

LEADING ARTICLE

Video consultations during the coronavirus disease 2019 pandemic are associated with high satisfaction for both doctors and patients

Leonardo Zorron Cheng Tao Pu,*  Manjri Raval,* Ryma Terbah,*[†]  Gurpreet Singh,* Anton Rajadurai,* Rhys Vaughan,*[†] Marios Efthymiou*[†] and Sujievan Chandran*[†]

*Department of Gastroenterology and Hepatology, Austin Health, Heidelberg and [†]University of Melbourne, Parkville, Melbourne, Victoria, Australia

Key words

coronavirus, COVID-19, outpatient clinic, telehealth.

Accepted for publication 31 March 2021.

Correspondence

*Dr Leonardo Zorron Cheng Tao Pu, Austin Health, 145 Studley Road, Heidelberg, Vic. 3084, Australia.
Email: leo.zorronchengtaopu@austin.org.au

Declaration of conflict of interest: The authors have no conflict of interests to declare.

Author contribution: Leonardo Zorron Cheng Tao Pu, Anton Rajadurai, Rhys Vaughan, Marios Efthymiou, and Sujievan Chandran conceptualized and designed the study. Sujievan Chandran was responsible for the study supervision. All authors were involved in data extraction. Leonardo Zorron Cheng Tao Pu and Ryma Terbah were involved in the statistical analyses. All authors helped with interpretation of the results and drafting the manuscript. Rhys Vaughan, Marios Efthymiou, and Sujievan Chandran carried the critical revision of the article for important intellectual content. All authors read and approved the final version of the manuscript.

Introduction

The year 2020 will remain in history as the year of the COVID-19 pandemic. According to the World Health Organization (WHO), as of January 2021, the SARS-CoV-2 virus had over 90 million confirmed cases and almost 2 million related deaths worldwide.¹ As part of the strategies to contain the spread of the disease, the delivery of outpatient healthcare was adapted to utilize technology to overcome these new challenges across the globe. Throughout Australia, hospitals converted almost all their outpatient appointments from face-to-face to telehealth.

The use of phone and video consultations for specialist clinics has previously been studied outside of the pandemic setting, and has highlighted the obvious time/cost benefits in addition to more timely access to care.²⁻⁴ The use of telehealth

Abstract

Background and Aim: Telehealth has become the standard of care during the COVID-19 outbreak. This study aimed to assess doctor and patient satisfaction of endoscopy-related telehealth clinics with video consultations.

Methods: A prospective observational study of patients consecutively booked to attend two endoscopy-related telehealth clinics at an ambulatory tertiary care setting was conducted from July to October 2020. Data collected from our previously published study using phone consultations (data collected in April–May 2020) were used as a control arm. The primary outcome (satisfaction) was assessed through the six-question score (6Q_score) as per previous research. Secondary outcomes included failure-to-attend (FTA) rate and perceived necessity of physical examination/in-person follow-up appointment.

Results: There were 962 endoscopy clinic appointments between July and October, of which 157 were conducted through video. Data on 127 doctor questionnaires and 94 patient questionnaires were analyzed. The median age (years) of patients reviewed via video [57, interquartile range (IQR) 48–66] was lower than those reviewed via phone (65, IQR 55–74, $P < 0.01$). Patient average 6Q_score was higher with video compared to phone (85.1% vs 78.4%, $P = 0.01$), as was doctors' 6Q_score (97.5% vs 91.9%, $P = 0.02$). FTA rates remained similar between the two assessments (6.4% in April/May and 4.4% between July/October, $P = 0.12$). The requirement for in-person follow-up/physical examination was identified in two video consultations (1.6%).

Conclusion: Video consultations during the COVID-19 outbreak demonstrated higher patient and doctor satisfaction compared to phone consultations. There was no significant difference in FTA rates and need for in-person follow-up consultations/physical examination between the telehealth two modalities.

during the COVID-19 pandemic has a slightly different twist though. The most important issue that differentiates this year's telehealth studies from all the previous telehealth-related research is the deciding factor for having the consultation through telehealth. Whereas historically telehealth has been offered as an option based on patient preference, during the coronavirus pandemic, outpatient telehealth consultations were mandatory. Even in the few cases where a face-to-face appointment is warranted, this is driven by the doctor's decision rather than the patient's preference. It could be postulated that this difference may result in poorer satisfaction with telehealth compared to pre-COVID-19 times.

However, recent research on the use of telehealth during COVID-19 has been encouraging, even supporting continued use

of telehealth after the pandemic.⁵ Our previous research on telephone consultations has shown that the necessity for physical examination and face-to-face follow-up was rarely necessary.⁶ The positive outcomes from our study may be associated to a certain degree with the type of clinic in which this study has focused (i.e. pre- and post-endoscopic procedures). However, similar findings have been described across different specialties throughout the globe.^{4,7,8}

In our previous research, we have identified that although reasonably high satisfaction was found for both doctors and patients, there was a significant gap between patients' and doctors' satisfaction. The aim of this study was to evaluate whether video consultations lead to improved patient and doctor satisfaction for endoscopy-related outpatient appointments during the COVID-19 outbreak.

Methods

All consecutive patients booked for a consultation in the weekly Advanced Endoscopy clinic or the weekly Post-Endoscopy clinic at our tertiary Australian center were assessed for eligibility. All appointments during the study period were booked as telehealth (video or phone consultations) as per our hospital and Gastroenterology department guidelines regarding the management of outpatients during the COVID-19 outbreak.

Data were collected prospectively for consultations conducted via video in clinics booked as "mixed telehealth" (both phone and video consults) between July and October 2020. For phone consultation control data, our previously published data were used for comparison (data prospectively collected from April to May 2020). This will be henceforth referred to as "phone-only cohort" data as during this period the video consultation software was not yet in use for our clinics. The primary outcome on satisfaction was assessed based on the six question score (6Q_score), in which participants were asked to rate how strongly they agree or disagree with the six following statements using the Likert scale:

1. This appointment was suitable for a video consult;
2. I felt comfortable communicating with the patient/doctor through this video call;
3. I did NOT miss the physical interaction with the patient/doctor during this consult;
4. The doctor/I was able to understand my/the patient healthcare condition through the video consult;
5. In the future, I would like to use a video consult again;
6. I would recommend video consults to family and friends/colleagues in case they face the same circumstances.

Secondary outcomes included rates of failure-to-attend (FTA), perceived necessity for physical examination, and recommendation for an in-person follow-up appointment by the doctor. For the FTA outcome, data on the entire mixed telehealth cohort was compared with the phone-only cohort. For the two remaining comparisons, the video consult data from the mixed telehealth cohort were compared with the phone-only cohort satisfaction data.

Eligibility criteria for the telehealth cohort were as follow:

Inclusion criteria (consultant questionnaire)

- Patients booked for an outpatient consultation in the post-endoscopy clinic or advanced endoscopy clinic.
- Consultation conducted fully through telehealth (video call) as per preventive measures due to the COVID-19 outbreak.
- Age >18 years.

Inclusion criteria (patient questionnaire)

- Patients booked for an outpatient consultation in the post-endoscopy clinic or advanced endoscopy clinic.
- Consultation conducted fully through telehealth (video call) as per preventive measures due to the COVID-19 outbreak.
- Age >18 years.
- Ability to give informed consent.

Exclusion criteria (patient questionnaire)

- Telehealth consultation done with a relative as per the patient's preference (patient not present/participating in the consultation).
- Patients deemed as confused/not able to understand.
- Unwilling/unable to participate in the post-consultation survey.

The inclusion and exclusion criteria for the "phone-only cohort" study were the same as those described above.⁶

Primary outcome

Sample size calculation. The sample size was calculated to detect a 13% difference in patient satisfaction (i.e. 6Q_score) comparing video consultations *versus* phone consultations, based on the differences found in satisfaction between doctors and patients from our previous study (91.7% vs 78.5%).⁶ As the minority of the telehealth appointments were expected to be done through video calls, an enrolment ratio of 2:1 was adopted for the calculation. As per the comparison of two independent groups with 0.05 two-tailed alpha error and power of 80%, the expected number to achieve significance was 176 patients for the phone group and 88 for the video group.

Patient satisfaction measurement. As per previous studies,^{4,6,9} patients' overall experience with the consult was evaluated with the 10-item Multi-Source Feedback (MSF) questionnaire. This consists of five-point Likert-scale response mode statements ranging from 1 ("strongly agree") to 5 ("strongly disagree"). To assess the patient perspective and satisfaction with telehealth itself, the patient attitude-towards-video-consult (PAT-VC) questionnaire was used, based on previous studies.^{4,6} Within this questionnaire, the six statements described in the first part of Section 2 were used to calculate the 6Q_score. The PAT-VC and MSF questionnaires were then associated with other questions pertaining technical difficulties and one item scoring the overall experience with the video consultation (from 0 to 10). These were combined into one online form (Appendix S1) in which patients were invited to complete either via a link sent to their email or smartphone, or over the phone with another study doctor who had not conducted the consultation.

If a patient who accepted to participate had not responded to the questionnaire within 1 week of the appointment, a single

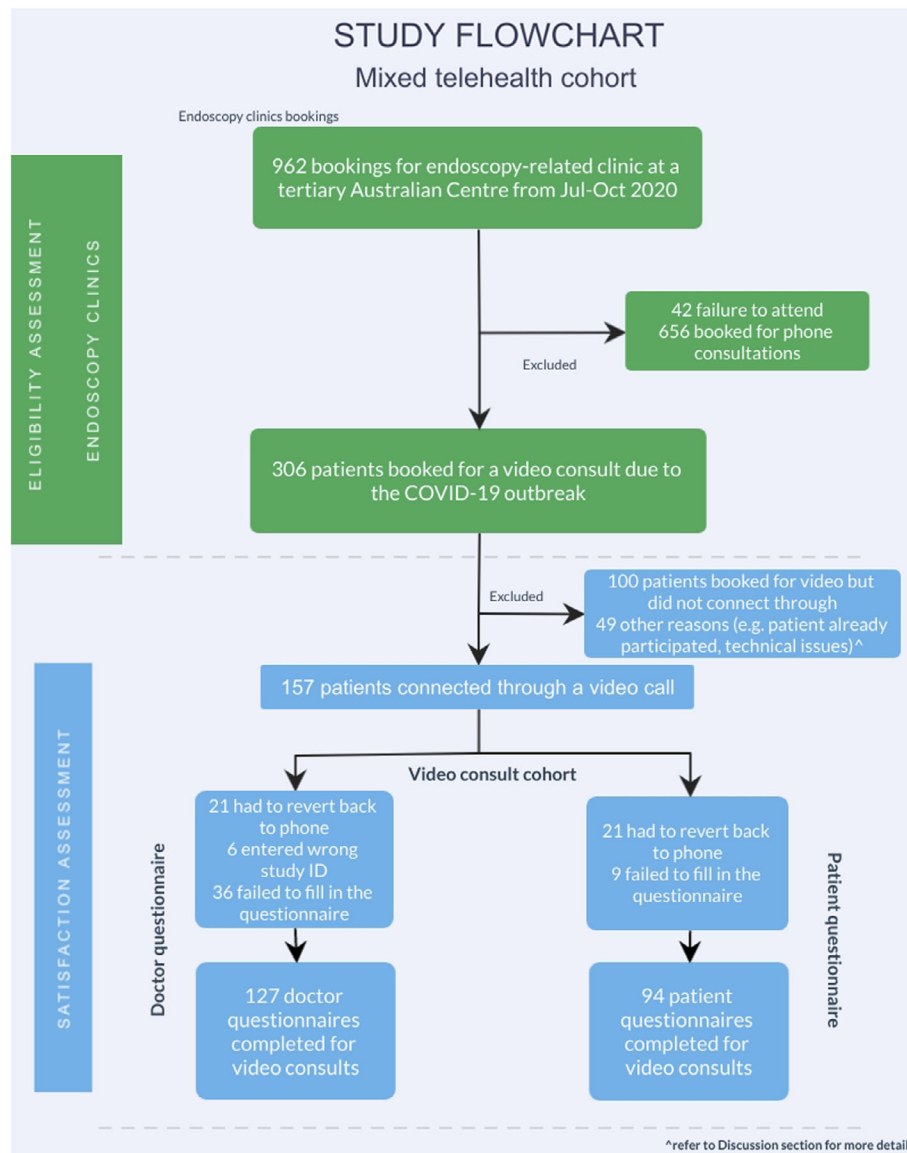


Figure 1 Study flowchart.

Table 1 Cohort demographics

Mixed telehealth cohort breakdown			
	Advanced endoscopy <i>n</i> = 401	Post-endoscopy <i>n</i> = 561	<i>P</i> value
Age—median (IQR)	65 (55–73)	63 (52–72)	NS
Male— <i>n</i> (%)	215 (53.6)	275 (49.0)	0.01
Failure to attend— <i>n</i> (%)	13 (3.2)	29 (5.2)	NS
Booked for a video consultation— <i>n</i> (%)	92 (22.9)	214 (38.1)	<0.001
First consultation with a specialist about the current issue— <i>n</i> (%) [†]	16 (47.1)	35 (58.3)	NS

[†]Data on this question are only available for the subset of patients who responded the questionnaire.

phone call was made to remind the patient about the survey. If after this the patient did not complete the questionnaire, they were considered as “unwilling.”

Doctor satisfaction measurement. Doctor satisfaction was evaluated using a similar online form that did not include the MSF component or the questions related to time/money/energy

Table 2 Demographics for phone-only and video cohorts, for included patients

Included patient demographics			
	Phone-only cohort included patients† <i>n</i> = 217 (patients)	Mixed telehealth cohort included patients (i.e. video) <i>n</i> = 94 (patients)	<i>P</i> value
Age—median (IQR)	61 (51–71)	58 (48–67)	0.04
Male— <i>n</i> (%)	86 (39.6)	51 (54.3)	0.02
First consult with specialist regarding current issue— <i>n</i> (%)	99 (45.6)	51 (54.3)	NS

†Collection of satisfaction data for phone consults was not contemporaneous with data for video consults.

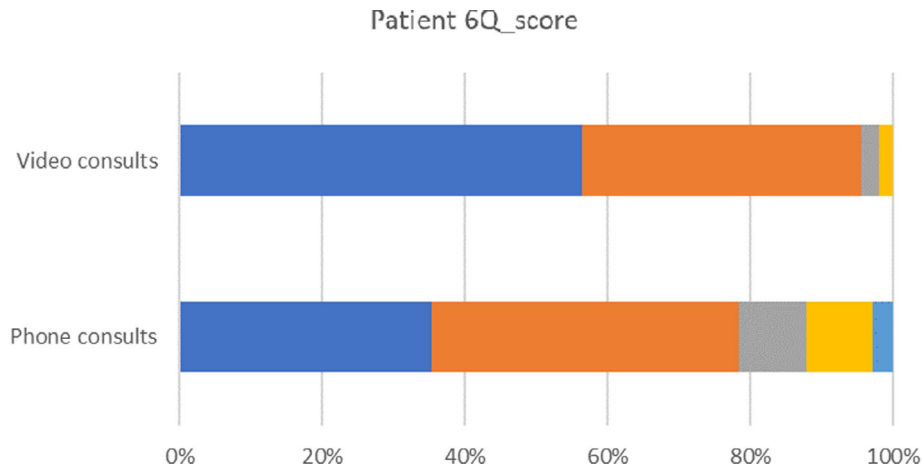


Figure 2 Patient satisfaction summary (six-question score—6Q_score). ■, Strongly agree; ■, agree; ■, neutral; ■, disagree; ■, strongly disagree.

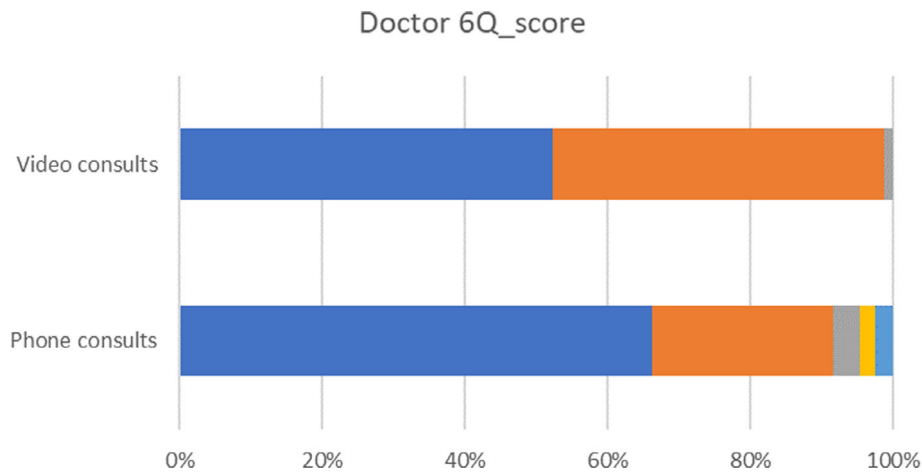


Figure 3 Doctors satisfaction summary (six-question score—6Q_score). ■, Strongly agree; ■, agree; ■, neutral; ■, disagree; ■, strongly disagree.

saved with the telehealth consult (Appendix S2). The 6Q_score questions in the doctor questionnaire directly relate to the six statements in the patient’s questionnaire. Therefore, the comparison of patient and doctor satisfaction with the video consultation was done through the comparison of “positive responses” (i.e. strongly agree/agree) for these six statements

(i.e. 6Q_score). The 6Q_score was then calculated per person as a percentage of positive responses over all responses for those questions (potentially ranging from 0 to 100%).

Secondary outcomes. FTA was assessed for all telehealth appointments (both phone and video consultations) and

Table 3 Phone and video consultation comparisons

Video consult <i>versus</i> phone consult comparison			
	Phone consult quality assessment [†] <i>n</i> = 257 (doctors); <i>n</i> = 217 (patients)	Video consult quality assessment <i>n</i> = 127 (doctors); <i>n</i> = 94 (patients)	<i>P</i> value
Duration of consult in minutes— median (IQR)	11 (9–16)	15 (10–16)	0.001
Overall doctor satisfaction in %—median (IQR)	10 (9.5–10)	10 (8–10)	<0.001
Overall patient satisfaction in %—median (IQR)	NA	9 (8–10)	NA
Doctor 6Q_score in %—mean (SD)	91.9 (17.6)	97.5 (9.9)	0.02
Patient 6Q_score in %—mean (SD)	78.4 (23.5)	85.1 (21.7)	0.01

[†]Collection of satisfaction data for phone consults was not contemporaneous with data for video consults.

6Q_score, six-question score.

Overall satisfaction with the consult

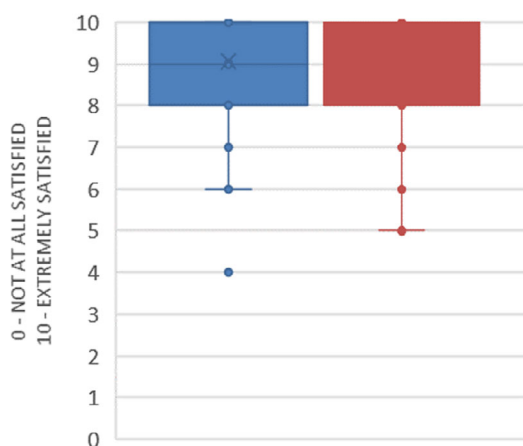


Figure 4 Overall satisfaction scale. ■, Patient; ■, doctor.

compared between the mixed telehealth cohort and the phone-only cohort. A patient was defined as failing to attend if they did not contact the hospital to cancel their appointment, did not log into the virtual waiting room at their allocated appointment time, and did not answer at least three attempts to contact them on the phone numbers listed in their hospital record.

Statistical analyses and ethical remarks. Data are summarized as mean \pm SD or median and interquartile ranges for continuous data; and as frequency and percentages for categorical data. For continuous data, comparisons were done using Mann–Whitney *U* test based on the normality assumption assessed by the Kolmogorov–Smirnov and Shapiro–Wilk tests. Categorical data were compared with Pearson Chi-Square test. A *P* value of <0.05 was considered significant. Statistical analyses were performed with SPSS statistical software (IBM Corp. 2020. IBM SPSS Statistics, version 26.0. Armonk, NY, USA). This study was exempt from IRB review after institutional IRB review. This study was approved by the Research

Office as a Quality & Service Improvement project under the reference RiskmanQ Number: 39384.

Results

Between July 13 and October 21, 2020, consecutive patients booked for consultations with the post-endoscopy clinic or advanced endoscopy clinic were assessed for eligibility. There were 962 telehealth appointments conducted between July and October 2020, of which 157 were fully video consultations. Following these consults, 127 doctor questionnaires and 94 patient questionnaires were submitted (Fig. 1). In the phone-only cohort, of the 373 telephone appointments, 257 doctor questionnaires and 217 patient questionnaires were collected for analysis.

Within the mixed telehealth clinics, the median age was lower for patients who had a video consultation (57, IQR 48–66) compared to who had preferred to connect via phone (65, IQR 55–74, *P* < 0.01), while gender distribution was similar. When looking at the breakdown based on the type of clinic (post-endoscopy *vs* advanced endoscopy), patient age was similar but gender was unbalanced. Video consultations were more frequently used in the post-endoscopy clinic, which typically sees patients who are less complex than those seen in the advanced endoscopy clinic (Table 1). The comparison of age, gender, and the percentage of first consultations for the patients who responded the questionnaires for the phone-only and video cohorts is described in Table 2.

Patient satisfaction when analyzed through the average 6Q_score was shown to be higher with video consults compared to phone consults (85.1% *vs* 78.4%, *P* = 0.01; Fig. 2). This was also true for doctor satisfaction (97.5% *vs* 91.9%, *P* = 0.02; Fig. 3). However, the gap between patient and doctor satisfaction with video consultations assessed through the 6Q_score was still statistically significant (*P* = <0.001). Compared to the phone-only cohort, video consultations lasted longer (median of 11 *vs* 15 min). The breakdown of satisfaction measures and duration of the consult per telehealth modality is shown in Table 3.

The overall satisfaction score measured through the linear 0–10 scale (as a single question) was high for both doctors

and patients (Fig. 4). The comparison between the patient's and doctor's overall score was not statistically significant ($P = 0.69$).

FTA rates calculated for the mixed telehealth cohort and compared to the phone cohort were similarly low (4.4% vs 6.4%, $P = 0.12$). The necessity for physical examination and an in-person follow-up consultation was suggested for only two patients (1.6%).

Discussion

Our previous research on the use of phone consultations for endoscopy-related clinics has demonstrated a higher satisfaction for doctors compared to patients when assessing the solely telehealth aspect through the 6Q_score. In line with this, there was a gap between the percentage of doctors and patients responding either "strongly agree/agree" to the statement (which is part of the 6Q_score): "I did NOT miss the physical interaction with my doctor/patient during this consult." Within the phone-only cohort, 83.7% of the doctors strongly agreed/agreed with the statement while only 42.6% of patients did ($P < 0.001$). Notably, alongside the better results in the 6Q_score for both patients and doctors when utilizing video calls for consultations, the agreement with the statement improved for both, but more markedly for patients (83.3%) than for doctors (98.4%). This lends strength to the hypothesis that led to this study: that the gap in satisfaction between doctors and patients could be addressed with video input. As video consultations only came into practice for our endoscopy-related clinics in the second half of 2020, this was a perfect scenario to test these two similar but different telehealth modalities.

The 49 patients excluded for "other reasons" as per the study flowchart (Fig. 1) have been mostly excluded either because of a repeat appointment within the study period (6) or because of technical issues with the video call software either from the doctor's or the patient's end (26). Two appointments were canceled on the day and other two appointments were booked as telehealth but the patient mistakenly presented in person. Three appointments were carried out exclusively with the primary carer and for the remaining 10 appointments, a reason for not being included was not given. The study team and attending doctors for both the mixed telehealth cohort and the phone-only cohort remained mostly the same. More details on the phone-only cohort have been described in our previous research.⁶

We believe that the overall assessment of satisfaction with the consult through a one-off visual scale (ranging from 0–10) is not the ideal tool to assess satisfaction with the telehealth modality used in isolation. It rather tends to show the overall satisfaction with the consultation as a whole, including the satisfaction with the doctor's performance. In our data, the overall satisfaction with the consultation was high and similar between doctors and patients. However, when looking deeper into the satisfaction with the telehealth modality itself through the 6Q_score, a statistically significant difference became apparent. This is evidence that even though the satisfaction of using the telehealth system might

be flawed, the overall satisfaction with the final product (i.e. medical consultation) was good. As we have anticipated, the difference between doctor and patient satisfaction in relation to telehealth (i.e. 6Q_score) was slightly smaller for video consults when compared to phone consults. However, it was maintained as a statistically significant difference as doctor satisfaction has increased with video consults as well, even though patient satisfaction gain was slightly higher. The improvement in satisfaction was of 5.6% for doctors and 6.7% for patients.

The results of this study suggest that, whenever possible, having video consultations as an option for telehealth appointments has the potential to increase satisfaction while maintaining low FTA rates, and does not commonly require face-to-face follow-up consults in endoscopy-related clinics.

A limitation of our study is the retrospective assessment and comparison of the phone-only cohort data. However, these data were collected earlier this year in a similar setting and by the same study group, and hence could be considered directly relatable to the video consult data (even though not collected in parallel). Another limitation is the lack of a direct comparison of the overall satisfaction (one-off 0–10 scale) for patients between the phone and video groups. Although this comparison was not available, we understand that the 6Q_score is a more precise measurement of the satisfaction with the telehealth method used. Hence, we believe we were able to properly assess the differences in telehealth methods by comparing the 6Q_scores.

In conclusion, the use of video consultations for endoscopy-related clinics during the COVID-19 outbreak demonstrated higher patient and doctor satisfaction compared to phone consultations. The FTA rates and need for in-person follow-up consultations/physical examination were similarly low. These data suggest that employing telehealth (especially video calls) for outpatient appointments is a viable service-delivery method for specialist clinics.

References

- 1 Organization WH. WHO Coronavirus Disease (COVID-19) Dashboard 2020 Cited Jan 14 2021. Available from URL: <http://covid19.who.int>.
- 2 Vimalananda VG, Orlander JD, Afbale MK *et al.* Electronic consultations (E-consults) and their outcomes: a systematic review. *J. Am. Med. Inform. Assoc.* 2020; **27**: 471–9.
- 3 Constanzo F, Aracena-Sherck P, Hidalgo JP *et al.* Contribution of a synchronic teleneurology program to decrease the patient number waiting for a first consultation and their waiting time in Chile. *BMC Med. Inform. Decis. Mak.* 2020; **20**: 20.
- 4 Barsom EZ, Jansen M, Tanis PJ *et al.* Video consultation during follow up care: effect on quality of care and patient- and provider attitude in patients with colorectal cancer. *Surg. Endosc.* 2021; **35**: 1278–87.
- 5 Owens AP, Ballard C, Beigi M *et al.* Implementing remote memory clinics to enhance clinical care during and after COVID-19. *Front. Psych.* 2020; **11**: 579934.
- 6 Zorron Cheng Tao Pu L, Singh G, Rajadurai A *et al.* Benefits of phone consultation for endoscopy-related clinics in the COVID-19 pandemic. *J Gastroenterol Hepatol.* 2021; **36**: 1064–80.

- 7 Bracke X, Roberts J, McVeigh TP. A systematic review and meta-analysis of telephone vs in-person genetic counseling in BRCA1/BRCA2 genetic testing. *J. Genet. Couns.* 2021; **30**: 563–73.
- 8 Lapointe-Shaw L, Rader B, Astley CM *et al.* Web and phone-based COVID-19 syndromic surveillance in Canada: A cross-sectional study. *PLoS One.* 2020; **15**: e0239886.
- 9 Donnon T, Al Ansari A, Al Alawi S *et al.* The reliability, validity, and feasibility of multisource feedback physician assessment: a systematic review. *Acad. Med.* 2014; **89**: 511–6.

Supporting information

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix S1: Patient questionnaire.

Appendix S2: Doctor questionnaire.