

AWARENESS OF DENTISTS REGARDING USE OF TELE-DENTISTRY DURING PANDEMIC OF CORONA VIRUS DISEASE 2019 (COVID-19)

Syeda Fatima Tu Zahra, Ajmal Yousaf, Husnain Akram, Taliya Sajjad*, Khurshid Ali Bangash**, Nasrin Yousaf***

Armed Forces Institute of Dentistry/National University of Medical Sciences (NUMS) Rawalpindi Pakistan, *Shifa College of Dentistry Islamabad Pakistan, **Combined Military Hospital /National University of Medical Sciences (NUMS) Rawalpindi Pakistan, ***Quaid I Azam Hospital, Islamabad Pakistan

ABSTRACT

Objective: To assess the knowledge, attitude and practice of dentists regarding use of tele-dentistry in pandemic of COVID-19 and to determine dentist's perceived obstacles in its practicability.

Study Design: Cross sectional study.

Place and Duration of Study: Department of Operative Dentistry, Armed Forces Institute of Dentistry, Rawalpindi, from April 2020 to May 2020.

Methodology: After taking approval from ethics committee, a questionnaire using google forms was shared through social media using emails and WhatsApp groups to 172 dentists including general dentists, consultants and post graduate residents out of which 156 responded. The questionnaire included socio-demographic details, questions pertaining to the knowledge, attitude and practice of dentists towards the use of tele-dentistry during COVID-19 pandemic and various obstacles in its applicability.

Results: One hundred and twenty (76.6%) participants had a knowledge of tele-dentistry despite that 135 (80.8%) had never used it. One hundred and forty (89.9%) of the respondents agree that tele-dentistry is an effective way to triage patients for problem-focused evaluations in order to limit office visits of patients during COVID-19 outbreak. However, 124 (79.6%) responded that tele-dentistry was not available at their setup.

Conclusion: The present survey concluded that majority of the participants had a fair knowledge and awareness regarding tele-dentistry, its benefits, applicability in pandemic of COVID-19 but had never used it. The use of tele-dentistry is not that common due to barriers such as unavailability and lack of education and training of the dental professionals.

Keywords: Corona virus disease (COVID-19), Rural health services, Tele-dentistry, Tele medicine.

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INTRODUCTION

The world is waking up to a new reality where an invisible enemy has made human contact contagious and exposed the long-hidden fault line of verisimilitude, blurring the lines between reality and paranoia. Corona Virus Disease 2019 (COVID-19) pandemic brought new challenges to the health care system as it became the epicenter of this unprecedented global pandemic challenge. The spread of this viral disease has posed significant challenges for all fields of medicine including dentistry¹. Dental care settings invariably carry the risk of COVID-19 infection due to the specificity of its procedures, which involves face-to-face communication with patients,

and frequent exposure to saliva, blood, and other body fluids, and the handling of sharp instruments so the risk of COVID-19 transmission during aerosol generating dental procedures cannot be eliminated¹. During this pandemic dental patient is generally advised to avoid dental treatment because of the possibility of cross infection however dental emergencies can occur which needs Immediate consultation, here the COVID-19 brought the tele-dentistry into spot light². For prioritizing patients that require emergency treatment, triaging could be a useful tool for the dental team. Procedures that do not require emergency treatment and do not pose any threat to the patient can be effectively managed through tele-dentistry.

“Tele-medicine” or “E-Health” is a comprehensive term for the support of long-distance

Correspondence: Dr Ajmal Yousaf, Dept of Operative Dentistry, Armed Forces Institute of Dentistry Rawalpindi Pakistan
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clinical healthcare, health-related education, public health, and health administration². Tele-dentistry refers to the use of tele-health systems and methodologies in dentistry. In an era of amassed demands on dentist's productivity, computer and communication technologies allow dental health providers to experiment with these applications for educational and research activities³.

Dentistry in countries like Pakistan faces various hurdles like inadequate health infrastructure and clinical services, scarcity of qualified dentists, the delay in the delivery of treatment as it is time consuming to transport patients to urban healthcare setups and the provision of healthcare by inexperienced primary healthcare service provider². Geographically spars population of Pakistan with deficiency of qualified professionals in dentistry, shortage of dental specialist at primary and secondary care hospitals arguably, has created a vacuum which afloat the suffering patients in the hands of quackery and abuse of health services^{4,5}. Tele-dentistry not only provides convenience to such suffering patients it also provides treatment at a minimal cost and time. Other than providing health care services in rural areas tele-dentistry also has implications in urban setups when a patient under severe distress or in a state of medical emergency wants to seek a dentist^{6,7}.

Tele-dentistry encompasses almost all the fields of dentistry from diagnosing and framing a treatment plan in oral medicine to suitable treatment of complex cases by analysis of advanced dental imaging method in Oral and Maxillofacial Surgery⁸. Routine cephalometries in orthodontics, locating accessory canals using CBCT in endodontic cases and preparing inlay, onlays and crowns via CAD, CAM for prosthodontics patients are the jewels to the crown of tele-dentistry. The process of tele-dentistry incorporates consultation, diagnosis, and treatment planning away from a dental office setup and onto patient's computer or mobile screens⁹. Tele-dentistry can also be used to distinguish those patients requiring emergency care and those who can be managed without any intervention especially in COVID-19

pandemic. Social media, video platforms and emails all can be used to effectively communicate with the patients regarding their problem and devising a treatment protocol, to give post-operative instructions and follow up, thus limits the patient contact during this pandemic.

Previous studies have reported that despite of its known advantages and rapid spread tele-dentistry is still an alienated concept to the dentists of Pakistan due to limitations such as inexperienced dental professionals in the subject, resistance of dental professionals, adaptation by population with literacy rate of 45%¹⁰. The objective of present survey was to determine the knowledge and attitude of dentists about use of tele-dentistry in COVID-19 pandemic, to determine dentist's perceived obstacles and its practicability in improving dental health.

METHODOLOGY

After taking approval from ethics committee (ref no.905/Trg-ABP1K2) this survey was conducted at operative department Armed Forces Institute of Dentistry, Rawalpindi, from 15th April 2020 to 15th May 2020. The sample size of 172 was calculated using Clin Calc calculator with level of Significance 5%, power of test 85% and population proportion 50%^{4,7}. One hundred and seventy two Dentists of Rawalpindi and Islamabad from all fields of dentistry were included in the study, using convenient sampling technique and a questionnaire on google forms was sent through social media via emails and WhatsApp. The participants involved in direct dental care of patients were included in the survey and those having less than 1 years of clinical experience were excluded. The questionnaire was taken from similar study conducted in India⁷ and it comprised of three parts; Part 1 having questions regarding socio-demographic details, Part 2 having close ended questions relating to knowledge regarding tele-dentistry use in COVID-19 and Part 3 had questions to assess the awareness and attitudes regarding tele-dentistry during COVID-19. 25 Out of 172 participants, 156 successfully filled the form and selected for results

marking response rate of 90.62%. The data were collected, compiled, arranged in a systematic manner, and analyzed in terms of frequencies using SPSS-21. Chi-square test was applied to evaluate quantitative variables with *p*-value <0.05 taken as significant.

RESULTS

Out of 156 respondent 95 (60.9%) were females and 61 (39.1%) were males. Sevety three

focused evaluations in order to limit office visits of patients during COVID-19 outbreak. However, 124 (79.5%) responded that tele-dentistry is not available at their setup. Table-III showed that 53 (33.9%) are in the opinion that dental patient compliance and satisfaction need physical presence of dentists, not online consultation.

Details of results were presented in figure and in table-I & III.

Table-I: (A) Knowledge of tele-dentistry among dentists and (B) Practice of tele-dentistry among different hospitals and clinics.

(A)	Yes	No
Do you know what tele-dentistry is?	120 (76.9%)	36 (23.2%)
Is tele-dentistry an effective way to triage patients and conduct problem-focused evaluations in order to limit office visits of patients during COVID-19 outbreak?	140 (89.8%)	16 (10.1%)
Do you have knowledge about dental software use for tele-dentistry?	41 (26.3%)	115 (73.7%)
Have you attended any seminar on E-health or tele-dentistry?	20 (12.8%)	136 (87.4%)
Do you think that dental examinations are accurate via computers and intraoral camera as in the traditional office setting?	64 (41.03%)	92 (58.9%)
(B)	Yes	No
Is tele-dentistry available at your workplace?	32 (20.4%)	124 (79.6%)
Have you used tele-dentistry at your workplace?	21 (13.5%)	135 (86.5%)

Table -II: Opinion about uses of application of tele-dentistry in different areas of dentistry.

Application of Tele-Dentistry	n (%)
Dental Treatment Plans	28 (18.5%)
Education of Patients	49 (31.4%)
Online Appointments/ Consultation in COVID-19 Pandemic	45 (28.8%)
Increase accessibility of the Dental services to rural and underserved communities	34 (21.8%)

Table-III: Challenges to the application tele-dentistry.

Barriers in its applicability	n (%)
Lack of computer skills among dentists	18 (11.5%)
High cost to develop the system	24 (15.3%)
Dentistry requires manual work and cannot be done online	25 (16.1%)
Patient compliance and satisfaction need physical presence of dentists	53 (33.9%)
Extra burden for dentists	10 (6.4%)
Illiterate population below the poverty line	26 (16.6%)

(46.8%) of the respondents had less than 5 years of experience, 36 (23.1%) had 5-10 years of experience and 47 (30.1%) had more than 10 years of experience. Table-I showed that 120 participants out of 156 (76.6%) had a knowledge of tele-dentistry despite that 135 (86.5%) of these participant had never used it. 140 (89.7%) of the respondents agree that tele-dentistry is an effective way to triage patients and conduct problem-

DISCUSSION

Tele-dentistry is not a concept new to mankind and has been developing since 1994 as means to allow dental professionals to communicate with one another over long detachments, allow collaboration by different practitioners, and involve the exchange of clinical information over remote distances for dental consultation and treatment planning but has not yet properly

found its way to Pakistan¹¹. Especially during COVID-19 pandemic when dental patients can be benefitted through tele-dentistry. This survey was planned to find out the knowledge of dentists about use of tele-dentistry in COVID-19 pandemic and to determine dentist’s perceived obstacles in its practicability.

The present survey shows that most of our participants (76.9%) were aware about tele-dentistry out of which the majority of dentists (46%) had less than 5 years of clinical experience.

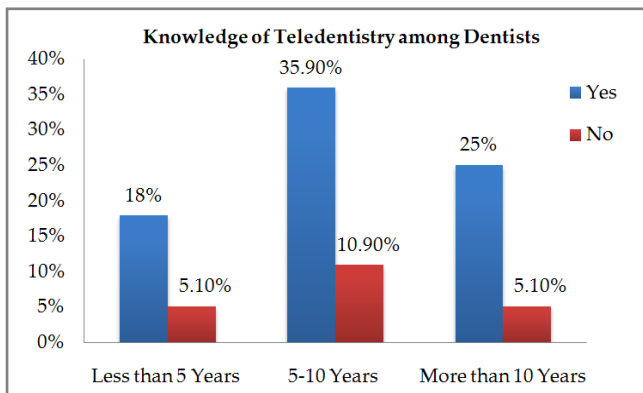


Figure: Clinical experience of the respondents in terms of years.

which was in accordance to study conducted on Post graduate residents in Kolkata, India and similar study conducted in Islamabad, Pakistan^{12,13}. Our results showed that regardless of their acquaintance with the concept of tele-dentistry most of the dentists (79.6%) either did not have access to such facilities or even if had the facilities available had not used it (80.8%). Comparable results were seen in a previous study conducted by Akhtar *et al* showing that none of respondent in their study had practiced tele-dental health. Various studies conducted by Cooper and Engeswick, Purohit *et al*, Tomar *et al*, Mure-rehe *et al*, and Chang *et al* also revealed similar demographic details, but lesser values were found by Ata and Ozkan¹⁴⁻¹⁸.

Dentistry in urban setting has come a long way but it’s not the same for the dental setups present in Primary and Secondary Healthcare system present in the rural areas. Unfortunately the government health care system in Pakistan

lags behind both in efficiency and service quality due to limited resources and manpower¹⁹. Health sector has tried to overcome this barrier by tele-medicine which connects rural healthcare centers such as DHQs in Attock and Khusab and THQ in Pindigheb through satellites with the Main HUB of Holy Family Hospitals. However, no such remote E-Dental Clinics or any application of tele-dentistry has been practiced anywhere in Pakistan¹³. Majority (89.9%) of the respondents of our survey agree that tele-dentistry is an effective way to triage patients and conduct problem-focu-sed evaluations in order to limit office visits to patients during COVID-19 outbreak and (21.9%) of our respondents are in opinion that tele-dentistry is most useful in accessibility of dental health services to rural and undeserved communities. Rendering to a national survey in Finland, electronic patient records are being managed in the country at a very large scale and communication systems are being used in 94% hospitals of the country to provide primary health care²⁰. Study done by Nagarajappa *et al* support the results of this study²¹. Eino Ignatius and others also reported similar results²².

Despite being highly advantageous tele-dentistry is not used routinely in both private and public dental setups. There are multiple barriers to the use of such technologies according to the respondents of our survey the biggest challenge to tele-dentistry is that the patient compliance needs physical presence of dentist rather than online consultation. Looms *et al*²³ and Ajami *et al*²⁴ both explained similar reason of non-practica-bility of Electronic Medical Record (EMR).

Technology used alone is not enough, tele-dentistry has risen to its maximum extremes but all is in vain if it is not readily available to both the dentists and patients. Present survey showed that 87.4% of the dentist has never been educated through seminars regarding this area of dentistry. Latif *et al* reported in their study in 2016 that the last seminar conducted by E-Health Association of Pakistan was in 2011, and till date no further advances has been made in this sector¹². This survey focuses on turning heads towards the lag

in advanced oral health services education and provision.

LIMITATION OF STUDY

The limitation of this study was that the sample size was not sufficient to generalize the findings of the study and study population from the dentists working in rural areas could have been considered to get a better view of tele-dentistry in the unreached localities.

RECOMMENDATION

Awareness of tele-dentistry among dental surgeons should be increased by conducting continuing dental education (CDE) programs and awareness campaigns about its importance and use in COVID-19 pandemic.

CONCLUSION

The present survey concluded that majority of the participants had a fair knowledge and awareness regarding tele-dentistry, its benefits, applicability in pandemic of COVID-19 but had never used it.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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