

Impact of COVID-19 on the Periodontal health of adults in Kashmiri population: An online cross-sectional questionnaire survey

¹Bisma Aijaz Tak, Post Graduate Scholar, Department of Periodontics and Oral Implantology Government Dental College & Hospital, Srinagar

²Suhail Majid Jan, Professor & Head of Department, Department of Periodontics and Oral Implantology Government Dental College & Hospital, Srinagar

³Roobal Behal, Associate Professor, Department of Periodontics and Oral Implantology Government Dental College & Hospital Srinagar

Corresponding Author: Bisma Aijaz Tak, Post Graduate Scholar, Department of Periodontics and Oral Implantology Government Dental College & Hospital, Srinagar

How to citation this article: Bisma Aijaz Tak, Suhail Majid Jan, Roobal Behal, “Impact of COVID-19 on the Periodontal health of adults in Kashmiri population: An online cross-sectional questionnaire survey”, IJMACR- May - June - 2022, Vol – 5, Issue - 3, P. No. 205 – 211.

Copyright: © 2022, Bisma Aijaz Tak, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License 4.0. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Purpose: This study aims to know the impact of COVID-19 on the Periodontal health of adults in Kashmiri population.

Materials and methods: This study was an online cross-sectional questionnaire survey done to know the impact of COVID-19 on the periodontal health amid the pandemic in Kashmiri population. A questionnaire was sent to participants through the most popular instant messaging applications like WhatsApp, Facebook messenger & Instagram through an online generated link. All the subjects above 20years and using social networking apps like WhatsApp, Facebook messenger & Instagram were included in the study. Subjects who were under 20 years and were not the citizens of j&k were

excluded from the study. The participation of all subjects was anonymous and voluntary.

Results: The results showed that 42.6% of participants with already known periodontal disease gets worsened as compared to other systemic diseases of body. Among the periodontal problems, the gaps between the teeth (12.4%), food lodgement (9.9%), loosening of teeth (7.5%), bad breath & pain on chewing (7.4%) & bleeding gums (5.5%) were the most common effected due to Covid pandemic.

Conclusion: conclude that individuals in Kashmir tended to be more seriously affected and suffered more periodontal problems amidst the pandemic.

Keywords: Covid -19, Periodontal diseases, Halitosis

Introduction

Coronavirus disease 2019 (COVID-19), due to SARS-CoV-2, has affected the health and lives of people all over the world. This pandemic spread rapidly all across the world since December 2019, when a cluster of cases of pneumonia with unknown aetiology were reported in Wuhan, the capital city of Hubei Province, China [1]. A novel coronavirus was eventually identified, and the WHO declared the novel coronavirus outbreak a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 [2], this virus was named severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), and the epidemic disease was announced as coronavirus disease 2019 (COVID-19) in February 2020 [3, 4]. As the epidemic continued to worldwide with severe consequences, the WHO officially characterized COVID-19 as a pandemic on 11 March 2020 [5]. A series of strong measures viz strict lockdowns throughout the world, social distancing measures and personal hygiene measures were taken to prevent human to human transmission. The COVID-19 and the subsequent unprecedented lockdown measures have greatly affected physical, social, mental status and daily behaviours that affected the well-being of the people. The oral healthcare behavioural habits were also changed that resulted in change in the oral health status amid the pandemic [6, 7]. So, it is very important to explore the impact of COVID-19 on oral health especially periodontal health, i.e., oral healthcare behaviours and status, the dental/periodontal problems encountered, how people dealt with these problems, and whether these problems aggravated their uneasiness and anxiety. With this background, the present study was undertaken to investigate the impact of COVID-19 on the Periodontal health of Kashmiri adult population.

Materials & methodology

This questionnaire study was conducted in the Department of Periodontology, Government Dental College & Hospital, Srinagar. Before the start of study an ethical clearance was obtained from institutional ethical committee. An online generated link (https://docs.google.com/forms/d/1rKOEyxmAudAgoQdZ-7wt7-S_zbBF66gJo1reVA3YoC4/edit?usp=drivesdk) that contained questionnaire was sent to participants belonging to J&K and other parts of India through most popular social networking applications like WhatsApp, Facebook messenger & Instagram. All the participants were informed that participation is anonymous and voluntary in the study. Subjects with their age of > 20 years and using social networking applications like WhatsApp, Facebook messenger & Instagram were included. Participants under 20 years of age and not the citizens of j& k were excluded from the study. The questionnaire consisting of questions regarding general information, psychological status, living habits, oral health behaviour, periodontal health status, and knowledge and attitudes towards nosocomial infections and future dental treatment. Specifically, general information included gender, age and residing location during the pandemic. Participant psychological status was evaluated by three questions about increasing anxiety levels, and each question was scored on a scale of 1–4 (none or a little of the time, some of the time, a good part of the time, and most of the time). Total scores were calculated to evaluate psychological status. Living habits was evaluated by calculating total rest time, dining frequency and smoking. Tooth brushing frequency was assessed as information about each participant's oral hygiene behaviour. Participants were also asked about the periodontal problems they

encountered, the way they dealt with the problems and the concern of not receiving timely dental care. The last three questions were concentrated on knowledge and attitudes towards nosocomial infections & acquiring covid-19 infection and future dental treatment.

Statistical analysis

Data was collected and statistically analysed with SPSS 22.0 (SPSS, Chicago, IL). Results on categorical measurements were expressed as Frequency (Percentage).

Results

We obtained a total of 1652 valid questionnaires in this survey. A total of (47.6%) participants were males, and the rest (52.4%) were females. Regarding age, (65.5%) participants were between 20-30 years old, (23.6%) were between 31 and 40 years old. The rest (10.9%) of the study participants were in the age group of 41-50, 51-60 & >60 years old respectively. Nearly (87.6%) of the participants were from Kashmir.

Impact of Covid-19 on periodontal health behaviour

A total of 37.7% of the study population in Kashmir changed their rest times during the pandemic. Regarding dietary habits, 28.8% of the participants changed their dietary habits experiencing more meals compared to 58.3% of participants with constant dietary habits & 12.9% experiencing fewer meals.

A total of 90.8% of these individuals were non- smokers, 9.2% were smokers especially from Kashmir who showed increased frequency of smoking during pandemic.

A total of 25.8% of the participants brushed their teeth twice, 72.4% participants brushed their teeth once, and the rest did not brush their teeth at all(Table 1). Although participants were more concerned about their periodontal health, oral hygiene than before pandemic &

37.3% changed their attitude of paying more attention to periodontal health but the tooth brushing frequency did not differ significantly among participants in Kashmir.

Total Participants	Total Responses	Tooth brushing Frequency (%)		
		Once a day	Twice a day	Not brushing at all
1652	1630	72.4%	25.8%	1.8%

Table 1: Tooth brushing frequency of participants in Kashmiri population

Impact of Covid-19 on periodontal disease

Participants were asked about their history of diabetes, cardiovascular diseases, chronic respiratory diseases and periodontal diseases before the pandemic and made self-assessments of the changes in the original diseases during the pandemic (worse, better, or no change). The results of the study showed that 50.1% of participants with a history of periodontal disease before pandemic & 4.3% of participants with periodontal disease occurring during pandemic thought that the disease worsened, which was the highest proportion than that of other systemic diseases. When asked about their covid-19 status, participants who tested positive (18.7%) experienced that their oral hygiene was much affected (7.5%).

A total of 50.1% of the participants had periodontal problems before the pandemic. Significantly more participants in Kashmir experienced periodontal problems than other places. Among the periodontal problems the most common problems amidst the pandemic were gaps between the teeth (12.4%), food lodgement (9.9%), loosening of teeth (7.5%), bad breath & pain on chewing (7.4%) & bleeding gums (5.5%). The prevalence of bad breath & bleeding gums tended to increase as the participants were fearful about getting covid-19 infection at treatment place. Table 2

Periodontal problems	Before pandemic	Occured during pandemic	Experience during pandemic
Bleeding gums	5.5%	1.9%	5.7%
Pain on chewing	7.4%	0.6%	5.7%
Bad breath	7.4%	0.6%	8.2%
Food lodgement	9.9%	0	7.6%
Loosening of teeth	7.5%	0.6%	2.6%
Gaps between teeth	12.4%	0.6%	7.6%
Total	50.1%	4.3%	54.4%

Table 2. Periodontal problems & frequency of occurrence before & during pandemic & Experiences during pandemic

Impact of Covid-19 on dental treatment during pandemic & future dental treatment

Questions were raised about knowledge and attitudes towards possible nosocomial infection from dental treatment & frequency of visits during pandemic. A total of 60.2% of the participants knew that dental procedures could cause nosocomial infections & 62.7% thought that frequency to visit dentists were affected during pandemic (Fig.1). When asked about the option to deal with their periodontal issues, 59.2% dealt with their periodontal problems by taking personal protection & went to hospital for dental treatment, 21.7% chose to get an online consultation & 10.2% chose to find a solution on their own but don't go to seek dental treatment (Fig.2). Regarding the future dental treatment, 26.9% of the participants were worried about not being able to get professional dental treatment during pandemic.

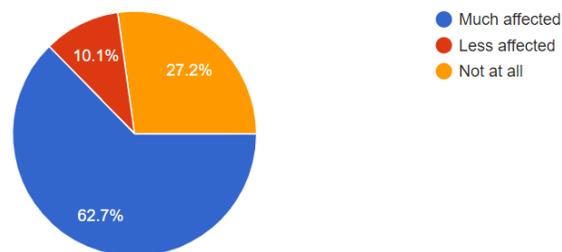


Fig.1: Frequency to visit dentists affected during pandemic

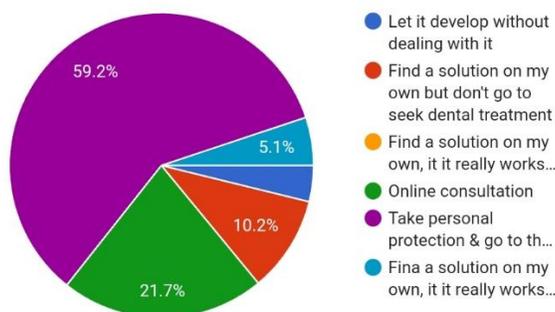


Fig.2: Frequency distribution of participants to deal with their periodontal issues during pandemic

Discussion

This study aimed to evaluate the impact of COVID-19 on the periodontal health of adults in Kashmiri population amid the pandemic using an online questionnaire survey. The COVID-19 pandemic, severely affected physical and mental health [8,9] Experts from WHO warned of the multiple outbreaks of this pandemic time by time, and this virus may never entirely go away [10]. In this manner, the present study not only contributed to a comprehensive understanding of the impact of COVID-19 on periodontal health in kashmiri polpulation but also provided additional advice for management of periodontal problems by changing attitude towards dental treatment. The results of our survey showed that the pandemic did affect psychological status of the Kashmiri participants which could be due to the more deadly nature of the virus during multiple outbreaks. Previous studies have

evaluated the mutual impact of psychological emotions and periodontal health [11-13]. In our study, the significantly higher prevalence of periodontal problems among participants in Kashmir may also be proof of this mutual correlation.

Regarding smoking status the frequency of smoking increases during pandemic among Kashmiri population which could also contribute to exaggeration of already existing periodontal problems as smoking causes an alteration of the caliber of the blood vessels perfusing the gingival tissues. Reduced bleeding reflects an underlying disruption of the immune response and that this may account for the increased loss of clinical attachment and alveolar bone^[14].

Toothbrushing frequency did not significantly differ between the participants but the participants were more concerned about their periodontal health. Those subjects who brushed their teeth twice a day had lowest prevalence of periodontal problems which could be explained by the relationship between oral hygiene habits and periodontal disease.

Among the other common chronic diseases, the highest proportion of participants with a history of periodontal diseases felt that the original disease had worsened during the pandemic especially for the participants who suffered from covid-19 infection. This outcome illustrates the specificity of dental treatment in that the majority of periodontal problems can only be solved by professional dental procedures. Most dental institutions cannot provide regular dental services amidst the pandemic, leading to the worsening of existing periodontal problems which increased the overall burden on dental institutes regarding periodontal health. Also, there has been found to be positive correlation between

sars-cov-2 & periodontitis which could explain the worsening of periodontal conditions in these patients^[15]. Among the periodontal problems the most common problems amidst the pandemic were gaps between the teeth (12.4%), food lodgement (9.9%), loosening of teeth (7.5%), bad breath & pain on chewing (7.4%) & bleeding gums (5.5%). All these periodontal problems are associated with oral hygiene^[16-19] and psychological status has been proven to be an important risk factor for periodontal problems^[20]. All these findings suggest the importance of good oral hygiene behaviours and mental states in reducing the occurrence of periodontal diseases. Inadequate dental services and reluctance to go outside during pandemic made participants face more periodontal problems. People chose to stay home as much as possible during lockdown because of the official recommendation and fear of the getting covid-19 infection at treatment place. This finding is in accordance with the results of a previous study showing significantly reduced dental emergency patients in Beijing in February 2020^[21].

Despite this concern, 59.2% of the participants surveyed said as covid-19 is still with us & may remain forever, they would go to dental institutions when facing periodontal problems after taking personal protection measures. This response is an important message that reminds us of the importance of avoiding nosocomial infections during & after this pandemic period. Several studies have provided guidelines for the provision of dental care both during and after the epidemic, including the screening and assessment of patients, prevention of infection, hand hygiene, and personal protective equipment^[22- 24]. These guidelines remain to be further improved and evaluated. The most important thing is to abide strictly by the relevant regulations and guidelines

during regular dental procedures; thus, both the patients and the dentists will be protected and safe.

Conclusion

Based on the findings of the present survey, we could conclude that individuals in Kashmir tended to be more seriously affected and suffered more periodontal problems amidst the pandemic compared with people from other places in India. Keeping good oral health behaviours and mental status play an important role in preventing periodontal problems. It is crucial to establish and to follow the standard guidelines for the provision of dental care both during and after the pandemic so that the overall burden of periodontal problems which tended to increase during pandemic could be addressed timely & aptly. Our research is a preliminary study of the impact of COVID-19 on periodontal health. This study is limited by the total sample size, and the population sampled may not be representative. More well-designed studies would contribute to a continuing understanding of this important issue.

References

1. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;395(10223):497–506.
2. Zarocostas J. What next for the coronavirus response? *Lancet*. 2020;395(10222):401
3. World Health Organization. Naming the coronavirus disease(COVID-19) and the virus that causes it. 2020. Available from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it). Accessed June 2020.
4. Ye Q, Wang B, Mao J, Fu J, Shang S, Shu Q, et al. Epidemiological analysis of COVID-19 and practical experience from China. *J Med Virol*. 2020;92(7):755–69
5. World Health Organization. WHO Timeline COVID-19. 2020. Available from: <https://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19>. Accessed June 2020
6. Cullen W, Gulati G, Kelly BD. Mental health in the COVID-19 pandemic. *QJM Mon J Assoc Phys*. 2020;113(5):311–2.
7. 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
8. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA*. 2020;323(11):1061–9.
9. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17(5):1729
10. Reuters.2020. World Health Organization warns of ‘second peak’ in areas where coronavirus is declining. Available from: <https://www.reuters.com/article/us-health-coronavirus-who-peak/who-warns-of-second-peak-in-areas-where-covid-19-declining-idUSKBN2311VJ>. Accessed June 2020
11. Zucoloto ML, Maroco J, Campos JA. Impact of oral health on healthrelated quality of life: a cross-sectional study. *BMC Oral Health*. 2016;16(1):55.

12. Settineri S, Rizzo A, Liotta M, Mento C. Clinical psychology of oral health: the link between teeth and emotions. *SAGE Open*. 2017;7:2158244017728319.
13. Schwarzer R, Antoniuk A, Gholami M. A brief intervention changing oral self-care, self-efficacy, and self-monitoring. *Br J Health Psychol*. 2015;20(1):56–67
14. Mirbod SM, Ahing SI, Pruthi VK. Immunohistochemical study of vestibular gingival blood vessel density and internal circumference in smokers and non-smokers. *J Periodontol*. 2001;72:1318-23
15. Campisi et al. *Head & Face Medicine* (2021) 17:16 <https://doi.org/10.1186/s13005-021-00267-1>
16. Caton J, Bouwsma O, Polson A, Espeland M. Effects of personal oral hygiene and subgingival scaling on bleeding interdental gingiva. *J Periodontol*. 1989;60(2):84–90.
17. Kotsakis GA, Lian Q, Ioannou AL, Michalowicz BS, John MT, Chu H. A network meta-analysis of interproximal oral hygiene methods in the reduction of clinical indices of inflammation. *J Periodontol*. 2018;89(5):558–70.
18. Bollen CM, Beikler T. Halitosis: the multidisciplinary approach. *Int J Oral Sci*. 2012;4(2):55–63.
19. Siu A, Landon K, Ramos DM. Differential diagnosis and management of oral ulcers. *Semin Cutan Med Surg*. 2015;34(4):171–7
20. Chiappelli F, Cajulis OS. Psychobiologic views on stress-related oral ulcers. *Quintessence Int* (Berlin, Germany: 1985). 2004;35(3):223–7
21. Guo H, Zhou Y, Liu X, Tan J. The impact of the COVID-19 epidemic on the utilization of emergency dental services. *J Dent Sci*. 2020;15(4):564–7
22. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus disease 19 (COVID-19): implications for clinical dental care. *J Endodont*. 2020;46(5):584–95.
23. Dave M, Seoudi N, Coulthard P. Urgent dental care for patients during the COVID-19 pandemic. *Lancet*. 2020;395(10232):1257.
24. Zimmermann M, Nkenke E. Approaches to the management of patients in oral and maxillofacial surgery during COVID-19 pandemic. *J Cranio-Maxillo-Facial Surg Of Publ Eur Assoc Cranio-Maxillo-Facial Surg*. 2020;48(5):521–6.