

Role of Teledentistry in Dental Education: Need of the Era

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ABSTRACT

Teledentistry, a relatively new field, can change the dynamics of the dental care delivery system. Most of the dentists are unaware about teledentistry, about its goals and advantages and how to get involved into it. This article illustrates as to how teledentistry can be an effective solution for dentists and their patients.

Teledentistry presents a possible solution to many longstanding problems in dentistry, but it also faces significant challenges. Its maturation will depend as much, on the efforts of the

health authorities as on the collective efforts of the dental professionals.

Teledentistry can meet the dental care needs of the underserved in the rural areas of India and it can ensure the good oral health of the children in schools and child care centres. Teledentistry provides new opportunities for dental education by providing an easy access to primary care professionals for efficient consultation, thus helping in conducting effective postgraduate education and continuing dental education programmes.

Key Words: Teledentistry, Telecommunication, Telemedicine

INTRODUCTION

Dental care is being constantly transformed by the opportunities which are provided by technology and telecommunication [1]. Teledentistry is a relatively new field that combines telecommunication technology and dental care. Due to the enormous growth of technological capabilities, teledentistry possesses the potential to fundamentally change the current practice and the face of the dental care [2].

The term “teledentistry” was used in 1997, when Cook defined it as “the practice of using video-conferencing technologies to diagnose and to provide advice about the treatment over a distance” [3].

‘Teledentistry’ allows a whole new way of providing specialist advice. Through the use of telecommunication and computer technologies, it is now possible to provide interactive access to specialist opinions that are not limited by the constraints of either space or time.

The referring dentist logs into a secure web-server and fills in the patient’s details, the specific reasons for the consultation, the chief complaints and the provisional diagnosis information and attaches the digital intra-oral images and the scanned digital dental radiographs. The specialist subsequently logs into the secure web server, reviews the case and suggests his diagnosis and treatment plan within a limited period.

TELEDENTISTRY AND ITS APPLICATION IN DENTAL EDUCATION

The role of teledentistry in education can be divided into two main categories: self-instruction and interactive video-conferencing.

The Web-based, self-instruction educational system contains information that has been developed and stored before the user accesses the program [4]. The advantage of this system is that the user can control the pace of the learning and can review the material multiple times as he or she wishes [5]. Johnson and Schleyer [6, 7] studied the Web-based dental continuing education or the CE courses and evaluated them on the basis of a set of well-

designed guidelines by using the Design of Educational Software. Spallek and colleagues [8] conducted a survey of the participants in several Web based dental CE courses and found that lack of face to face communication with their peers and instructors could result in dissatisfaction.

Interactive video-conferencing may be conducted via POTS (plain old telephone service), satellite, ISDN, Internet or Intranet. Interactive video-conferencing includes both a live interactive video-conference with a proper camera set up where the patient’s information can be transmitted; and supportive information (such as the patient’s medical history, radiographs, etc) that can be sent before or at the same time (for example, via fax) as the videoconference. The advantage of this type of education system is that the user can receive an immediate feedback [5].

TELEDENTISTRY AND ITS USE IN RURAL AREAS

In rural areas, where there is a shortage of specialists, the lack of comprehensive and sophisticated health care is a problem. Teledentistry can increase the accessibility of the specialists to the rural and underserved communities for their dental needs, besides decreasing the time and the cost which are associated with the speciality consultations [9].

Changing the service delivery method may also positively affect the feasibility of a rural practice. Isolation from peers, specialists, and continuing education opportunities are the negative aspects of a rural practice. Providing dental care in a salaried arrangement allows one to meet the financial obligations while learning to build the efficiencies which are gained with experience in care delivery without incurring additional debt. It also allows one to sample the experience of living in a rural setting without committing to a permanent relocation.

TELEDENTISTRY AND ITS ROLE IN POSTGRADUATE EDUCATION AND DENTAL PRACTICE

Teledentistry can serve as a good tool for educating postgraduate

students and for providing continuing updates for the practicing dentists.

In interactive video-conferencing, the patient information is evaluated first (with or without the patient's presence), which allows for the interaction and feedback between the educator and the students. The patient cases can be reviewed thoroughly and at the students' pace. The cases can be discussed at length after all the clinical data have been collected and transmitted, without the patient being present at the scheduled meeting. This enhances the students' enthusiasm and provides new learning opportunities for the dental students and the practicing dentists.

THE ROLE OF TELEDENTISTRY IN SCHOOLS AND CHILD CARE CENTRES

It is the need of the hour to develop models for schools and child care centres in our country to utilize teledentistry to increase the access to dental care for the children. Schools and child care centres play a vital role in ensuring the optimum oral health of the children through:-

- Screening for dental problems before these become emergencies [10].
- Helping children in managing chronic illnesses.
- Connecting children and their families to the needed health and social services. and
- Providing urgent care.

Paediatric dentists at the University of Rochester use the photographs of toddlers to identify those with early childhood dental caries. A study of the program found that nearly 40 percent of 162 toddlers suffered from tooth decay. The early detection of such decay can prevent the child from painful and financial trauma, visits to the emergency treatment room, and ultimately, extractions of the teeth [11].

Teledentistry can serve as a tool to complement and expand the capacity of school and child care centres to meet the children's dental care needs by using technology to connect to the health providers at another location.

SCOPE OF TELEDENTISTRY IN INDIA

India has opened up to telemedicine to address various issues which are being faced by the healthcare delivery system, like inadequate health infrastructure and clinical services, paucity of qualified doctors, the almost non-availability of specialist care, the late discovery of the ailment, the delay in the delivery of the treatment due to the greater time which is required for the transport of the patients to urban healthcare facilities and the provision of healthcare by inexperienced primary healthcare service providers [12]. In 1999, the Department of Information Technology, the Ministry of Communications and Information Technology (Government of India) launched a pilot project which was entitled, 'Development of Telemedicine Technology', with the objective of reinforcing the national healthcare delivery system [13]. The key specifications of the project included [14].

- To identify the appropriate technological tools and services which are required to implement telemedicine technology at the three premier hospitals in the northern parts of India, namely, All India Institute of Medical Sciences (AIIMS), New Delhi, the Post Graduate Institute of Medical Education and Research (PGIMER) at Chandigarh and the Sanjay Gandhi

Post Graduate Institute of Medical Sciences (SGPGIMS) at Lucknow (Uttar Pradesh).

- To develop and carry out system integration to enable telemedicine technology and for establishing telemedicine services (teleconsultation and telediagnostic services for the specialties of radiology, cardiology and pathology and tele-education) at three tertiary level hospitals.
- To train clinicians in the use of telemedicine technology.

In India, where a majority of population lives in rural areas and where healthcare facilities are insufficient, teledentistry can have a significant contribution in bridging the gap between the demand and the supply.

FUTURE PROSPECTIVES OF TELEDENTISTRY

The advances in telecommunication have rightly enabled the dental care to promise many exciting changes during the next few years [15]. However, like any revolution, it will not be easy or painless. There are certain issues which require resolution for the success of teledentistry. These issues include inter-state licensure, jurisdiction and malpractice, as well as technological, security and ethical aspects [16].

Various measures that can be employed for the effective implementation of teledentistry are:

- The instructors of the teledentistry education courses need to be well versed with computer knowledge and they should have adequate teaching experience [7].
- The practitioners who are engaged in teledentistry must have a license in each state in which they practice [17].
- Dentists who are engaged in teledentistry must make every effort to ensure the security of their systems, as well as of any data that they may transmit. For example, data encryption, password protection and user access logs can help in deterring most of the people and in protecting patient confidentiality [16].

SUMMARY

Dentistry, in a synergistic combination with telecommunications technology and the Internet, has yielded a relatively new and exciting field that has endless potential. Teledentistry can be used as a valuable tool for providing dental care in rural areas, where there is a shortage of specialists and a lack of comprehensive and sophisticated health care. It can be a solution to the barriers of dental care like the lack and cost of transportation, time off from work and school and to save the patient's money. Moreover, teledentistry provides new opportunities for dental education by providing the primary care professionals with an easy access to efficient consultation and by helping in conducting postgraduate education and continuing dental education programmes.

In spite of some issues which need to be resolved, the potential of teledentistry is tremendous, which needs to be explored.

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