

Scope of Teledentistry during the Trying Times of COVID-19 Pandemic: A Patient Perspective Questionnaire Survey

MANASA PRABAKAR¹, HEMALATHA RAMAKRISHNAN², SATHYA PRATHIBA PARTHIBAN³,
DHIVAKAR CHEYYAR PALANI⁴, INDUMATHI PALAYATHAN⁵



ABSTRACT

Introduction: Teledentistry has provided a glimmer of hope for patients who require treatment, but are limited to their homes owing to Coronavirus Disease-2019 (COVID-19) restrictions. Like any other professional careers, dentistry also had to switch to a new normal mode of consultation and teledentistry came to its aid. With the support of advanced technologies dental care was made possible even though face to face interactions were to be refrained due to the curfew restrictions.

Aim: To assess the scope of teledentistry from a patient's perspective.

Materials and Methods: The survey was designed as a descriptive cross-sectional study conducted in the Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, on dental patients of Chennai, India, from April 2021 to May 2021 who made use of Telemedicine for dental consultation. The study population included those who sought teledentistry and the study included 100 participants. A computer aided self-administered questionnaire was designed and validated. Practicing dentists were requested to circulate a questionnaire containing 10 questions that assessed scope

of teledentistry from patient's perspective, to their patients at the end of their teleconsultation after obtaining consent. A total of 94 responses were obtained successfully out of 100 participants. Descriptive analysis of the obtained data was done using International Business Machines Statistical Package for the Social Sciences (IBM SPSS) software version 22.0.

Results: The mean±Standard Deviation (SD) age of the study participants was 33±2.5 years, there were 51 males and 43 females. A 57.5% (n=54) of individuals made the best use of teledentistry during the lockdown and 59.6% (n=56) of the respondents felt that teledentistry was safe as it prevented the risk of unnecessary exposure and cross-infection. Of all, 79 (84.04%) respondents answered that they support teledentistry in the future. Suggestions were received requesting reduction in consultation fee and to increase consultation timings.

Conclusion: Teledentistry proved to be an excellent alternate mode of dental service during the COVID-19 pandemic crisis. Moreover, it helped to bring down the cross-infection and made health services available to people caught up in inaccessible areas thus, making teledentistry a valuable tool that can be used on a day to day basis.

Keywords: Coronavirus disease-2019, Cross-infection, Pain management, Quarantine, Telemedicine, Teleconsultation

INTRODUCTION

The emergence of teledentistry was as early as in the 1960s and the service of which was maximum utilised by space technology sectors and the military [1]. The word "Telemedicine" was coined in 1970s meaning healing at a distance. It denotes the use of Information Communication Technology (ICT) which provides scope for increased access to medical care and information [1]. World Health Organisation (WHO) defined Telemedicine as, the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities [2].

Telemedicine being an umbrella term it has various branches and one such branch of Telemedicine is teledentistry. As defined by Cook in 1997, teledentistry is a practice of making use of video conferencing technologies as an aid to diagnose and provide advice over a treatment over a distance [3].

Dental care has been provided mostly through physical examination, wherein technology has provided an opportunity for dentists to communicate with patients. Teledentistry utilises the aid of technological innovations and high-speed internet

networks for connecting the dental care provider and patient to provide timely care and also for sharing of essential information for treatment planning and dental consultation [4]. Dental healthcare professionals encountered a tough time at the time of COVID-19 pandemic, as dental consultation involves face to face interaction with patients. The occurrence of pandemic and the lockdown curfew following it brought things to a standstill, where the only way the dentist could provide care to the patients was through teleconsultation. Teledentistry made easy the tasks of history taking and obtaining consent and to an extent frame treatment planning thereby, sparing an initial visit to the dentist [5]. A second appointment face-face could be directly done to carry on the procedure.

Teleconsultation may prove to be an effective form of consultation, as the patient feels at ease and more comfortable being at home, as it spares certain anxiety related issues, which few patients experience in physical consultation [6]. Teleconsultation has an advantage of preventing the patients from unwanted exposure to COVID-19 patients or asymptomatic carriers including healthcare workers [7]. This minimises the risk of healthcare workers as well from getting exposed to asymptomatic carriers.

Consultation through Telemedicine is an excellent option to save resources as well as to improve patient healthcare services. For

example, teleconsultation spares the use of Personal Protective Equipment (PPE), thereby facilitating judicious use by frontline workers. Although teledentistry had existed for a very long time, most literature on teledentistry have evaluated its scope from the clinician's perspective [8]. Only limited literature is available that assessed the impact of teledentistry from the patient's end [9]. The aim of the present self-administered computer aided questionnaire is to assess the scope of teledentistry from the patient's perspective.

MATERIALS AND METHODS

The present survey was a descriptive cross-sectional study conducted in the Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, on dental patients of Chennai, India, from April 2021 to May 2021. The proposal was submitted to the Institutional Ethical Committee of Karpaga Vinayaga Institute of Dental Sciences and was approved to proceed further (IEC NO: KIDS/008/2021).

Inclusion criteria: Dental patients who made use of Telemedicine for dental consultation were included in the study.

Exclusion criteria: Dental Patients who were not willing to participate in the survey and incomplete forms were excluded from the study.

Sample size calculation: The sample size was estimated using G*Power software. Sample size was calculated as 85 subjects.

Study Procedure

Questionnaire: The questions were designed to assess the individual's attitude and perception towards Telemedicine for dental consultation. The questionnaire consisted of a total of 10 questions, out of which seven were Multiple Choice Questions (MCQ), three were dichotomous questions [10]. The questionnaire was prepared as a Google Form and was validated in a pilot study by administering it to 10 volunteers, who would not participate in the actual survey. Following validation, the questionnaire was sent to practicing dental surgeons in Chennai, India and they were requested to get the Google Forms filled from their respective patients at the end of teleconsultation after obtaining consent. The questionnaire was sent to 100 patients through e-mail and other online telecommunication systems such as WhatsApp, Telegram, etc., a total of 94 responses were recorded.

STATISTICAL ANALYSIS

With the submission of google forms, data entry was done in excel sheets. Descriptive analysis of the obtained data was performed using IBM SPSS software version 22.0.

RESULTS

The computer aided questionnaire was filled by patients who utilised the teledentistry facility. The mean±SD age of the subjects participated in the study was 33±2.5 years. A total of 51 males and 43 females participated in the study.

The individuals who participated in the survey were those who opted for teleconsultation for dental problems. Of the 94 responses recorded, n=74 (78.7%) respondents had used teledentistry atleast once, whereas n=12 (12.8%) respondents had teleconsulted twice and n=8 (8.5%) of them had utilised teledentistry more than twice. About 54 (57.4%) individuals had agreed that teledentistry helped them at the best during the time of pandemic and 35 (37.2%) respondents had said that they made use of teleconsultation when they were not able to reach the clinic due to personal reasons and that it was time saving and

5 (5.4%) respondents had made use of teledentistry when their dentist was unavailable in the clinic [Table/Fig-1].

Questions	Percentage of response n (%)
1. How many times have you undergone consultation through teledentistry?	
Once	74 (78.7)
Twice	12 (12.8%)
More than twice	8 (8.5%)
2. When do you think teledentistry helps you the best?	
Lockdown	54 (57.5%)
Not able to reach clinic due to personal reasons	35 (37.2%)
Dentist was out of station	5 (5.3%)
3. What do you think is the advantage of teledentistry?	
Time saving	27 (28.7%)
Prevents risk of cross-infection especially during pandemic	56 (59.6%)
Saves a trip to the dental clinic	11 (11.7%)
4. Level of satisfaction in teleconsultation	
Satisfied	49 (52%)
Moderately satisfied	36 (38.3%)
Not satisfied	9 (9.6%)
5. Fee charged for teledentistry consultation	
Nominal	73 (77.7%)
Over charged	21 (22.3%)
6. Time spent per consultation was	
Adequate	22 (23.4%)
Inadequate	72 (76.6%)
7. Do you support teledentistry in the future?	
Yes	79 (84.04%)
No	15 (15.96%)
8. What was the option given by the dentist when approached for teledentistry?	
Initial pain management and to wait till the clinic reopens	62 (66%)
Referral to another functioning clinic	23 (24.4%)
No response from your dentist	9 (9.6%)
9. Major complaint to reach out teledentistry	
Pain	68 (72.3%)
Broken tooth	12 (12.8%)
Crown dislodgement	6 (6.4%)
Swelling and pus discharge	8 (8.5%)
10. Which aspect of teledentistry you wish to improve?	
a. To increase the time spent	38 (40.4%)
b. To reduce the fee charged	14 (14.9%)
Both a and b	42 (44.7%)

[Table/Fig-1]: Depicts the list of questions and the responses received (N=94).

When the respondents were queried about what they thought was the advantage of teledentistry, n=56 (59.6%) of the population had suggested that the prevention of cross-infection was the greatest advantage of teledentistry especially during times of pandemic and n=27 (28.7%) of them agreed that teleconsultation is time saving as it saved the waiting time at clinics and 11 (11.7%) respondents felt that it saves a trip to the dental clinic. To assess the extent to which teledentistry could serve the patients, the various options given to the patients by the dentist who opted teleconsultation was asked, for which n=62 (66.0%) of the respondents answered initial pain management till the clinic is reopened, n=23 (24.5%) of them answered they were referred to a nearby functioning clinic

and n=9 (9.6%) of them answered that there was no response from their dentist [Table/Fig-1].

The majority of patients who participated in the survey suggested that an increase in the time spent per consultation and reduction in the consultation fee will help in better use of teledentistry.

DISCUSSION

Lockdown during COVID-19 pandemic was one of the tough times when people encountered difficulties in commutation to dental clinics. Telemedicine helped to overcome these difficulties and helped patients, when there was an absolute need for it. Though teledentistry, a branch of telemedicine was an age-old concept, the lockdown was a prime reason why teledentistry has come to lime light, mostly due to the curfew restrictions. The response of the current study was in synchrony with the above statement as 57.4% of the respondents also replied that it was more useful for them during lockdown. Teledentistry was a choice for people when there was a desperate need for dental consultation, when caught up in inaccessible areas and when physical consultation was not possible [11]. Other reason why patients opted teleconsultation was unavailability of dental surgeon in his office or clinic or whenever he was out of station.

The most advantageous attribute of telemedicine especially during this pandemic was, it cut down the risk of exposure and cross-infection to the novel Coronavirus. Khairat S et al., in 2020 studied the trends of virtual care aids in this COVID-19 pandemic through a cohort study and their study findings concluded that service of teledentistry proved useful in decreasing cross transmission of the disease and unwanted overcrowding of hospitals at the time of pandemic [12]. The Centre for Disease Control and Prevention (CDC) in its guidelines for dental settings in 2020 has recommended to use teledentistry as alternatives to in-office care [13]. The results of this questionnaire were also in agreement with the above statement as 59.6% of the respondents answered that they think teleconsultation prevented the risk of cross-infection especially during this pandemic. Janakiram C et al., in his review stated that a beforehand telephonic conversation will help to assess the absolute need for physical consultation [14]. Moreover, it helps to filter the patients suspected with COVID-19 symptoms. While 28.7% of the respondents replied that teleconsultation was time saving that it saves a trip to the dental clinic. Added to this advantage, when there was an extreme shortage of PPE during the COVID-19 pandemic in the hospital settings, the use of teledentistry minimised and helped judicious usage of PPE.

As dentistry is more of a procedural practice the resolution that can be given over a teleconsult is much limited. Hence the questionnaire incorporated question regarding the various options given by the dentist to the patients when approached for teledentistry. A 66.0% of the patients responded that the dentist advised initial pain management and asked the patient to wait till he reopens the clinic, while 24.5% of the patients replied that the dentist referred to other functioning clinic as majority of the respondents had pain as their chief complaint. A 9.6% of the respondents said that there was no response from the dentist. A survey conducted from patient's perspective by Rahman N et al., suggested that teledentistry was a reliable, easy alternative method of dental consultation with good patient satisfaction providing better access, especially during these trying times of pandemic [10].

Considering the patient satisfaction as the key factor for any treatment or consultation offered the questionnaire posed queries regarding the time spent and fee charged per consultation and to suggest what measures can be taken to improve and most of the suggestions were to improve the time spent per

consultation, which clearly shows that a physical consultation with the dentist has its own advantages. The dichotomous question asked regarding people's support towards teledentistry in future suggested that 84.0% of the respondents support teledentistry in the future, where 16.0% of the individuals answered 'No'.

Teleconsultation has some short comings and pitfalls as far as dental treatment is concerned [15]. Though teledentistry might be advantageous in some aspects like initial pain management, it may not provide a justified service to the patient as a physical consultation does, as dental consultation involves performing treatment procedures [16]. So, teledentistry could be used as an adjunct to physical dental appointments, to bring the best out of dental service to the patients [17].

Limitation(s)

The limitation of the present study was that it was a computer-generated questionnaire, only patients with smart phone facility and English language knowledge were able to take part in the survey.

CONCLUSION(S)

On assessing the patient's perspective on teledentistry, the majority of participants agreed that teledentistry was able to minimise the risk of cross-infection and was of great assistance during the COVID-19 pandemic. The common complaint of patient for seeking teledentistry during the pandemic was dental pain. More than 60% of the study participants voted initial pain management was provided through teledentistry consultations. Thus, teledentistry proved to be a valuable tool during the tough times of COVID-19 pandemic and has a great scope for usage on a day to day basis claiming to its advantages.

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PARTICULARS OF CONTRIBUTORS:

1. Postgraduate (Student), Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, India.
2. Professor, Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, India.
3. Postgraduate (Student), Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, India.
4. Professor, Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, India.
5. Senior Lecturer, Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences, Chengelpet, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Manasa Prabakar,
No: 7, Department of Periodontics, Karpaga Vinayaga Institute of Dental Sciences,
GST Road, Padalam Taluk, Chengelpet-603308, Tamil Nadu, India.
E-mail: drmanasa212@gmail.com

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