

UTILITY OF TELEDENTISTRY DURING COVID-19 PANDEMIC: EXPERIENCE OF A TERTIARY DENTAL CARE HOSPITAL IN NEW DELHI.

Periodontology

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ABSTRACT

The Covid-19 pandemic has set new challenges in the health care system. The strict limitations in movement of people during the pandemic changed the structure of oral health care system worldwide including India. The novel coronavirus is highly transmissible and contagious with the highest risk while working in the patient's mouth. Patients had fear and anxiety visiting a dental setup for their dental complaints. Teledentistry provided access to oral healthcare in these unprecedented and extraordinary circumstances.

To check for utilization of Teledentistry services during the Covid-19 pandemic a retrospective study was conducted. The data collected from patients calling for dental consultations was retrieved from the hospital records of Faculty of Dentistry, Jamia Millia Islamia (August 2020 to June 2021). 1176 patients called during the covid-19 pandemic period for enquiry and various dental chief complaints. Their demographic characteristics, reasons for consultation and advice given were analyzed. Out of the 1176 patients, there were 43, 6% males and 56, 4% females. The mean age of the patients was 33.39 ± 14.98 years. The most common consultation was regarding dental pain (30.10%). 27.15% patients enquired about the reopening of dental health services. 41.4% patients were advised medications for their dental complaints. Teledentistry in the covid-19 pandemic lockdown had proven to be helpful for rendering emergency prescriptions and essential preventive care.

KEYWORDS

Teleconsultation, chief complaint, teledentistry, Covid-19 pandemic, oral health

INTRODUCTION:

COVID-19 has become a major challenge to healthcare systems worldwide. As it spreads by droplet through air and contact transmission, the face-to-face interaction of a patient with the healthcare professional carries a high risk for both individuals. It was hence recommended to avoid visits to hospitals and dental setups as they can act as a source of cross-infection leading to the spread of the novel Coronavirus [1]. As a result, routine dental procedures were suspended and only emergency procedures were being performed worldwide. Due to the fear and apprehension in the minds of the dentists and patients, there was a greater need to switch to newer methods of consultations. Use of internet and high-speed mobile data along with the use of laptops and smartphones, it was possible to render dental consultations *via* "Teledentistry" (a subunit of Telehealth along with Telemedicine) which is a new concept in providing dental care over a long distance [2]. The term "telehealth" is used for healthcare services provided with the aid of information technology and communication. It is used in the medical and dental fields in the form of "telemedicine" and "teledentistry." Using teledentistry, a dentist can provide oral health consultation, diagnose the condition and suggest an appropriate treatment option to a patient at a distant site.

Looking at the current scenario of COVID-19, it is highly unlikely that the pandemic will end up anytime soon. Scientists in this field say that this virus may become endemic like many other viruses and remain in our communities [3]. A public tertiary healthcare center plays an important role in providing easily accessible, affordable, and reliable healthcare to patients of different strata of society [4]. It doesn't make a distinction between different communities while providing healthcare facilities. As the Out Patient Department services in both the government and private hospitals were suspended during the pandemic, the only option left is "teleconsultations."

Thus, this study aimed to identify the usefulness of teledentistry as an alternative to deliver oral healthcare to patients. The objective of this study was to analyze and compare the hospital records and characterize the different dental problems which were received *via* teledentistry in a

tertiary dental healthcare center during the COVID-19 pandemic.

MATERIAL AND METHOD:

A retrospective cross-sectional study was conducted from August 2020 to June 2021 at the Faculty of Dentistry, Jamia Millia Islamia, New Delhi. The data regarding the total number of patients, their demographics, and type of dental complaints for which patients used teledentistry facility and the treatment offered were collected. Information regarding emergency treatments was also collected. The data of patients who shared their complaints on instant messenger application (WhatsApp) with the help of photographs and audio calls were also collected. Data was entered into MS Excel, and further cleaned and coded. It was analysed in IBM SPSS Statistics 20.0 for descriptive analysis. Categorical variables were presented as percentages while continuous variables were expressed as means and standard deviation.

RESULTS:

A total of 1176 patients called for dental consultations. About 363 (30.83%) consultations were made through instant messenger application (WhatsApp) along with audio calls. The mean age of patients was 33.39 ± 14.98 years (Figure 1). Out of these, 43.6% were males and 56.4% were females (Figure 2).

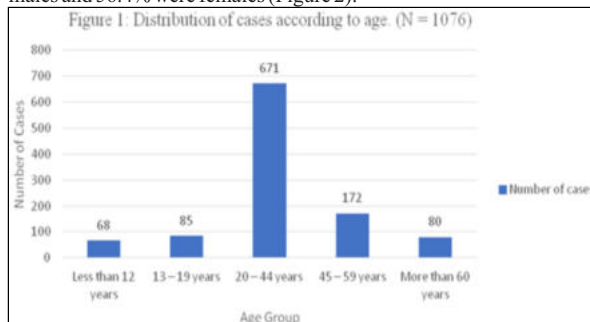
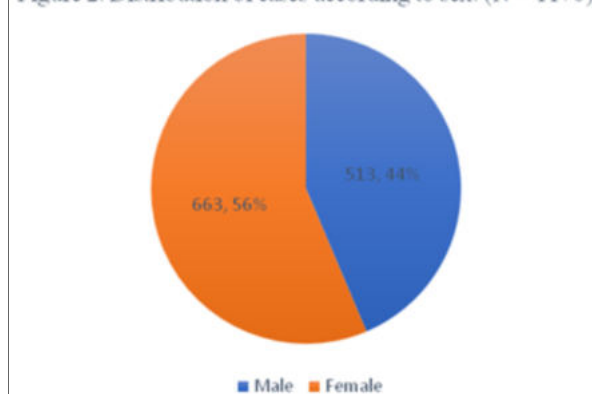


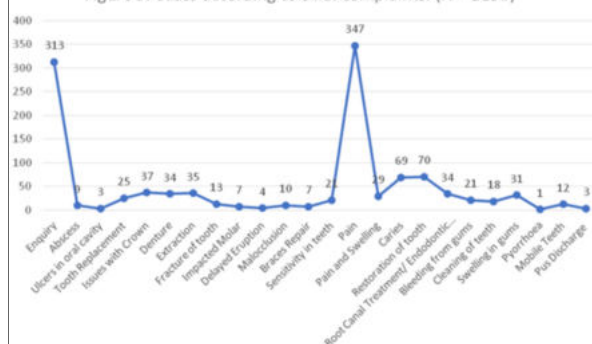
Figure 2: Distribution of cases according to sex. (N = 1176)



The most common consultation was regarding dental pain (30.10%). About 27.15% of patients enquired about the re-opening of dental hospital for routine dental healthcare services. Patients commonly complained of pain and intraoral / extraoral swelling associated to a particular tooth. They complained of cavity, food lodgement or dislodged restoration in teeth. Caries (5.98%), restoration (6.08%) and Endodontic treatment (2.95%) were the complaints regarding conservative dentistry. Prosthodontic problems were noted as need of placement of denture (2.95%), issues with crown / bridge (3.21%) or teeth replacement (2.17%). About 3.04% of patients felt the need for extraction of the problematic or mobile tooth. The least consultations were observed for periodontal problems like bleeding gums (1.82%), mobility of teeth (1.04%) and pus discharge from gums (0.26%).

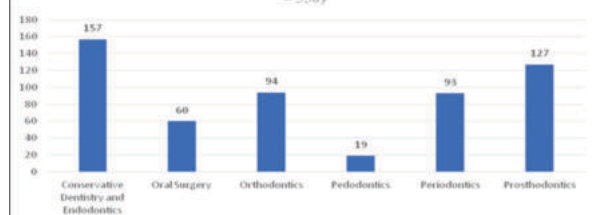
About 1.4% of patients called for orthodontic treatment (Figure 3). Patients complained about malposed teeth, delayed eruption, eruption of permanent teeth without exfoliation of deciduous teeth. They enquired about the reopening of the faculty for placement of braces. Some patients undergoing orthodontic treatments contacted the teledentistry mobile number for enquiry regarding the reopening of the faculty for their continuation of ongoing treatments.

Figure 3: Cases according to chief complaints. (N = 1153)



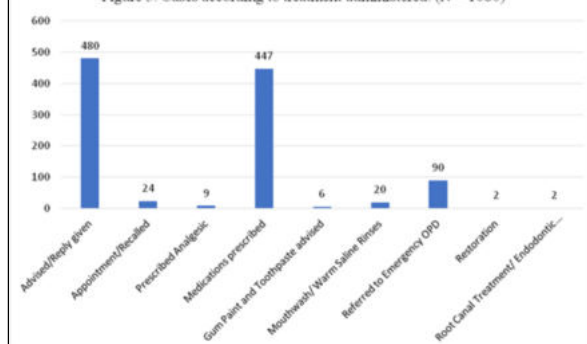
The maximum consultations were for conservative dentistry and endodontics (28.5%) followed by prosthodontics (23.1%). The least consultations received were for pedodontics (3.9%) (Figure 4).

Figure 4: Cases according to the referral to the concerned department (N = 550)



The treatment advised were mostly regarding prescription of medications i.e. antibiotics and analgesics (41.4%). About 44.4% were advised about proper dental care. Patients with periodontal problems were advised to use mouthwash or warm saline rinses. Some were advised to apply ointments or gum astringents (5.12%). Medicated toothpastes were prescribed wherever necessary with emphasis on meticulous oral hygiene maintenance. Only 8.4% of cases were referred to emergency dental operator as their problem required immediate intervention (Figure 5).

Figure 5: Cases according to treatment administered. (N = 1080)



DISCUSSION:

With the COVID-19 outbreak, the Government of India announced a strict lockdown to control the spread of novel Coronavirus. During this period, only emergency medical treatments were available. Similar was the scenario with the dental healthcare services. As most of the routine medical healthcare shifted to telemedicine, a similar shift was observed with dentistry.

The Faculty of Dentistry, Jamia Millia Islamia, which is a tertiary care hospital, started with teledentistry consultation from August 2020 to June 2021. During this period, patients were able to consult a specialist over phone and instant messenger application (WhatsApp). The patients would share their problems or complaints verbally or chat messages. They shared the details of their complaints by sending photographs (intraoral or extraoral) to the specialist to receive a diagnosis and treatment suggestion.

In our study, the mean age of patients' calling for consultation was 33.39 years. This was similar to the study reported by Kumar et al in which the maximum percentage of patients who consulted was from the age group of 31 to 35 years^[5]. Patients called for problems like caries, pain and swelling, need of restoration or endodontic treatment. This was similar to the study reported by Kumar et al. In their study, most patients presented with dental emergency related to endodontics (86.1%), irreversible pulpitis (53.1%) followed by abscess (16.6%), symptomatic apical periodontitis (15.0%) and dental trauma (0.3%). Another study by Kafle and Mishra reported that pain followed by swelling was the most common type of dental emergency^[6]. They also reported that more than 75% of patients consulted doctors for dental pain during the COVID-19 pandemic. The second-common reason was swelling. Our study results are similar to their findings.

A study by Acharya et al. in 400 patients showed that majority of patients complained about pain and decay (N=200) in the involved tooth. Some patients complained of pain and swelling (N=60). Other complaints were related to bleeding gums, foul smell, sensitivity to hot and cold foods, third molar eruption problem and neuralgic pain^[7]. In our study we noted a similar pattern of dental complaints. A considerable number of patients (23.1%) called up for replacement of teeth or prosthodontic rehabilitation with 16.9% of cases consulted for periodontal problem. Pajpani et al. reported that 63% of patients presented with pain secondary to acute pulpitis as the main reason for consulting the tertiary care center in the UK^[8]. The study by Long and Corsar in 2020 led to similar findings^[9]. They noted that the daily emergency patients decreased indicating the refraining behavior of patients for routine dental care.

In contrast, patients wanted to continue with their orthodontic treatment during COVID-19 as reported by Cotrin et al^[10]. Though, the patients were anxious in attending the dental setup for orthodontic therapy, there was a greater concern regarding delay in the completion of their treatment. In our study also, we noted a similar observation. 17.1% patients consulted for requirement of orthodontic treatment as well as for continuation of their ongoing treatment during the pandemic. The study by Kafle and Mishra reported 14% of emergency cases related to orthodontic therapy^[6]. However, in our study we had only 0.61% patients who reported for orthodontic emergency.

Teledentistry gained popularity during the COVID-19 pandemic. Recent studies quoted that teledentistry can reliably diagnose dental caries even without use of radiographs^[10]. In our study, we could effectively diagnose caries using teledentistry and offer suggestions

and medications to patients. Those who required emergency care were referred to the emergency dental operatory of our faculty. The non-emergency treatments were postponed as treating dental patients could pose a risk of transmitting the Coronavirus. During the pandemic, rendering dental services was challenging. Telephonic consultations ensured safety of the patients and clinicians as the patient queries for non-emergency procedures could be dealt with later and only emergency dental problems could be treated employing all COVID-19 protocols. Extractions were prioritized over restorative procedures to minimize repeated patient contact.

In the current study, patients shared their intraoral / extraoral photos on Whatsapp making it easy to judge the condition and severity of the problem. The prescription was then sent through messaging application or verbally. Patients complaining of tooth decay with pain and swelling were prescribed antibiotics and analgesics for a period of 3-5 days. Teleconsultation for patients having periodontal problem were advised maintenance of meticulous oral hygiene with emphasis on twice daily toothbrushing. Medicated toothpastes and mouthwashes were prescribed wherever necessary. Few patients with periodontal disease were advised antibiotics and topical application of gum paints or ointments.

Chong reported that tele-dental consultations using clinical photos which could be shared through messaging application were beneficial to the covid-19 positive patients admitted to a covid-19 community care facility when they required dental care^[11]. He reported that the patients could send their clinical photos and discuss their condition and symptoms via the messaging application. The author then advised the physician at the covid-19 center for the management of their dental problem. This study reported that teledental consultations were a practical solution for providing some form of dental care rather than no care at all during the pandemic.

Teleconsultation can be established in two ways: 1) A real-time consultation with video conferencing and 2) A store forward method that uses exchange of patient data collected and stored by dental professionals and shared with other dental specialists whenever needed^[12, 13]. The teledentistry consultations can be done using both these methods. In our study, we used telephonic conversations and typed chats with sharing of photographs and investigation details from patients' over instant message service application (Whatsapp). This reduced the need for travel to the dentist for consultation. Also the patient data regarding his/her clinical condition, medical history and extraoral / intraoral pictures of the problem could be shared with the remotely stationed specialist for expert opinion. This reduced the overall time and cost to the patient and provided accurate treatment suggestions.

Despite these advantages, teledentistry has certain limitations. There was a learning curve for patients and health care professionals regarding mobile camera usage which can affect the quality of photographs. In our study, we sometimes had to educate the patient about the camera angulations while clicking the photographs. Problem like lack of awareness about information technology which is usually associated to education and age of an individual can be a limitation for the patient^[14].

Currently, there is no regulatory body and adequate training of dental professionals available for maintaining the quality of this service. There is no provision for remuneration for dentists who provide these services. There can also be constraints regarding infrastructure like poor network connectivity and shortage of hardware. Lack of clarity about confidentiality and security of data could limit the use of this mode of treatment. Insufficient financial support to healthcare provider can act as a barrier for teledentistry. [14]

Thus, in the Covid-19 pandemic situation when there is limited access to routine dental healthcare facility, teledentistry can provide an alternative method of delivering dental care. It can be a viable option for patients having socioeconomic and geographical difficulties or are differently - abled. The virtual clinics using telephonic and instant messaging application facilitate careful evidence-based practice along with education and preventive care. However, the issues faced by the dental healthcare workers need to be addressed so as to provide benefit to the dental patients.

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