

Teledentistry: A Boon in Indian Scenario

Amitabh Kallury¹, Ankur Jain², Kunal Agrawal³, Aishwarya Sahu⁴, Sheena Saluja⁵, Anurag Mahajan⁶

From¹ Professor & HOD, ⁵PG Student, Department of Orthodontics, ²Professor & HOD, ³PG Student, Department of Pedodontics, ⁴PG Student, Department of Conservative Dentistry, ⁶ Intern, People's Dental Academy, Bhopal, M.P. India

Correspondence to: Dr. Kunal Agrawal, Department of Periodontics, People's Dental Academy, Bhopal, M.P. India, Email: kunalagrwal219@gmail.com

Received - 29 March 2019

Initial Review -11 April 2019

Accepted - 21 April 2019

ABSTRACT

An amalgamation of telecommunication and dentistry is known as 'Teledentistry', which involves switch over the clinical information in remote areas for diagnosis, consultation, health education and treatment planning. The accessibility of dental care at low cost by all people has ton increased by teledentistry. It also has an immense perspective to overcome the disparities in oral healthcare between rural and urban population. Thus the aim behind to review this article is to establish the essential role of Teledentistry in Indian Scenari. The literature for this review obtained from published articles, online manuals and books.

Keywords: Information, telecommunication, dentistry, remote areas

After the striking escalation of information technology and the internet from the last few decades, leads to significant changes in the health care delivery system. The concept of telemedicine and teledentistry arrived with remote diagnosis and treatment planning by means of telecommunication [1]. The origin of teledentistry lies in telemedicine, which was firstly used in the 1970s in NASA [2] and defined as "the practice of health care delivery, diagnosis, consultation, treatment, and education using interactive audiovisual communications."

The term 'Teledentistry' was firstly used by Cook in 1997 he defined teledentistry 'is a practice of using video conferencing technologies in the diagnosis and treatment planning over the distance' [1]. To cater the dental health-related communication, education, information and public awareness across the geographic distance "Teledentistry" is used [3]. It is also very helpful to assist general the dentists in various specialties to improve their services for the underprivileged population [4,5]. Electronic

technology with an encroachment in digital communication and the usage of internet introduce gives an opportunity to inaccessible areas to receive the best dental care [6]. In a country like India where the 2/3rd population lives in rural areas and unable to get good dental health services teledentistry is a boon, thus the aim behind to review this article is to establish the essential role of Teledentistry in Indian Scenario. The history of Telemedicine starts in 1924, with a perception of a physician when he saw his patient over the radio using a television screen. The first program of Telemedicine started in 1950. The first concept of teledentistry developed as a part of the blueprint for dental informatics which was a new domain that combines computer and information science, engineering and technology in all areas of oral health. This concept was drafted at a conference funded by the Westinghouse electronics system group in Baltimore in 1989 [5]. Then, the use of teledentistry started by US army in 1994 by the starting the dental consultations for those who located more than 100 miles apart [7].

NEED OF TELEDENTISTRY

According to WHO (World Health Organization) statistics the ideal dentist population ratio should be 1:7500. As per 2004 statistics, the dentist population ratio in India was 1:30,000, among them one dentist available for 10000 population for urban and 1.5 lac population for a rural area. World Health Statistics - 2014, the ratio is 1:10000 [8,9]. In a country like India where almost 2/3rd population resided in the rural area and the only 1/3th population lives in urban cities, equal distribution of dental services should be emphasizing. A number of dental colleges available in India, but the distribution is uneven. A few states like Karnataka, Andhra Pradesh having a privileged number of dental colleges as compared to other states like Bihar, Jharkhand, and Gujarat, etc.[10]. Uneven distribution of dental services is the major problem of the current oral health status of the Indian population. Thus there is an extreme need of any mode by which we can facilitate specialized dental services, health education, and awareness campaigns to the rural area, and "Teledentistry" is a one.

TYPES OF TELEDENTISTRY

Two-way interactive or real-time consultation and Store and forward method are two basic types of teledentistry.

1. **Two-way interactive technology or real-time consultation:** This is the commonly used type of teledentistry in which by the use of use of video-conferencing patients can consult with and their dentist in real time at different locations with advanced telecommunication technologies and internet connections. This technology also assists general dentists to consults with their peer dentist for any special case, then plan the treatment accordingly [5,11].
2. **Store and forward type of teledentistry:** In this method, all information assembled and stored then relocates the information onward to consulting practitioners from different locations. The stored data includes all relevant information including the patient's history, photographs, x-rays, MRI scanning etc [3,7]. teledentistry is a critical approach whether any technique two-way interactive or store and forward used clarity, reliability, compatibility is an important issue [12].

TOOLS USED IN TELECOMMUNICATION

Plain old telephone system (POTS) is a frequently used tool for telecommunication. The cost of using this method is low and affordable. Two methods of POTS are; i. real-time method, ii. store and forward method. By the real-time method, we can relocate information without any delay whereas by stored and forward method there is a need to allow the storage of data on the local database than forwarded whenever required. The POTS is very reliable and run through Telephone Company at low speed [13].

ISDN (Integrated services digital network), is a set of communication standard network which transmits information in the form of voice, video, data, and other network services over the traditional circuits of the public switched telephone network [14]. This method of information broadcast increases trustworthiness and accessibility in teledentistry. Although building an ISDN network worldwide is quite difficult. Worldwide web-based teledentistry also an important tool in transferring the information and unlike ISDN it is available in most cities and cost-effective also [15,16], live video conferencing also promising by web network [17]. Apart from the tools used in telecommunication, a good instructor needs with well-organized education, teaching experience, and computer knowledge to work in teledentistry. All educational courses should be guided by a sound instructor with experience in online communication.

LIMITATIONS

Even though teledentistry seems to be capable of dental consultations but before the usages there is an extreme need to be aware of the limitation. Some legal issues are adhering with teledentistry like licensure, unprofessional conduct, seclusion, safety, and moral values. Although telecommunication increases accessibility in dental consultation when we talked beyond the boundary line the [1] main problem concern with the usage of teledentistry is the internet, if any technical problem occurs during data broadcast there might be a chance of misdiagnosis of particular health problem. Similarly, if patient data are misplaced during the process of transmission there is needed to repeat the whole process, the privacy concern is very important when dealing with cyber space's [18].

In the United State, the Health Insurance Portability and Accountability Act of 1996, commonly known as HIPAA, addresses many of the standards surrounding electronic exchanges [12]. Thus some protocol has to derive regarding the customization of telecommunication in dentistry universally acceptable.

CONCLUSION

Dentistry accomplished a new goal with the latest technology nowadays; utilization of teledentistry is one of them. This field attracts the dentist and brings all fraternity closer to cater to oral health care services at their best. Teledentistry is not become a vital part of our oral health care system yet because of its few drawbacks but after battling them it can be a promising role in oral health care delivery in the future.

REFERENCES

1. Jung Wel Chen, Martin H, Kim Dunn, Johnson-Throop KA, Zhang J. Teledentistry and its use I dental education. J Am Dent Assoc. 2003;134(3):342-346
2. Mihailovic B, Miladinovic M, Vujcic B. Telemedicine in dentistry (Teledentistry). In: Grasczew G, Roelofs TA, editors. Advances in Telemedicine: Applications in Various Medical Disciplines and Geographical Areas. Rijeka (Croatia): InTech; 2011. p. 215-30.
3. Clark GT. Teledentistry: What is it now, and what will it be tomorrow? J Calif Dent Assoc. 2000;28(2):121-127.
4. Berndt J, Leone P, King G. Using teledentistry to provide interceptive orthodontic services to disadvantaged children. Am J Orthod Dentofacial Orthop. 2008;134(5):700-706.
5. Chen JW, Hobdell MH, Dunn K, Johnson KA, Zhang J. Teledentistry and its use in dental education. J Am Dent Assoc. 2003;134(3):342-346.
6. Dils ES, Lefebvre C, Abeyta K. Teledentistry in the United States: A New Horizon of Dental Care. Int J Dent Hygiene. 2004;2(4):161-4.
7. Folke LE. Teledentistry. An overview. Tex Dent J. 2001;118(1):10-8.
8. Dagli N, Dagli R. Increasing Unemployment among Indian Dental Graduates - High Time to Control Dental Manpower. J Int Oral Health. 2015;7(3):i-ii
9. Tandon S. Challenges to the oral health workforce in India. J Dent Educ. 2004;68(7):28-33.
10. Jain H, Agarwal A. Current scenario and crisis facing dental college graduates in India. J Clin Diagn Res. 2012;6(1):1-4
11. Farman AG, Farag AA. Teleradiology for dentistry. Dent Clin North Am 1993;37:669-81.
12. Golder DT, Brennan KA. Practicing dentistry in the age of telemedicine. J Am Dent Assoc 2000;131(6):734-44.
13. Rocca MA, [Kudryk VL](#), [Pajak JC](#), [Morris T](#). The evolution of a teledentistry system within the department of Defense. Proc AMIA Symp 1999:921-24
14. ISDN (Integrated Services Digital Network) Definition. Available on <https://techterms.com/definition/isdn>. (cited on 12/12/18)
15. Schleyer TK, Dasari VR. Computer-based oral health records on the World Wide Web. Quintessence Int 1999;30:451-60
16. Bauer JC, Brown WT. The digital transformation of oral health care. Teledentistry and electronic commerce. J Am Dent Assoc 2001;132(2):204-209
17. Subramanyam Venkata R. Telepathology: Virtually a reality. journal of Oral and Maxillofacial Pathology 2002;1(1):1-15
18. Biegel S. Virtual health care: Unresolved legal issues. J Calif Dent Assoc 2000;28:128-32.

How to cite this article: Kallury A, Jain A, Agrawal K, Sahu A, Saluja S, Mahajan A. Teledentistry: A boon in Indian Scenario. J Orofac Res. 2019; 8(2):13-15.

Funding: None; Conflict of Interest: None Stated.