

**Barriers of Dental Service Utilization during Covid-19 Pandemic – A Systematic Review**

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**Citation of this Article:** Dr Nivedha K., Dr Aparna S., Dr Parangimalai Diwakar Madankumar, “ Barriers of Dental Service Utilization during Covid-19 Pandemic – A Systematic Review”, IJDSIR- October - 2021, Vol. – 4, Issue - 5, P. No. 10 – 18.

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**Type of Publication:** Review Article

**Conflicts of Interest:** Nil

**Abstract**

The purpose of this systematic review was to identify the COVID-19 pandemic influence on patients’ utilization of dental services and to report alternative strategies for the same. Suitable articles were identified by searching PubMed, Trip database, and Google Scholar host databases. The search was done with the help of the PEO analysis where

**Population:** population age group above 18 years seeking for dental service.

**Exposure:** Fear to visit dental service during a pandemic situation.

**Outcome:** Patients’ self-reported barriers and fears in seeking dental care. Screening of the titles and abstracts was done, and only those articles that fulfilled the eligibility criteria were selected. The search resulted in

250 articles out of which only 2 articles that fulfilled the criteria were included. The need of the hour is to upgrade the clinic set-ups to increase safety standards in dental practice to regain lost faith in dental patients. Strict infection control to ensure safe dentistry along with correct information disbursement to the public may enable patients to avail much-needed health services without fear in this time of crisis.

**Keywords:** Barriers, Dental service, Utilization, COVID-19 pandemic.

**Introduction**

Health inequities are avoidable and unjust. Although COVID-19 has infected people worldwide, as per the World Health Organization report, around 175 million were affected globally by COVID-19 (coronavirus disease 2019) [1]. On March 11, 2020, the World Health

Organization (WHO) has affirmed the global spread of the disease as “the pandemic”. The sudden appearance of the virus has become a foremost public health crisis globally and its influences on people magnanimity left everyone to choose their own lives as a topmost priority than any other.

As a result, there was a substantial change in delivering health care services to people during the pandemic situation. COVID-19 has disrupted the health systems and affected human health globally. It was crucial to protect people and maintain people’s access to life-saving health services during the pandemic. COVID-19 has significantly affected health care services for non-communicable diseases, and especially dentistry [2]. Current observations suggest that people of all age groups are generally susceptible to the COVID-19 and however, those who are in close contact with the patients, including health care workers.

The health care professionals are at the front line of the COVID-19 outbreak response and among them the WHO stated that dentists were at high risk of being infected with SARS-CoV-2, because of their close proximity to their patients in order to treat them [3]. Percutaneous injuries and blood splashes to the eyes, nose or mouth occur frequently during dental treatment and it is clear that there is a higher risk of viral transmission in the dental office. This resulted in people being reluctant to accept dental care services even though they had a need.

There are many barriers to dental care services. Barriers for seeking dental services have been classified by the FDI as related to the following: (a) individuals themselves (such as the lack of perceived need, anxiety or fear, financial considerations, and lack of access), (b) dental profession (inappropriate workforce resources, uneven geographical distribution, training inappropriate to changing needs and demands and insufficient sensitivity

to patient's attitudes and needs), and (c) society (insufficient public support of attitudes conducive to health, inadequate healthcare facilities, inadequate oral health workforce planning, and insufficient support for research) [4,5]. In the pandemic, dentistry has faced many challenges in delivering services because of the characteristics of dental settings, nature of work such as the aerosol generating procedures, droplets transmission, patients opening of mouth for a long duration of time in dental clinics having a high risk for cross-infection, which attributed the significant decline in the number of patients visiting dental clinics or hospital [6]. Further, due to the restriction of dental procedures as per the guidelines, only emergency procedures were performed and common lockdown restrictions have also contributed to the barriers in utilizing dental care services [7]. It has become more difficult for dental professionals to provide most of the preventive, conservative, and aesthetic 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 patients.

However, since dental services cannot be stopped for a long period of time, it is important that the dentist must be fully prepared before resuming their service. This systematic review insight only on self-reported barriers by the patients as they are expected to seek care because they are the most suitable to express their opinions about the barrier they confront during the process of seeking oral care, especially when visiting dental health care centres.

### **Materials and Methods**

The systematic review was undertaken using objectives and transparent methods as per the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) Guidelines, to identify, evaluate and summarize all relevant research findings. The protocol for systematic Review was registered first in PROSPERO (International

prospective register of Systematic review).

Acknowledgement ID: 266836 2.1.

**Eligibility Criteria**

The PEO analysis of the articles searched was set as shown below:

**Peo Analysis: Population**

Population age group above 18 years seeking dental service

**Exposure:** Fear to visit dental service during the COVID-19 pandemic situation from November 2019 to June 2021.

**Outcome:** Self-reported barriers among the population in seeking dental services.

**Inclusion Criteria**

1. Studies that reported the barriers for dental services utilization among those seeking dental services during “the COVID-19 pandemic situation”.
2. Studies that had a sample of the population with an age group above 18 years who seeks dental help.
3. Studies that were self-reported by the population.
4. The study included participants from the online platform.
5. Cross-sectional, Longitudinal observational studies were only included.
6. Studies done from November 2019 to June 2021 were only included. (COVID-19 outbreak)
7. Studies written in the English language were only included.

**Exclusion Criteria**

1. Studies included the barriers to providing dental services from a dental professional’s perspective during the pandemic situation.
2. Review articles, systematic reviews, meta-analyses, and case reports were excluded.

**Search Strategy**

A literature search was done in PubMed, Trip-database, Google Scholar host database was performed from the year November 2019 to June 2021. The keywords used in the search were “barriers, dental services, utilization, COVID-19 pandemic”. The combination of the following terms barriers and dental services and utilization and pandemic were included in the search strategy. The references of all the full-text articles were searched to select the relevant articles. Table 1

Studies were eliminated based on their title and abstract. Full-text reading was done when the abstract of those studies fulfilled all the inclusion criteria. When the study met the eligibility criteria, full texts of the articles were obtained. A further literature search was performed based on the references of the selected articles.

Table 1: Search strategy table for the systematic review.

Database	Search pattern
Pubmed	((barriers) AND (dental service)) AND (utilization) AND (covid-19 pandemic) from 2019/11/1 - 2021/6/15
Google Scholar	barriers and dental services and utilization and pandemic [(self-reported patient) "dental care"]
Trip Database	barriers dental service utilization COVID-19 pandemic

**Data Extraction Table**

The data extraction from these two articles was done using a data extraction form. Which included the Author name and year of publication, study design, methodology, sample size, parameters used outcome and the inference.

Table 2

**Table 2:** Data extraction of the final articles including the first Author name and year, study design, methodology, sample size, parameters used outcome and inference.

Sn.	Author &Year	Study Design	Methodology	Sample Size	Parameters Used	Outcome	Inference
1	Kumar V et al & 2020	Cross-sectional study	This study involved participants aged 18 years and above, surveyed randomly on social media platform. The participants were invited to take part in online survey via an <b>email</b> or via messaging platform <b>WhatsApp messenger</b>	Invited- 600 Response-468 (Response rate-78%)	The questionnaire used in the survey had sections of 1.Demographic details 2.Routine dental check-up related habits 3.Dental health during lockdown due to COVID-19 4.Attitudes towards seeking dental care 5. Problems faced during this period The Questionnaire were based on Knowledge and attitude of respondents 1. Reasons for visiting the dentist during pandemic	27.4% of the participants had experienced one or more dental problems. 12.5% of the participants feeling the need to visit the dentist. 51.3% of the participants willing to get the dental treatment. The rest either preferred self-medication or only pharmacologic management. The main barrier of dental services utilization, according to the study, is fear of Covid-	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, and to improve the safety standard in dental clinic setups People’s fear of COVID-19, because of its novel and rapid transmission, make them reluctant to go to dental health care practitioner, to remove these barriers the dentist have to
2	Vanka S et al & 2020	Cross-sectional study	The study involved sample of patients from a private dental school. The questionnaire was done electronically through <b>google docs</b> and distributed	Invited-340 Response-283 (Response rate-91%)			

			<p>through WhatsApp to all patients whose contact information was available to the students.</p>		<p>2. Barriers in seeking dental care during COVID-19 pandemic 3.Using technology for dental consultations during COVID-19 pandemic Study also mentions the significance of socio-demographic variables</p>	<p>19 transmission [164 (58.2%)]. The second reason is offered by people not having symptoms to visit a dentist [94 (33.3%)]. Also, the high cost of dental treatment was a barrier [67 (23.8%)]. The first reason of using technology for dental consultations of COVID-19 pandemic was safety, as it reduces the risk of its spreading.</p>	<p>explain the importance of overcoming all barriers and to utilize dental services during the COVID 19 pandemic. The best alternative for patients visiting the dental clinic is to incorporate tele-dentistry into dental practice.</p>
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**Results**

**Search Results:** At first, the search generated 250 articles based on the title from 3 different databases: PUBMED, TRIPDATABASE, and GOOGLE SCHOLAR. PUBMED produced 11 articles, TRIPDATABASE produced 19 articles and Google Scholar produced 220 articles. Among these 114 articles were eliminated due to duplication, 130 articles eliminated after abstract reading and 4 articles

eliminated after the full-text reading. Finally, based on the inclusion and exclusion criteria, 2 articles were selected for the review using PRISMA flowchart (Figure-1). The inter-examiner bias was eliminated. The first two authors (NK & AS) analysed the studies. The discrepancies between the first two authors were resolved by the consensus from the third author (MK). Good inter reliability (kappa value = 0.8) was obtained.

### Quality Assessment

The final analysis included 2 cross-sectional studies. To determine the methodological quality of the included study, the qualitative assessment was done using the “Modified Newcastle-Ottawa Scale for cross-sectional studies”. The quality score was based on seven items of the following categories: selection, comparability and outcome. The quality assessment can be awarded a maximum of one star for each numbered item within the Selection and outcome categories. A maximum of two stars can be given for Comparability. “Higher the score, better the quality of the study”. The studies with 9–7 points are Good Studies, 5–6 points are Satisfactory Studies, and 0 to 4 are Unsatisfactory Studies. Table-3

### Outcome

The studies included in the review identified the various barriers in utilizing the dental care services in “the pandemic situation”. Kumar V et al stated that a significant percentage of the population avoided dental visits or treatment during the COVID-19 out-break which led to a long-term ignorance of oral health. Vanka S et al,

stated that people’s fear of COVID-19 due to its rapid transmission, make them reluctant to seek professional dental care and she also suggested the importance of overcoming the barriers and utilizing dental services during the pandemic COVID-19.

Figure 1: Prisma Flow Chart

Prisma flow chart- representing the search among different data bases and included studies

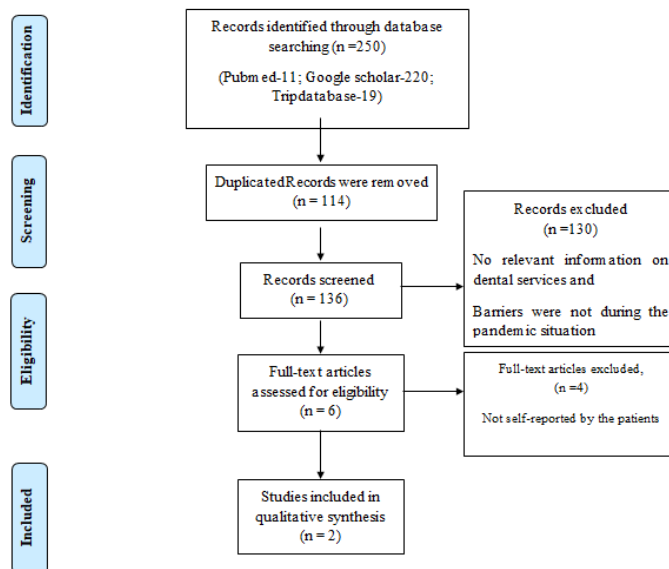


Table 3: Newcastle-Ottawa Quality Assessment Scale for cross-sectional studies

Sn	Selection					Comparability	Outcome		
	Author / Year	Representativeness of sample size	Sample size justification	Non-response	Ascertainment of exposure		Assessment of outcome	Was follow-up long enough for the outcome to occur (statistical test)	Total quality score
1	Kumar V et al 2020	*	*	-	*	*	*	*	6 stars
2	Vanka S et al 2020	*	*	-	*	*	*	*	6stars

## **Discussion**

To the best of our knowledge, this is the first systematic review on the barriers of dental service utilization during the pandemic situation from a beneficiary perspective. The purpose of this systematic review was to identify the COVID-19 pandemic influence on patient's utilization of dental services and to report alternative strategies for the same. There are several barriers in utilizing the dental care service, among them fear to visit dental clinics and hospitals during the pandemic was more owing to the high risk of experiencing the virus transmission while utilizing the dental services.

Kumar V et al in their study found that 27.4% of the participants had experienced one or more dental problems since the disease outbreak, while others had no dental problems. 20.5% of the total participants had felt the need to visit the dentist and out of these, only 12.5% visited the dentist without any delay, over 41.67% postponed it due to fear of infectious disease or visited the dentist only when the symptoms were out of control. As high as 45.8% of these participants had not visited a dentist till the time of undertaking this questionnaire despite feeling the need [8]. Even though there was a need for treatment 70.9% of the participants felt that dental clinics were a risky place to visit and few got pharmacologic prescription or self-medicate for suppressing the symptoms. Such attitudes may be detrimental to the long-term goals of the oral health promotion.

About, 28.6% of participants stated that they were provided only with pharmacological management and due to lack of knowledge about the disease and its transmission, none of the interventional procedures were done by the dentist citing a risk of COVID-19, whereas 7.1% of participants refused the treatment as they were suspectable for the COVID-19 exposure. A decline in procedural interventions at dental clinics was associated

not only with the fear of the general public, but also those of the dentists. Kumar V et al also mentioned how social media influences dentistry-related fear since from the first case of COVID-19 there were a lot of rumours and misinformation circulated regarding COVID -19 and dentistry, which spreads rapidly than the disease. This is a serious concern and should be addressed carefully [9].

According to Vanka S et al, more than 50% of participants had fear of COVID-19 because of its novel and rapid transmission which made them reluctant to go to dental health care practitioners, whereas others had no symptoms of any dental or oral health-related problems. People tend to ignore dental problems for a longer duration as they were least bothered and negligence of swelling or pain, waiting for 5 or more episodes of pain and managing it with home remedies were of serious concern. Patient's doubt or fear for using the un-sterilized instrument during the treatment, fear towards dentist and dental procedures, finance/ insurance, lack of transportation at the time of lockdown restrictions, lack of time to visit a dental care services and long waiting hour in dental OPD, inability to take time off child care duties were considered as some of the barriers [10]. Though young age individuals showed higher dental fear than older age individuals, young age individuals utilized more dental help when compared to the older age group.

A change in personal dental health will have a positive impact on the demand as well as the utilization of dental services across the communities, nation, and finally the world [11]. Therefore, it is the duty of the dentist to remove all the barriers and to explain the importance of overcoming these barriers to utilize dental care services. Further, the dentist should entertain a high level of awareness and integrity to deal with the disease and should be able to control and manage its spread. The latest

precautionary actions could be viewed by dentists as extra protective measures [12].

The public health response to the novel COVID-19 pandemic has shut down traditional modes of health service delivery worldwide. While efforts are underway to reduce barriers by technology-supported health delivery systems. Care should be taken to reframe traditional models of care into a virtual and supported online system. Across the globe many countries have successfully implemented technology-supported services to maintain health care practices. Henceforth the best alternative for patients visiting the dental clinic is to incorporate “tele-dentistry” into the dental practice [13,14]. Tele-dentistry may not be a complete substitute for the dental health care setting, but it will be a definite alternative for consulting basic oral health problems, which may not be an emergency.

### Conclusion

This systematic review highlights the need to address COVID associated fear in public to avoid long-term dental health consequences. As the need of the hour dentist has to approach the patient and explain all the essential precautions needed to be taken especially during the emergencies like pain or swelling. Following stricter infection control and increasing the safety standards in dental practice can regain patients lost faith to visit dental professionals.

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