Knowledge and attitude of dental students towards teledentistry

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Abstract

Background: Teledentistry is a relatively new branch of dentistry that is quickly gaining traction. Teledentistry is the practice of providing dental care using information technology and telecommunications. The purpose of this study was to assess third-, fourth-, intern-, and postgraduate dental students' knowledge and attitudes about teledentistry.

Materials and Methods: Third year, fourth-year, interns and postgraduate dental students participated in the cross-sectional study. A questionnaire with 26 questions was used to assess knowledge and attitude regarding teledentistry. SPSS version 23 was used to perform descriptive statistics and Chi-square tests on the data. A p-value < 0.05 was used to evaluate statistical significance.

Results: A total of 267 students took part, with 219 (82 percent) of them are females and 48 are males (18 percent). Female dental students had more knowledge and a more positive attitude toward teledentistry than male dental students, while fourth-year dental students had more knowledge, followed by interns, third-year dental students, and postgraduate dental students.

Conclusion: The findings revealed that dental students have been educated about teledentistry and have a positive attitude towards it, and that continuous dental education and training programmes are required to give knowledge and enhance attitudes toward teledentistry.

Keywords: Attitude, Dental students, Knowledge and Teledentistry.

Introduction

With the advent of computers and telecommunications, health care is changing dramatically. There are several communication solutions for hospitals, and a new term, telemedicine, has arisen over time to describe them.^[1] Telemedicine, which makes use of information-based technology and communication systems, is a convenient way to provide health care to people all over the world. Because it is beneficial in transferring vast volumes of data, the Internet is the backbone of this modern telemedicine system.^[2] Covid-19 pandemic is causing fast changes in dentistry. Early diagnosis, preventive treatment, and early intervention can prevent or slow the progression of most oral disorders, according to advances in dental care.^[3] Teledentistry is an exciting new field of dentistry that uses electronic health records, telecommunication technology, digital imaging, and the internet to connect health care providers in rural and remote areas to improve communication, health information exchange, and access to underserved patients.^[4]

Teledentistry was established in 1989 at a meeting in Baltimore as part of the dental informatics plan.^[5] Teledentistry is a subspecialty of telemedicine that was created in 1994 as part of a US Army military operation to provide patient care and dental education. Dental experts can confer with one another over long distances, lowering overall patient care expenses, extending dental care to remote and rural locations, and providing complete data for deeper analysis.^[6] Teleconsultations can be done in a variety of

ways, including: i. "Real-time consultations," in which dental specialists and their patients meet via video conferencing from separate locations. ii. "Store and forward method," in which clinical data and statistical images are exchanged.^[7]

Teledentistry is a new branch of dentistry that is fast growing in popularity. Teledentistry techniques have the ability to address many of the issues around dental care access, cost, efficiency, and quality.^[1] It has implications not only in an urban setting when a patient in severe dental distress or in a state of dental emergency wants to see a dentist, but also in rural areas where money is a major concern for residents because seeking medical or dental treatment can be difficult because the distance between a village and a city hospital can be hundreds of kilometers. Teledentistry offers the ability to satisfy these demands by just going on to a website and receiving immediate relief. Teledentistry opens up new avenues for dental education by allowing dental practitioners easy access to fast consultations and assisting in the delivery of postgraduate and continuing dental education programmes. Teledentistry has a lot of promise that has to be explored. The goal of the study is to showcase teledentistry, as well as dental students' understanding and attitudes about it.

Aim

To assess the knowledge and attitude of dental students towards teledentistry.

Objectives

To determine the knowledge of dental students towards teledentistry.

To determine the attitude of dental students towards teledentistry.

To know the difference in knowledge and attitude towards teledentistry based on gender and year of study.

Materials and Methods

A cross-sectional investigation was conducted. The Institutional Ethics Research Committee approved the study as ethical. The questionnaire was put through its paces in a pilot study. The questionnaire is divided into two sections. The first section contains demographic information such as name, age, gender, and year of study. The second section consists of 26 questions that were designed utilizing earlier research. 14 of the 26 questions are knowledge-based, while

the other 12 are attitude-based. To determine the study's validity and reliability, a pilot study with a group of 40 students was undertaken.

The purpose of the study was explained to the students, who were then invited to participate on the condition of anonymity. In Google Forms, an online questionnaire was designed and a link was made. A social media platform was used to distribute the link to the students. The survey was handed to the students for a week to complete. For each question, participants were asked to choose one answer from a list of possibilities.

The data from the completed surveys was tabulated in excel files, and statistical analysis was done with SPSS version 23. (IBM Inc., Chicago, IL, USA). $P < 0.05^*$ was considered statistically significant.

Results

Table 1: Demographic profile of respondents

Demographic profile	No of respondents	% of respondents
Age groups		
<=20 Years	12	4.49%
21 – 22 Years	113	42.32%
23 – 25 Years	117	43.82%
>25 Years	25	9.36%
Mean age	24.22	
SD age	1.86	
Gender		
Male	48	17.98%
Female	219	82.02%
Year of study		
III Years	58	21.72%
IV Years	96	35.96%
Interns	80	29.96%
Post Graduates	33	12.36%
Total	267	100.00%

Table 2: Comparison of knowledge of dental students towards teledentistry across gender and year of study

	Gender			Year of Study				
	Males	Females	p-value	III years	IV years	Interns	Postgraduates	p-value
Yes	23 (47.92%)	114 (52.05%)	0.035	21 (36.21%)	52 (54.17%)	47 (58.75%)	17 (51.52%)	0.222
No	7 (14.58%)	27 (12.33%)		9 (15.52%)	11 (11.46%)	6 (7.50%)	8 (24.24%)	
May be	18 (37.50%)	78 (35.62%)		28 (48.28%)	33 (34.38%)	27 (33.75%)	8 (24.24%)	

Table 3: Comparison of attitude of dental students towards teledentistry across gender and year of study

	Gender			Year of Study				
	Males	Females	p-value	III years	IV years	Interns	Postgraduates	p-value
Yes	37 (77.08%)	168 (76.71%)	0.003	48 (82.76%)	73 (76.04%)	60 (75.00%)	24 (72.73%)	0.078
No	11 (22.92%)	51 (23.29%)		10 (17.24%)	23 (23.96%)	20 (25.00%)	9 (27.27%)

Questionnaires were sent to 400 students, and 267 completed them, yielding a response rate of 66.75 percent. Out of 267 participants, majority of them belonged to 23 – 25 years age group, with a mean age of 24.22+ 1.89 years. Most of the participants (82.00%) are females, in the present study most of the participants were fourth years (35.96%) followed by interns (29.96%), third years (21.72%) and post graduates (12.36%). (Table 1)

On comparison of knowledge of dental students towards teledentistry, females (52.05%) think that teledentistry can increase the accessibility of specialists to rural and underserved for their dental needs than males (47.92%) and it is statistically significant (p -value = 0.035). Among all the dental students interns (58.75%) have more knowledge than fourth years (54.17%), postgraduates (51.52%) and third years (36.21%). (Table 2)

On comparison of attitude of dental students towards teledentistry, males (77.08%) are more interested in using teledentistry than females (76.71%) and it is statistically significant (p -value = 0.003). Among all the dental students third years (82.76%) shows more attitude than fourth years (76.04%), interns (75%) and postgraduates (72.73%). (Table 3)

Discussion

The genesis of teledentistry as a subspecialist field of telemedicine may be traced back to the United States Army's Total Dental Access Project, which began in 1994. This was done to improve patient care, dental education, and communication between dentists and dental labs. It has been demonstrated in Teledentistry that dental practitioners can confer with one another over long distances and in isolated rural regions. There was very little information accessible concerning the field of teledentistry.

This study looked into and evaluated dental students' knowledge and attitudes concerning teledentistry. According to the results of the current study, 82.02 percent of the participants acknowledged that they had heard about teledentistry, which is consistent with a study published by Balsaraf SV et al. (2015),^[8] which found that around 85 percent of 92 practice dentists were aware of teledentistry. However, according to another study, just 33% of dentists are aware of teledentistry.^[9]

The Internet provides the foundation for today's teledentistry system, as it is up-to-date, rapid, and capable of delivering vast volumes of data. All contemporary teledentistry technologies are Internet-based, allowing for all types of remote consultations.^[10] According to the current study, 62.92 percent of participants felt that teledentistry may

be used in any discipline of dentistry. Teledentistry, according to Alabdullah et al. (2018),^[11] uses electronic medical data, videoconferences, and digital photographs of patients living in isolated and distant locations to provide dental care, consultation, education, and public awareness. Knowledge of technology application is an important component of teledentistry, and if dentists are not trained in it, it will constitute a barrier. The majority of the participants in this study (74.15 percent) agreed that teledentistry employs computers, the Internet, and intraoral cameras to diagnose and prescribe therapy without the patient being present in the clinic.

Through teledentistry, nearly 74.16 percent of dental students agreed to use computers, the Internet, and intraoral cameras to diagnose and recommend treatment. This is similar to an Indian study^[12] in which 88.6 percent of dentists responded positively. According to Nagarajappa et al., 2013,^[12] 60 percent and 38 percent of study participants disagreed that teledentistry saves time and money. This is similar to our findings, which found that 40.07 percent and 51.31 percent of participants felt that teledentistry saves time and money.

In our study, 76.78 percent of dental students agreed to practice teledentistry in the future. In a survey published by Latif et al. in 2016, only 39.3 percent of dentists agreed to conduct teledentistry.^[13] Oral health practitioners' knowledge of the subject has improved thanks to teledentistry training. Dental schools can play a critical role in educating health care providers about teledentistry. About 43.82% of dental students expressed interest in the teledentistry training programme in this survey. However, 7.87 percent expressed the least interest in future teledentistry instruction.

In this study, fourth years and interns outperformed third years and postgraduates in terms of teledentistry knowledge, awareness, and attitude. The majority of dental students (47.10 percent) are open to teledentistry, whereas 32.57 percent are neutral and 20.33 percent are opposed to it. Many studies on teledentistry have been conducted in different areas of the world, but just a few have been reported in India among dental students. This is an institution-based study focused on a particular private college, and thus does not reflect all dentistry practitioners.

Conclusion

Overall, dental students' knowledge and awareness were adequate. Postgraduates and III years, on the other hand, have a more negative attitude than IV years and interns. In this study, fourth-year dental students and interns had more knowledge, awareness, and a good attitude toward teledentistry. Lack of formal training programmes and unwillingness to adapt to modern dental practice strategies are to blame for dentistry students' lack of knowledge,

awareness, and poor attitude. As a result, dental institutions should implement teledentistry-related continuing dental education programmes and workshops.

Funding

None.

Conflict of Interest

None.

References

1. Bhambal A, Saxena S, Balsaraf SV. Teledentistry: potentials unexplored!. *Journal of International oral health* 2010.
2. Kopycka Kedzicrawski DT, Billings Rj. Teledentistry in inner- city child-care centers. *J Telemedicine Telecare*. 2006;12(4):176-81.
3. American Dental Association. State and community models for improving access to dental care for the underserved – A white paper. Chicago: American Dental Association; 2004.
4. James Friction, Hong Chen. Using teledentistry to improve access to dental care for the underserved. *Dent Clin N Am* 2009;53:537-48.
5. Berndt J, Leone P, King G. Using teledentistry to provide interceptive orthodontic services to disadvantaged children. *Am J Orthod Dentofac Orthoped*. 2008;134(5):700-6.
6. Bhambal A, Saxena S, Balsaraf SV. Teledentistry: potentials unexplored. *J Int Oral Health*. 2010;2(3):1-6.
7. Aditi Verma, Akshay Dhall, Sakshi Kataria. Teledentistry: New Tool to Access Dental Care. *Int Healthcare Res J*. 2009;3(1):16-9.
8. Balsaraf SV, Chole RH. Knowledge, awareness, and attitude among practicing dentists about teledentistry in Indore, Central India. *J Indian Assoc Public Health Dent*. 2015;13:43
9. Alawwad SM, Zakirulla M, Alasmari NM, MohammedAlamr M, Alshahrani RA. Perceptions of Teledentistry among Dental Professionals in Saudi Arabia. *Ann Trop Med Health*. 2019;22:11-20.
10. Mihailovic B, Miladinovic M, Vujicic B. Advances in Telemedicine: Applications in Various Medical Disciplines and Geographical Regions, Prof. Georgi Grashew (Ed.). InTech, China. 2011. Chapter 11, Telemedicine in Dentistry (Teledentistry); pp.215- 30. Available from: <http://www.intechopen.com/books/advances-in-telemedicine-applications-invarious-medical-disciplines-and-geographicalregions/telemedicine-in-dentistry-teledentistry>.
11. Alabdullah JH, Daniel SJ. A systematic review on the validity of teledentistry. *Telemedicine e-Health*. 2018;24(8):639-48.
12. Nagarajappa R, Aapaliya P, Sharda AJ, Asawa K, Tak M, Pujara P et al. Teledentistry: Knowledge and attitudes among dentists in Udaipur, India. *Oral Health Dent Manag*. 2013;12(502):2.
13. Latif N, Alam AN, Abdullah S. Knowledge and attitude of dentists towards teledentistry in Pakistan. *Pak Oral Dent J*. 2016;36(2):205-9.

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