

# Digital Health Implementation Before and During the COVID-19 Pandemic

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**Received date:** July 02, 2024; **Accepted date:** July 25 2024; **Published date:** August 12, 2024

**Citation:** Abdalmawla Alhussin Ali Ali, (2024), Digital Health Implementation Before and During the COVID-19 Pandemic., *Journal of Clinical Chemistry*, 3(4); DOI: 10.31579/2835-8090/19

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## Abstract

Teledentistry is a modern consultation technique, originated from the combination of telecommunication tools with dental disciplines. It is used to transfer a clinical information and images over wide distance for dental deliberation, consultation and treatment. It has the ability to improve understanding of oral healthcare, and reduce its costs. The aim of this article was to highlight the importance and applicability of this technique in diagnostic dentistry in Libya before and during COVID-19 pandemic lockdown.

**Keywords:** teledentistry; healthcare; dentistry; COVID-19

## Introduction

Teledentistry or E-dentistry, gained much importance on a global scale over the past 20 years [1]. Cook et al., defined teledentistry as the use of videoconferencing for remote diagnosis and counselling for the first time in 1997 [2]. Currently, it is extending to include the use of digital 3D pictures, video, and electronic patient records for diagnosis and consultation [3]. Teledentistry as a technique is used to enhance communication between dental practitioners, as well as to improve consultation abilities through the transmission of images, radiographs, and clinical data.

Pre-COVID-19 pandemic, teledentistry became popular as a way to triage patients and provide long-distance care [4]. Many studies have shown that teledentistry is gradually gaining popularity among both patients and dental professionals [5]. In Libya, teledentistry applications are already commonly utilize in dental urgent, despite of the pandemic condition.

Through the agreements between academic hospitals in Libya and developed countries, use of telemedicine technologies by connection, where the consultation for diagnosis and treatment as well as participation in Libyan medical conferences become possible. This overview offers areas of action with special focus to opportunities and challenges because it is a new field that gained national attention in Libya, particularly during the COVID-19 pandemic.

As in any other countries, Libyan patients must frequently visit their dentists for screening of oral health in order to monitor the treatment process for routine monitoring of therapeutic response and illness development. While teledentistry can take, the place of many physically visits with virtual visits as well as saving costs and wait times [6].

During COVID-19 pandemic, in developing countries like Libya, patients have avoided visiting their dentists because they are worried about getting infection. When an infected person sneezes, coughs, or talks, nose secretions, respiratory droplets, and saliva are strongly suspected to be the mechanism of transmission [7]. Dentists have also experienced a great deal of instability, because the Covid-19 is easily distributed throughout the community and is sustainable, which causes community spread [8]. People's dental health has been managed through teledentistry, which has been considered as a key strategy.

The Libyan government particularly health ministry made many actions and established laws and regulations to improve the digitization of healthcare. Several patients chose to have their first communication channel via video consultation on their computer or cell phone. However, specialists might not be easily accessible to the patients who living in rural areas.

In April 2020, most of the Libyan dental clinics closed. Primarily due to concerns about patient safety and the lack of sufficient information about the virus (COVID-19). The virus's spread and person-to-person

transmission are a concern for the National Centre for Disease Control in Libya (NCDC), which makes the issue complicated. As a special protocol has been developed by the committee in charge of the syndicate on how to follow the guidelines and work in accordance with the standards of correspondence of the union, regarding the operation of dental practices in the private and public sectors sent from the Libyan Dental Association to NCDC on March 2020 [9]. At the beginning of treatment, a particular document must be completed for each patient, before other actions take place for record and reference. To avoid close contact and prevent virus spread in dental clinics, Libyan regulatory agencies advise the social isolation and home quarantine.

NCDC and WHO (World Health Organization) have specified a number of standard practices that dentists must follow which include the use of protected coveralls, surgical gloves, N95 face mask, thermometer, protective face shield, gown, and head and foot coverings. Although every precaution has been taken, it is still very difficult to completely eliminate the formation of droplet and aerosol during dental treatment, which is the most worrying issue in the dental clinic.

The technical and infrastructure challenges of teledentistry acceptance in Libya: -

Infrastructure related to limitations could include insufficient internet service - a lack of hardware - a lack of training, and a lack of technical guidance and knowledge, particularly in Libyan rural areas, which remain unconnected by various mobile service providers. In addition to that the acceptance of dental professionals, and patient confident, which considered as the main categories of challenges. The strategies to overcome these challenges included that the dental workers should receiving proper training and education about this technology to address these issues and acceptance of teledentistry. In addition to that guiding patient, investing appropriately, and advancing technology. Utilization of smartphones to detect dental caries is strongly encouraged [10,11]. The adaptation of programs and software that are widely accessible to teledentistry services was a significant innovation. Applications like WhatsApp and Zoom can also be used.

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In an environment with limited resources, clinical examination and remote screening of patients, through WhatsApp photos, can be appropriate, dependable, and economical tools [12-14]. Libyan dental practitioners have provided an example of how WhatsApp and teledentistry could be utilized to differentiate between oral lesions during the existing COVID-19 pandemic as the dental photography can be used because the majority of oral lesions are frequently readily visible, negating the necessity for a close clinical assessment. Giudice, et al., [15] also reported the use of WhatsApp for patient follow-up and virtual consultation. Additionally, they claimed that ongoing patient monitoring and remote consultation enhance the patient-physician connection and the patient's ability to participate in and adjust to therapy.

The Libyan ministry of higher education take several actions and laws regarding the applications of teledentistry in dental education that enhance the formal education online either by interactive videoconferencing or web-based self-learning with advantage of teaching exchange between an instructor and student, provides for feedback and interaction. Although telemedicine provides potential solutions for dentistry education and training, it is also important to note its drawbacks and important considerations e.g. data security, ethical considerations, safety, licensing, and malpractice.

Through their aid project, the European Union also tried to improve the healthcare in Libya, where they funded the “SAHA Project” within five universities (i.e. Tripoli, Misurata, Sebha, Sirte, Zawia) and supplied the required equipment, which will help the encouragement of telemedicine applications in Libya [16].

Finally, teledentistry has the potential to improve the standard of dental care. Such services necessitate extensive preparation and careful situation analysis, particularly among developing countries. In hopes of fully understanding the benefits of teledentistry and reduce its risks and challenges, both now and in the future, more studies are necessary.

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