

Teledentistry from a patient perspective during the coronavirus pandemic

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Key points

Considers teledentistry to reduce the risk of viral transmission and compliance with social distancing measures.

Demonstrates improved patient experience with use of virtual clinics and telephone consultations.

Suggests a future for the use of telehealth in dentistry as an aid for recovery planning from the coronavirus pandemic.

Abstract

Objective Evaluation of patient experience when utilising teledentistry during the coronavirus (COVID-19) pandemic.

Methods We designed a ten-item, five-point Likert-scale questionnaire assessing: 1) patient satisfaction; 2) ease of use; 3) the effectiveness including increasing access to clinical services; 4) reliability of the teledentistry system; and 5) usefulness for patients. Fifty-two patients completed the survey and data was analysed.

Results We had a 100% response rate with 52 surveys completed over seven clinics. Patients that used the virtual clinic and telephone consultation had 97% and 94% satisfaction with their experience, respectively. All respondents agreed or strongly agreed with statements indicating that the teledentistry system would be very useful in saving time and a substantial proportion (96%) would use this system again in light of COVID-19.

Conclusion Our study has shown positive patient experiences towards the use of teledentistry in all five domains. In light of the COVID-19 pandemic, healthcare providers should consider adapting patient pathways and using telehealth as a method of consultation in the recovery planning of services, as well as to reduce the spread of this highly transmissible disease.

Introduction

The World Health Organisation declared a coronavirus (COVID-19) pandemic on 11 March 2020. Following the outbreak of COVID-19, the UK government has instigated lockdown and social distancing measures¹ since 23 March, with suspension of all routine, non-urgent dental care.² Telehealth has been encouraged by many hospital trusts to play a critical role in maintaining communication with patients. Teledentistry is a form of telehealth utilising a combination of telecommunications and dentistry, which involves the exchange of clinical information and relevant imaging over remote distances for consultation and treatment planning.³

In the standard operating procedures for urgent dental care systems,² it is encouraged to risk assess, triage and manage remotely via telephone or video link for the provision of urgent dental care. Initially, virtual clinics were introduced at East Surrey Hospital as an adjunct to face-to-face appointments for such circumstances whereby it would save time on travelling a long distance to see a specialist, which could be managed with advice or to confirm appropriateness of a referral. To avoid complete cancellation of elective outpatient clinics due to the pandemic, we have launched virtual care to replace face-to-face dental appointments at East Surrey Hospital. The use of telephone consultations and video consultations, using NHS England's Attend Anywhere platform, allows clinicians to continue communication with their patients without physical interaction. Additionally, both healthcare workers and patients can feel safe by reducing non-essential contact and the psychosocial effects of fear and anxiety.⁴

There is limited published evidence to show patient readiness and acceptance of teledentistry services.⁵ The current literature

on the acceptance of teledentistry is limited to care providers.^{6,7,8,9,10} We therefore designed a patient survey to explore five main domains of: 1) patient satisfaction; 2) ease of use; 3) the effectiveness including increasing access to clinical services; 4) reliability of the teledentistry system; and 5) usefulness for patients.

Method

Survey instrument

Data were collected from seven virtual and telephone clinics. Patients were given a choice of either type of clinic. A total of 52 patients participated in the questionnaire at the end of their consultation. The first section of the survey collected information on patient demographics, profession and familiarity with telehealth. The second part of the survey was comprised of five domains (two statements for each domain) utilising the five-point Likert-scale: 1) patient satisfaction; 2) ease of use; 3) effectiveness including increasing access to clinical services; 4) reliability of the teledentistry system; and 5) usefulness for patients.

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Survey distribution

Using the Attend Anywhere telehealth system, we offered scheduled appointments for new patient consultations and follow-up appointments, to allow patients to interact with the clinicians from either their personal computer, tablet or smartphone. Patients that did not feel comfortable using a virtual clinic were offered a telephone consultation. Patients were asked to complete the survey after their telephone or virtual consultation.

Data analysis

Completed responses were entered into an Excel spreadsheet (Microsoft 2016). The data were analysed using Excel and SPSS (version 19.0). Descriptive statistics were used to summarise demographics and data. Data were expressed as percentages.

Results

Demographics and professional characteristics of participants

There was a 100% response rate. Thirty-five patients attended the virtual clinic and 17 patients opted for telephone consultation. Table 1 shows the age range was 10–70 years with a mean age of 36 years (SD 18.4) and 8–88 years with a mean age of 52 years (SD 26.7) for virtual clinic and telephone consultation participants, respectively. There were more retired participants in the telephone consultations compared to the virtual clinic group. Most students were adolescents and their parents were present during the consultation (Table 1). The majority of participants in both types of clinics had no experience of telehealth before (Fig. 1).

Patient satisfaction

Ninety-seven percent of participants felt satisfied that the clinic met their needs and were willing to use the virtual clinic again for consultations or follow-up appointments. In comparison, 94% of the telephone clinic patients felt the clinic met their needs and all participants were willing to use the telephone clinic again. Telephone clinic participants explained that they lacked the face-to-face interaction which would make the consultation more personable.

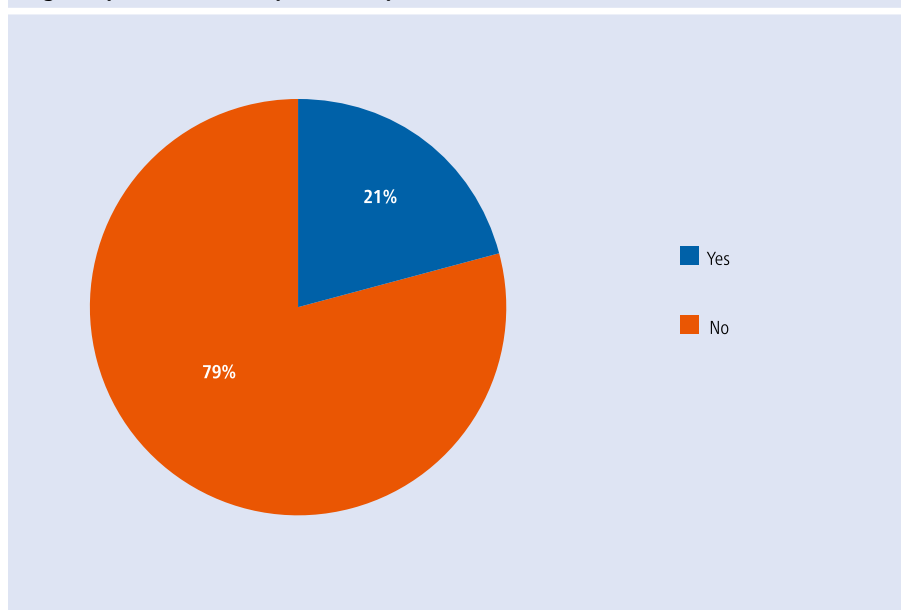
Ease of use of the teledentistry system

The majority of virtual clinic patients (91%) and all telephone clinic patients felt they could

Table 1 Description of demographic and professional characteristics of survey participants

| Characteristics | Virtual clinic participants | Telephone clinic participants |
|-------------------|-----------------------------|-------------------------------|
| Age range (years) | 10–70 | 8–88 |
| Mean age (SD) | 36 (18.4) | 52 (26.7) |
| Gender | | |
| Female | 13 | 14 |
| Male | 22 | 3 |
| Occupation | | |
| Student (parents) | 10 | 4 |
| Professional | 18 | 3 |
| Carer | 1 | 2 |
| Homemaker | 1 | 0 |
| Retired | 4 | 8 |
| Unemployed | 1 | 0 |

Fig. 1 A pie chart to show previous experience with telehealth



understand and use the system, maintaining good communication with their clinicians. CBCT scans, radiographs and histopathology results were shared in virtual consultations. Six percent neither agreed or disagreed and three percent (1 patient) found it difficult to use on their smartphone due to a smaller screen. This was particularly useful for children and adolescents undergoing orthodontic-related dento-alveolar surgery, whereby both parents and the patient could be present together during the consultation. The clinician is able to share their screen with the patient and offer interpretation of the CBCT or other radiographic images. This feature was also useful in explaining CBCT imaging of

wisdom teeth and the relationship of the ID canal, as well as the risks involved. In both clinics, patients could hear and speak to the clinician easily with 100% in strong agreement or agreement.

Effectiveness including increasing access to clinical services

A large majority of respondents (100% of telephone consultations and 97% virtual clinic patients) strongly agreed or agreed in being able to express themselves clearly and felt they could talk to their clinician as if they met in person. Many commented that the virtual clinic was an effective form of communication and being at home made them feel at ease,

Fig. 2 Virtual clinic survey results

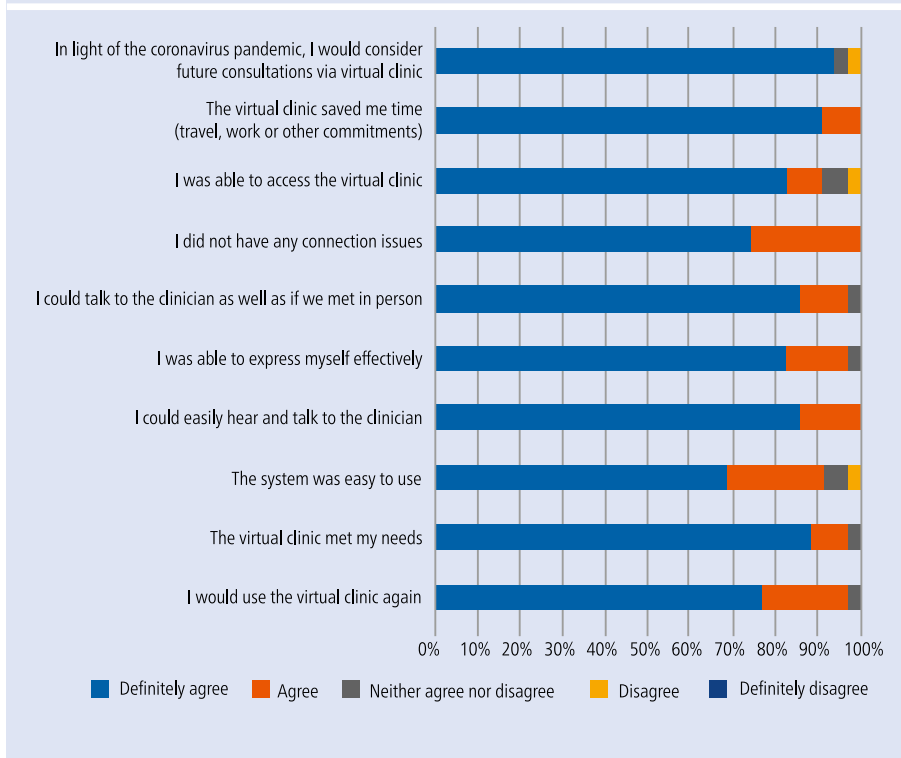
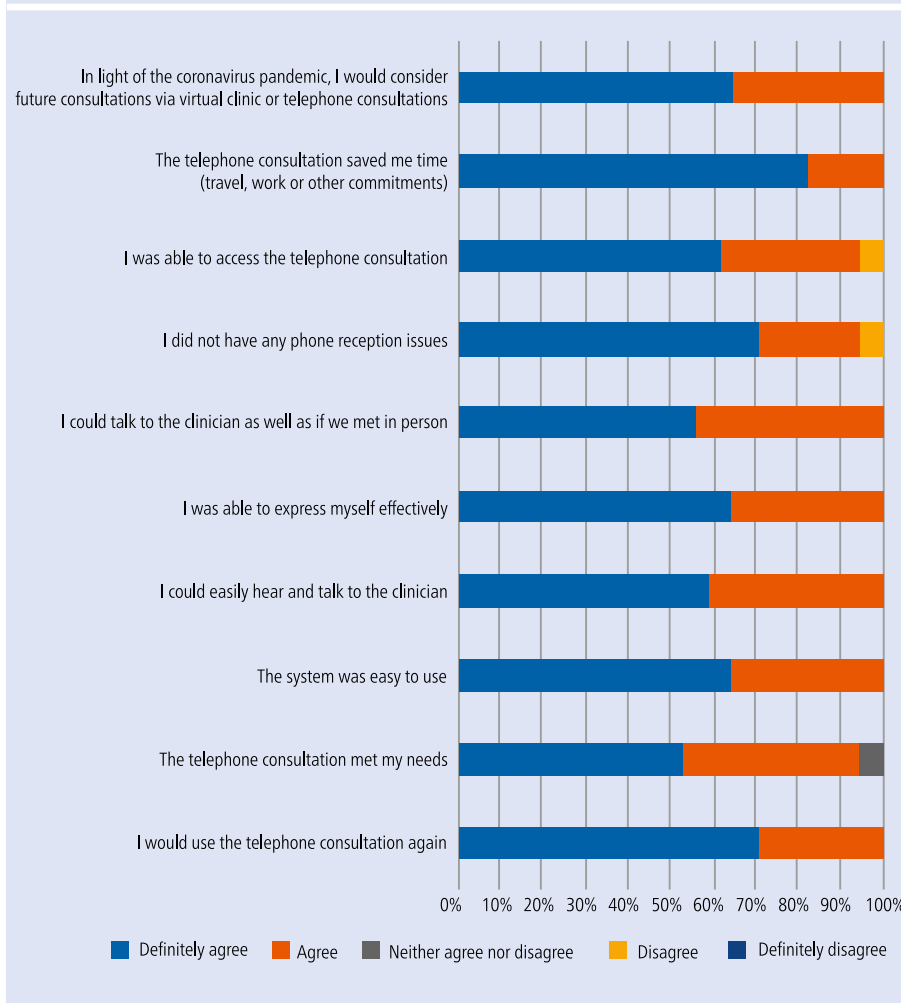


Fig. 3 Telephone clinic survey results



increasingly confident and therefore better able to absorb information, especially as a few patients had dental-related anxieties.

Reliability of the teledentistry system

All patients who participated in telephone consultations were able to access the clinic and had good phone reception. All virtual clinic patients agreed or strongly agreed that they had no connection issues and 91% could access the system. Nine percent of participants had problems with their microphone and had to use the loudspeaker option on their phone, but still found the consultation useful as they were able to interpret their CBCT scan with the clinician from their laptop.

Usefulness for patients

The feedback on the potential merits of teledentistry to patients was extremely positive. All respondents agreed or strongly agreed with statements indicating that the teledentistry system would save time. The feedback received highlighted that it would save time on travel, car parking or in the waiting room and was easier with childcare arrangements or work commitments. Ninety-four percent of patients would use the virtual clinic again and 100% agreed to using telephone consultations (Figures 2 and 3). The slim minority stated that they feel dentistry would require face-to-face consultations. However, the respondents who were identified as shielding or high risk of contracting COVID-19 reported that the experience gave them some reassurance that they had access to healthcare via this method during the COVID-19 pandemic. Overall, 96% would use teledentistry for future consultations in light of the COVID-19 pandemic.

Discussion

Teledentistry is an innovative method of health service delivery that can aid triaging of patients and contact with follow-up patients, as well as enable investigations results to be discussed and clinicians to give advice.¹¹ To our knowledge, this is the first study that evaluated the use of teledentistry from a patient’s perspective. Our results show that the majority of patients were very satisfied with using teledentistry in all five domains: patient satisfaction, ease of use, the effectiveness including increasing access to clinical services, reliability of the teledentistry system and usefulness for patients.

As shown by our results, the use of this technology can also facilitate patients to seek

access to healthcare earlier, provide specialist care, minimise time off work and reduce travel over long distances to receive consultations. For healthcare providers, it has the potential to eliminate inappropriate referrals¹² and reduce long waiting lists¹³ for specialist consultations. There is evidence which shows that, despite initial extra costs, telemedicine can help in reducing inequalities in oral health.¹⁴

Teledentistry is ideal for limiting the footfall through hospitals, preventing unnecessary exposure of patients to COVID-19 or asymptomatic carriers, including healthcare workers.¹⁵ A wider adoption of virtual clinics and telephone consultations at this present time will reduce the number of unnecessary urgent care visits or overcrowding of emergency rooms, which increase the risk of transmission of the disease and which will ultimately avoid exhausting our healthcare system.¹⁶ It has also been reported that the transmission of the disease is more likely in densely populated areas as well as areas close to an airport.¹⁵ East Surrey Hospital is situated in a diverse and densely populated area serving a population of 535,000 and growing.¹⁷ It is also near Gatwick Airport and therefore the use of teledentistry would help prevent and reduce the risk of the viral transmission of the disease.

Telehealth also allows staff including high-risk groups (older or immunocompromised), staff in self-isolation and those with childcare responsibilities to work remotely, continuing to provide a service to patients.¹⁸ Consultations via telehealth would also be beneficial to reduce the need for personal protective equipment, which can be used more appropriately for frontline staff.

The General Dental Council provides key principles for good practice in remote consultations¹⁹ and identifies safeguards for patients, as well as responsibilities for clinicians. The guidance also recognises the limitations in the use of teledentistry. Clinical examination cannot be conducted and the video clinics cannot provide good definition to facilitate examination of the mouth. Furthermore, it is difficult to access special investigations that would require direct patient contact, which would aid an accurate diagnosis.

There were limitations in the survey design and implementation. Our sample size was small and a larger survey response would need to be conducted for reliable results. A larger survey response is currently underway. The Likert scale gives clarity in answers and allows respondents to understand what is being

asked of them. However, the survey was not confidential and therefore patients may have felt that negative feedback would jeopardise their relationship with the clinician. The follow-up patients had a comparison of their first face-to-face appointment whereas the new patients had no comparison and therefore the latter group's satisfaction towards the service could arguably be less meaningful. Given the current situation, patients could also be pleased to be seen earlier, avoid travel or be seen in a hospital.

All patients in the survey were offered virtual clinic appointments. While we recognise that remote care can be beneficial, access can be difficult for the elderly, those from socioeconomically disadvantaged backgrounds, or those with physical or learning needs.²⁰ Patients that could not access the internet or the virtual clinic were offered telephone consultations. There was no selection bias and all patients were consulted successfully in this way. The authors found the virtual clinic particularly useful for patients with CBCT scans that could be shared and interpreted on their own device.

Teledentistry can be valuable for future service preparedness planning whereby new patient referrals can be seen via this method for the initial stages of history-taking and consent. A second appointment therefore includes a face-to-face visit whereby the examination, diagnosis and possible treatment can be completed in one visit. If adopted by healthcare providers, this would allow for recovery of elective practice and reduce the number of patient appointments in hospitals, which would reduce the spread of COVID-19.

Conclusion

The majority of survey participants expressed positive views towards teledentistry in all five domains: patient satisfaction, ease of use, the effectiveness including increasing access to clinical services, reliability of the teledentistry system and usefulness for patients. Teledentistry can be a suitable option to increase access of healthcare services to patients and save resources during the COVID-19 pandemic. In light of social distancing and lockdown measures, healthcare providers should consider adapting patient pathways and using telehealth as a method of consultation in the recovery planning of services.

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