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Editorial

Emergence of teledentistry during COVID-19 for management of dental services

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The novel Coronavirus disease, COVID-19, caused by Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), swiftly evolved into the worldwide epidemic ever since the first case was identified in Wuhan, China in December, 2019.¹⁻⁵ As of June 24, 2022 there are about 542 million cases and over 6.33 million deaths worldwide.⁶ The most impacted countries include the United States of America, India and Brazil with about 86.7 million, 43.4 million and 32 million cases, and about 1.01 million, 0.52 million, 0.67 million deaths, respectively.⁶ COVID-19 has adversely influenced the way of life and health of individuals as well as the economy all over the world.⁷ A meticulous quest for an efficacious drug against the SARS-CoV-2 did not result in any revolutionary candidates.⁷ As the number of patients affected with COVID-19 continue to increase and distinct variants of coronavirus are identified globally, discovery, evaluation and understanding of immune response to SARS-CoV-2 infection became vital. Numerous vaccine candidates were developed, analyzed and injected all over the world to combat rising cases and deaths worldwide.⁷⁻⁹ In addition to vaccines, social distancing and restrictions were imposed worldwide to restrict the spread of the disease. This measure restricted dental services to

emergency and urgent care and resulted in the rescheduling of elective cases owing to the risk of virus transmission related to the aerosols produced during dental procedures.¹⁰ Therefore, rather than the traditional face-to-face care, teledentistry was instigated for the initial management of acute dental conditions.

Teledentistry involves a set of technologies and tactics to improve care delivery and includes telephone triage that allows dentists to interview callers, assess urgency, and sort patients by priority and level of care needed.¹¹⁻¹⁴ Worldwide statements of the pandemic's effect on the delivery of urgent dental care advised that telephone triage be compulsory in the evaluation of the need for the emergency treatment.¹⁵⁻¹⁷ The teledentistry consultations can recognize oral diseases and guide referrals,¹⁸ however the literature on teledentistry and telephone triage during the epidemic uncovered the knowledge gaps. These included short duration, and limited scope, patient populations and geographical coverage. In terms of scope, no prior teledentistry research assessed the specifics of the call, patient, condition, or the triage process and its outcomes. In this editorial, we focused on the study by Ali et al., titled "Role of Newly Introduced Teledentistry Service in the Management of Dental Emergencies during COVID-19 Pandemic in Qatar: A Cross-Sectional Analysis".¹⁹

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In this study by Ali et al., the authors objective was to evaluate the ability of a newly launched triage-based teledentistry service to deliver its goals, by assessing its processes and outcomes and evaluating the demand for teledentistry.¹⁹ Specifically, this study evaluated select characteristics of the following:

1. Call - frequency, time, and duration;
2. Caller - demographics, medical history, and relationship of caller with patient.

For all their institution hotline calls, the precise goals were to assess the ability of the newly launched teledentistry triage-based management tactic to deliver the service goals by:

1. Evaluating the triage processes - triage category, referral to emergency/dental facility undertaken, and categorization by discipline required; and outcomes - medications prescribed and procedure performed at the point of referral;
2. Evaluating the demand for the newly introduced teledentistry service.

We applaud the authors for a well thought out, clear, concise and well-written manuscript which has an excellent study design, appropriate sample size and longer duration. In this study, the authors analyzed call, patient as well as the triage data of all calls (N=1239 during first 5months of first wave of COVID-19 lockdown). They excluded callers with inadequate records (N=389). This resulted in 850 calls, which were included in the study. Of these 850 calls, around 70.6% of the calls were handled remotely. This showed that the teledentistry service successfully managed two-thirds of the calls remotely, thereby substantially decreasing the face-to-face/in-person visits. This is in accordance with other published studies.²⁰ The results showed that 29.4% were classified as emergency and/or urgent and transferred to the dental facility. The results also demonstrated that orofacial dental pain was the most common reason for the calls compared to other concerns (41.6%, $p < 0.0001$). This is again in accordance with published studies who reported similar data.^{20,21} Around 14.71% of callers got prescriptions remotely. The most asked disciplines were general dentistry, orthodontics, and oral surgery, respectively ($p < 0.0001$). Among the patients referred to the dental facility, 31.84% needed no clinical intervention, 28.7% obtained orthodontic devices repair, and 14.3% had urgent dental extractions, and 11.2% had root canal treatments. Other studies in the literature also demonstrated increase in number of cases requiring orthodontic treatments during the epidemic compared to pre-pandemic levels.²² Although orthodontic procedures are non-life threatening, they do affect quality of life and challenge daily activities, and if unattended, they can lead to significant concerns.²²

As also reported by Ali et al., this study is not without limitations. Some missing data was observed, but this is common in retrospective studies. In addition, audio-dentistry constituted the majority of teledentistry as video cells were not conducted. This can be attributed to need of time to establish a new field (teledentistry), callers being tech illiterate, not comfortable with this new approach of interaction or sharing their photos. Despite these, the advantages of this study far outweigh the disadvantages. This study evaluated a wide scope of a new service provided to a large population, both adults and children; during a long duration, 5 months; with an assessment of the epidemiology of a large range of variables, such as call, patient, and triage characteristics.

In addition to utilization of teledentistry in Qatar, as indicated by Ali et al., its use has been understood and promoted in other countries as well. For example, in Indonesia, the use of teledentistry prior to COVID-19 pandemic was not widely explored and majority of the literature was restricted to the role of electronic medical records (EMR).²³ During the pandemic, the government of Indonesia encouraged the use of teledentistry and a study was conducted to explore the Indonesian dentist's perception to use teledentistry and to determine factors that influenced those perceptions. 652 dentists participated and majority of them agreed related to benefits of teledentistry, specifically for saving time, improving dental practice and benefits for the patients. However, most of them also had concerns related to digital forgeries and technical incompatibility.²³ Similar to Qatar and Indonesia, recently published studies showed that the scope and utilization of teledentistry has increased worldwide including in Australia, Chile and Nigeria.^{24–26}

In summary, teledentistry was successful and appropriate and demonstrated huge potential for triage, service delivery, and care during the epidemic. We believe that teledentistry appears to hold great potential for long term sustainability and in the future, it will certainly cause dynamic changes in dental services which will far outlast the epidemic, both for patients as well as providers.

Author Contributions

M.G. and A.G. conceptualized the manuscript, wrote the initial manuscript draft, reviewed and edited the manuscript. All authors have read and agreed to the published version of the manuscript.


References

1. Gupta A, Kashte S, Kadam S. Immunomodulatory extracellular vesicles: an alternative to cell therapy for COVID-19. *Expert Opin Biol Ther.* 2021;21(12):1551–60.
2. Rodriguez HC, Gupta M, Cavazos-Escobar E, El-Amin SF, Gupta A. Umbilical cord: an allogenic tissue for potential treatment of COVID-19. *Hum Cell.* 2021;34(1):1–13.

3. Gupta A, Kashte S, Gupta M, Rodriguez HC, Gautam SS, Kadam S. Mesenchymal stem cells and exosome therapy for COVID-19: current status and future perspective. *Hum Cell*. 2020;33(4):907–18.
4. Koehler G, III SEA, Gupta A. COVID-19 and the Dynamic Role of Telemedicine. In: Sánchez-García JC, Hernandez-Sanchez B, Moreira AC, Monteiro APA, editors. Psychosocial, Educational, and Economic Impacts of COVID-19. London: IntechOpen; 2021.
5. Rodriguez HC, Gupta M, Cavazos-Escobar E, Montalvo E, III SEA, Gupta A. Mesenchymal Stem Cells and Extracellular Vesicles: An Emerging Alternative to Combat COVID-19. In: Agrawal M, Biswas S, editors. Biotechnology to Combat COVID-19. London: IntechOpen; 2021.
6. COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Available from: <https://coronavirus.jhu.edu/map.html>.
7. Kashte S, Gulbake A, Iii SEA, Gupta A. COVID-19 vaccines: rapid development, implications, challenges and future prospects. *Hum Cell*. 2021;34(3):711–33.
8. Forman R, Shah S, Jeurissen P, Jit M, Mossialos E. COVID-19 vaccine challenges: What have we learned so far and what remains to be done? *Health Policy*. 2021;125(5):553–67.
9. Gupta A, Gupta M. Dental Anxiety Associated with Visiting Dental Clinics before and after Getting COVID-19 Vaccine. *Ann Dent Sci*. 2022;1:594. doi:10.55085/ads.2022.643.
10. n SL, Giacaman R. COVID-19 and inequities in oral health care for older people: An opportunity for emerging paradigms. *JDR Clin Trans Res*. 2020;5(4):290–2.
11. American Dental Association. ADA Statement on Teledentistry; 2021. Available from: <https://www.ada.org/en/about-the-ada/ada-positions-policies-andstatements/statement-on-teledentistry>.
12. Khan S, Omar H. Teledentistry in practice: Literature review. *Telemed J E Health*. 2013;19(7):565–7.
13. Horton M, Harris RV, Ireland RS. The development and use of a triage protocol for patients with dental problems contacting an out-of-hours general medical practitioner cooperative. *Prim Dent Care*. 2001;8(3):93–7.
14. Huibers L, Smits M, Renaud V, Giesen P, Wensing M. Safety of telephone triage in out-of-hours care: A systematic review. *Scand J Prim Health Care*. 2011;29(4):198–209.
15. Izzetti R, Nisi M, Gabriele M, Graziani F. COVID-19 transmission in dental practice: Brief review of preventive measures in Italy. *J Dent Res*. 2020;99(9):1030–8.
16. Pereira L, Pereira C, Murata R, Pardi V, Pereira-Dourado S. Biological and social aspects of Coronavirus Disease 2019 (COVID-19) related to oral health. *Braz Oral Res*. 2020;34:e041. doi:10.1590/1807-3107bor-2020.vol34.0041.
17. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): Emerging and future challenges for dental and oral medicine. *J Dent Res*. 2020;99:481–7.
18. Alabdullah JH, Daniel SJ. A systematic review on the validity of teledentistry. *Telemed J E Health*. 2018;24(8):639–48.
19. Ali SA, Al-Qahtani A, Banai SR, Albaker FJ, Almarri A, Al-Haithami K, et al. Role of Newly Introduced Teledentistry Service in the Management of Dental Emergencies During COVID-19 Pandemic in Qatar: A Cross-Sectional Analysis. *Telemed J E Health*. 2022;doi:10.1089/tmj.2021.0584.
20. Beauquis J, Petit AE, Michaux V, Sague V, Henrard S, Leprince JG. Dental emergencies management in COVID-19 pandemic peak: A cohort study. *J Dent Res*. 2021;100(4):352–60.
21. Weintraub J, Quinonez RB, Smith AJT, Ciarrocca K. Responding to a pandemic: Development of the Carolina Dentistry Virtual Oral Health Care Helpline. *J Am Dent Assoc*. 2020;151(11):825–34.
22. Eggmann F, Haschemi A, Doukoudis D, Filippi A, Verna C, Walter C, et al. Impact of the COVID-19 pandemic on urgent dental care delivery in a Swiss university center for dental medicine. *Clin Oral Investig*. 2021;25(10):5711–21.
23. Soegyanto AI, Wimardhani YS, Maharani DA. Indonesian dentist's perception of use of teledentistry. *Int Dent J*. 2022;(22):71–5. doi:10.1016/j.identj.2022.04.001.
24. Poirier B, Jensen E, Sethi S. The evolution of the teledentistry landscape in Australia: A scoping review. *Aust J Rural Health*. 2022;30(4):434–41.
25. Beltrán V, Marttens AV, Acuña-Mardones P. Implementation of a Teledentistry Platform for Dental Emergencies for the Elderly in the Context of the COVID-19 Pandemic in Chile. *Biomed Res Int*. 2022;2022:6889285.
26. Oluwatola TI, Olowookere OM, Folayan MO. COVID-19 pandemic and the widening oral health inequality in Nigeria. *Pan Afr Med J*. 2022;41:40. doi:10.11604/pamj.2022.41.40.26549.

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