ejpmr, 2022,9(5), 484-487

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

TELEDENTISTRY IN PEDIATRIC DENTISTRY: BRIDGING THE URBAN RURAL GAP IN INDIA- A CROSS SECTIONAL STUDY

Dr. Mohamad Arshid Khanday*[1], Dr. Nazia Lone[2] and [3]Dr. Mohsin Sidiq

[1]M.D.S; Registrar in Department of Pedodontics and Preventive Dentistry Govt Dental College and Hospital Srinagar.
[2]M.D.S. Professor and H.O.D –Department of Pedodontics and Preventive Dentistry Govt Dental College Srinagar India.
[3]Lecturer in Department of Pedodontics and Preventive Dentistry Govt Dental College and Hospital Srinagar.

***Corresponding Author: Dr. Mohamad Arshid Khanday**

M.D.S; Registrar in Department of Pedodontics and Preventive Dentistry Govt Dental College and Hospital Srinagar.

Article Received on 21/03/2022 **Article Revised on 11/04/2022** **Article Accepted on 02/05/2022**

ABSTRACT

Background: Teleadaptation arises as a complement to behavior management in response to physical and dental environment restrictions imposed by the current pandemic. Delivering oral health care to the remote areas is challenging due to lack of access of pediatric dentist in rural areas. Access to broadband internet and mobile devices can remove these geographical barriers and help to bridge this gap. **Methodology:** This short observational study was designed with the aim to: Observe the feasibility of using teledentistry for oral examination, consultation and education of 6-10yearold children by screening of children with intraoral camera and transferring of data to pediatric dentist. **Results:** Children were comfortable with the use of intraoral camera and having a dental consultation through a digital device. 78 percentchildren found it better than going for a regular dental visit. **Discussion:** The current study seeks to take advantage of mobile technology to acquire dental images from a child's mouth at remote areas and transfer the information electronically to an offsite dental practitioner to assess and prepare dental recommendations. Such an approach will help to prioritise high-risk children and provide them with a quick treatment pathway and avoid unnecessary referrals or travel. **Conclusion:** As virtual reality has taken forefront due to the COVID pandemic across the globe, teledentistry has the ability to open a new frontier for providing basic consultation for oral problems in the neglected rural child population.

KEYWORDS: Teledentistry, Telecommunication, oral health status, telehealth.

INTRODUCTION

Technology plays a significant role in our lives. In today's world, its next to impossible to imagine a life without the use of technology. Remarkable progress in telecommunication technology has had and will continue to have an enormous impact on oral health care services. In particular, digital technology that integrates transmission, switching, processing, and retrieval of information provide opportunities to deliver various types of health care modalities irrespective of the distance between the care-provider and care-receiver.[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 dental care.[2]

Dental caries (tooth decay) remains the most prevalent chronic disease of childhood, even ahead of asthma and hay fever. There is a significant social gradient between socioeconomic status and the prevalence and severity of oral diseases which highlights oral health inequalities and inadequate funding for prevention and treatment. Dental caries is an entirely preventable dynamic disease, with an interplay of risk factors that protect against or cause progression of the disease. In general diet, oral hygiene and fluoride exposure are the most common factors assessed when determining an individual's risk level for the disease.[3-5]

Periapical lesions constitute a large portion of dental pathology and their treatment is commonly performed by dentists who are not specialists in endodontics. Modern telemedical systems are an ideal solution for seeking and obtaining timely expert help in that regard. Distant consultants and specialist are informed via their mobile phones about the received request, after which they download the digital images and accompanying an amnestic data. They establish the diagnosis and suggest a treatment, then post this information on an on-line server, which informs the consultation-requester dentist about the received response. Prevention and early detection of caries are the key factors in the suppression of this mass disease of etiologically insufficiently known nature.[6] Telemedicine is here to a method of choice in many situations where direct clinical inspections are not

possible. It has been demonstrated in real conditions that distant diagnosis of pediatric dental problems, based on non-invasive imaging, is a valid grounding for an appropriate insight into dental problems. The success with these teledentistry systems largely depends on the quality of intraoral cameras.

In India, the dentist population ratio is 1: 8,000 in urban areas and 1: 50,000 in rural areas, which is much lower than the ideal ratio suggested by WHO. For the majority of the population that resides in a rural area, the only source of health care is primary health centres where the majority of the professionals are the medical practitioners. Also, dental professionals are less accessible to the population as compared to the medical ones in rural areas. The reasons for this lack of oral health care are the main barriers like poverty, geographical location, inadequate financial coverage for the dental treatments, social and cultural barrier, lack of workforce, lack of transportation, lack of knowledge and awareness of oral health, etc. In a country like India where the 2/3rd population lives in rural areas and unable to get good oral health services, teledentistry is a boon without any doubt.[7-9]

Considering the vast scope of teledentistry in India and very limited number of published studies related to pediatric dentistry, this short observational study was designed with the aim toobserve the feasibility of using teledentistry for oral examination, consultation and education of 6-12 year old children in rural areas of district anantnag with Pediatric dentist located at a distant setting.

METHODOLOGY

This was an observational study. A convenience sample of 70 children aged 6- 10 years living in nearby villages were taken up for the study. Intra oral examination was carried by a general dentist with the intraoral camera and real time consultation was done with the pediatric dentist located at a distant setting. Fivesimple, non-structured questionnaires were prepared and answers seeked pre and post teledentistry session.

PRE TELEDENTISTRY QUESTIONNAIRES

1. Have you ever visited for a dentist for check up?

Yes	No
21.4%	78.6%

2. Have you ever experienced a dental pain?

Yes	No
57%	43%

3. Are you scared of going to a dentist?

Yes	No
78.5	21.5%

4. Would you allow a person to put mouth mirror into your oral cavity for examination?

Yes	No
85.7%	14.3%

5. Do you think it is better to go to a dentist for regular dental check up instead of using intra oral mirror?

Yes	No
28.5%	71.5%

This was followed by Screening of children with intraoral camera by the health workers and transferring of data to pediatric dentist situated in a dental college via internet. Live video consultation with the pediatrict dentist sitting in a dental college was done.

POST TELEDENTISTRY QUESTIONNAIRES

1. Did you like putting mouth mirror in your oral cavity for check up?

Yes	No
88.5%	11.5%

2. Did you understand the instruction given by the person?

Yes	No
78.5%	21.5%

3. Did you understand the instruction given by the person on phone?

Yes	No
82.8%	17.2%

4. Did putting the mouth mirror inside your mouth scared you?

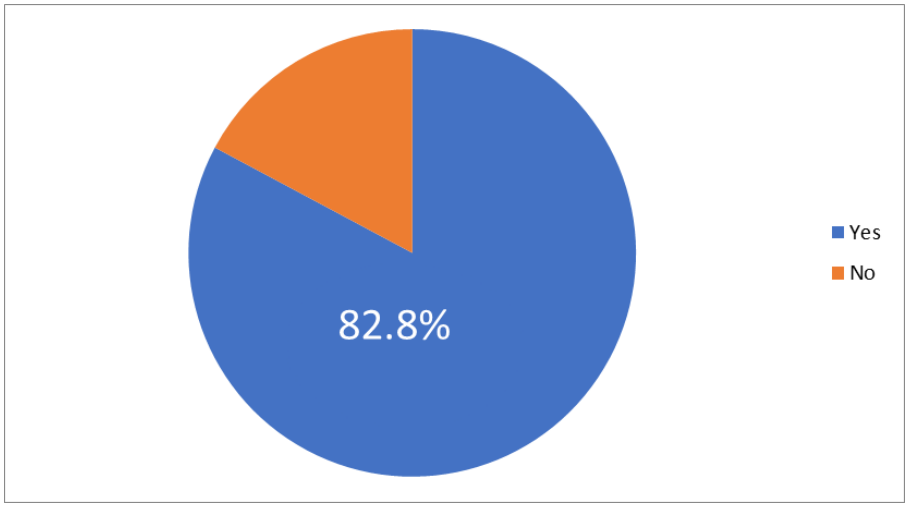
Yes	No
8.6%	91.4%

5. Do you think using mouth mirror to check your teeth is better than going to a dentist in real?

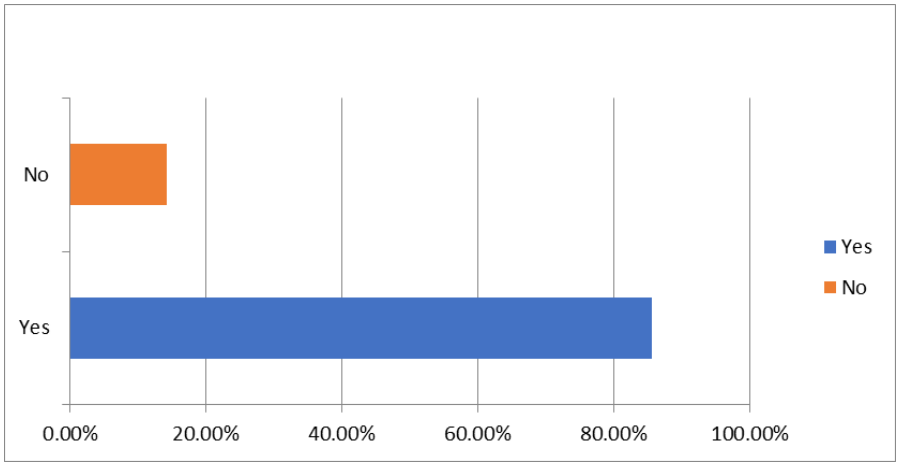
Yes	No
85.7%	14.3%

RESULTS

Children were comfortable with the use of intra oral mouth mirror and having a dental consultation through a mobile device. 82.8% liked the instructions given through mobile deviceby a specialist residing remotely.



85.7% children also found it better than going for a regular dental visit.



DISCUSSION

The present study is innovative because it investigates the use of an equitable, low-cost mobile technology and the Internet to provide a foundation of equitable dental care for children living in the areas where there is no access to a pedodontist. More specifically, it identifies vulnerable and rural people as a priority area warranting actions to reduce inequity in dental care access. Healthy behaviours and practices established in the early life of the child are often carried into adulthood.[10] Therefore, improving oral health in childhood is fundamental for reducing dental caries, early tooth loss and other oral diseases in adulthood and the advanced aged period. However, improving the population's oral health is challenging, with an unequal distribution of the dental workforce and scarcity of resources making the transition to the prevention of dental disease difficult. Paradigm shifts in the technology, where by trained dental personnel, embracing a user-friendly mobile App, can work on the frontline to aid in identifying high-risk children. The frontline clinicians can collect oral health data (e.g. demographic information and still/live images) from screen-positive patients using their mobile devices and then store-and-forward the records to a dental expert at a distance to confirm the diagnosis or to request further investigation.[11] The expected benefits from the interventions are an improvement in the oral health status of school children, with a reduction in decay experience, disease prevention, and costsaving due to a reduction of inappropriate referrals and unnecessary travel.

The importance of telehealth (including teledentistry) has become more evident as a result of the impact of the COVID-19 pandemic on clinical care. Telehealth holds the promise of reaching many patients, particularly those with compromised immune systems, underlying medical conditions, or concurrent family responsibilities, such as child care, while avoiding unnecessary contact and enabling physical distancing.[12] Technologies used for teledentistry range from simple text messaging or phone call follow-up to more sophisticated televideoconferencing using an intraoral camera or live monitoring device to obtain and

transmit live images. These telehealth methods could allow programs with limited resources to deliver targeted interventions.[13-16]

Teledentistry can be limited in applicability when there are technological challenges, such as slow internet speed

or unreliable service.[17] These challenges are likely exacerbated in many developing countries and rural areas where the necessary infrastructure to adopt teledentistry does not exist. Communication infrastructure requires bandwidth and reliability to adopt teledentistry modalities effectively. Although the benefits of Teledentistry are established and the pros outweigh the cons, yet several challenges are standing in the way of professionals adopting it and introducing it into the practice.[18-19] A pronounced challenge is the lack of direct contact with patients. In India, in a large number of areas, IT literacy is weak. There may be a decline in the accuracy of health information available, and there may be too high of an increase in clinic time and workload. Talking about Indian infrastructure, there is a lack of internet access and technical support in most rural areas. The technology may also seem too complex for many people.[20]

CONCLUSION

As virtual reality has taken forefront due to the COVID pandemic across the globe, teledentistry has the ability to open a new frontier for providing basic consultation for oral problems in the neglected rural child population. Nowadays, children everywhere are familiar with the digital world and acceptance of a screen for communication is normal for them. With a little effort by healthcare community, teledentistry can be incorporated in regular consultation practice, in rural camps or other remote areas where physical access for routine care is difficult.

REFERENCES

1. Kopycka –Kedzierawski DT, Billings RJ. Teledentistry in inner city child carecenters. J Telemedicine and Telecare, 2006; 12(4): 176-82. 7.
2. 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.
3. 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.
4. Mihailovic B, Miladinovic M, Vujicic B. Telemedicine in dentistry (Teledentistry). In: Graschew G, Roelofs TA, editors. Advances in Telemedicine: Applications in Various Medical Disciplines and Geographical Areas. Rijeka (Croatia): InTech, 2011; 215-30.
5. Petruzzi M, De Benedittis M. WhatsApp: A telemedicine platform for facilitating remote oral medicine consultation and improving clinical examinations. Oral Surg Oral Med Oral Pathol Oral Radiol, 2016; 121: 248-54.
6. Aziz SR, Ziccardi VB. Telemedicine using smartphones for oral and maxillofacial surgery consultation, communication, and treatment planning. J Oral MaxillofacSurg, 2009; 67: 2505-9.
7. D. Di Stasio, A. Romano, R. S. Paparella et al., "How social media meet patients' questions: YouTube™ review for mouth sores in children,"Journal of Biological Regulators and Homeostatic Agents, 2018; 32(2): 117–121.
8. R. Mariño and A. Ghanim, "Teledentistry: a systematic review of the literature," Journal of Telemedicine and Telecare, 2013; 19(4): 179–183.
9. C. S. Bavaresco, L. Hauser, and A. E. H. E. Haddad, "Impact of teleconsultations on the conduct of oral health teams in the Telehealth Brazil Networks Programme," Brazilian Oral Research, 2020; 34.
10. C. I. Salazar-Fernandez, J. Herce, A. Garcia-Palma, J. Delgado, and T. S. Jose Felix Martín, "Telemedicine as an effective tool for the management of temporomandibular joint disorders," Journal of Oral and Maxillofacial Surgery, 2012; 70(2): 295–301.
11. H. Guo, Y. Zhou, X. Liu, and J. Tan, "The impact of the COVID-19 epidemic on the utilization of emergency dental services," Journal of Dental Sciences, 2020; 15(4): 564–567.
12. M. S. AlShaya, M. K. Assery, and S. C. Pani, "Reliability of mobile phone teledentistry in dental diagnosis and treatment planning in mixed dentition," Journal of Telemedicine and Telecare, 2020; 26(1–2): 45–52.
13. Summerfelt FF. Teledentistry-assisted, affiliated practice for dental hygienists: An innovative oral health workforce model. J Dent Educ, 2011; 75: 733–42.
14. Duka M, Mihailovic B, Miladinovic M, Jankovic A, Vujicic B. Evaluation of Telemedicine Systems for Impacted Third Molars Diagnosis. Vojnosanit Pregl, 2009; 66: 985–91.
15. Aziz SR, Ziccardi VB. Telemedicine Using Smartphones for Oral and Maxillofacial Surgery Consultation, Communication, and Treatment Planning. J Oral Maxillofac Surg, 2009; 67: 2505–9.
16. Rocca MA, Kudryk VL, Pajak JC, Morris T. The Evolution of a Teledentistry System within the Department of Defence. Proc AMIA Symp, 1999; 921–4.
17. Khan SA, Omar H. Teledentistry in practice: literature review. Telemed J E Health., 2013; 19: 565–7.
18. Watt RG, Williams DM, Sheiham A. The role of the dental team in promoting health equity. Br Dent J., 2014; 216: 11–4.
19. Estai M, Bunt S, Kanagasingam Y, Kruger E, Tennant M. Diagnostic accuracy of teledentistry in the detection of dental caries: a systematic review. J Evid Based Dent Pract, 2016; 16: 161–72.
20. Estai M, Kanagasingam Y, Xiao D, Vignarajan J, Huang B, Kruger E, et al. A proof-of-concept evaluation of a cloud-based store-and-forward telemedicine app for screening for oral diseases. J Telemed Telecare, 2016; 22: 319–25.