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Knowledge, Perception and Practices of Teledentistry among the Dentists during COVID-19 Pandemic

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ABSTRACT

Background: *Virtual dentistry practices, when implemented correctly, reduce the burden on healthcare systems by preventing COVID-19 and asymptomatic carriers from infecting healthcare professionals and high-risk employees. This study was carried out to evaluate the perception and state of teledentistry practices among the dentists during COVID-19 pandemic.*

Materials and methods: *A descriptive cross-sectional study was conducted among 218 dentists through a semi-structured questionnaire to evaluate the state of teledentistry practices among 6 dental colleges and hospitals in Dhaka City.*

Results: *Most of the dentists (87.2%) mentioned that teledentistry practice increased during COVID-19 pandemic and it has reduced the spread of infection. Majority recommended teledentistry is a good tool for oral hygiene instruction (72.5%) but couldn't provide accurate diagnosis (73.9%). One fourth of the respondents (26.1%) prescribed medicine virtually and others prefer providing health education and counseling only. There are some barriers during practicing teledentistry such as poor audio or audio-video quality, expensive set-up, accurate diagnosis provision and difficulty to use software.*

Conclusion: *Teledentistry isn't intended to replace traditional methods of treatment that involve patient examination, but rather to provide a new way to practice healthcare. Dentists should be encouraged to practice virtual health education tool which may lower the cost burden, overcrowding and spread of COVID-19.*

Key words: COVID-19; Dentists; Effectiveness; Perception; Practice; Teledentistry.

Introduction

The ongoing coronavirus disease 2019 (COVID-19) outbreak has presented new challenges to nearly all health plans and large health organizations around the world, including movement restrictions, strict limitations in healthcare services, particularly in the dental field, and patients fear of infection.[1-2] Virtual dentistry practices and telephonic consultations reduce overcrowding in emergency rooms, potentially reducing the burden on healthcare systems. These procedures, if implemented correctly, can prevent COVID-19 and asymptomatic carriers from infecting healthcare professionals and high-risk employees who are immune compromised, elderly or pregnant and so these procedure can be used because they can work remotely.[3] Teledentistry is a new specialty in dentistry that combines information technology and communication systems to provide health care to patients that provide dental care information through the use of appropriate digital communication channels and it also aids in the dissemination of fundamental information about oral health care to patients, hence increasing the health care services available to them.[4-5] Cook coined the term "teledentistry" in 1997, defining it as "the practice of employing video conferencing technologies to diagnose and provide treatment guidance over a distance." Teledentistry has the potential to significantly modify the current practice and face of oral health care due to the enormous expansion of technical capabilities and to increase access to oral healthcare, enhance the delivery of that care and reduce costs.[6-7] Using teledentistry in the COVID-19 pandemic, a screening protocol can be built in which a practitioner can undertake an audiovisual assessment on a stable patient via video conferencing and efficient solution to protect patient and safety of clinician during a pandemic.[8-9] Teledentistry can help to address the issue of

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inequitable access to specialized health care practitioners. It can deliver patient-centered care to underserved communities and effectively disseminate oral health-related informations.[8-9] To make a trustworthy diagnosis, live real-time video consultations can be used to diagnose intra oral and extra oral soft tissue swelling, mobile teeth, periodontal problems, and highly carious dentition. Image quality, lighting, internet connectivity, and the patient's technological skill are all critical considerations.[10-11] Telehealthcare has already been employed in emergency situations, including Severe Acute Respiratory Syndrome (SARS) pandemic in 2003. Despite the fact that telehealth-related services were available at no additional cost to patients during these humanitarian crises, their general adoption remained restricted.[12-13] During the present pandemic, only emergency dental procedures and surgeries are being performed, however, this pandemic does not appear to be ending anytime soon and dental practices will need to reorganize and innovate in order to continue providing dental care while minimizing the danger of cross-infection that has the potential to give an innovative alternative for continuing dental practice during and beyond the present pandemic.[14] A number of areas in dentistry those are particularly appropriate for teledentistry are remote consultations for preparing treatment plans, providing preventive care and supervising practitioners working in rural settings as well as continuing education.[15] This study was carried out to evaluate the perception and state of teledentistry practices among the dentists during COVID-19 pandemic.

Materials ande methods

Dental College based cross-sectional study was conducted among conveniently selected 218 dentists during COVID-19 pandemic over a period from January 2021 to December 2021. The study sample based on who practiced teledentistry.

Data were collected by a pretested semi-structured questionnaire through face to face interview during the study period. The data were checked and cleaned followed by categorizing data, coded and post codes into IBM SPSS v23. The analysis was carried out by using both descriptive and inferential statistics and presented with tables and charts.

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of National Institute of Preventive and Social Medicine (NIPSOM) (Memo: NIPSOM/IRB/2021/18, Dated: 13.12.2021). Informed written consent was taken from all the respondents.

Results

The mean age of the dental surgeons was 31.7 ± 7.3 years where two third (66.5%) were from 24-33 years' age group. Almost three-fifth (61.5%) respondents were female and 34.4% respondents were post graduate. Most of the respondent's service duration was up to 5 years while two fifth (39.9%) dental surgeon's service duration was more than 5 years. Government respondents were 57.3% and the mean monthly income was 29,355.65 ±49103.015 (Table I).

Table I Socio-demographic status of the respondents

Variables	Frequency	Percentage (%)
Age (In complete year)		
24-33	145	66.5%
34-43	52	23.9%
≥ 44	21	9.6%
Mean ± SD	31.7 ± 7.3	
Gender		
Male	84	38.5%
Female	134	61.5%
Educational qualification		
Graduate	143	65.6%
Post graduate	75	34.4%
Duration of the service		
Up to 5 years	131	60.1%
More than 5years	87	39.9%
Work setting of service		
Government	92	57.3%
Private	125	42.2%
Monthly income (In taka)		
Up to 30,000	157	72.0%
>30,000	60	27.5%
Mean ±SD	29,355.65 ±49103.015	

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Table II Distribution of the respondents (Perception) regarding benefits from teledentistry practice

Benefits	Frequency	Percentage (%)
Initial diagnosis	192	87.6%
Time saving technique	184	84.4%
Easier to contact patient	179	82.1%
Reduction of spread of infection	196	89.9%
Oral health education	177	81.2%
Good tool oral hygiene instruction	158	72.5%
Reduction of cost	151	69.3%
Reduction of patient load	148	67.9%
Efficient for patient referral	147	67.4%
Increased number during pandemic	190	87.2%

Table II demonstrates distribution of benefits from teledentistry practice, here majority of the respondents indicated that teledentistry could be quite effective for initial diagnosis in dental practice, nine-tenth (89.9%) dentists agreed that it can reduce spread of infection, while seven-tenth (69.3%) dentists' beliefs in reduction of cost, majority of the respondents (87.2%) indicated that frequency of teledentistry practice was increased during COVID-19 pandemic.

Table III Distribution of the respondents regarding barriers of teledentistry practices

Barriers	Frequency	Percentage (%)
Can't provide accurate diagnosis	161	73.9%
Expensive to set up	94	43.1%
Poor audio-video quality	163	74.8%
Can't use dental software	159	72.0%

Table III shows distribution of the respondents regarding barriers of teledentistry practices. Here provision of accurate diagnosis and difficulty of using software were identified as main barrier.

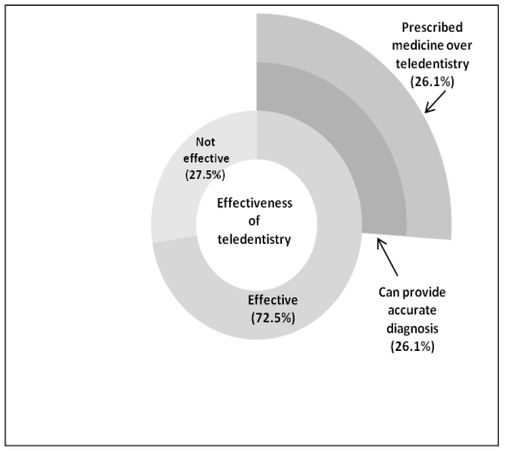

Figure 1 Perception of effectiveness of teledentistry among respondents

Figure 1 indicates the perception of effectiveness of teledentistry among respondents. Majority (72.5%) thought teledentistry is an effective tool for oral hygiene instruction in pandemic situation but less of them thought it's provides accurate diagnosis.

Table IV Distribution of the respondents regarding applications of teledentistry service

Variables	Frequency	Percentage (%)
Preferred communication tools		
Telephone	131	60.1%
Videoconference	73	33.5%
Social Media	12	5.5%
Frequency to use teledentistry		
Daily	24	11.0%
Weekly	177	53.7%
Monthly	75	34.4%
Collection of information		
Only audio	131	60.1%
Audio-visual	85	39.0%
Management of the patients		
Counselling	91	41.7%
Health education	70	32.1%
Prescribe medicine	57	26.1%

Table IV interprets distribution regarding application of teledentistry service. Here two-fifth (60.1%) respondents preferred telephone over other media and most of them doesn't prefer teledentistry to prescribe medicine.

Discussion

In this study it is mentionable that, majority of the respondents (87.2%) indicated that frequency of teledentistry practice increased during COVID-19 pandemic and 89.9% respondents said, teledentistry can reduce spread of infection.

The majority of the respondents agreed with the benefit of teledentistry in giving oral health education (81.2%) and it is efficient for patient referral (67.4%). Three-fifth (60.1%) respondents used audio type of teledentistry service. In contrast other study states only 62.50% dentists agreed teledentristry. A study performed in 2020 states that half (50.0%) of the practicing dentist agree on promotion and execution of health education by teledentistry, which is parallel to the finding of the current study.[1,3]

Here, most of the respondents (53.7%) used teledentistry service weekly, frequency of daily use was very poor which is only 11%. This results are similar to the result of a study where about 96.1% of postgraduates were aware about teledentistry but few implemented into their daily practice.[16]

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A substantial proportion of respondents (70-75%) expressed that, there are some barriers to practice teledentistry such as poor audio video quality, accurate diagnosis provision and difficulty to use software. Other study conducted in Saudi Arabia also found that two-fifth (40.0%) of the participants were uncertain if teledentistry would help provide accurate diagnostic information.[17]

In the present study, majority (60.1%) of the respondents preferred telephone for communicate with patients. Rest of the respondents communicate by videoconference and social Media. Different literature has emphasized majority (84.5%) of respondents consult or communicate with other dental professionals through internet or mobile phone.[18]

In this study 41.7% dentists managed patients by counselling. A study was conducted in Pakistan was meant to survey and compare the perceptions of general dentist, undergraduate and postgraduate dental students regarding teledentistry and they reported, before COVID-19 pandemic, teledentistry has been used for patient counseling in distant and rural areas which is similar to current study.[19]

Conclusion

Through teledentistry dentists can reach any patients at any corner of the country during emergency situation. So it can be a useful medium to reduce the cost burden, overcrowding and spread of COVID-19. Proper training facilities, social support may encourage dentists to use teledentistry as a primary health care tool in an emergency situation like COVID-19.

Disclosure

All the authors declared no competing interests.

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