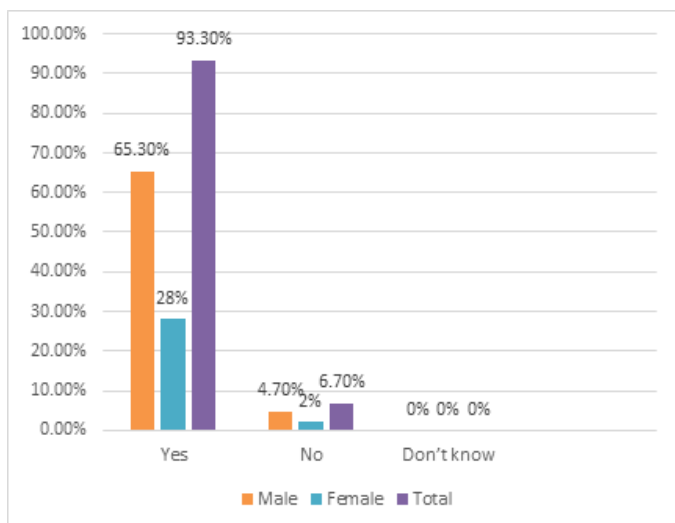
Table 1: shows the Dentists' viewpoints regarding the effects of Covid-19 pandemic on dental practices

Dentists' viewpoints regarding the effects of Covid-19 pandemic on dental practices	Male (n%)			Female (n%)			Total (n%)			P value	X ² value
	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know		
Q 1. Do you think that COVID-19 pandemic is a serious global health issue?	98 (65.3%)	7 (4.7%)	0 (0%)	42 (28)	3 (2%)	0 (0%)	140 (93.3%)	10 (6.7%)	0 (0%)	0.000*	0.000
Q 2. Do you think taking COVID-19 test for patients should be a routine?	64 (42.6%)	30 (19.9%)	11 (7.2%)	27 (17.9)	13 (8.6 %)	5 (3.3%)	91 (60.6%)	43 (28.6%)	16 (10.6%)	0.018*	0.018
Q 3. Are you facing financial problems because of the COVID-19 pandemic?	57 (38%)	37 (24.6%)	11 (7.3%)	24 (16%)	19 (12.)	2 (1.3%)	81 (54%)	56 (37.3%)	13 (8.7%)	0.419	1.739

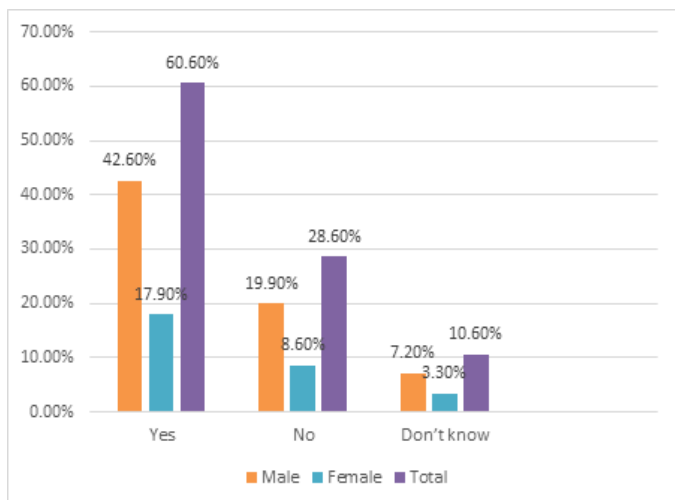
Q 4. Do you feel wearing PPE (Personal Protective Equipment) guarantees you protection against the virus?	48 (32.0%)	54 (35.9%)	3 (2%)	28 (18.6%)	14 (9.3%)	3 (2%)	76 (50.7%)	68 (45.3%)	6 (4%)	0.068	7.134
Q 5. Do you feel charging patients an extra amount for PPE and other precautionary accessories is acceptable?	52 (34.7%)	39 (23.9%)	14 (9.3%)	26 (17.3%)	17 (13.3%)	2 (1.3%)	78 (52%)	56 (37.3%)	16 (10.7%)	0.350	3.28

*p<0.05 is statistically significant, p<0.01 is statistically highly significant.

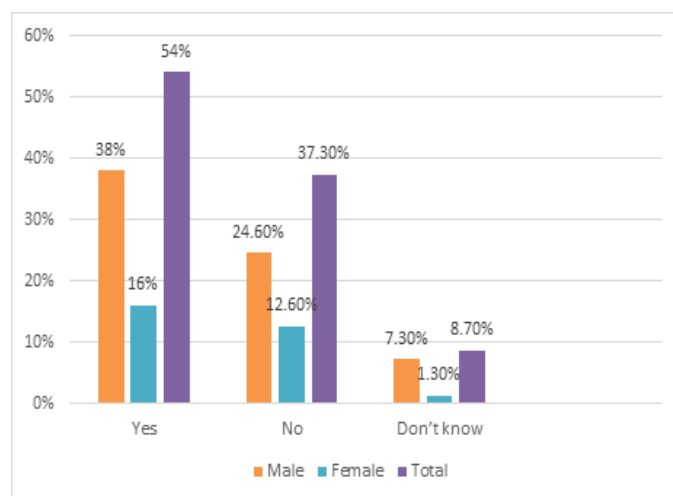
Graph 2 (Q-1): Do you think that COVID-19 pandemic is a serious global health issue?



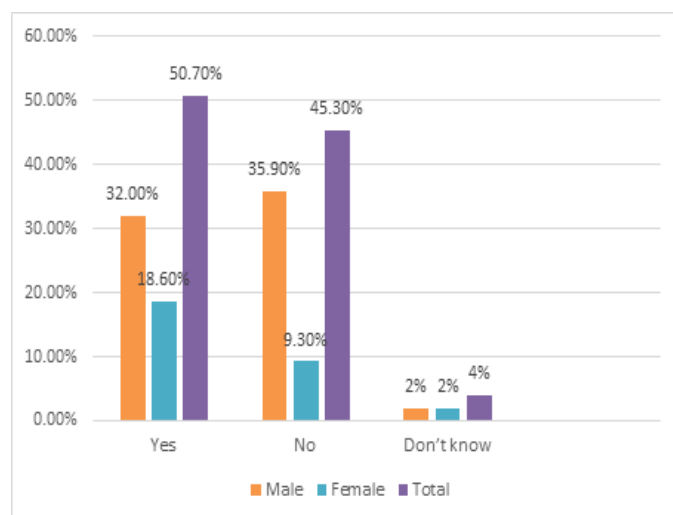
Graph 3 (Q-2): Do you think taking COVID-19 test for patients should be a routine?



Graph 4 (Q-3): Are you facing financial problems because of the COVID-19 pandemic?



Graph 5(Q-4): Do you feel wearing PPE (Personal Protective Equipment) guarantees you protection against the virus?



Graph 6(Q-5): Do you feel charging patients an extra amount for PPE and other precautionary accessories are acceptable?

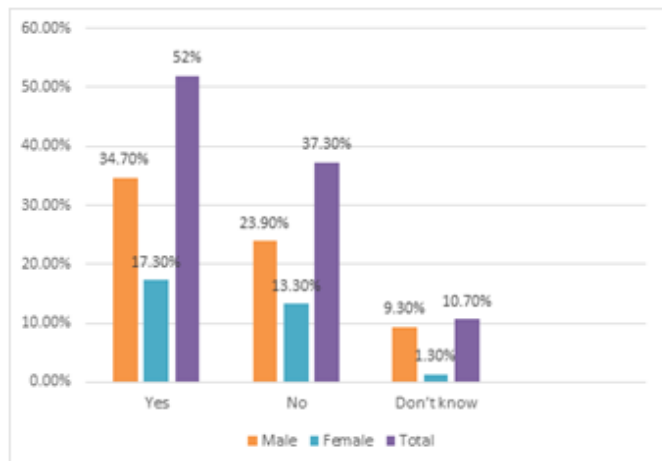
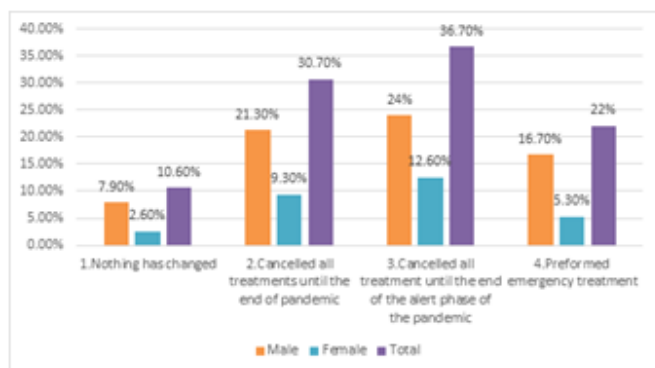


Table 2: shows the Dentists' experiences during the Covid-19 pandemic

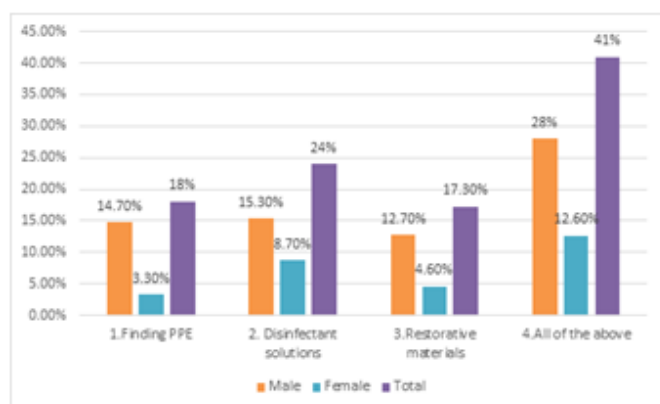
Dentists' experiences during the Covid-19 pandemic	Response	Male	Female	Total	P value	X ² value
Q 6. How have you changed your treatment plans during the COVID-19 pandemic?	1.Nothing has changed	12 (7.9%)	4 (2.6%)	16 (10.6%)	0.739	1.25
	2.Cancelled all treatments until the end of pandemic	32 (21.3%)	14 (9.3%)	46 (30.7%)		
	3.Cancelled all treatment until the end of the alert phase of the pandemic	36 (24.0%)	19 (12.6%)	55 (36.7%)		
	4.Preformed emergency treatment	25 (16.7%)	8 (5.3%)	33 (22%)		
Q 7. Which of the following equipment has been a scare item during the COVID-19 pandemic?	1.Finding PPE	22 (14.7%)	5 (3.3%)	27 (18%)	0.669	2.36
	2. Disinfectant solutions	23 (15.3%)	13 (8.7%)	36 (24%)		
	3.Restorative materials	19 (12.7%)	7 (4.6%)	26 (17.3%)		
	4.All of the above	42 (28%)	19 (12.6%)	61 (41%)		

*p<0.05 is statistically significant, p<0.01 is statistically highly significant

Graph 7(Q-6): How have you changed your treatment plans during the COVID-19 pandemic?



Graph 8(Q-7): which of the following equipment has been a scare item during the COVID-19 pandemic?



Discussion

We all know that oral cavity is a visible window through which general health of the individual reflects. This pushes for greater commitment by the health seeker to achieve greater health. In today's world health is considered as big asset and is realised by millions but this statement has its own short falls. The increase in prevalence of oral diseases justifies this hard reality and the amount for health care services needed further augments the scarcity of money, manpower and materials. The handling of COVID-19 pandemic has seen a sea of miseries and inability or failure to handle this one pandemic has opened the Pandora box and we are still in the recovery stage. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus

will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease and cancer are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age.

The present study comprised of 150 subjects, of which 70% were male dentists and 30% were female dentists. This was similar to a study done by Mazumdar et.al⁵. Contrary to this finding were seen in studies done by Dr. Ashwin P S et.al⁶ and Ayca S G et.al⁷. The collective reason behind this gender difference in our study might be due to family and domestic commitments of females and also male dentists have more tendencies to go for private practice and comparatively devote more time to their practice.

When the participants were asked whether they think that COVID-19 pandemic is a serious global health issue or not, an overall majority of 93.3% of the study subjects agreed that it is a serious global health issue. This result may be due to the fact that till now each and every person have gained a good knowledge about this pandemic. COVID-19 is affecting people in each and every way whether it is physically, mentally or economically that is why it has become very serious. A latest report by WHO states that as the coronavirus pandemic rapidly sweeps across the world, it is inducing a considerable degree of fear, worry and concern in the population at large and among certain groups in particular, such as older adults, care providers and people with underlying health conditions.⁴

When the question was asked regarding the fact that do they think taking COVID-19 test for patients should be made a routine in practice. an overall majority of 60.6%

of the study subjects agreed on it. The result of our study is similar to the result of study done by Parakkaje et.al¹¹ where 58.3% of the subjects agreed that patients should undergo COVID-19 testing before dental treatment. Participants perceived a very high risk of COVID-19 contamination during the dental procedure. Thus, the opinion of majority of dental professionals, 'patients should undergo COVID19 testing before the treatment' can be related to the fear of carrying infection to home and also regarding risk of cross-contamination in dental practice. Although universal precautions and emphasis on personal protection equipment are heightened due to COVID-19, the possible risk of spread cannot be fully ruled out. However, there are mixed opinion on this issue. In their report by Niraj et al¹², it is reported that small majority (57.8%) perceived that they like to request COVID-19 test results from all patients prior to any aerosol-generating treatment procedures, while the rest (40.0%) of the respondents wished to request the test only from symptomatic patients.

When asked regarding the financial problems faced by the dentist after COVID-19. 54% of the study participants agreed that they are facing financial issue. This result is similar to the study result of Sarwar et.al⁸ where 58.5% with the practice of 3-5 years reported only 5% of the revenue. Rather crippling losses were reported by the employers of private dental practices across Pakistan. This economical downfall of the dental industry is evident globally. According to the American Dental Association, 7.9% of net revenue was generated during the lock-down period. The Irish Dental Association reported 76% dentist's experienced financial loss and about 70% amid the COVID-19 outbreak.¹⁰

Regarding the importance of PPE, 50.7% of the participants replied that they feel safe and PPE guarantees protection against the virus. Contrary

findings were found in the study done by Chasib et.al⁹ where majority of 85% of the participants were aware of the importance of PPE. This difference in finding may be due to the reason that the practicing dentists in Patna were also aware about the complication of wearing PPE. Health workers using PPE for long periods have reported different complications including fatigue, dehydration, and headaches. These adverse effects were further complicated by fear of infection which added further stress that significantly impacted their decision making and quality of treatment.

Regarding charging patient an extra amount for PPE and other precautionary accessories are acceptable or not. Only 37.3% of the study participants did not agree on charging extra amount for PPE and other precautionary accessories. This finding is similar to the study result of Rodrigus et.al² where 28.6% of the study subjects polled that it was unethical and asserted that the charges should not change whatsoever. Contrary findings were found in the study result of Chasib et.al⁹ where the majority of participants reported that their budget for purchasing PPE increased after the pandemic. However, over 60% of them thought that PPE was cost-effective and <20% of the dentists actually increased the treatment cost to compensate for the change in PPE cost.

Regarding whether the dentist changed treatment plans during the covid-19 pandemic, 36.7% of the study participants agreed that they had changed treatment plan during covid-19 pandemic. This finding is similar to the study done by Ahmadi et.al¹⁰ (46%).

When asked about what kind of non-emergency procedure should you do during the pandemic. Of many procedures like aesthetic dental procedures, restorative dental treatments of asymptomatic carious lesion, extraction of asymptomatic teeth and initial examination, an overall majority of 29.3% opinioned that they had

done initial examination. Our study result was slightly higher than the Ahmadi et.al¹⁰ study the reason behind this difference in both the result may be because of study subjects have good knowledge about all the infection control protocol. They are following proper covid-19 guideline issued by government of India.

When asked regarding scare item during the COVID-19 pandemic, 18% of the study participants said that finding PPE was difficult. This could be due to the reason that all the PPE resources were provided to hospitals. The authorities did not take the oral health care sector, either public or private into consideration. According to a research, access to PPE was a particularly important decisive factor for Polish dentists as to whether to continue or suspend their clinical practice during the pandemic. There was a myriad of reports about the lack of personal protective equipment (PPE) all over the world, The Royal College of Surgeons of England conducted a survey on PPE between April 6 and 9, 2020, which revealed that more than half (57%) of doctors had described shortages of PPE in the past 30 days. Discussions around PPE were increasingly politicized and sensitive causing overwhelming anxiety both in health care professionals and patients.¹¹

Recommendations

- Further research should be conducted on a larger population which should include dental practitioners, teaching faculty and undergraduate students from different parts of state or country because their knowledge and viewpoints will pass to the young dental practitioners.
- The future of dentistry rests in the hands of the younger dental practitioners, therefore Dental Council of India must organize workshop and seminar on topics that focuses on the different level of sanitization protocol in the existing new normal after covid 19 pandemic.

- We believe that the public organizations must intervene to financially and psychologically support the dentists during these unprecedented times.

Conclusion

Majority of dental professionals in India are dependent on private dental practices, majorly secondary level and tertiary level of treatment. Due to COVID-19 pandemic outbreak, a sudden decrease in the number of performed dental procedures and implementation of new infection control protocols are the new norms and has caused financial problems for many practising dentists. Although there is a better level of knowledge and awareness of required practice regarding the COVID-19 outbreak among Indian dentists, they also reported a high level of anxiety. There has been a significant increase in stress levels due to the uncertainty of the working conditions of Indian dentists during the COVID-19 pandemic period, as can be said to be the case with dentists all over the world. It is expected that dentists, enriched with the experience acquired during the recent outbreak, will be able to efficiently redefine their scope of practice and adjust to the new circumstances.

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