

Knowledge, awareness, and attitude regarding Teledentistry among dental practitioners of Dhule city: A cross sectional survey

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Abstract-

INTRODUCTION-Telemedicine has a variety of applications in patient care, education, research, public health. It helps in the exchange of clinical information and images over remote distances for dental consultation and treatment planning.

AIM-To access knowledge, awareness, and attitude regarding teledentistry among dental practitioners of Dhule city.

MATERIAL AND METHODOLOGY-The study was a cross sectional Survey conducted among dental practitioners conducted in Dhule City of Maharashtra. A structured questionnaire was formulated with 19 questions in English language. The first part of questionnaire was based demographic data including name, age, gender, address, Qualification and experience. Second part consisted of 19 multiple choice closed ended questions. Questions regarding the knowledge of teledentistry and its uses to monitor patient's oral health were included as well as the awareness about teledentistry among dentist's, its feasibility and uses during dental emergencies.

Results-24.1% participants were known to the term teledentistry. 66.9% participants find teledentistry useful for monitoring patient's oral health. 76.6% participants felt need of awareness about teledentistry among dentist. 72.9% participants think teledentistry can be an addition to the regular care provided.

Conclusion-In spite of having good oral health care facilities in, rural population is quite devoid of dental services and through teledentistry dentist's can serve deprived rural population.

key words - Teledentistry , Dental Practitioners , KAP , Telemedicine, Cross sectional

1. INTRODUCTION

The use of technology has accelerated the field of medical and dental science. Today's highly used digital dental technologies include: Digital radiography, Digital impression technology, Intraoral cameras, CAD/CAM restorations, Occlusal analysis system, Digital records, Computer guided implant dentistry, Cone beam computed tomography. Telemedicine is the technology which uses telecommunication technology in healthcare or medical field. Telemedicine has a variety of applications in patient care, education, research, administration and public health[1]. Similarly, teledentistry helps in the exchange of clinical information and images over remote distances for dental consultation and treatment planning. The introduction of teledentistry to the dental practice was suggested to help the utilization of the time and efforts of the specialists and consultants[2] Teledentistry can take place in either of the following ways – "Real-Time Consultation" and "Store-and Forward Method". Real-Time Consultation involves a videoconference in which dental professionals and their patients, at different locations, may see, hear, and communicate with one another while Store-and-Forward Method involves the forwarding of patient's information for consultation and planning of treatment. In teledentistry, the dentists hold the main responsibility for the consultation performed online. The dentist must carefully judge whether sufficient information is obtained from the online consultation and the information can be used to make an appropriate diagnosis. When using teledentistry for dental consultations, a dentist's will be to diagnose a disease and develop treatment plans. In comparison with the face-to-face consultation, teleconsultation will be cost effective and time saving. It can reduce the travel costs and limit the number of appointments with dental practice. During the pre-pandemic period the use of teledentistry was limited but during COVID lockdown it was preferred the way of communication between the patients and dentist. The application of teledentistry enables prior triage to aid patient screening effectiveness and prioritise patients' needs[3]. In 2020 the number of registered dentists in India were 2,76,980 for 1380 million[4] of people and teledentistry can prove to be helpful for accessibility to those population There is a noted Rural-urban difference in dental health facility and teledentistry is capable of improving patient's access to oral health and improves delivery of oral health care and perhaps at lower costs[5]. Hence dentists should be aware of all the possible communication technology available for the betterment of the patients. Hence the present study was planned to assess the knowledge among dental professionals regarding teledentistry.

2. MATERIAL AND METHODOLOGY

Study Design: The Present study was a cross sectional Survey conducted among dental practitioners.

Study Setting: The study was conducted in Dhule City of Maharashtra

Study Population: Dental practitioners in Dhule City of Maharashtra

Ethical considerations: Ethical clearance for the study was obtained from the institutional ethics committee prior to start the study. A written informed consent was taken from the participant for the study.

Questionnaire: A structured questionnaire was formulated with 19 questions in English language. The first part of questionnaire was based demographic data including name, age, gender, address, Qualification and experience. Second part consisted of 19 multiple choice close ended questions. Questions regarding the knowledge of teledentistry and can teledentistry help to monitor patient's oral health were included as well as the awareness about teledentistry among dentist's, its feasibility and its helpfulness during dental emergencies. To evaluate the dental practitioners attitude, question regarding teledentistry as an health educational tool was also included.

Validity of questionnaire: The validity of questionnaire I-CVI, S-CVI and UA in English was 0.96, 0.95 and 0.94

Sample size: A study was conducted among 133 among dental practioners in Dhule city by using Convenient Sampling method. Total 133 copies of questionnaire were distributed to dental practioners & were ask to return it on same of day.

Collection of data: Data was collected from the questionnaire and it was transferred to an excel sheet.

Statistical Analysis: Statistical Analysis was carried out using SPSS Software version 20

3. RESULTS

In the present study total sample was 133. Sociodemographic data included the dental practitioners of up to 55 years of age. The male participants accounted for 64.7% and females for 35.3% with 33.3% respondents having completed their B.D.S and 66.2% completed with their M.D.S degree. 24.1% answered teledentistry as an a combination of telecommunications and dentistry for dental consultation and treatment planning whereas 6% participants answered teledentistry as Virtual communication technology to provide dental care and according to 7.5% participants teledentistry is the delivery of dental services through the use of synchronous, real-time communication. 83.5 % participants believed teledentistry as the use of computers, Internet, and technologies to diagnose and provide advice about treatment over a distance. 71.4% participants think teledentistry will help to consult with an expert about specific patient's problem. 88% participants believed that teledentistry can be useful for dental education over internet and for training primary care. 66.9% participants find teledentistry useful for monitoring patient's oral health. 53.3% participants think teledentistry can be useful in improving the access to oral health care and 44.1 think teledentistry can be applied in every branch of dentistry. 76.6% participants feel that there should be awareness about teledentistry among dental practioners. 62.4% participants think the instrument/ gadget used in teledentistry are expensive while 37.6% do not think so. 38.3% think teledentistry is helpful for dental emergencies. 45.9% participants feel they will be able to monitor patient's condition well using teledentistry while 54.1 do not feel. 61.7% think teledentistry as the convenient form of oral health care delivery which makes dental examination easier. 72.9% participants think teledentistry can be an addition to the regular care provided and 63.2% think teledentistry can reduce costs for the dental practices. 71.4% participants agreed teledentistry can save time for dentist while 28.6% participants disagreed. 60.2% participants believe that teledentistry can increase accessibility of the specialists to rural and underserved communities for their dental needs. 69.9% participants think that teledentistry is a good tool for oral hygiene training.

4. DISCUSSION

Dentist's hold the primary responsibility in employing the use of teledentistry technology and hence to assess the knowledge regarding teledentistry among dentist's is very important. According to present study 62.4% participants were aware about the meaning of teledentistry and the findings were similar to the study conducted by Priyanka BS, et al [6] where 77.2% of the participants were aware with the definition of teledentistry. A study conducted by Nassani MZ, et al [7] only 38% of study participants had heard about teledentistry which was contradictory to the findings of this study. In the present study 83.5% participants agreed that teledentistry about the practice of use of computers, Internet, and technologies to diagnose and provide advice about treatment over a distance which was similar to studies conducted by Singh P et al [8] and Pradhan D et al [9]. Teledentistry can serve as a tool for consultation, Alotaibi S et al [10] conducted a study to measure the effectiveness of teledentistry usage during the COVID-19 pandemic and found that the 49% participants were very satisfied with the way they were able to get consultation on the telephone which were similar to present study where 71.4% participants believed that teledentistry will help to consult with an expert about specific patient's problem. Teledentistry can be useful in improving the access to oral health care and can play an important role in providing dental healthcare in rural population, 53.4% participants agreed to it which was found similar in the study conducted by Mathivanan A et al [11] where 73% of the dentists believe that teledentistry can provide access of specialists to the rural population. When asked whether teledentistry can be applied in every branch of dentistry 44.6% participants answered it no and 55.1% participants answered it with yes. In a study conducted by Brüllmann D et al [12] it was noted that remote recognition of root canal orifices was tested on 50 images of endodontically accessed teeth and were presented to 20 observers who marked the visible canal orifices using software. In 87% of the cases, the canal locations were marked correctly this showed that teledentistry can be applied to every branch of dentistry. Also in a study conducted by Balsaraf SV and Chole RH[13] 66% answered that teledentistry will be useful in all fields of dentistry 76.7% participants feel there should be awareness about teledentistry among general practioners which was found similar to study conducted by Khokhar RA et al [14]. 62.4% participants think the instrument/ gadget used in teledentistry are expensive while 37.6 think they are not expensive this can be due to the reason that though the gadgets are useful they serve for a long run should also be taken into consideration. 38.3% participants believed that teledentistry can be helpful in case of emergencies and 61.7% participants felt teledentistry will not be useful in dental emergencies, where as a study conducted by Ali SA et al [15] proved that teledentistry was effective and suitable for triage, service delivery, and care during the pandemic. 45.9% participants believed that teledentistry will be able to monitor patient's condition well. 63.5% participants think teledentistry can reduce costs for the dental practices which was confirmed in a study conducted by Estai M et al [16] where teledentistry model of dental screening can minimised costs. 69.9% participants believed that teledentistry is a good tool for oral hygiene training and similar findings were noted in a study conducted by Raja KP et al [17] where 81.2%

study participants felt teledentistry can be a good educational tool. In an review by Arora PC et al [18] it was stated that Teledentistry is an innovative tool for the underserved population and similarly in the present study 60.2% participants believed that teledentistry can increase accessibility of the specialists to rural and underserved communities for their dental needs

5. LIMITATIONS

The study was conducted among dental practitioners of a lower tier urban city and to obtain a better picture , a study involving dental professionals of upper tier metropolitan cities may be recommended with larger sample size.

6. CONCLUSION

Inspite of having good oral health care facilities in, rural population is quite devoid of dental services and through teledentistry dentist's can serve deprived rural population. Teledentistry can also be used as an tool for dental health education. Dentist's should update themselves with the newer technologies for the service to society.

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Conflict of interest

The authors has no conflict of interest to declare

Table 1

SR.NO	QUESTIONS	OPTIONS	PERCENTAGE
1	What is teledentistry?	1. A combination of telecommunications and dentistry for dental consultation and treatment planning. 2. Virtual communication technology to provide dental care. 3. The delivery of dental services through the use of synchronous, real-time communication. 4. All of the above	24.1 6.0 7.5 62.4
2	Is teledentistry about the practice of use of computers, Internet, and technologies to diagnose and provide advice about treatment over a distance?	Yes No	83.5 16.5
3	Do you think teledentistry will help to consult with an expert about specific patient's problem?	Yes No	71.4 28.6
4	Do you think teledentistry is good for dental education over internet and for training primary care dentists?	Yes No	88.0 12.0
5	Do you think teledentistry can help to monitor patient's oral health?	Yes No	66.9 33.1
6	Do you think teledentistry can be useful in improving the access to oral health care?	Yes No	53.4 46.6
7	Do you think teledentistry can be applied in every branch of dentistry?	Yes No	44.4 55.6
8	Do you feel there should be awareness about teledentistry among general practioners?	Yes No	76.7 23.3
9	Do you think the instrument/gadget used in teledentistry are expensive?	Yes No	62.4 37.6
10	Do you think teledentistry is helpful for dental emergencies?	Yes No	38.3 61.7
11	Using teledentistry, will I be able to monitor patient's condition well?	Yes No	45.9 54.1

12	Do you think teledentistry is convenient form of oral health care delivery which makes dental examination easier?	Yes No	61.7 38.3
13	Do you think teledentistry can be an addition to the regular care provided?	Yes No	72.9 27.1
14	Do you think teledentistry can reduce costs for the dental practices?	Yes No	63.2 36.8
15	Do you think teledentistry can save time for dentist?	Yes No	71.4 28.6
16	Do you think teledentistry can provide peer contact and specialist support?	Yes No	65.4 34.6
17	Do you think teledentistry will be able to monitor your patient's condition well?	Yes No	48.1 51.9
18	Do you think that teledentistry can increase accessibility of the specialists to rural and underserved communities for their dental needs?	Yes No	60.2 39.8
19	Do you think that teledentistry is a good tool for oral hygiene training?	Yes No	69.9 30.1

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