

REVIEW ARTICLE

A Scoping review of challenges, scope and assessment approaches of teledentistry: an Indian perspective

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Abstract

Context: In India, COVID-19 pandemic has limited the utilization and access to dental services owing to the risk of infections transmission. In this context, tele-dentistry could be useful but there is paucity of literature which provides guidance on the scope and challenges for using tele-dentistry in India. **Aims:** To identify challenges, scope and assessment approaches of tele-dentistry from an Indian perspective. **Settings and Design:** Scoping Review. **Methods and Material:** Scoping review was conducted using the Arksey and O'Malley framework. Databases were searched in July from April to August 2020. Studies concerning challenges and scope of tele-dentistry in India were included. Additionally, literature about assessment approaches used for tele-dentistry programs were also reviewed **Results:** A total of 64 studies were reviewed, out of which 26 articles were included in the final review. Scoping review revealed that tele-dentistry could act as a seamless tool for diagnosing, training and screening. Few studies suggested the relevance of smartphone technology for specialist consultations and proper diagnosis. Majority of studies revealed shortage of basic infrastructure as a major challenge for tele-dentistry in India. Assessment studies were mainly focused on economic perspective and cost-effectiveness of the programs. **Conclusions:** This review provide guidance for using tele-dentistry in India. It is also reflected that there is a need for further research about the assessment of tele-dentistry in terms of safety, clinical outcomes, and patient perception.

Keywords

Dental Care; Tele-dentistry; Oral Health; Oral Hygiene; Information Technology

Introduction

Oral health care is a major public health challenge as there are various problems associated with the accessibility of oral health services especially in developing countries.(1) In India, a large population is living in urban slums or rural areas where they have a lack of access to basic health care necessities including oral health care.(2) The common obstacles faced in maintaining overall dental health include lack of access to oral health care in rural or remote areas, unaffordable expenses on dental treatments,

growing and aging populations, migratory population, long distances from specialists, and scarcity of dental professionals.(3) Tele-dentistry, as a new information and communication technology (ICT), could be useful in improving the access and increasing awareness for oral health to further effectively enhance the quality of oral health services.(4)

In the current scenario of the COVID-19 pandemic, oral health professionals and patients are more at risk of transmission for COVID-19 infections. So, the people who are suffering from oral health diseases postponed their

dental visits as a preventive measure.(5) Further, it will deteriorate their oral condition as they might be detected in a later stage, which eventually makes dental treatment more complicated. Recently, the study suggested that poor oral hygiene might increase the risk of complications in COVID -19 patients especially in patients with comorbidities like diabetes, hypertension, and cardiovascular diseases.(6)

Literature suggests that the incorporation of tele-dentistry in this COVID 19 era can be beneficial for dental professionals to detect, assess the severity of the oral condition, and provide proper consultation. However, these suggestions are based on the assumptions as there is a paucity of literature related to the challenges and scope of Tele-dentistry in the Indian context.(7)

Aims & Objectives

To identify various challenges of tele-dentistry and scope for future directions.

Material & Methods

The methodology of scoping review was developed using the framework proposed by Arksey and O'Malley (2005) and approach by Peters et al. (2015).(8) We conducted the study using PRISMA flowchart for selecting relevant studies⁹. This review was followed in five steps: Step 1- Developing the research questions; Step 2-Identifying relevant studies; Step 3- Selecting studies; Step 4-Charting data; and Step 5-Collating, summarizing and reporting results.

Search strategy: Electronic databases were searched from April to August 2020. The studies published within 10 years were included in the review. The following terms to identify challenges, scope and evaluation approach of tele-dentistry were used for the literature search: "Dental informatics in India", "Digital Dentistry" "Tele-dentistry in India", "Assessment", "Economic evaluation", "Health technology assessment (HTA) in tele-dentistry". Literature search was limited to the English language using Google Scholar, PubMed/ Medline, and Scopus. We also included studies from the referencing of selected articles to further avoid missing literature.

Study selection and Inclusion criteria: Studies concerning challenges and scope of tele-dentistry in India were included in this scoping review. All selected studies were written in the English language. Three reviewers independently searched titles or abstracts to recognize studies based on inclusion criteria. The authors reviewed and retrieved the full-text articles that met with inclusion criteria independently. All articles selected in this scoping review were based on consensus between all three reviewers. There is a paucity of literature related to the assessment of tele-dentistry programs. Therefore, additionally, we also reviewed literature on assessment of tele-dentistry programs.

Data abstraction: Each article was evaluated and relevant data were extracted by the same reviewers

independently. All articles selected for the final review were analyzed and discussed between all three reviewers.

Results

Studies were searched from April to August 2020. A total of 64 studies were reviewed and analyzed. After the removal of duplicate articles, 60 potentially relevant studies were selected for screening. Total of 34 studies were excluded from the review. 20 studies were excluded as they were not related to tele-dentistry in the Indian context and 14 studies were were not related to the scope and challenges of tele-dentistry. After reviewing all studies, 26 articles met the inclusion criteria and were included in the final review. (Figure 1) shows the Prisma framework used for the literature search process.(9)

The scoping review illustrates studies that revealed various scope and challenges of tele-dentistry in India. OP Kharbanda in 2019 described the project ECHO India, Collaborative Digital Diagnosis System (CollabDDS), and eDantSeva implementation in India.(10). Baishakhi Modak (2020) and Nitin Patwardhan (2015) have mentioned about need of tele-dentistry in under-privileged population.(11,14) Devina Pradhan (2019) said that tele-dentistry can act as a tool for oral hygiene training and help in the reduction of dental costs.(13). Suhani Ghai in 2020 suggested that incorporation of tele-dentistry in routine services, especially in COVID-19 pandemic.(7) Bharathi M. Purohit (2016) assessed that, video-graphic method as a tele-dentistry might be used as an alternative for dental caries screening.(17) Few authors stated that smartphone tele-dentistry can be effective for the screening of oral diseases, especially in remote areas.(31,32) Most of the of studies revealed that the shortage of basic infrastructure is a major challenge for the implementation of tele-dentistry in India. (Table 1) shows Scope and challenges of included studies in India. Additionally, we also reviewed the methods used for the assessment of tele-dentistry in literature. Authors Scuffham PA (2002) and Mohamed Estai (2017) in their study cost-minimization analysis was considered as an assessment approach for tele-dentistry.(36,40) Scuffham PA mentioned in the study that tele-dentistry can be a cost-effective technique for dental specialist consultations especially in remote areas.(40) Mohammed Estai (2017) illustrated that implementation of tele-dentistry can reduce overall dental costs and comparatively be considered as a feasible approach for mass dental screening.(36) Rodrigo Marino (2014) conducted a pilot study where they indicated that the tele-dentistry technique is a reliable and feasible approach for the diagnosis of oral diseases in comparison to face-to-face examination.(39) Most of the authors were comparing the cost of tele-dentistry technique with routine based traditional dentistry and found that tele-dentistry is likely to be effective.(35,37,38) (Table 2)

illustrates studies that showing assessment approaches for tele-dentistry.

Discussion

This scoping review was performed to identify literature on the scope and challenges of tele-dentistry in the Indian context. We identified 26 studies describing the various scope of tele-dentistry for future directions and challenges that need to be considered before implementation of tele-dentistry. We found that tele-dentistry as a part of dental services will facilitate basic oral health care in rural or remote regions where there is lack of basic health care facilities. As there is a paucity of dental specialists especially in rural India, it is important to consider tele-dentistry as a part of basic oral health care especially in Primary Health Centers (PHC).(20)

Additionally, it was also found in the literature that few studies in this review suggested the relevance of smartphone technology for specialist consultations in remote areas and mentioned the benefits of a smartphone camera or WhatsApp application in the diagnosis of oral lesions. Clinical photographs can be taken using a smartphone and discussion with a specialist through online meeting could be performed remotely.(31,32) In developed countries like the U.S.A, an initiative was taken to provide basic oral health care to remote populations through dental hygienists by sharing digital clinical information with oral health care workers over long distances.(42) Similar studies conducted in a developing country like Brazil reported that the sharing of digital photographs by E-mails can be beneficial for the diagnosis of oral lesions in remote areas where accessibility to oral medicine specialist is poor.(43),(44) Therefore, tele-dentistry could be used as an alternative way to provide diagnostic or preventive oral health care to underprivileged communities living in rural India as well as in unprecedented times like COVID 19 pandemics.

We found that tele-dentistry acts as an important tool for collaboration between dental professionals. This finding could be correlated to the finding of the study that suggested that the case discussions between multiple consultants in the diagnostic process give accurate results, especially for remote population.(45) Tele-dentistry has the benefits to provide specialist care over long distances particularly in a developing country like India, which will further help in early detection of oral diseases and better treatment planning.(14)

This review also emphasized the scope and benefits of tele-dentistry apart from routine dental practice during this pandemic COVID-19 crisis. Tele-dentistry could help maintain social distancing and avoid unnecessary exposure of patients through online consultation. Recently, the studies conducted in developing countries stated that tele-dentistry can effectively fulfill the basic oral health needs during this health crisis.(46, 47)

While doing the review, we found some challenges for implementing tele-dentistry including lack of infrastructure, lack of knowledge among dentists, patient confidentiality and security issues. These challenges also coincide various challenges reported in studies conducted globally which mentioned patient data security issues, lack of infrastructure, poor internet in rural areas, poor technical knowledge, licensure and medico-legal issues and low level of knowledge and awareness for tele-dentistry as implementation challenges.(3),(48) These shortcomings related to infrastructure or technical issues need to be considered before the implementation of tele-dentistry in developing countries like India. Suitable training for technology and update with current techniques should be encouraged among oral health workers. As, tele-dentistry is not in routine dental practice in India this review showed lack of knowledge and awareness about tele-dentistry among Indian dental professionals. Similar findings were also indicated in studies conducted on awareness about tele-dentistry in developing countries.(46,49) On positive side we also found that Indian dentists have a positive attitude towards using tele-dentistry.

Since no considerable literature was found on the assessment of tele-dentistry in the Indian context, we reviewed studies globally which mentioned about assessment approaches used for tele-dentistry.

Most studies were found to be focused on the evaluation of costs required for tele-dentistry in comparison to daily routine traditional dentistry and assessed the tele-dentistry programs from economic perspective and identified the cost-effectiveness of these programs. There was limited literature available on other aspects of assessment approaches as described in the MAST (Model for Assessment of Tele-medicine) evaluation model for telemedicine. The MAST evaluation is a multidisciplinary process that summarizes and evaluates information about the medical, social, economic and ethical issues related to the use of tele-medicine in a systematic, unbiased, robust manner.(50) It seems that there is a need for further research about the assessment of tele-dentistry in terms of safety, clinical outcomes, patient perception and other organizational aspects as mentioned in the MAST model.

Conclusion

This review revealed that dentists have positive attitude towards tele-dentistry, but challenges like infrastructure and knowledge constrains need to be addressed for implementing and using tele-dentistry in India

Recommendation

There is a need for further research about the assessment of tele-dentistry in terms of safety, clinical outcomes, and patient perception.

Limitation of the study

As this is a scoping review, it does not assess the rigor or quality of studies

Authors Contribution

VJ PB & NJ contributed to data collection and analysis. All the authors contributed to the design and writing.

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Tables

TABLE 1 SCOPE AND CHALLENGES OF TELE-DENTISTRY OF INCLUDED STUDIES IN INDIA

SN	Study	Scope	Challenges	Recommendation	Type of study
1	O.P Kharbanda (2019).(10)	<ul style="list-style-type: none"> Implementation of CollabDDS (Collaborative Digital Diagnosis System) can help in enhancing medical or dental services in rural areas. "The Tele-oncology network" in Kerala helps in early diagnosis and regular follow-ups in cancer patients especially in remote areas. Better Case presentation for cancer by consulting specialists can be implemented through ECHO India via teleconferencing. 	<ul style="list-style-type: none"> Privacy, security and Confidentiality of patient records. Prescribing medicines in smartphone is not lawful in India. Technical problems like infrastructure, network issues, finance of telehealth setup and lack of training. Lack of awareness among dentists. 	<ul style="list-style-type: none"> Not available 	Not-specified
2	Nitin Patwardhan (2015).(11)	<ul style="list-style-type: none"> Tele-dentistry can help in providing dental services in inaccessible and under-privileged population. Patients can consult with oral health specialist through teleconferencing 	<ul style="list-style-type: none"> -Lack of literacy and infrastructure Poverty 	<ul style="list-style-type: none"> Not available 	Not specified
3	Ramesh Nagarajappa (2013).(12)	<ul style="list-style-type: none"> Collaboration between multiple dental specialists can be developed through tele-dentistry. Can helpful in better treatment planning through the sharing of clinical data or dental images. 	<ul style="list-style-type: none"> Illiteracy Lack of infrastructure Poverty Lack of awareness in more experienced dental professionals Have low knowledge of advantages among dentists. 	<ul style="list-style-type: none"> Training courses required for tele-dentistry among dentists especially in graduate dentists and more experienced. 	Cross-sectional study
4	Devina Pradhan (2019).(13)	<ul style="list-style-type: none"> Teledentistry makes dental services or specialists will become more accessible to the rural or underserved population. Helps in reducing the costs of dental services. can serve as an important tool for oral hygiene training. 	<ul style="list-style-type: none"> Illiteracy Population below the poverty line. Lack of infrastructure. 	<ul style="list-style-type: none"> While using tele-dentistry, the dentist should maintain the privacy and confidentiality of patient records. Promoting continuing dental education programs and awareness campaigns/programs 	Cross-sectional study

				for Tele-dentistry among dentists.	
5	Baishakhi Modak (2020).(14)	<ul style="list-style-type: none"> • It will increase the accessibility of dental services to elder, poor, underprivileged population. • Cost-effective especially in remote areas to avoid transport charges. • Helpful in early diagnosis and will encourage preventive measures for oral health. • It can provide medicinal treatment through E-Prescription • Helps in storing and transferring the data to specialists for better treatment planning if required. 	<ul style="list-style-type: none"> • There is a lack of infrastructure, knowledge and awareness about tele-dentistry. • Security problems like confidentiality, the privacy of patient data, medical malpractice 		Not-specified
6	Avnica Agarwal (2019).(15)	<ul style="list-style-type: none"> • Clinical training or education can be given to dentists in remote areas. • Time and money of patients on diagnostic and preventive measures can be prevented. • It can provide enhanced dental services and education at primary health centres and secondary health centres. 	<ul style="list-style-type: none"> • Ethical issues like Jurisdiction, inter-state licensure and malpractice. • Security of the system should be ensured. • Technical issues like internet. 	<ul style="list-style-type: none"> • In future, tele-dentistry will helpful for population living in remote areas where they have a lack of dental services or transport. 	Not specified
7	Vandana V .Gopi (2019).(16)	<ul style="list-style-type: none"> • Incorporation of tele-dentistry will provide basic dental services at PHC and CHC. • Increases general oral health awareness among the population. • Helps in delivering basic clinical training among dentists. 	<ul style="list-style-type: none"> • Basic infrastructure like high reliability and low latency bandwidth required for tele-dentistry. 	<ul style="list-style-type: none"> • Proper Information technology (IT) systems will be needed in district hospitals. • Technical training group required at main centres and sub-centres (PHC or CHC). 	Not specified
8	Suhani Ghai (2020).(7)	<ul style="list-style-type: none"> • In this COVID -19 pandemic, addition of teledentistry in basic dental services can maintain social distancing. • Prevent exposure of patients unnecessarily. • Helpful in monitoring the patient's condition in a virtual meeting. 	<ul style="list-style-type: none"> • Technical issues like poor internet connection. • Lack of training among patients. • Tele-dentistry may not acceptable by patients. They may feel uncomfortable in virtual meeting. 	<ul style="list-style-type: none"> • In covid-19 pandemic, basic oral health care is neglected. So, incorporation of tele-dentistry will able to overcome this challenge. 	Not-specified
9	Bharathi M. Purohit (2016).(17)	<ul style="list-style-type: none"> ○Video- graphic method as a tele-dentistry can useful in assessing dental caries. ○It may help in better treatment planning especially in a rural region. • Tele-dentistry can reduce the gap between urban and rural areas. 		<ul style="list-style-type: none"> • Oral examination through tele-dentistry may act as a screening tool. 	Not-specified
10	Haritha Avula (2015).(18)	<ul style="list-style-type: none"> • Tele- periodontics can overcome problems like lack of doctors or specialists in the rural area. • It can be helpful in early diagnosis of any lesion and provide better treatment in early stage. • Preventive dental care will be enhanced in rural population where oral hygiene is usually neglected. 	<ul style="list-style-type: none"> • Technological issues like lack of infrastructure, poor internet access. • Illiteracy • Population below the poverty line. • Privacy and confidentiality of patient records should be maintained. 	<ul style="list-style-type: none"> • In the Indian context, tele- periodontics will provide basic periodontal care in remote areas. • Increase in the knowledge level of a primary health care professional. 	Not-specified

		<ul style="list-style-type: none"> • Reduces time consumption by transport to travel in urban areas for dental services. 	<ul style="list-style-type: none"> • Licensure for tele-dentistry. 		
11	Mathews MA (2015).(19)	<ul style="list-style-type: none"> • long-distance consultation by specialist can be possible with tele-dentistry. • It can help in preventive oral health care for children. • It can provide basic dental services to older patients. • Collection of information of patients may help in epidemiology and clinical research. • Cost-effective technique for oral care especially in rural India. 	<ul style="list-style-type: none"> • Privacy and confidentiality of patient records. • Patient consent is important 	<ul style="list-style-type: none"> • The national training programs or addition in dental courses required for tele-dentistry. 	Non-specified
12	Mallick .R (2016).(20)	<ul style="list-style-type: none"> • It can provide oral health care from distant specialists at PHC/CHC centres. • Increases awareness for oral hygiene maintenance. 	<ul style="list-style-type: none"> • Patient consent, security and legal issues. • Technical issues like high reliability and low latency internet bandwidth will be needed. 	<ul style="list-style-type: none"> • capacity building of dental professionals for tele-dentistry. 	Not-specified
13	Dr Nilofer Sultan Sheikh (2017).(21)	<ul style="list-style-type: none"> • It can provide oral health care in rural areas of India. • Ensure oral hygiene maintenance in children • Helpful in case discussions and providing education for dental students. 	<ul style="list-style-type: none"> • Inter – state licensure, jurisdiction, malpractice and ethical issues. 	<ul style="list-style-type: none"> • Not available 	Not-specified
14	K.C. Pentapati (2017).(22)	<ul style="list-style-type: none"> • Intraoral camera can be used as tele-dentistry for the screening of dental caries, fluorosis, oral diseases, calculus and stains. • Tele-dentistry can act as a cost-effective technique for screening oral conditions, especially in rural areas. • Helps in early diagnosis, save time and cost of patients. 	<ul style="list-style-type: none"> • -Some treatment requires visiting dental offices. • -Intraoral camera unable to see immature plaque and distal side of molars. 	<ul style="list-style-type: none"> • Not-available 	Pilot study
15	Niveda Balakrishnan (2017).(23)	<ul style="list-style-type: none"> • Helps in diagnosis and treatment planning using smartphones and media. • can contact specialists for case discussions. 	<ul style="list-style-type: none"> • Technology problems like cost, not comfortable and unclear guidelines. 	<ul style="list-style-type: none"> • Mobile dental setup using tele-dentistry in rural areas is required. 	Cross-sectional study
16	Mamatha Boringi (2015).(24)	<ul style="list-style-type: none"> • -Positive attitude shown by dental professionals for teledentistry. - Increases the accessibility of dental services for the underserved population. 	<ul style="list-style-type: none"> • Low level of knowledge among dental professionals for teledentistry. 	<ul style="list-style-type: none"> • Awareness programs about teledentistry for dentists are necessary. 	Cross-sectional study
17	Jagadeeshwar Rao Sukhabogi (2014).(25)	<ul style="list-style-type: none"> • It will provide basic services in a rural area where lack of clinical services, doctors, specialists and basic infrastructure. • Reduces the late diagnosis and late delivery of proper treatment. 	<ul style="list-style-type: none"> • Patient consent, licensure, jurisdiction and malpractice. • Privacy and confidentiality. 	<ul style="list-style-type: none"> • Tele-dentistry has an enormous scope in developing countries like India. 	Review
18	Kirti Verma (2019).(26)	<ul style="list-style-type: none"> • Post-graduate dentists have a positive attitude for tele-dentistry. 	<ul style="list-style-type: none"> • Awareness for tele-dentistry required for dental professionals. 	<ul style="list-style-type: none"> • Addition of tele-dentistry in BDS curriculum. 	Cross-sectional study
19	N. Aravind (2019).(27)	<ul style="list-style-type: none"> • Positive attitude of dentists towards tele-dentistry. 	<ul style="list-style-type: none"> • lack of knowledge among dental professionals. 	<ul style="list-style-type: none"> • There is a need for continuous dental education programs 	Cross-sectional study

		<ul style="list-style-type: none"> Increases the access to basic oral health services for the underserved population. 	<ul style="list-style-type: none"> Security and legal issues. 	<ul style="list-style-type: none"> and awareness programs. 	
20	Sen. N (2017).(28)	<ul style="list-style-type: none"> Helps in dental tourism. There is fair knowledge and attitude of dentists towards tele-dentistry. 	<ul style="list-style-type: none"> Poverty illiteracy Lack of infrastructure. 	<ul style="list-style-type: none"> Dentists should ensure the security of data while using tele-dentistry. CDE programs and awareness programs should be encouraged. 	Cross-sectional study
21	Subhalakshmi.T (2017).(29)	<ul style="list-style-type: none"> Intraoral camera can help in the screening of caries in school-going children. It is feasible and cost-effective technique. Improving the accessibility to oral health care. 	<ul style="list-style-type: none"> Using intraoral camera as a tele-dentistry may have false positive, missed proximal caries. Patients may feel dissatisfactory due to lack of interaction between patient and dentist. 	<ul style="list-style-type: none"> Using intraoral camera is a feasible technique for the diagnosis of dental caries in children. 	Not-specified
22	Deepa Tomar (2018).(30)	<ul style="list-style-type: none"> Has the potential to increase communication between dental specialists. Save time of patient utilized to visit the dental setting. 	<ul style="list-style-type: none"> Lack of training among dentists. 	<ul style="list-style-type: none"> CDE projects and workshops is a necessity for the implantation of tele-dentistry. 	Cross-sectional study
23	Ravi Karthikayan (2019).(31)	<ul style="list-style-type: none"> Smartphone camera is a reliable method for the diagnosis of oral lesions, especially in remote areas. 	<ul style="list-style-type: none"> Patient consent is necessary. 	<ul style="list-style-type: none"> Dentist should be encouraged for clinical pictures of oral lesions in daily routine. Clinical pictures should be used as a research purpose. 	Cross-sectional study
24	Praveenkumar Ramdurg (2016).(32)	<ul style="list-style-type: none"> Smartphone tele-dentistry can be useful for specialist consultation, especially in remote areas. Positive response for WhatsApp application used as a tele-dentistry. fast communication between patients and specialists. 	<ul style="list-style-type: none"> Patient confidentiality should be maintained. 	<ul style="list-style-type: none"> There is a need for training among dentists. 	Cross-sectional study
25	Arun Keeppanasserril (2011).(33)	<ul style="list-style-type: none"> Can increase access to specialist care. Useful in communities with lack of health care facilities. 	<ul style="list-style-type: none"> Legal and ethical problems Patient confidentiality should be maintained. 	<ul style="list-style-type: none"> Incorporation of technology in the existing health care system. 	Cohort study
26	Mayuresh J Baheti (2014).(34)	<ul style="list-style-type: none"> Reduction in cost and increases access to dental treatment. Provide specialist care to remote or rural areas. 	<ul style="list-style-type: none"> Legal problems like Licensure, malpractice, privacy and security. 	<ul style="list-style-type: none"> It can be a new way of providing dental education among professionals. 	Not-specified

TABLE 2 ASSESSMENT APPROACHES FOR TELE-DENTISTRY

Study	Type of assessment	Summary/brief details
Rodrigo Marino (2016). ⁽³⁵⁾	Tele-dental asynchronous patient assessments and remote real-time oral examination.	<ul style="list-style-type: none"> Comparison of costs and benefits of face-to-face examination with two tele-dentistry methods. Using the tele-dentistry approach: an asynchronous review with a treatment plan and real-time communication. Real-time consultation has better outcomes.
Mohammed Estai (2018). ⁽³⁶⁾	Cost-minimization analysis	<ul style="list-style-type: none"> comparison of costs of traditional screening and tele-dentistry models in school children. using tele-dentistry reduces costs; these savings will help in improving basic oral health services in underserved areas.
Jonathan Teoh (2018). ⁽³⁷⁾	Model-based and Cost-effectiveness analysis.	<ul style="list-style-type: none"> Comparison of costs and effectiveness of tele-dental specialist consultations with standard consultations.

Peebles HG (2011). ⁽³⁸⁾	Cost-effectiveness analysis	<ul style="list-style-type: none"> • Tele-dentistry is likely to be cost-effective technique. • Comparison of tele-dentistry with traditional dentistry in children. • Tele-dentistry is cost-effective and cost-saving as compared to traditional dentistry.
Rodrigo Marino (2014). ⁽³⁹⁾	Pilot Feasibility study	<ul style="list-style-type: none"> • Reliability of tele-dentistry was assessed through comparison with face-to-face consultation. • using an intraoral camera as a tele-dentistry. • Tele-dentistry approach is feasible and reliable.
Scuffham PA (2002). ⁽⁴⁰⁾	Cost-minimization analysis	<ul style="list-style-type: none"> • Cost Comparison of two approaches: outreach visits where specialist visits at remote areas and hospital visits where the patient visits the hospital. • Tele-dentistry is a cost-saving
Nazanin Mazlooman (2016). ⁽⁴¹⁾	Mathematical modelling	<ul style="list-style-type: none"> • Using mathematical modelling, the study assessed the acceptance of tele-dentistry among dentists and lab technicians.

Figures

FIGURE 1 PRISMA FRAMEWORK FOR LITERATURE SEARCH PROCESS

