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Role Of Teledentistry And Oral Medicine In COVID-19

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Abstract

Regardless of occupational exposure to COVID-19, dentistry has not been exempt. Dentists are at the highest risk of being exposed to COVID-19 and other airborne pathogens owing to the nature of their work. Necessity being the mother of invention, the pandemic has emerged as an opportunity for teledentistry industry. With teledentistry role of OMDR in diagnosis and palliative care has become more significant than ever, from diagnosis to use of suitable medications In this article, we will be discussing about scope and knowledge of oral medicine in COVID-19 situation and the role of teledentistry.

Keywords: COVID-19, oral medicine, teledentistry

Introduction

When COVID spread its spike to embrace the world after being discovered on December 31, 2019, being declared as Public Health Emergency of International Concern on January 30,2020 and a Pandemic on March 11,2020, a massive lockdown was imposed all over. All the professions which did not pertain to treatment of COVID were mostly shutdown, OPDs were closed and even planned surgeries and procedures including Radiotherapy and chemotherapy were postponed, such was the impact of the great disaster; so dentistry has no silver lining either. Instead there were studies that claimed most private dental practices won't last even 3-4 months if lockdown continued. In August 2020, when Unlock Phases started, WHO data revealed that dentists were at highest risk of cross infection at work all thanks to the regular contact with aerosols and the first thing we ask patient to do after walking in the workspace is take off your mask. In this depressing situation, teledentistry emerged as a boon for dentists who were willing to provide consultation and learn new skills of telecommunication.

The method of sharing of information digitally, consultation through online networking sites, and analysis is taken care of by a branch of science of telemedicine concerned with dentistry known as "Teledentistry".[1] Teledentistry is more like a combination of dentistry and telecommunication where there is exchange of clinical information and relevant clinical and radiological images over internet for dental consultation and treatment planning. Teledentistry has been an advantage to both patients and dentists as it decreases the exposure, factor for both parties involved and prevent a vulnerable group of people to get out of their bio-bubble. Although most dental infections cannot be treated by medications alone and require invasive procedures, even symptomatic relief in pandemic crisis have put the patients to ease.

Most important aspect in prescribing medications on online platforms is to reach to a suitable diagnosis based on clinical history and clinical images solely provided by the patient. This art of taking history, formulating a provisional diagnosis and prescribing appropriate medications has been the in-built specialty of OMDR department, which has put us at

an edge over others. Also the non-availability of tobacco and related products has helped patients in quitting or decreasing habit frequency and seek professional help in quitting, while realizing associated oral changes like OSMF, leukoplakia etc.

Advances in technology, computers, imaging services have been an effective measure to accurately diagnose the patient and refer them appropriately at curable stages. Teledentistry was initially developed as part of the dental informatics, drafted at a conference funded by Westinghouse Electronics Systems Group in Baltimore in 1989 which was aimed at discussing on how to apply dental informatics in dental practice such that the oral healthcare can be revolutionized.[3] Teledentistry as a subspecialist field of telemedicine was initiated as a military project of the United States Army (U.S. Army's Total Dental Access Project) in 1994, which aimed at improving communication between dentists and dental laboratories thus the patient care and dental education. This pilot project demonstrated that teledentistry has reduced overall patient care costs, dental care to remotest areas by specialist analyzation and providing complete information.[1] Though numerous telemedicine options are available, no startup dedicated solely to dentistry has come up yet.

Internet outreach to even suburban, rural and remote areas has been an advantage factor in teledentistry as people who are deprived of healthcare facilities in unreached sectors of country can be diagnosed and treated accordingly. This subspecialty field has helped uncountable people who were helplessly suffering from dental ailments as lockdown and COVID-19 fear did not let them seek dentist in person. CollabDDS is remote dental exoert dental programme served between 3 dental schools with centre for dental education and research at AIIMS, New Delhi. It works as a data repository and is a telecommunication, diagnosis, remote education program.

Methods

Teleconsultation can take place by one of the following.[4]

Real Time Consltation : Patient and dentist from different demographics communicate online using advanced telecommunication devices and high speed internet.

Store and Forward: Dentist shares stored data with clinical and radiographic images, diagnosis and treatment options which can be assessed by patients on a later date and they can correlate their findings with most suitable case and have a diagnosis for themselves.

Subunits

1. Teleconsultation : It is the commonest form teledentistry where patients seek online consultation through a video call from a dentist.
2. Telediagnosis : It is exchange of images primarily for the diagnosis of oral lesions and pathologies. Patient sends the image to the dentist and the dentist based on clinical appearance and his/her experience gives a provisional diagnosis.
3. Teletriage : It is well timed referral, appropriate and timely disposition of patient symptoms before the disease progresses to a threatening stage.
4. Telemonitoring : It replaces regular frequent visits for monitoring treatment outcomes with virtual ones.

These methods offer an online appointment and proper healthcare approach thus decreasing the patients need to get out of biobubble and the operator’s exposure to an additional patient.

Scope

Teledentistry has best outcomes in the field of OMDR as teleconsultation and teleradiology are the most feasible options, since other branches require intervention procedures to halt the disease progress, making a provisional diagnosis which is as close to final diagnosis as possible is a skill acquired by experience of the professional. Although direct examination is still the most accurate aspect in establishing an diagnosis for oral conditions than transmitted description of patient data alone, there is still a lot of scope in improving the teledentistry experience.[5]

Teledentistry is an opportunity for underserved population. Teledentistry improves access to dental and oral wellbeing, healthcare and lower its costs.[6] It can also eliminate the disparities in healthcare among rural-urban and among various economical backgrounds.[4] It has helped to bring specialized

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healthcare to remotest corners of the world. Sky has always been the limit in dentistry for any procedure or technology which is convincing enough to be feasible and not wear off in the long run. Though there are pitfalls, the scope of improvement pertains. Lienert N *et al*. concluded that telemedical services have been an essential aid in dental trauma cases.[7] Snow MD *et al*. found that teledentistry allowed budget friendly, quality dental consultations for rural Australians.[8]

Discussion

As an alternative method to deliver existing dental services, teledentistry is of great value in areas where specialist consultation is not readily available. 173 children were screened among which 40% children aged 12-48 months were dentally cripples, according to Eastman Department of Dentistry at University of Rochester. Distant diagnosis for oral lesions by transferring digital images via mail is effective alternative in community service as proved by Belfast in N. Ireland.[5] Smartphones have become the latest tools overcoming the issues of having a PC for diagnosis, as reported by Aziz and Ziccardi.[9] Teledentistry has made it easier to get second opinions, preauthorization instantaneously and other helps fulfill insurance requirements as well.[6] Though legal, technological and ethical issues are yet to be managed and have to be dealt with carefully, a whole new era of revolution in dentistry is waiting for acceptance both by the patients and the dentists.

Conclusion

It is evident that most dentists are unaware of the technological advances, including teledentistry, its modus operandi and how to be a part. In dentistry, there are fewer specialties and dentist population ratio is way lower, thus the urgent need of utilizing resources effectively and efficiently is the need of the hour. Teledentistry has significant potential for supporting dental education and clinical care while simultaneously acting as a data reservoir. Average rating of an e-visit in meeting patient's expectations is 9.1, according to primary evaluation by Fricton *et al*.[2] Benefits of store and forward image system, use of E-mail in records and education have shown an effective distant access to oral lesions, according to Torres-Pereira *et al*. Mail has been the best and most convenient medium for acquiring latest information, exchanging views, and discussing the potential diagnosis according to a study at University of California at Los Angeles.[12] Dental consults is a web-based consultation system used by dentists where general dentists can take consultations from a specialist by sharing case details, including reason for consultation, intraoral images and dental radiographs over a secure web browser.[13]

Also, teledentistry can be used for educating and self-updation too. Educational respondents reported that teledentistry is a good alternative for dental education as well as training and educating primary care dentists online.[10] Teledentistry is an innovative tool for online CE programs and webinars as well as educational lectures can be conveniently broadcasted to a remote site.

Recommendations

Teledentistry is a relatively new field of dentistry using internet services and web browsres to improve patient care and referral in remote areas. Future advances in technology will add another dimensions to teledentistry as well, it will be used in many more ways other than it is being used now. Light-field-based 3D Telemedicine has the potential to be the next technological revolution in teledentistry. Light field camera captures information about light field emanating from scene and precise direction that the light rays are travelling in space and provides 3D display with a wide zone of viewing. This enables a 3D display and HD convertible algorithm including important details of the patient/case for the doctor and health professionals, thus improving accuracy.[13]

Teledentistry includes a growing variety of technologies to provide applications and services, like smartphones, social media, mails, chats, video calls, and other forms of telecommunication technologies. Although this form of teledentistry is not paramount and is just in the initial stage and has medicolegal implications, it has the potential for providing faster diagnostics or therapies and often lead to better prognosis.[11]

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