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# Teledentistry: A New Evolution in Dentistry

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Teledentistry is a new field that combines telecommunication to advanced dental care. Most of the dentists are not aware about the goals, advantages of teledentistry and how it can be used to improve the delivery of oral healthcare and lower its costs. It also has the potential to eliminate the disparities in oral health care between rural and urban communities. In dentistry, it can be used by specialists in various branches and can serve the general dentist too. Some barriers still exist for teledentistry practice, which includes legal, educational and insurance issues. In spite of these barriers, telemedicine and teledentistry have showed tremendous growth in recent years. This article places emphasis on how teledentistry can be a cost effective answer to the dentists and their patients.

**KEYWORDS :** Teledentistry, Humans, Education, Oral Diseases.

## INTRODUCTION

Technology and telecommunication have created a lot of opportunities which provide the platform for dentistry to completely transform itself.<sup>1</sup> Teledentistry is a relatively new term that significantly connects the two fields: telecommunication and dentistry. Due to the tremendous development in technology, fundamentally, teledentistry has its own potential to change the scenario of dental care.<sup>2</sup>

In the year of 1997, "Teledentistry" was introduced by Cook who defined teledentistry as "the practice of using video-conferencing technologies to diagnose and to provide advice about the treatment over a distance".<sup>3</sup>

'Teledentistry' allows the dental specialists to provide a new type of care to their patients through the means of telecommunication and electronic technologies, it is now possible to provide interactive access to specialist opinions that are not limited by the distances that lead to longer periods of time.<sup>4</sup>

The referred dentist logs into the webserver and fills the details of the patient including his chief complaint, reasons of his consultation to the dentist, extra oral and intraoral examination and his provisional diagnosis. The specialist

subsequently logs in the same web address, reviews the case of the patient and suggests final diagnosis and his treatment plan within a limited period.

## APPLICATION OF TELEDENTISTRY IN DENTAL EDUCATION

Teledentistry has played an important role in dental education through the means of self-instruction and video conferencing.

The web based, self-instructional educational system contains information that has been used and stored in webserver by the user even prior to accesses the program.<sup>5</sup> The advantage of this system is that the user has authority to control the speed of the program and can review the learning material on numerous times on his or her own wishes.<sup>6</sup> A study done by Johnson and Schleyer about Web-based dental continuing education and assessed the values on the basis of a set of well designed guidelines by using the Design of Educational Software.<sup>7,8</sup> A survey conducted by Spallek et al. among participants who undertook several web based dental Continuing Education(CE) courses revealed that lack of communication among individuals and with their peer groups could result in dissatisfaction.<sup>9</sup>

Interactive video-conferencing may be conducted via various modes of communication such as POTS(Plain old telephone service), Satellites, ISDN, Internet or Intranet. Interactive video-sessions includes both a live video conferencing sessions with a proper camera set up where the information about patient personal details can be transmitted and other valuable points (such as past medical history, extra or intra oral radiographical examination ) that can be delivered before or at the same time (for example, via fax) as the videoconference. The benefit of this type of interactive based education system is that the user can receive feedback in short span of time.<sup>6</sup>

#### **Importance of teledentistry in Remote areas**

In remote areas of a country shortage of dental specialists and lack of comprehensive dental care is a big drawback. Hence, teledentistry plays an important role to provide accessibility of the specialists to the populations who live in rural areas for their basic dental needs apart from reducing time and the cost of their consultation to the people who have dental problems.<sup>10</sup>

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. Dental care services provided in a salaried arrangement allows one to have equal profitable obligations while learning to establish the efficiencies which are gained by the lots of experience in dental services without sustaining additional debt. It also allows individual to the have experience of living in isolated areas without committing to a permanent relocation.

#### **Role of teledentistry in Dental specialties and Dental practice**

Teledentistry can serve as a powerful tool for educating students who are pursuing post-graduation and helps them for continuous updates in the field of dental practice.<sup>4</sup>

In video conferencing sessions, the first step to evaluate the patient details (with or without the patient's presence), allows for the interaction and feedback between the educator and the students. The second step is to review the patient cases which are done thoroughly and the discussion between students and educator about the patient cases can be done at different lengths once the

data has been collected and transmitted, without the patient being present at the scheduled meeting. This engages the students and provides new opportunities for the post graduate students to learn the newest things in dental practice.<sup>4</sup>

#### **The Role of teledentistry in schools and child health care centres**

It is the need of the hour to establish models for schools and child health care centres in our country to make proper use of 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<sup>11</sup>
- 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 used photographs of toddlers to identify those with early childhood dental caries. The results of their 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.<sup>12</sup>

Teledentistry can act as a weapon to complement and expand the capacity of school and child care centres to match the children's dental care services via technology linked to the health providers at another location.

#### **FUTURE PROSPECTIVES OF TELEDENTISTRY**

In the upcoming years, advancement in the field of telecommunication promises to make certain exciting changes which will rightly enable the access to dental care to all.<sup>16</sup> 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.<sup>17</sup>

Various measures that can be employed for the

effective implementation of teledentistry are:

- The trainers of the teledentistry education courses need to have well sounded computer knowledge and they should have enough teaching experience.<sup>8</sup>
- The practitioners who are using the technology of teledentistry must carry a license in any part of country which they practice.<sup>18</sup>
- Dentists who are obliged to do work in the field of teledentistry must make every effort to protect the security system as well as to take care of any transmit. For example, data encryption, password protection to the webserver and access to log in by the user helps in protecting the patients personal reports.<sup>17</sup>

## CONCLUSION

Despite the fact that telemedicine has been used for many years, it has limited use in the field of Dentistry. Currently, Teledentistry has not yet become an essential part of dental health care. The reasons are many including: reimbursement; regulatory and legal sanction; privacy and security; compatibility and interoperability of technology across systems; sustainability; and acceptance of Teledentistry by patients and providers alike. In the near future Teledentistry will be just another way to access an oral health care, especially encouraging for isolated populations who may have difficulty accessing the oral health care system due to distance, inability to travel, or lack of oral health care providers in their area.

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