

Original Article

TELEDENTISTRY FOR IMPROVING ORAL HEALTH OF RURAL INDIA

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Abstract: In the past three decades, teledentistry has grown as a way for dental professionals to connect with one another from afar. It enables collaboration between different practitioners when it comes to a patient and the required care for this patient. With rural communities or those of underserved populations, teledentistry can be quite useful. Along with reducing the time and expense involved with speciality consultations, it would boost the accessibility of specialists.

Key-words: Rural, Oral Health, Telehealth, Videoconferencing


1. Introduction

Teledentistry is a form of telehealth that allows dental professionals to provide dental care and consultation remotely using technology. This can include virtual consultations, remote monitoring of patients, and the exchange of patient information and images. Teledentistry can be used in a variety of ways, including to provide routine check-ups and consultations, to monitor patients with chronic dental conditions, and to provide urgent care to patients who are unable to visit a dentist in person. It can also be used to provide education and outreach to patients and communities, especially those in remote or underserved areas. Teledentistry can be conducted using a range of technologies, including videoconferencing, digital imaging, and mobile apps. It can help to improve access to dental care, reduce the need for in-person appointments, and provide more efficient and cost-effective dental care. However, it is important to note that teledentistry does have some limitations, and some dental procedures may still require in-person visits to a dental office. (1,2)

Problems with Indian Rural Population

India has a large rural population, with around 66% of the country's population living in rural areas. These communities face a number of challenges, including:

1. Poverty: Many people in rural India live below the poverty line, and struggle to meet their basic needs such as food, housing, and healthcare.
2. Lack of access to education: Rural areas often lack educational institutions and qualified teachers, leading to a low literacy rate and limited opportunities for education and career advancement.
3. Poor healthcare: Rural healthcare facilities are often inadequate and understaffed, leading to a lack of access to quality medical care. This is especially challenging in light of the COVID-19 pandemic.
4. Infrastructure: Many rural areas lack basic infrastructure such as roads, electricity, and clean water. This can make it difficult to access basic services and impede economic development.
5. Gender inequality: Rural women in India face discrimination and limited opportunities, including limited access to education and healthcare.

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6. Agricultural challenges: Agriculture is the main source of income for many rural Indians, but farmers face a range of challenges such as lack of access to credit, market volatility, and unpredictable weather patterns.
7. Migration: Rural-to-urban migration is common in India, as many young people leave their homes in search of better economic opportunities. This can lead to a loss of community and social support networks in rural areas. (3)

Oral health problems of rural India

Oral health problems are a significant public health concern in rural India. According to a study by the World Health Organization (WHO), dental caries, periodontal diseases, and oral cancer are the most common oral health problems in India, and these conditions are more prevalent in rural areas. Several oral health problems are commonly observed in rural India. Dental caries, commonly known as tooth decay, is a common oral health problem in rural India. Poor oral hygiene, a high intake of sugary foods, and lack of access to dental care are some of the primary factors contributing to the high prevalence of dental caries. Periodontal diseases: Periodontal diseases, including gingivitis and periodontitis, are widespread in rural India. Poor oral hygiene and tobacco use are the primary causes of periodontal diseases. Oral cancer is a severe form of cancer that is prevalent in rural India. The use of tobacco, alcohol, and betel quid (a combination of areca nut, tobacco, and slaked lime) are the primary risk factors for oral cancer. Malocclusion, or misaligned teeth, is another common oral health problem in rural India. Poor nutrition, lack of access to orthodontic care, and a lack of awareness of the importance of orthodontic treatment are the primary causes of malocclusion. Tooth loss is a significant problem in rural India, mainly due to the lack of access to dental care, poor oral hygiene, and a diet high in sugar. To address these oral health problems, rural India needs access to affordable and quality oral healthcare services, as well as better education and awareness programs to promote good oral hygiene practices.(4,5)

Solution to unmet oral health needs – Teledentistry

The management of dental patients is now more effective and can be done partially or entirely thousands of kilometres away from medical facilities or experienced dentists thanks to new information technologies. Teledentistry handles the complete networking, sharing of digital information, consultations over the phone, workup, and analysis procedure. It is now possible to provide interactive access to expert perspectives that are not constrained by the limitations of either space or time by using telecommunication and computer technology. The referring dentist logs into a secure web server, fills out the patient's identity, the main complaints, the consultation's specific reasons, and the preliminary diagnosis data, and then attaches the digital intraoral images and the radiographs that have been scanned digitally.

Literature Evidence

Mathivanan A. et al.(6) evaluated the knowledge, attitude, and practise of teledentistry among general dentists in and around the Coimbatore district of Tamil Nadu, India by a self-administered, closed-ended questionnaire. According to the study findings, 73% of dentists were of the opinion that teledentistry could provided oral health access to rural Indian population. According to Saad Ahmed Khan et al.(7), teledentistry was widely utilised in dental practises for procedures like preventive dentistry, orthodontics, endodontics, oral surgery, periodontal diseases, early detection of dental caries, patient education, oral medicine, and diagnosis. All teledentistry applications work to increase efficiency, reach marginalised populations, boost service quality, and lessen the burden of oral diseases. According to James Friction and Hong Chen's review (8), for patients in underserved or rural areas, teledentistry increases easy access to preventive dental treatment and teleconsultation with specialists. It also makes it possible for the local dentist to give a patient who might not otherwise seek care easy access to preventive care. According to R. Mulligan et al(9), the Internet has the potential to be used in creative ways

for teleconsulting and idea exchange, which might help people feel less alone and give them access to specialised information. Real-time videoconferencing and store-and-forward procedures, according to E Sanchez Dils et al(10), are the most generally employed approaches for teledentistry. This field has grown in popularity due to the prevalence of digital media in dental offices. Rocco Cheuk et al(11). identified contributing variables in order to understand the attitudes and usage of teledentistry by dentists in Ontario, Canada, during the COVID-19 epidemic. The research revealed that, despite the COVID-19 pandemic's increased use, participants' lack of enthusiasm in teledentistry surfaced as a hindrance to its use. Increased awareness of the technical features of teledentistry's use as well as its areas of application can spark interest in this instrument, which could result in a greater uptake by dental practitioners. According to Philip O Ozuah and Marina Reznik (12), telemedicine has grown in popularity as a way to reach individuals in rural areas of the United States and other countries with medical care and health education. A non-profit group called Medical Missions for Children set out to create a "virtual information bridge" between hospitals in developed countries and their American sponsors. Since it began, the initiative has offered teleconsultations and other services to about 18,000 kids yearly.

Advantages of Teledentistry

Teledentistry can increase care quality and lower service costs. It can decrease in peer isolation and an increase in expert support and education. General dentists will be able to provide dental experts multimedia patient records, which frequently allows the specialist to diagnose a patient's condition and create a treatment plan without having to see the patient in person. It can upgrade to the diagnostic services by better integration of dentistry into the whole system for delivering healthcare.

Limitations of Teledentistry

However, there are some challenges to implementing teledentistry in rural India, including limited internet connectivity and digital literacy among some populations. Also, certain procedures may still require in-person care, which may be difficult to access for those living in remote areas. Overall, while teledentistry may not be a complete solution to the oral health needs of rural India, it can be an effective tool to increase access to dental care and promote oral health education and prevention.

Conclusion

Teledentistry has the potential to overcome unmet oral health needs of rural India by providing remote access to dental care services. Rural areas in India often have limited access to dental care due to a shortage of dental professionals and infrastructure. This can result in untreated oral health problems that can lead to pain, infection, and tooth loss.

Teledentistry allows dental professionals to provide oral health consultations, assessments, and treatment recommendations remotely using technology such as video conferencing, digital imaging, and remote monitoring devices. This can help to improve access to dental care for people in rural areas who may not have easy access to in-person dental services. Additionally, teledentistry can also provide education and preventive care services, such as oral health promotion and disease prevention, which can help to reduce the incidence of oral health problems in rural areas.

References

- ¹Steed M. Evaluation of a teledental PC videoconference link in the delivery of a restorative dentistry service to remote dental practices in Scotland. *J Telemed Telecare*. 2000;6(Suppl 1):204.
- ²Snow MD, Canale E, Quail G. Teledentistry permits distant, cost effective specialist dental consultations for rural Australians. *J Telemed Telecare*. 2000;6(Suppl 1):216.
- ³Patil AV, Somasundaram KV, Goyal RC. Current health scenario in rural India. *Aust J Rural Health*. 2002 Apr;10(2):129-35.
- ⁴Deolia SG, Kela KS, Sawhney IM, Sonavane PA, Nimbalkar G, Reche A. Evaluation of oral health care seeking behavior in rural population of central India. *J Family Med Prim Care*. 2020 Feb 28;9(2):886-891.
- ⁵Shekhawat KS, Chauhan A, Gourh R. From the perspective of lifeline express: Oral hygiene practices and reported barriers in rural India. *J Datta Meghe Inst Med Sci Univ [serial online]* 2017 [cited 2023 Feb 15];12:206-10
- ⁶Mathivanan A, Gopalakrishnan JR, Dhayanithi A, Narmatha M, Bharathan K, Saranya K. Teledentistry: Is It the Future of Rural Dental Practice? A Cross-sectional Study. *J Pharm Bioallied Sci*. 2020 Aug;12(Suppl 1):S304-S307.
- ⁷Khan SA, Omar H. Teledentistry in practice: literature review. *Telemed J E Health*. 2013 Jul;19(7):565-7. doi: 10.1089/tmj.2012.0200. Epub 2013 May 14. PMID: 23672799.
- ⁸Fricton J, Chen H. Using teledentistry to improve access to dental care for the underserved. *Dent Clin North Am*. 2009 Jul;53(3):537-48
- ⁹Mulligan R, Goldstein CM, Niederkohr RE. Rural dentistry: opportunities for the next millennium in fixed and mobile practices. *J Calif Dent Assoc*. 2000 Feb;28(2):133-40.
- ¹⁰Sanchez Dils E, Lefebvre C, Abeyta K. Teledentistry in the United States: a new horizon of dental care. *Int J Dent Hyg*. 2004 Nov;2(4):161-4.
- ¹¹Cheuk R, Adeniyi A, Farmer J, Singhal S, Jessani A. Teledentistry use during the COVID-19 pandemic: perceptions and practices of Ontario dentists. *BMC Oral Health*. 2023 Feb 4;23(1):72.
- ¹²Ozuah PO, Reznik M. The role of telemedicine in the care of children in under-served communities. *J Telemed Telecare*. 2004;10 Suppl 1:78-80.