

Original Research

Effect of COVID-19 pandemic on utilization of dental services in India

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ABSTRACT:

Background: The fear of contracting corona virus infection has become a major barrier in availing dental services. The aim of this study was to analyze the effect of COVID-19 pandemic on utilization of professional dental services in India. **Methods:** An online questionnaire seeking information on demographics and socio-economic status, routine dental check-up related habits, dental health during lockdown due to COVID-19, attitudes towards seeking dental care and problems faced during this period, was filled by 468 participants. The data thus obtained were analyzed statistically to study the utilization pattern of dental services after COVID-19 outbreak and interaction of the same with various factors. **Results:** 27.4% of the participants had experienced one or more dental problems since the start of lockdown. Only 12.5% of the participants feeling the need to visit the dentist actually proceeded to seek the treatment without delay. 51.3% of the participants showed willingness to get the dental treatment done as per dentist's advice in case of need, while the rest either preferred self-medication or only pharmacologic management during COVID days. A significant association was found between the dental visits made before COVID-19 outbreak and those after COVID-19 outbreak, and also between the perceived risk of visiting dental clinic during COVID times and attitude towards making such visit in case the need arises. **Conclusion:** A significant percentage of population avoided dental visit or treatment during COVID-19 outbreak. There is a need to address COVID associated fears in public to avoid long-term dental health related consequences.

Key words: COVID-19, dental services, infection.

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INTRODUCTION

COVID -19 pandemic has affected the whole world in unexpected ways.¹ The sudden appearance of the virus and magnanimity of its influences on people's lives have led everyone- from households to executives and from public to policy makers- to experience uncertainties and fears about their health, finances, career and above all their lives.^{2,3,4,5}

In the COVID-19 outbreak, dental clinics are being considered high-risk places to visit, owing to the nature

of work- the aerosol generating procedures, with patients' mouth wide open for long duration.⁶ The dental clinics have seen a massive decline in the number of patients visiting for treatment, which may be attributed to this increased sensitivity of people towards risk of transmission from dental procedures.⁷ Further, due to restriction of dental procedures only to emergency and urgent ones as per guidelines,⁸ it has become difficult to provide most of the preventive, conservative and esthetic treatment options to the

patients. Such conditions are a concern for dental professionals as these have become a major barrier in delivering timely dental care to the patients.

Previous studies have reported the effect of COVID-19 outbreak on various healthcare services.^{9,10,11} Researchers have reported a significant decline in consultations even for major and acute conditions like stroke during lockdown period.⁹ Under such circumstances, ignoring the oral health and avoiding professional dental care is expected to be extreme in a country like India, where dental health is usually not considered a priority by the majority.¹²

To the best of our knowledge, there has been no study to observe the changes in extent and pattern of utilization of dental services in India following COVID-19 outbreak. Hence this study aimed to analyze the utilization pattern of professional dental services in India during the outbreak of COVID-19 pandemic.

METHODS

The research was conducted in accordance with ethical principles as per World Medical Association's Declaration of Helsinki. This was a cross-sectional online survey based study conducted in the month of September 2020. This study involved Indian participants aged 18 years or older, surveyed randomly on social media platform. To avoid bias due to rapidly changing COVID statistics and corresponding mental influences, the study duration was kept short.

600 participants were invited to take part in online survey via an email or via messaging platform WhatsApp messenger (WhatsApp Inc, California, United States). The invitation message consisted of participant information sheet consisting of title of the study, details of the study including its purpose, approximate time required to fill the online questionnaire, assurance of privacy and confidentiality, voluntary nature of participation and statement for informed consent. The invitation message was followed by link to electronic Google form which contained the research questionnaire.

The questionnaire used in this survey had sections of demographic details, routine dental check-up related habits, dental health during lockdown due to COVID-19, attitudes towards seeking dental care and problems faced during this period. The language of questionnaire was English.

The data thus obtained were analyzed using Microsoft excel 2007 and IBM SPSS statistics 19 (IBM Corp., New York, USA). Chi-square tests were used to study associations between categorical variables. Bon-ferroni corrections were used for multiple comparisons.

RESULTS

A total of 468 responses were obtained with a response rate of 78%. The study sample included 42.7% males

and 57.3% females. Distribution of the study participants on the basis of the socio-economic and demographic details is presented in Table 1.

It was found that 27.4% of the participants had experienced one or more dental problems since the COVID-19 outbreak till the time of filling up the questionnaire (March 2020 to September 2020). Out of these, 21.8% had experienced tooth sensitivity, 18.75% had experienced tooth pain, 6.25% of these had bleeding gums, another 6.25% had ulcers in mouth and still another 6.25% had swelling in gums or on face. Rest 40.6% had other dental problems.

20.5% of the total participants stated that they had felt the need to visit the dentist from March 2020 to September 2020. Out of these, only 12.5% visited dentist without delay. 41.67% felt the need to visit dentist, but postponed it for the fear of corona infection, or visited dentist only when the symptoms were out of control. As high as 45.8% of these participants had not visited dentist till the time of undertaking this questionnaire despite feeling the need.

When asked about the experience of visit to the dentist and treatment sought from those participants who had visited dental clinics after the COVID-19 outbreak, 64.3% stated no difficulty in getting treatment done, 28.6% stated that they were provided only pharmacological management and any procedural intervention was refused by the dentist citing coronavirus infection risk, and 7.1% stated that they themselves refused the dental treatment as they were asked to get investigated for a possible COVID infection first, despite being asymptomatic for viral infection (Figure 1).

19.7% of the total participants stated that they would prefer to self-medicate for their dental problems in case they happen to get one during COVID times, 25.6% stated they would get a medicine from dentist but won't get any intervention done because of fear of COVID infection, 3.4% stated they would get a medicine from dentist but won't get any intervention because of financial issues arising post COVID outbreak, and 51.3% stated they would get the treatment done as advised by the dentist (Figure 2). 17.9% of the total participants stated they would prefer government hospitals for their dental treatment in case they need it during COVID times, 16.2% stated they would prefer multispecialty private hospitals having a dental department, and 65.8% stated they would prefer private dental setups (Figure 3).

As high as 70.9% of the participants felt that there was a high risk of COVID transmission in dental clinics.

Chi square tests revealed that age of the participants ($p=.000$) and socio-economic scale ($p=.000$) significantly influenced the choice of type of dental services, with the participants with lower socio-economic status and older age groups being more likely

to choose government hospitals for their dental services. Younger population was more likely to choose multispecialty hospitals with dental department for their treatment during COVID times.

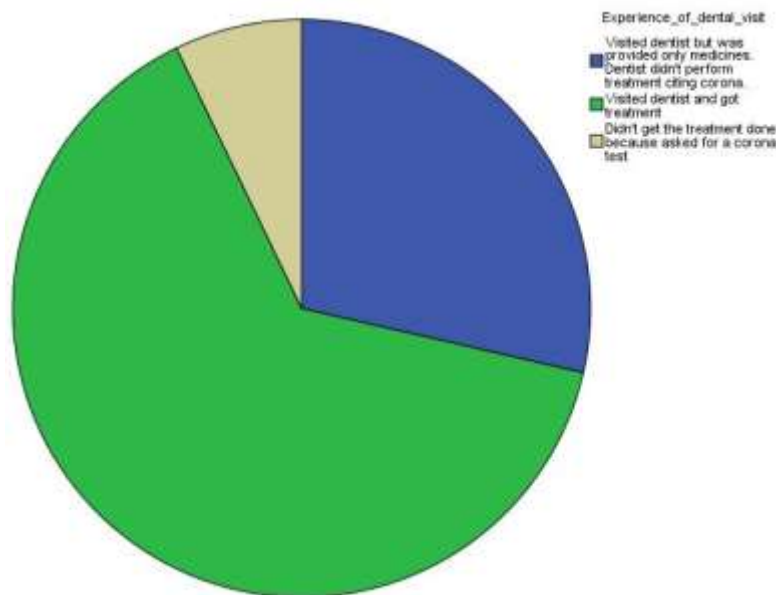
There was a significant association between the movement of participants out of the home for their duties during lockdown and unlock phase, and perception regarding safety of visiting dental treatment during COVID times (p=.003 and .007 respectively). Those who used to move out for duties were

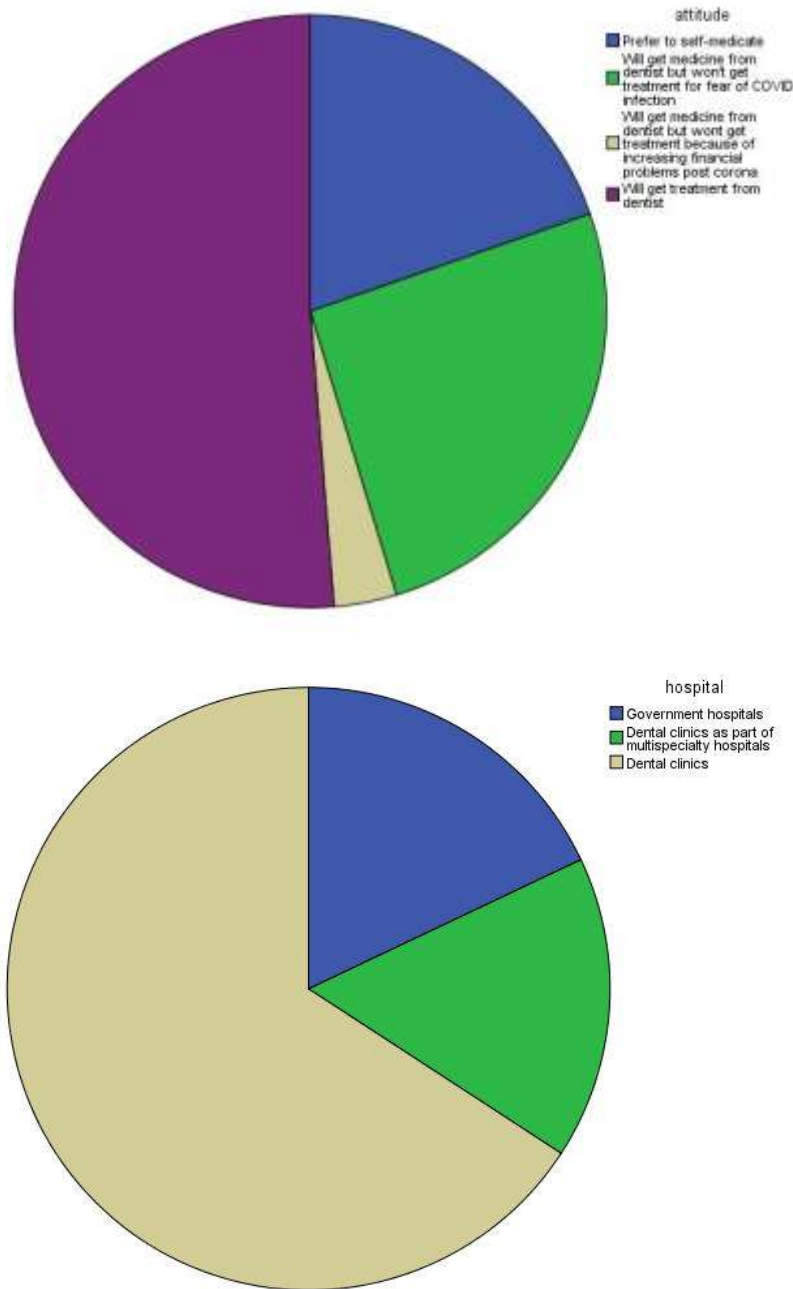
significantly more likely to term dental clinic a risky place to visit during COVID times.

There was a significant association between (p=.000). A significant association was also found between type of dental symptoms and perceived need to visit the dentist (p=.000) with participants with toothache and bleeding gums being significantly more likely to visit the dentist and either get pharmaceutical management or procedural intervention.

Table 1: Distribution of study respondents according to their gender, age group, geographic location and socio-economic scale (as per modified Kuppuswamy’s scale)¹³

| Category | Number of participants (n=482, %) |
|-----------------------------|-----------------------------------|
| Gender | |
| Male | 200 (42.7%) |
| Female | 268 (57.3%) |
| Age group (years) | |
| 18-25 | 336 (71.8%) |
| 26-35 | 68 (14.5%) |
| 36-45 | 28 (6.0%) |
| 46-55 | 28 (6.0%) |
| >55 | 8 (1.7%) |
| Socio-economic scale | |
| Upper | 0 (0%) |
| Upper-Middle | 128 (27.4%) |
| Lower-Middle | 128 (27.4%) |
| Upper-Lower | 212 (45.3%) |
| Lower | 0 (0%) |





There was a significant association between the perceived risk of visiting dental clinic during COVID times and attitude towards making such visit in case the need arises. Those who perceived dental clinic as a risky place were more in favour of getting only pharmacological management and not getting any intervention done during COVID times, and those who didn't perceive dental clinics being at more risk in terms of COVID infection, were more likely to get intervention based treatments from dental office. A significant association was also found between perceived rating of COVID precautions taken

themselves by the participants and the attitude towards dental care ($p=.000$). Those who rated their precaution level as "moderate" were more likely to get interventional treatment, while those who rated their precautions as "excellent" were more likely to get only pharmacological management. No significant association was found between socio-economic status and attitude toward visiting dental clinic during COVID times ($p=.537$).

DISCUSSION

At the time of collection of data for this study, i.e. in September 2020, a phased resumption of services had started post lockdown. Almost all dental clinics had started providing their services, though with modifications in infrastructure, case-selection and treatment protocols.

The present study reported a significant fear associated with visiting dental clinics during COVID times in Indian population, as is evident by the finding that as high as 70.9% of the participants felt that dental clinics are risky place to visit. Amid the government guidelines to wear face masks when moving out of home, and the nature of dental treatments being totally contradictory, the mouth wide open for prolonged period, these fears seem to be in sync to the current conditions. However, an additional role of social media in aggravating the dentistry-related fears of general population can't be overestimated. Since the appearance of first case of COVID-19 in China, social media has been implicated in spreading anxiety about the COVID19 outbreak to the extent that COVID-19 has been hailed as the first social media infodemic.¹³ Dentistry, as a profession was also not untouched from this infodemic, and the misinformation circulating on various social media platforms may be the reason why a significant percentage of population avoided dental treatment when required, even when there were no such guidelines to the general public from the government.

A decline in procedural interventions at dental clinics was associated not only with the fears of general public, but also those of the dentists. Various studies have reported the perceptions of dentists during COVID outbreak in various parts of the world.^{14,15,16} Ahmed et al.,¹⁴ in a survey on dentists from 30 countries reported that more than two-thirds of general dental practitioners were anxious and scared by the devastating effects of COVID-19. Martina et al.¹⁵ also reported that Italian dentists were scared as they considered their jobs were a high risk to them and their families. Kinariwala et al.¹⁶ reported that Indian dentists were inadequately prepared for this pandemic, in terms of procurement and advanced training of protective equipment, and medicolegal concerns. These findings may explain dentists' hesitation towards procedural interventions, as reported in this study.

The results of this study throw some light on the probability that the general oral health status of the Indian population may suffer from the after-effects of this pandemic. It was seen that only half of the participants were ready to follow the advice of the dentists regarding treatment plan, while the rest half either preferred to self-medicate or get only pharmacologic prescription for suppression of symptoms. Such attitudes may be detrimental to long-term goals of National Oral Health Programme, i.e.

reducing morbidity from oral diseases and integration of oral health promotion and preventive services with general health care system.¹⁷

This was a web based study where questionnaires were created online and links were sent to students. This methodology is usually associated with problem of coverage error.¹⁸ However, attempt was made to include participants from all age groups and socio-economic status in the research invitations. Despite this, it is probable to have bias pertaining to self-selection in sampling, as those who accepted the invitation to participate in the survey are more likely to be the ones who were more affected by dental problems during COVID pandemic. Few researchers have also raised doubts about ethical issues like informed consent in web-based surveys.¹⁹ In the present study, the link of the questionnaire was preceded by complete information of the nature and purpose of the study and confidentiality was ensured. Personal details which can lead to identification of participant were not asked, and it was clearly mentioned that opening the link implies signing informed consent. Further, participants were free to leave the questionnaire in between and such questionnaires were not included in the study.

Another limitation is that use of closed ended questionnaires may have possibly led to exclusion of certain factors. Relatively small sample size, and information bias due to self-reported nature of data are other limitations of the present study.

COVID-19 has affected whole world, including individuals of all social, financial or occupational background. This study highlights the need to address COVID associated fears in public to avoid long-term dental health related consequences. The need of the hour is to upgrade the clinic set-ups to increase safety standards in dental practice to regain lost faith of dental patients. Stricter infection control to ensure safe dentistry along with correct information disbursement to public may enable patients to avail much needed health services without fear in this time of crisis.

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