The journal of
PROSTHETIC AND IMPLANT DENTISTRY
Official Publication of Indian Prosthodontic Society
Kerala State Branch

IMPACT OF COVID-19 PANDEMIC ON PATIENTS SEEKING PROSTHODONTIC TREATMENT- A CROSS SECTIONAL STUDY

*Litty Francis, *Deepthi. V.S

*Assistant Professor, Department of Prosthodontics and Crown & Bridge, Govt. Dental College, Thiruvananthapuram - 695 011 | Corresponding Author: Dr. Litty Francis, E-mail: litty.franciz@gmail.com

https://doi.org/10.55231/jpid.2023.v07.i01.04

Abstract:

Aim: *To find out the problems faced by the patients regarding prosthodontic rehabilitation during the COVID-19 pandemic.*

Settings and Design: *The study was designed to be a cross-sectional study and was carried out in various dental colleges and dental clinics in the Thiruvananthapuram district. The study population includes the patients reporting for prosthodontic treatment in the various dental clinics and Dental Colleges of Thiruvananthapuram district.*

Materials and Methods: *Data were collected by the investigators by means of questionnaire which was distributed either directly or via google forms. The purpose of study was also explained and their right to withdraw assured. Their major concern about the prosthodontic treatment during the pandemic and their willingness to attend an appointment were assessed. Responses were obtained and tabulated, for statistical analysis.*

Statistical analysis: *Chi-square test was used to find association between categorical variables. Results: 328 patients participated in this study. The concern of getting Covid-19 infection from the dental hospital was significantly higher in females. The youth were more anxious compared to the elderly. The financial crisis as a result of the Covid-19 pandemic influenced the choice of Dental Hospitals.*

Conclusion: *The corona virus pandemic seems to have a definite impact on the patients seeking prosthodontic treatment as the major concern was financial problems owing to the pandemic. There was great concern among the patients about the pandemic affecting their prosthodontic treatment.*

Key words: ***Covid-19, Prosthodontic treatment, teledentistry***

Introduction

Prosthodontic rehabilitation of partially and completely edentulous patients helps restore function which significantly improves the quality of life. Treatment and rehabilitation procedures have been disrupted worldwide since the COVID-19 pandemic outbreak. The emergence of the highly infectious and novel Coronavirus named SARS-CoV-2 first reported in Wuhan[1], China has led to a global pandemic. The World Health Organization (WHO) has declared it as a public health emergency of international concern. Globally, as of 4:32pm CET, 12 November 2021, there have been 251,788,329 confirmed cases of COVID-19, including 5,077,907 deaths, reported to

WHO[2]. The COVID-19 is a viral infection caused by the SARS CoV-2 virus; interpersonal transmission occurs mainly via respiratory droplets and contact, in addition to these characteristics, asymptomatic subjects and patients in the incubation period are also carriers of the novel coronavirus[3,4]. Although the mortality associated with COVID-19 is low, it has a high spreading potential[5].

The worldwide population is exposed to many different problems during the present coronavirus (COVID-19) pandemic. The pandemic has had a global social and economic impact as it affected travel, business and other normal activities[6]. The isolation and lockdown procedures during the current COVID-19 crisis has resulted in compromised treatment protocols. Chung et al. suggested various factors that may affect willingness to visit a hospital like expectation level toward a hospital, reliability of the medical care, accessibility to the diagnosis, expenses for diagnosis and patients' satisfaction level[7]. Due to the widespread transmission of SARS-CoV-2 and the unique characteristics of dental office[8], both the dental healthcare professionals as well as the patients have an increased risk of cross infection[9]. In the first phase of pandemic prosthodontists deferred all elective treatment procedures like crowns, bridges, veneers, inlays, onlays, which involve the generation of aerosols and handled only urgent and basic procedures. As the people learned to live with the pandemic, Prosthodontic procedures including aerosol generating procedures are being done using complete personal protective equipment (PPE suit, face-shield, double gloves, N95 mask, shoe cover) donned by the prosthodontist as well as the assistant[10].

Materials and Methods

This study was approved by the Research Ethics Committee of Govt. Dental College, Thiruvananthapuram, Kerala. The study population included the patients reporting for prosthodontic treatment in the various dental clinics and Dental Colleges of Thiruvananthapuram district and agreed to participate in the study. Data were collected by the investigator after getting the scientific and ethical clearance using a pretested structured questionnaire. The questionnaire was distributed either directly or via google forms in WhatsApp. Detailed information including the purpose, procedure, and significance of conducting this study was explained to the patients. The purpose of study was also explained and their right to withdraw assured. Patients answered several questions including personal information (age, gender, city/state) and regarding the Covid-19 situation and their prosthodontic difficulties. Their major concern about the prosthodontic treatment during the pandemic and their willingness to attend an appointment were assessed. Responses were obtained and tabulated, for statistical analysis.

Results

328 patients participated in this study. Out of 328, 167 were females and 161 males with a mean age of 46.8. The majority of patients were either not working/studying (36.3%) or has to go out for work (35.1%), 17.4% are working/studying from home and 11.3% are studying. Most of the patients got updates on the Covid-19 pandemic through various sources including social media, newspaper, television and friends and family (45%). 32.6% remained updated through television, whereas 21 % opted newspapers. 15.5 % selected social media as their news source while 4.3 % opted friends and family.

94.8% patients were aware of the precautionary measures to be taken to prevent Covid-19. While 95.7% patients' practices SMS (Social distancing, Mask, Sanitization/ Hand hygiene routinely, 4.3% practices only wearing mask, 2.7 % hand hygiene and 0.9 % social distancing. With respect to the suggested restrictions imposed on the daily life, 86% are going out only for unavoidable/emergency situations, 7.3% are not leaving home and 6.7%

are going out as usual and not respecting the restrictions. Regarding the feeling about the coronavirus pandemic, 39.6% are anxious, 36.3% of the patients are calm, 17.1% reported to be afraid (fear), 3.4% are in panic and 3.7% are indifferent.

Majority of the patients' (84.1%) prefer to go to a dental hospital in any case of prosthodontic emergency whereas 15.9% preferred tele dentistry. 72.6% preferred Government dental colleges for their treatment during Covid-19 pandemic while 24.7% preferred dental clinics near their house.

Table 1: Feeling about the Covid-19 pandemic and Gender of the patient

		Male		Female	
		Count	Percent	Count	Percent
Feeling about the Covid-19 pandemic	Calm	65	40.4	54	32.3
	Anxious	58	36.0	72	43.1
	Fear	25	15.5	31	18.6
	Panic	5	3.1	6	3.6
	Indifferent	8	5.0	4	2.4

The financial crisis which emerged as a result of the Covid-19 pandemic influenced the choice of dental hospitals for 45.1% patient's. 90.9% patients were comfortable going to a dental hospital during the pandemic and 68.9% are not willing to defer their treatment till the pandemic is over.

61.3% of the patients wanted a new prosthesis and reported to the dental clinics. 14.3% reported a complaint of broken denture and wanted repair or replacement of existing denture. 13.4% complained about pain and associated discomfort with the existing denture (complete/removable/fixed) while 11.9% implant associated problems, 2.1% about discomfort due to broken and sharp teeth and 1.5% about Rehabilitation/associated treatment after oral cancer treatment. On a 10-point scale,18.3% graded their difficulty 5 while 14.6% graded 6 and 13.4 % graded 4.

49.7% patient had a major concern about Risk of Covid-19 infection from the dental hospital while 34.5% had concerns about financial problems due to pandemic, 30.2% about the possible delay

Table 2: Concern about COVID-19 infection from Dental Hospital and Gender

		Gender				χ^2	p
		Male		Female			
		Count	Percent	Count	Percent		
Concerned of getting Covid-19 infection from the dental hospital	Yes	70	43.5	92	55.1	4.42*	0.035
	No	91	56.5	75	44.9		

Table 3: Feeling about the Pandemic and Age

Feel about the Covid-19 pandemic	<=40		41 - 60		>60	
	Count	Percent	Count	Percent	Count	Percent
Calm	34	29.3	53	39.6	32	41.0
Anxious	52	44.8	52	38.8	26	33.3
Fear	24	20.7	18	13.4	14	17.9
Panic	3	2.6	6	4.5	2	2.6
Indifferent	3	2.6	5	3.7	4	5.1

in the treatment procedures. 18% were not sure whether dental hospitals are open and 13.7% lacked transportation facility. Most patients (98.5%) would go to an appointment scheduled by the dentist and 1.5% would not go. 63.4% are concerned about the pandemic affecting their prosthodontic treatment.

49.4% patients was concerned about getting Covid-19 infection from the dental hospital. 90.2% would agree if their dentist insisted upon Covid-19 screening test before the dental procedure; but only 57.9% are willing to meet the expenses of a covid-19 screening test. 73.2% are aware of the precautionary measures to be taken in dental hospitals. In relation to the precautionary measures to avoid contamination in dental offices, most patients reported important measures such as screening test for each patient (4.3%), disposable PPEs for doctors (5.2%) surgical masks and the use of face shield (9.8%), avoid crossing other patients at reception (14.3% of the subjects) and sanitizer made available at reception (9.5%). 75.9% considers all the above precautionary measures to prevent COVID -19 cross infection in dental hospitals as important and expects the same.

Table 4: Patients'feelingand concern about the COVID-19 pandemic affecting theirProsthodontic treatment

Feel about the Covid-19 pandemic	I am concerned		I am not concerned		χ^2	p
	Count	Percent	Count	Percent		
Calm	32	26.7	87	41.8	12.12*	0.017
Anxious	54	45.0	76	36.5		
Fear	26	21.7	30	14.4		
Panic	6	5.0	5	2.4		
Indifferent	2	1.7	10	4.8		

Table 5: Willingness to defer the treatment and concern of patients

		Willing to defer the treatment till the pandemic is over				$\chi2$	p
		Yes		No			
		Count	Percent	Count	Percent		
Concerned about the pandemic affecting the prosthodontic treatment	I am concerned	46	45.1	74	32.7	4.62*	0.032
	I am not concerned	56	54.9	152	67.3		

Table 6: Willingness to meet the expenses of a Covid-19 screening test and financial problems due to pandemic

	Willing to meet the expenses of a Covid-19 screening test				$\chi2$	p
	Yes		No			
	Count	Percent	Count	Percent		
Financial problems due to pandemic	57	30.0	56	40.6	3.96*	0.047

Discussion

In late December 2019, clusters of pneumonia cases of unknown origin were reported from Wuhan City in China and was identified to be caused by a new type of Coronavirus. On March 11, 2020, WHO declared Novel Coronavirus Disease (Covid-19) outbreak as a pandemic[11]. There was surge in Covid-19 cases during the month of October 2020 in Kerala[8] & the survey was conducted during this period when the Covid-19 cases all over Kerala was on the rise and people had started to accept mask, hand sanitizing, and social distancing as a part of their routine life. Surveys may come in handy for collecting clinically important information and understanding the situation, helping the clinicians to provide better dental care. The primary objective of this survey was to assess the effects of pandemic on Prosthodontic treatments as well as to assess the feelings, awareness, and concerns of patients facing this pandemic. When the survey started, it had already been over 6 months into the pandemic.

The COVID-19 pandemic has many implications: family organization, closing of schools, companies and public places, changes in work routines, isolation leading to a great fear of the helplessness, and social insecurity[12]. The media and public health generally focus on the biological and health consequences of the virus and the pandemic. Mental health repercussions that coincide with emerging diseases and epidemic are not given adequate importance[13]. Males tend to be calmer than females and anxiety was greater for females regarding the pandemic [Table 1]. This is in accordance with studies of psychological distress and anxiety among Chinese people in the COVID-19 epidemic, where female respondents showed significantly higher psychological distress and anxiety than their males counterparts[14,15]. The present survey also showed females being more concerned about the pandemic affecting their Prosthodontic treatment and more willingness to defer their prosthodontic treatment. Other studies on the distress during a disease epidemic and potentially traumatic events also showed that women has a predilection for psychological distress than men[16,17]. The concern of getting Covid-19 infection from the dental hospital was significantly higher in females [Table 2] and must have been the reason for their willingness to defer their prosthodontic treatment till the pandemic is over.

The youth were more anxious while the elderly was calm about the pandemic situation [Table 3]. This result was in accordance with a recent research which showed that younger people reported a significantly higher prevalence of anxiety and depressive symptoms during pandemic than older people[18,19]. High consumption rates of news about the COVID-19 pandemic have been associated with increased levels of distress[19]. A study among the Chinese citizens showed significant relation between the mental health problems and use of social media[20]. Younger population being more addicted to social media in today's world can become stressed and anxious during the pandemic and thus the survey outcome.

The patients feeling about the pandemic and their willingness to defer the treatment were significantly associated with their concern about the pandemic affecting their prosthodontic treatment. The patients who were more anxious about the pandemic were more concerned about their treatment being affected [Table 4 & 5]. The survey results show a significant association of financial problems due to the pandemic and willingness to meet the expenses of a COVID-19 screening test before their proposed treatment [Table 6]. The Covid-19 outbreak has had an enormous social and economic impact across the world. Nationwide lockdowns lasting several weeks have brought life to a standstill, and all the resources are being used to meet the crisis. The imminent poverty and inequality because of prolonged economic downswing followed by a slow recovery, are the aftermath of this pandemic[21]. Most of the patients depending on the Government sector for their treatment belong to the below

poverty line category and this must have influenced the survey outcome. These people were affected worse by the lockdown and unemployment was severe as most of them would have been on daily wages.

The Occupational Safety and Health Administration (OSHA) has placed dental healthcare professionals in a very high exposure risk category[22]. Regarding the precautionary measures to be taken in a dental hospital, the great majority of patients were of the opinion that use of disposable surgical masks, and face shields by the doctor and assistant, hand sanitizer be available for patients at reception, avoid crossing other patients at reception, Personal protective equipment for doctors, and screening tests were all considered important. This indicates that patients are aware of these recommendations, and strict adherence to the protocol will improve the patient/Prosthodontist relationship.

Teledentistry is effective in having a specialist consultation without the need to visit a dentist during this pandemic. The accuracy of a diagnosis made face-to-face have an important role in prosthodontic health care delivery, and many patients will need to visit the dental office. Emergency management of prosthodontic emergencies like crown dislodgment or denture breakage can be managed by guiding the patient on what has to be done[23]. Moreover, the teledentistry in prosthodontic patient care has limited application. Teledentistry can be employed effectively for communication between the Prosthodontist and the lab technician. Dental health care professionals are extremely exposed to COVID-19 infection and are at risk due to the close contact with patients and the exposure to biological fluids and aerosol/droplets production during various dental procedures[24]. The absence of adequate precautions in the dental clinics exposes patients to contamination[25]. The conventional prosthetic workflow involves many steps which can result in viral contamination and cross infection among the dental professionals. According to Peng et al 2020, saliva and blood of SARS COV-2 infected patients remaining on the impressions can contaminate the stone models also[26]. The digital workflow thus helps in reducing the steps and time required as well as the risk of cross contamination and infection of the personnel[27–30].

The limitations of this study include the cross-sectional design and the reliance on self-reported questionnaires.

Conclusion

The corona virus pandemic seems to have a definite impact on the patients seeking prosthodontic treatment. The concern of getting Covid-19 infection from the dental hospital was significantly higher in females. The major concern in seeking prosthodontic care during the pandemic was financial problems owing to the pandemic. The patients who were anxious about the pandemic and the patients who were willing to defer their treatment till the pandemic gets over were greatly concerned about the pandemic affecting their prosthodontic treatment. The use of disposable surgical masks, and face shields by the doctor and assistant, hand sanitizer be available for patients at reception, avoid crossing other patients at reception, Personal protective equipment for doctors, and screening tests were all considered important by the patients attending various dental hospitals.

References

1. CHP closely monitors cluster of pneumonia cases on Mainland [Internet]. [cited 2021 Jun 6]. Available from: https://www.info.gov.hk/gia/general/201912/31/P2019123100667.htm
2. https://covid19.who.int/
3. Chan JF-W, Yuan S, Kok K-H, To KK-W, Chu H, Yang J, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. The Lancet. 2020 Feb 15;395(10223):514–23.
4. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. N Engl J Med. 2020 Mar 5;382(10):970–1.
5. Liu K, Chen Y, Lin R, Han K. Clinical features of COVID-19 in elderly patients: A comparison with young and middle-

aged patients. J Infect. 2020 Jun;80(6):e14–8.

6. Morens DM, Fauci AS. Emerging infectious diseases: threats to human health and global stability. PLoS Pathog. 2013;9(7):e1003467.
7. Chung SH, Kim JY, Lee WG, Sohn EY, Choi YH, Song GB. Changes in the characteristics and satisfaction level of the patients at the Kyungpook National University's Dentistry. J Korean Acad Dent Health 2004;28:235-47.
8. Emerging understandings of 2019-nCoV - The Lancet [Internet]. [cited 2021 Jun 5]. Available from: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30186-0/fulltext
9. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. J Endod. 2020 May;46(5):584–95.
10. https://www.ipskerala.com/downloads/2020-IPS-Covid-Protocol.pdf.
11. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 [Internet]. [cited 2021 Jun 5]. Available from: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020
12. Ornell F, Schuch JB, Sordi AO, Kessler FHP. "Pandemic fear" and COVID-19: mental health burden and strategies. Rev Bras Psiquiatr Sao Paulo Braz 1999. 2020;42(3):232–5.
13. Tucci V, Moukaddam N, Meadows J, Shah S, Galwankar SC, Kapur GB. The Forgotten Plague: Psychiatric Manifestations of Ebola, Zika, and Emerging Infectious Diseases. J Glob Infect Dis. 2017 Dec;9(4):151–6.
14. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. Gen Psychiatry. 2020;33(2):e100213.
15. Hou F, Bi F, Jiao R, Luo D, Song K. Gender differences of depression and anxiety among social media users during the COVID-19 outbreak in China: a cross-sectional study. BMC Public Health. 2020 Dec;20(1):1–11.
16. Taylor MR, Agho KE, Stevens GJ, Raphael B. Factors influencing psychological distress during a disease epidemic: data from Australia's first outbreak of equine influenza. BMC Public Health. 2008 Oct 3;8:347.
17. Gender-Based Risk and Protective Factors for Psychological Distress in the Midterm Recovery Period Following the Great East Japan Earthquake - ProQuest [Internet]. [cited 2021 Jun 6]. Available from: https://www.proquest.com/openview/5b412b0a2b8e550fc2efbe1c0591d92f/1?pq-origsite=gscholar&cbl=3962590
18. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. Psychiatry Res. 2020 Jun;288:112954.
19. Nwachukwu I, Nkire N, Shalaby R, Hrabok M, Vuong W, Gusnowski A, et al. COVID-19 Pandemic: Age-Related Differences in Measures of Stress, Anxiety and Depression in Canada. Int J Environ Res Public Health [Internet]. 2020 Sep [cited 2021 Jun 6];17(17). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7503671/
20. Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S, et al. Mental health problems and social media exposure during COVID-19 outbreak. PloS One. 2020;15(4):e0231924.
21. http://www.niyamasabha.org/codes/14kla/session_22/economic%20review%202020/English%20Vol-1.pdf. In.
22. CDC. Healthcare Workers [Internet]. Centers for Disease Control and Prevention. 2020 [cited 2021 Jun 5]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html
23. Deshpande S, Patil D, Dhokar A, Bhanushali P, Katge F. Teledentistry: A Boon Amidst COVID-19 Lockdown—A Narrative Review. Int J Telemed Appl. 2021 Feb 17;2021:e8859746.
24. Izzetti R, Nisi M, Gabriele M, Graziani F. COVID-19 Transmission in Dental Practice: Brief Review of Preventive Measures in Italy. J Dent Res. 2020 Aug 1;99(9):1030–8.
25. Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. J Dent Res. 2020 May 1;99(5):481–7.
26. 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):1–6.
27. Ahlholm P, Sipilä K, Vallittu P, Jakonen M, Kotiranta U. Digital Versus Conventional Impressions in Fixed Prosthodontics: A Review. J Prosthodont Off J Am Coll Prosthodont. 2018 Jan;27(1):35–41.
28. Chochlidakis KM, Papaspyridakos P, Geminiani A, Chen C-J, Feng IJ, Ercoli C. Digital versus conventional impressions for fixed prosthodontics: A systematic review and meta-analysis. J Prosthet Dent. 2016 Aug;116(2):184-190.e12.
29. Barenghi L, Barenghi A, Cadeo C, Di Blasio A. Innovation by Computer-Aided Design/Computer-Aided Manufacturing Technology: A Look at Infection Prevention in Dental Settings. BioMed Res Int. 2019;2019:6092018.
30. Joda T, Ferrari M, Gallucci GO, Wittneben J-G, Brägger U. Digital technology in fixed implant prosthodontics. Periodontol 2000. 2017 Feb;73(1):178–92.