Impact of COVID-19 Outbreak in Dental Service Utilization Reported by Patients Visiting a Tertiary Care Centre: Mixed Quantitative-qualitative Study

Ashish Shrestha

B. P. Koirala Institute of Health Sciences

Tarakant Bhagat

B. P. Koirala Institute of Health Sciences

Santosh Kumari Agrawal

B. P. Koirala Institute of Health Sciences

Ujwal Gautam (✉ ujwal.gautam@gmail.com)

B. P. Koirala Institute of Health Sciences <https://orcid.org/0000-0001-9936-1524>

Research article

Keywords: Care seeking behaviour, COVID-19, Dental service utilization, Pandemic, Perceived dental needs

Posted Date: September 30th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-59399/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: COVID-19 poses a major public health calamity. Its wider impact on health service utilization is yet to be studied. The study aims to assess dental problems faced by patients during the COVID-19 outbreak and the possible reasons in failing to seek dental care

Methods: A cross-sectional quantitative-qualitative design was employed to assess the outcomes among patients reporting to a tertiary care centre. Participants were selected by convenient sampling and interviewed using structured questionnaire. Responses were transcribed, translated and coded before analyzing for the themes by thematic analysis. Quantitative component of the study was analyzed by descriptive and inferential methods.

Result: Mean age of the participants was 43.7 years (SD: 16.1). Most of them (63%) reported not having had an oral examination in the past year while 62% reported being unable to seek dental treatment during the pandemic. Pain, sequelae of pain and other self-perceived urgent causes were identified as the major problems faced by the participant. Similarly, the reasons for not being able to seek dental treatment were grouped as fear of transmission, lack of transportation and lockdown, unavailability of health services, misinformation, lack of communication from hospital regarding its services, and deferred treatment by the hospitals.

Conclusion: Pain remains the ultimate trigger for care seeking behaviour. Dental service utilization was reported to be influenced by a number of factors during COVID-19. The pandemic seemed to add up to the already pre-existing dilemma in seeking dental care. A conceptual framework has been suggested to aid further researches in the future for looking into the impacts from such pandemics.

Background

Corona Virus Disease of 2019 (COVID-19) has been declared a pandemic situation by the Director-General of WHO on March 11, 2020.(1) Current evidence suggest that COVID-19 virus is primarily transmitted through respiratory droplets and contact routes. Droplet transmission occurs when a person is in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing). Thereby, this increases risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed.(2) Unique characteristics of dental procedures lead to a large number of droplets and aerosols generated.(3) The standard protective measures in daily clinician work seem to be ineffective in halting the spread of the virus. Recent observations have hinted that even patients with asymptomatic COVID-19 can be carriers of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This has posed an extreme challenge to identify and quarantine such patients. Dentists are, therefore, required to undertake stringent personal protective measures for all cases and avoid or minimize operations that produce droplets or aerosols. For

areas of COVID-19 spread it has been recommended that nonemergency dental practices be postponed.
(4)

United States Centre for Disease Control and Prevention (CDC) recommends postponing elective procedures, surgeries, and non-urgent dental visits, and prioritize urgent and emergency visits and procedures during the outbreak.(5) American Dental Association (ADA) has urged the dental clinics to treat only emergency patients. The recommendations have been made to screen for dental emergencies using tele-dentistry or other remote modalities.(6) WHO, meanwhile, has emphasized on proper personal protective measures for healthcare professionals during the outbreak.(7) In the light of these events, the non-urgent dental services were halted all over the country. The healthcare centres have halted their regular out-patient resources and limited their services to keep the scarce resources in standby for any unforeseen events. A major tertiary care centre in Eastern Nepal has suspended all non-emergency outpatient procedures citing the situation. However, treatment requiring urgent care is still available following strict protocol. Besides these, alternative forms of treatment modalities like tele medicine and helpline consultation services were made available to the public.

The outbreak has resulted in many emergency measures taken by governing states. Limiting social contact through enforcing lockdown measures have resulted in decreased public mobility. Stringent confinement measures for general public in high risk areas has shown to have potential to slow down the spread of COVID-19.(8) Other evidence also support the idea of using a combination of containment and mitigation activities with the intention of delaying major surges of patients and levelling the healthcare demand for controlling the outbreak.(9) Moreover, lack of adequate Personal Protective Equipment (PPE) and safety measures at tertiary care centres, as mentioned earlier, have resulted in closure of regular outpatient services leading to substantial decrease in patient turnover at dental departments. These resulting measures can have a significant impact in seeking dental care. The impact of such measures has not been assessed till date, Guo et al(10) in China have demonstrated that COVID-19 epidemic had a strong influence on emergency dental services with the proportion of dental and oral infection raised from 51.0% of pre-COVID-19 to 71.9% during COVID-19, and dental trauma decreased from 14.2–10.5%. It is worthwhile important to generate evidence on the impact that such measures can have on dental care need so that recommendations can be drawn to anticipate and prepare for such incidences in the future.

This study intends to assess perceived unmet dental care needs during COVID-19 outbreak among patients visiting a tertiary care centre in Eastern Nepal and assess the dental problems faced by patients and possible reasons of the patients in failing to seek dental care during the outbreak using a mixed design approach.

Methods

Study design, setting, and participants

The study used hospital based Cross-sectional mixed quantitative-qualitative study design. Sample size was calculated with prevalence of 50% which gives maximum sample size (11) and adjusted for non-response to 108. All patients above 18 years of age reporting to Dental help desk at College of Dental Surgery (CODS), BPKIHS (tertiary care centre) for orofacial complaints were included in the study using convenience sampling. Participants were requested by the interviewer to enrol into the study. None who were approached declined to participate. Interviewer introduced himself and his credentials to the participants and read out the Participant Information Sheet explaining the study goals before interview. The participants volunteering to participate were interviewed in person alone at a separate desk in dental help desk. Interviewer was conducted in person alone and maintaining personal protective etiquettes to ensure personal and patient safety. The data collection was conducted from July, 2020 to August, 2020.

Study variable

The questionnaire had two components: quantitative and qualitative. The participants were interviewed by a single male investigator (UG) to elicit their response on both components. The responses on quantitative component were obtained by closed ended structured questionnaire. Responses on predictor variable of dental service utilization in the past and participants belief on regular dental visit were assessed using single questionnaire each. A questionnaire, adapted from Chae et al (12) and modified, was used to assess outcome variable of interest on perceived unmet dental care need by asking whether they were unable to seek dental treatment. Whereas, the responses for qualitative component were obtained, using structured questionnaire, from participants who responded to have been unable to seek dental treatment due to COVID-19 outbreak. For the same, a guide with two open ended questions constructed by the investigators were used. Responses were obtained for dental problems faced during the outbreak and reasons for being unable to seek dental care. The questionnaires can be found in additional file [Additional file 1].

The questionnaires were translated into Nepali language by standard WHO translation technique. Questionnaires were examined for face validity by experts in the related field. The responses were recorded verbatim in a notebook by the interviewer. The interview lasted for maximum of 15 minutes. The recorded transcript from the participants were, then, read back to them to ensure respondent validation. Field summary notes were also included. A wide range of responses was incorporated to ensure not including a single opinion.(13) The responses were, later, translated into English for further analysis. The transcripts were read to generate initial codes by the study team. All investigators then compared the themes, and re-examined the data to develop consensus

Data from questionnaires were entered in Microsoft Excel and exported to Statistical Package for Social Sciences software (SPSS) Version 11.5 software for statistical analysis. Descriptive analysis and inferential statistics using Chi-square test was done for assessing quantitative component. Level of significance was considered at $p < 0.05$. The analysis of qualitative component involved qualitative description approach with thematic analysis. Analysis ensured the confidentiality and safeguard of

identity of the participants. The responses were manually coded and theme were generated from the responses obtained.

Results

Quantitative component

Mean age of the participants was 43.7 years (SD: 16.1). All participants were included in the analysis. Of the 108 participants, 65 (60.2%) were female and 24% of the participants (n = 26) were illiterate. Most of them (63%) reported not having had an oral examination in the past year. Another majority (62%), 67 of 108, reported they needed dental care but couldn't receive due to COVID 19 outbreak. Meanwhile, only half of the participants believed that regular dental check-up is necessary.

The characteristics of participants classified across different study variables on the basis of their response is shown in Table 1.

Table 1

Characteristics of participants on the basis of their response regarding impact of COVID 19 on dental service utilisation

	During COVID 19 outbreak, was there a time you needed dental care, but didn't receive it?			p-value
	Yes	No	TOTAL	
Age in years [Mean (SD)]	46.6 (15.8)	39 (15.7)	43.7 (16.1)	0.016 ⁺
Sex [n (%)]				
Male	24 (55.8%)	19 (44.2%)	43 (100%)	0.278*
Female	43 (66.2%)	22 (33.8%)	65 (100%)	
In the past year, have you had an oral examination to determine the state of your oral health, even though you did not have any oral health problems? [n (%)]				
Yes	28 (70%)	12 (30%)	40 (100%)	0.191*
No	39 (57.4%)	29 (42.6%)	68 (100%)	
Do you believe it is necessary to visit dentist regularly?				
Yes	34 (63%)	20 (37%)	54 (100%)	0.999*
No / Don't know	33 (61.1%)	21 (38.9%)	54 (100%)	
+ independent t-test				
* chi-square test				
Bold signifies statistical significance at p < 0.05				

Qualitative component for perceived dental problems during COVID 19 outbreak

Thematic analysis of the data from interview generated three themes for perceived dental problems during COVID 19 outbreak while seven themes were generated for reasons for inability in seeking dental care during the COVID-19 outbreak.

Pain is the major problem

A major dimension of dental problem faced by the participants during COVID 19 outbreak was 'toothache'. Some participants reported having mild pain whereas other reported have progressive to severe toothache. Not all of them reported developing pain suddenly. Most of them reported having slightest of hints that something was problematic. A female student conveyed her sentiment about pain: "I develop severe toothache whenever I eat anything cold. Also, the tooth gets broken down when I chew from that side." However, the symptoms reported by all participants was not sudden in onset. Some reported having noticed some problem beforehand before they were troubled by the pain as another housewife reported: "I had noticed a decayed tooth and wanted to get treatment for long... but now it started to pain suddenly". An adult from Dharan was recorded saying: "there was a wound inside mouth; had been under medication for it... pain started to be unbearable since few days".

Another middle-aged adult described his suffering as: "there was swelling in the gums; pain, however, started few days back". Similar to him, pain was often reported with other symptoms by other participants as well. An elderly woman mentioned: "huge swelling in face was present... discharged pus inside the mouth. (I) Decided to come after pain became unbearable". This highlighted how pain was the leading factor to determine the patient's urge for seeking dental care despite prevalence of other problems. Similar reports were made by other participants as well. Another male student mentioned: "... had a tooth broken while playing... (it) was not problematic but now started having pain and swelling for few days".

Participants also reported seeking medications as a measure of pain relief. A young clerk mentioned her situation as: "... toothache for 3 days; been taking 'brufen' for the same... since then there was no pain; pain is now only occasional while chewing". Another male reported: "pain was there since few months; been taking medication since then but doesn't seem to work now". Pain was also reported by participants who were under treatment before the pandemic. Another participant explained his scenario as: "(I) was undergoing RCT for a painful tooth but now I've been experiencing pain since few days". A housewife mentioned: "I was undergoing treatment in lower right back tooth... so wanted to come here for the same".

Consequences from pain

There seemed to be negative sequelae from pain in reports made by several participants. A female was recorded reporting her frustrations as: "... couldn't sleep due to severe toothache since few weeks. I had to

take pain relieving medications for the same”. Alike her, several mentions regarding impact of pain on daily activities were reported by other participants. Another housewife recorded saying: “Painful tooth has made it difficult (for me) to have food and proper sleep”. Another participant went on to state that “severe pain in the tooth; sometimes there is headache; makes it difficult to do anything”.

Perceived urgency of treatment for other causes

However, not all the participants reported having faced pain as the major complaint. A rather young housewife was reported saying: “there was swelling in gums with toothache; now it started to discharge pus; thought it could turn out to be cancer”. A mid aged adult reported “sharp fractured tooth causes discomfort” as the reason for wanting to seek treatment. Another adult participant reported: “there is a broken tooth; sometimes it turns sensitive”. An illiterate housewife reported: “My tooth filling fell off ... difficulty in having food”.

Lack of knowledge on oral health was reflected in reports made by few participants as they insisted on having desire to get their tooth removed and hence wanted to come to the dental hospital. An elderly mentioned: “... developed decayed tooth... wanted to get the tooth removed”. Another adult female reported: “... wanted to remove my teeth”. The nature of perceived need was not same for all participants as illustrated by response from an illiterate elderly male as: “(Facing) very difficult to have food... had all my teeth removed... wanted to get new set of teeth”.

The Illustrative quotes from participant interviews regarding dental problems faced by patients during the COVID-19 outbreak is given in Table 2 in additional file [Additional file 2].

Qualitative component for reasons for inability in seeking dental care during the COVID-19 outbreak

While describing their problem faced during the outbreak, the participants responded to question on the reason for not being able to seek treatment through variety of responses. Lack of service availability due to closure of hospital was considered as the major reason for being unable to seek care by majority of the participants.

Lack of transportation services and lockdown

Few of the participants reported having problem with assessing the transportation facilities. An elderly male mentioned: “No transportation facility was available; couldn’t hire an ambulance by myself to come here; came here today by accompanying another patient with severe condition in an ambulance”.

Misinformation

Misinformation about hospital services were reported by few participants. This misinformation seemed to have spread through the participants own relative as an elderly housewife mentioned: “they told hospitals were closed, all my relatives”.

Lack of communication from hospital regarding its services

Most of them seemed to be unaware about the urgent care services that were in function despite the closure of general outpatient services. A housewife explained the reason as: “didn’t know hospitals were open... so stayed at home taking ‘brucet’... came here as soon as I knew OPD (out-patient department services) was open”. Another elderly housewife reported similar reason: “(I) thought hospitals were closed... so didn’t come”. The responses hinted that patients decided for hospital visit after they were assured that treatment was available. A female participant reported: “(I) Didn’t know if services were available; a neighbor informed me that treatment is available now... so I came here”.

Deferring of treatment services

Few participants even reported looking for alternate sources of treatment but were largely deprived of services. A housewife reported: “Didn’t know ghopa (this hospital) was open... went searching for private clinics but (they) were of no use”. Another illiterate participant from a rural area mentioned: “couldn’t come due to lockdown; went to local health post but treatment was unavailable there; so, waited for few weeks”. A literate male participant even reported being denied treatment by private clinics as he stated: “Tried to visit the clinic where treatment was done before but they refused to do anything; came here in a hope something will be done for the tooth”. A handful number of respondents, from the response, reflected their knowledge regarding additional patient services like telemedicine and helpline being conducted free of cost by the institution. However, some even responded to have relied on the suggestions received through telephone helpline services. An adult participant stated: “... had a problem but didn’t want to come due to corona; relied on helpline for suggestion but then doctor instructed me to come”.

Fear of transmission

Another majority of the participants cited their fear of coronavirus for seeking dental treatment. A young housewife mentioned: “Was very afraid to come outside of home; everyone said how danger corona is”. Some believed that visiting hospitals during the pandemic might expose them to undue risks of COVID 19 as “fear of going to the treatment” was cited by another female from urban Dharan. “Didn’t come due to fear of transmission in hospital” was response from adult man from urban Dharan. A participant from rural area seemed to be more aware regarding his concerns on COVID 19 as she stated: “had visited a local clinic; there was no social distancing; got afraid and didn’t seek for treatment”. An elderly housewife reported: “Didn’t want to crowd at hospital; telemedicine was not worthy”.

Deferring of treatment services

Some even reported to have had a visit in past few days but the suggestions or treatment provided didn't help ease their complaint. An adult man reported "(I) had come for treatment; doctor gave me medications that subsided the swelling but pain still persists; didn't want to come to the hospital due to fear". Another older male responded with more displeasure: "Only emergency services were available; they didn't attend my problem".

Unavailability of hospital services

Few individuals reported having tried seeking dental care but couldn't reach to one as all services were closed. An elderly housewife reported: "hospital services were not available in the city; tried searching for one that was open but everything was closed"

The illustrative quotes from participant interviews regarding reasons for failing to seek dental care during the COVID-19 outbreak is given in Table 3 in additional file [Additional file 2].

Discussion

This study attempted to identify dimensions on dental care seeking pattern during the COVID-19 outbreak. Studies have highlighted on the need for development of outbreak-ready research capacity in both high- and low-resource settings.(14) Identification of knowledge gaps, without disrupting the critical work of saving lives, in order to generate research questions for high-priority study through surveys is considered as an integral component of the immediate response and of longer-term follow-up.(15) Qualitative research has been used in dental public health to explore emerging ideas and answer important research questions that are difficult to address satisfactorily using quantitative methods alone. (16,17) Moreover, use of mixed methods in addressing population oral health outcomes has been identified for recognizing the determinants of oral disease.(18)

The most important finding that emerged from this study was pain seemingly being the leading problem faced by the participants during this outbreak. Toothache has been identified as the major reason for care seeking behavior.(19,20) Though individuals also expressed other problems faced during this duration, pain could have driven the participants to the hospital this time. It has been understood that manifestation of other clinical conditions as toothache ultimately plays an important role in care-seeking patterns.(21)

Patients are thought to undertake for desperate measure at times of emergency. Few participants in our study reported to have taken some forms of medication for their symptoms. They turned up for the visit only after the medications were no longer effective. Pain sufferers often use a combination of self-care and formal care strategies. Self-care strategies mainly focuses on nonprescription remedies.(22) This was evident in our study where a number of participants responded taking self-prescribed medication for

pain relief. Episodes of pain may propel an individual to seek lay consultations especially when formal care strategies are not available.(23,24) Our participants response also suggested similar pattern as the need for seeking care led them to communicate with non-health professionals (relatives and neighbours) and hence some were misled into inappropriate behaviour. Moreover, misinformation resulting from information overload in social media may well be an unintended consequence of the COVID-19 crisis which exacerbated the problems.(25) As highlighted by our study few participants were misinformed about hospital services. Meanwhile, lack of proper communication about availability of urgent care services can be contributed to the reason for patient's inability to receive care. Many seemed not having any knowledge of urgent care services like telemedicine and telephone helpline services that were provided by the institute. Use of appropriate risk communication in social media channels and ensuring a consistent media presence by including all stakeholders in public health messaging can help guide the communication channel.(26)

The participants in our study reported having a range of functional discomforts resulting from pain. This was consistent with findings from other researches.(27,28) Fox et al have highlighted change in symptoms, persistent of symptoms, worry/concern about symptoms and dislike of symptoms as the major triggers for seeking help. Moreover, beliefs about symptoms, health care professionals and individual circumstances were considered as the major barrier.(29)

It is imperative to explore that whether this COVID 19 situation made them reluctant to seek for dental care and wait till symptoms progressed and became unbearable. Besides, an array of patterns of care-seeking were identified. Situational factors play a role in determining their behaviour. Among individuals who perceive themselves to be in poor health, those who develop fewer urgent symptoms, less difficult life situation, and lack of faith in the medical care system would be least likely to seek medical attention. (30) However, accurate recognition of symptoms and the perception that symptoms can be indicative of serious underlying condition are important factors for health care seeking behaviour.(31) Some patients, in our study, reported to have decided for a visit even for problems of non-urgent in nature. Their perceived need for dental care may have functioned as the trigger. Gill et al reported that a large majority of emergency department patients perceive the problems for which they seek care as urgent, even if assessed as otherwise by the health professionals.(32) This could impact the emergency services available during the pandemic as people tend to overstrain the existing resources. Many participants reported lack of transportation facility as the reason for not being able to seek treatment. This was a consequence of lockdown imposed by the government. However, looking at the wider perspective, lockdown measures have helped contain the growth of incident cases.(8) Therefore, it is difficult to rationalize on this aspect.

Quantitative assessment of the study participants in our study failed to show if inability to seek care during COVID 19 was related to past dental visits. This could be attributed to our study population who were included from hospitals. The response from surveys conducted in community could prove otherwise. The hazards associated with this pandemic limited the investigators attempt to plan a comprehensive community-based study. None the less majority of the participants reported not being

able to receive dental care during the outbreak. Moreover, the definition of perceived unmet need used in this study should be taken with caution as it encompasses a wider multidimensional definition depending on who is defining the concept.(33) The generalizability of study findings should be done with caution. A more robust sampling strategy could ensure external validity of the study. Participants, despite agreeing to participate, may have been wary of prolonging the interview for too long due to fear and resorted to simple short responses. Social desirable bias may have occurred due to participants tendency for answering answers considered favourably by others. Obviously significant changes in service provision for dentistry is in place worldwide.(34) Evidences have been published regarding the concerns in dental service during the pandemic and recommendations have been suggested.(4,6,35–37) The rapid reorganization of clinical services may not be straightforward and might require considerable moral decision making from the dental professionals to commence regular services.(38) This might be the reason few participants despite being able to reach to the hospital were not provided with the desired treatment. Besides, the utilization of dental services has been traditionally low especially in our part of the world.(39,40) It was similar in our study in which only 40 of the 108 participants reported having had a dental visit in the past year. It should also be noted that for the first time since world war, the reversal of casualties by disease pandemic is noted in developed part of the world.(41) So, evidence regarding potential impact on oral health and necessary measures are yet to come from the developed world.(42) This could then guide the more resource restraint part of the world to undertake necessary responses. Meanwhile these studies can serve as body of literature in times when necessary evidence is lacking from developed countries.(43)

COVID 19 has again highlighted the issue of pandemic preparedness. Strengthening core capabilities along with public health and clinical infrastructure of developing countries is an important step.(44) The results from this study suggest that more studies should be undertaken to explore the impact of this outbreak on dental service utilization and preparedness for future scenarios should be well planned. A detailed impact of this pandemic on dental service utilization is yet to be obtained at community level. However, this study can serve as a framework in devising and planning further studies. Figure 1 shows a conceptual framework which can serve as a guide for future research on perceived unmet dental care need during COVID 19 outbreak. [Figure 1 here; Conceptual framework which can serve as a guide for future research on perceived unmet dental care need during COVID 19 outbreak]

The actions now should aim towards generating more evidence and focus on preparedness in providing urgent dental care services for the consequences that may arise in the light of rapid increase of infection or subsequent wave of reinfection.

Abbreviations

ADA: American Dental Association

BPKIHS: B. P. Koirala Institute of Health Sciences

CDC: Centre for Disease Control and Prevention

CODS: College of Dental Surgery

COVID-19: Corona Virus Disease of 2019

DMFT: Decayed Missing Filled Teeth

PPE: Personal Protective Equipment

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2

SD: Standard Deviation

SPSS: Statistical Package for Social Sciences

WHO: World Health Organisation

Declarations

Ethics Approval and Consent to Participate

Thesis protocol was reviewed by Research Committee, B. P. Koirala Institute of Health Sciences, Dharan (Acad. 020/077/078). Ethical approval was obtained from Institutional Review Committee (IRC), B. P. Koirala Institute of Health Sciences, Dharan (05/077/078-IRC).

Participants were required to fully understand the research purpose and risks involved (if any) before consenting to participate. The questionnaire form included information sheet and consent form. Confidentiality was assured and only those agreeing to consent were allowed to participate.

Consent for Publication

Written consent agreeing on publication of scientific data from the study was obtained from each participant.

Availability of Data and Materials

The dataset for the study can be obtained from principal author on reasonable request.

Competing Interests

The authors declare that they have no competing interests. The reports made by participants are not included in any other submitted manuscripts.

Funding

The study did not receive funding from any source.

Authors' Contributions

AS conceived the study, designed the study, contributed to preparation of interview guide, supervised acquisition of data, analysis and interpretation of data and preparation of draft. TB was involved in design of study, analysis and interpretation of data and revision of draft. SKA was involved in design of study, analysis and interpretation of the data and revision of draft; UG contributed in design of study, acquisition, analysis and interpretation of data and preparation of draft. All authors have approved the submitted version and have agreed to be personally accountable for their own contributions and ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

Acknowledgements

The authors would like to thank College of Dental Surgery for providing the setting for conducting the study.

Authors' information

AS is Professor and Head at Department of Public Health Dentistry, College of Dental Surgery, B. P. Koirala Institute of Health Sciences, Dharan, Nepal; TB and SKA are Associate Professor and Assistant Professor, respectively, at the same department; and UG is Junior Resident at the same department. AS, TB and SKA (female) are full time academicians and also, have experiences as guides and co-guides for postgraduate studies.

References

1. WHO. WHO Virtual Press Conference on COVID-19 [Internet]. [cited 2020 Apr 5]. Available from: https://www.who.int/docs/default-source/coronaviruse/transcripts/who-audio-emergencies-coronavirus-press-conference-full-and-final-11mar2020.pdf?sfvrsn=cb432bb3_2
2. Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations [Internet]. [cited 2020 Apr 4]. Available from: <https://www.who.int/news-room/commentaries/detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>

3. Welcome to CDC stacks | [Internet]. [cited 2020 Apr 4]. Available from:
<https://stacks.cdc.gov/view/cdc/6743>
4. Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. *Journal of Dental Research*. 2020 Mar 12;002203452091424.
5. CDC Recommendation: Postpone Non-Urgent Dental Procedures, Surgeries, and Visits [Internet]. [cited 2020 Apr 4]. Available from: <https://www.cdc.gov/oralhealth/infectioncontrol/statement-COVID.html>
6. COVID-19 Resources for Dentists [Internet]. [cited 2020 Apr 4]. Available from:
<https://www.ada.org/en/member-center/coronavirus-resource-toolkit-for-ada-members>
7. Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health [Internet]. [cited 2020 Apr 4]. Available from: [https://www.who.int/publications-detail/coronavirus-disease-\(covid-19\)-outbreak-rights-roles-and-responsibilities-of-health-workers-including-key-considerations-for-occupational-safety-and-health](https://www.who.int/publications-detail/coronavirus-disease-(covid-19)-outbreak-rights-roles-and-responsibilities-of-health-workers-including-key-considerations-for-occupational-safety-and-health)
8. Lau H, Khosrawipour V, Kocbach P, Mikolajczyk A, Schubert J, Bania J, et al. The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *Journal of Travel Medicine* [Internet]. 2020 Mar 17 [cited 2020 Apr 5]; Available from: <https://academic.oup.com/jtm/advance-article/doi/10.1093/jtm/taaa037/5808003>
9. Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G, et al. COVID-19: towards controlling of a pandemic. *The Lancet*. 2020 Mar;395(10229):1015–8.
10. Guo H, Zhou Y, Liu X, Tan J. The impact of the COVID-19 epidemic on the utilization of emergency dental services. *Journal of Dental Sciences* [Internet]. 2020 Mar [cited 2020 Apr 2]; Available from: <https://linkinghub.elsevier.com/retrieve/pii/S1991790220300209>
11. Naing L, Winn T, Rusli BN. Practical Issues in Calculating the Sample Size for Prevalence Studies. *Archives of Orofacial Sciences*. 2006;1:9–14.
12. Chae S, Lee Y, Kim J, Chun KH, Lee JK. Factors associated with perceived unmet dental care needs of older adults: Unmet dental care needs. *Geriatrics & Gerontology International*. 2017 Nov;17(11):1936–42.
13. Mays N. Qualitative research in health care: Assessing quality in qualitative research. *BMJ*. 2000 Jan 1;320(7226):50–2.
14. Ortiz JR, Rudd KE, Clark DV, Jacob ST, West TE. Clinical Research During a Public Health Emergency: A Systematic Review of Severe Pandemic Influenza Management*. *Critical Care Medicine*. 2013 May;41(5):1345–52.
15. Lurie N, Manolio T, Patterson AP, Collins F, Frieden T. Research as a Part of Public Health Emergency Response. *New England Journal of Medicine*. 2013 Mar 28;368(13):1251–5.
16. Bower E, Scambler S. The contributions of qualitative research towards dental public health practice. *Community Dentistry and Oral Epidemiology*. 2007 Jun;35(3):161–9.

17. Newton J. Editorial - Use of qualitative data in oral health research. *Community Dental Health*. 2010 Jun 1;(27):66–7.
18. Gupta A. Use and misuse of mixed methods in population oral health research: A scoping review. *Community Dental Health*. 2018;(35):109–18.
19. Duncan RP, Gilbert GH, Peek CW, Heft MW. The Dynamics of Toothache Pain and Dental Services Utilization: 24-Month Incidence. *Journal of Public Health Dentistry*. 2003 Dec;63(4):227–34.
20. Deolia S, Kela K, Sawhney I, Sonavane P, Nimbalkar G, Reche A. Evaluation of oral health care seeking behavior in rural population of central India. *Journal of Family Medicine and Primary Care*. 2020;9(2):886.
21. Pau AKH, Croucher R, Marcenes W. Perceived inability to cope and care-seeking in patients with toothache: a qualitative study. *BRITISH DENTAL JOURNAL*. 2000;189(9):4.
22. Cohen LA, Bonito AJ, Akin DR, Manski RJ, Macek MD, Edwards RR, et al. Toothache pain: Behavioral impact and self-care strategies. *Special Care in Dentistry*. 2009 Mar;29(2):85–95.
23. Riley JL, Gilbert GH, Heft MW. Oral health attitudes and communication with laypersons about orofacial pain among middle-aged and older adults: Pain. 2004 Jan;107(1):116–24.
24. Stoller EP, Gilbert GH, Pyle MA, Duncan RP. Coping with tooth pain: a qualitative study of lay management strategies and professional consultation. *Special Care in Dentistry*. 2001 Nov;21(6):208–15.
25. Laato S. Why do People Share Misinformation during the COVID-19 Pandemic? :20.
26. Abrams EM, Greenhawt M. Risk Communication During COVID-19. *The Journal of Allergy and Clinical Immunology: In Practice*. 2020 Jun;8(6):1791–4.
27. Macfarlane TV, Blinkhorn AS, Davies RM, Kinsey J, Worthington HV. Oro-facial pain in the community: prevalence and associated impact. *Community Dentistry and Oral Epidemiology*. 2002 Feb;30(1):52–60.
28. Riley JL, Gilbert GH, Heft MW. Health care utilization by older adults in response to painful orofacial symptoms: Pain. 1999 May;81(1):67–75.
29. Fox C. Evidence summary: what do we know from qualitative research about people's care-seeking about oral health? *British Dental Journal*. 2010 Sep;209(5):225–31.
30. Ludwig EG, Gibson G. Self Perception of Sickness and the Seeking of Medical Care. *Journal of Health and Social Behavior*. 1969 Jun;10(2):125.
31. Simons G, Belcher J, Morton C, Kumar K, Falahee M, Mallen CD, et al. Symptom Recognition and Perceived Urgency of Help-Seeking for Rheumatoid Arthritis and Other Diseases in the General Public: A Mixed Method Approach: Role of Symptom Recognition in Help-Seeking for RA. *Arthritis Care & Research*. 2017 May;69(5):633–41.
32. Gill JM. Nonurgent Use of Hospital Emergency Departments: Urgency from the Patient's Perspective. *The Journal of Family Practice*. 1996;42(5):6.

33. Marshall EG, Wong ST, Haggerty JL, Levesque J-F. Perceptions of unmet healthcare needs: what do Punjabi and Chinese-speaking immigrants think? A qualitative study. *BMC Health Services Research* [Internet]. 2010 Dec [cited 2020 Apr 5];10(1). Available from: <http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-10-46>
34. Yang Y, Zhou Y, Liu X, Tan J. Health services provision of 48 public tertiary dental hospitals during the COVID-19 epidemic in China. *Clinical Oral Investigations*. 2020 May;24(5):1861–4.
35. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. *Journal of Endodontics*. 2020 May;46(5):584–95.
36. Alharbi A, Alharbi S, Alqaidi S. Guidelines for dental care provision during the COVID-19 pandemic. *The Saudi Dental Journal*. 2020 May;32(4):181–6.
37. COVID-19: Operational guidance for maintaining essential health services during an outbreak. World Health Organization; 2020.
38. Coulthard P. Dentistry and coronavirus (COVID-19) - moral decision-making. *British Dental Journal*. 2020 Apr;228(7):503–5.
39. Bommireddy VS. Dental Service Utilization: Patterns and Barriers among Rural Elderly in Guntur District, Andhra Pradesh. *J Clin Diagn Res* [Internet]. 2016 [cited 2019 Sep 4]; Available from: http://jcdr.net/article_fulltext.asp?issn=0973-709x&year=2016&volume=10&issue=3&page=ZC43&issn=0973-709x&id=7456
40. Fotedar S, Sharma K, Bhardwaj V, Sogi G. Barriers to the utilization of dental services in Shimla, India. *European Journal of General Dentistry*. 2013;2(2):139.
41. Cash R, Patel V. Has COVID-19 subverted global health? *The Lancet*. 2020 May;395(10238):1687–8.
42. Hartley DM, Perencevich EN. Public Health Interventions for COVID-19: Emerging Evidence and Implications for an Evolving Public Health Crisis. *JAMA*. 2020 May 19;323(19):1908.
43. Syed SB, Dadwal V, Rutter P, Storr J, Hightower JD, Gooden R, et al. Developed-developing country partnerships: Benefits to developed countries? *Globalization and Health*. 2012;8(1):17.
44. Oshitani H, Kamigaki T, Suzuki A. Major Issues and Challenges of Influenza Pandemic Preparedness in Developing Countries. *Emerging Infectious Diseases*. 2008 Jun;14(6):875–80.

Figures

Figure 1

Conceptual framework which can serve as a guide for future research on perceived unmet dental care need during COVID-19 outbreak.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Additionalfile1.docx](#)
- [Additionalfile2.docx](#)
- [Additionalfile3.docx](#)