

DIGITAL TECHNOLOGY A comparison of in-person versus telephone consultations for outpatient hospital care

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ABSTRACT

The SARS-CoV-2 pandemic has triggered a transition towards telemedicine for delivering outpatient care. The evidence base for telemedicine is heterogeneous and its efficacy remains debated. We, therefore, designed a mixed-methods semi-structured survey to evaluate patients' and clinicians' experiences of outpatient telemedicine clinics during the pandemic. One-hundred and eighty-eight patients and 69 clinicians from two hospitals in Gloucestershire completed the survey. The quantitative results for patients rated in-person and telemedicine appointments similarly in all areas except communication ($p < 0.001$) and overall quality ($p = 0.004$), both in favour of in-person consultations, while clinicians rated all aspects of telemedicine appointments as inferior, with the exception of convenience ($p = 0.643$). Qualitative analysis highlighted themes of communication and relationship building difficulties, confidentiality concerns, loss of visual inspection as a clinical tool and debatable time efficiency associated with telemedicine. Significant adaptation of current telemedicine services is required before it will be integrated into current practice.

KEYWORDS: COVID-19, SARS-CoV-2, telemedicine, telehealth

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Introduction

The SARS-CoV-2 pandemic has affected how the UK practises medicine. To minimise transmission, the outbreak triggered a transition to telephone and video-enabled outpatient services. The delivery of healthcare through remote services, known as telemedicine, has been trialled previously to deliver healthcare to underserved areas, showing reasonable patient and clinician satisfaction.^{1–7} It has been celebrated for its potential to reduce travel and monetary costs, minimise disruption to patients' lives and improve access to care.^{1–3,7} Evidence is, however, conflicting on the true benefits of telemedicine in outpatient services. Patients and clinicians have raised concerns regarding confidentiality,

its appropriateness in delivering specialist care and loss of intimacy.^{1,2,4,8–17}

While a number of studies propt to study telemedicine, the term is vague and its use spans from transmitting photographs of skin lesions, to acute clinician–clinician consultations.^{18,19} The heterogeneous nature of the evidence means that, while several systematic reviews have been conducted, real-time specialist physician–patient consultations studies where the patient is at home are limited.^{7,13,20} A recent Cochrane review identified only one such study.²⁰ Where publications do exist, they are often out of date or conducted in a randomised-controlled format, limiting their transferability to real-world practice.²

With the current NHS long-term plan advocating increased telemedicine, further research is required to address clinician and patient experiences.²¹ We, therefore, designed a mixed-methods study to explore the benefits and drawbacks of telemedicine (defined here as live patient–clinician telephone consultations) in specialist care as experienced during the SARS-CoV-2 pandemic.

Methods

Participants

Patients from respiratory, cardiology, endocrinology and gastroenterology, who had been seen in person followed by a telephone consultation with a doctor, were identified over a 3-week period between October 2020 and November 2020 at Gloucestershire Hospitals NHS Foundation Trust. These specialties were chosen as they represent a large proportion of general internal medicine and are delivered in a similar fashion, allowing cross specialty generalisations. A minimum of 50 patients per specialty were issued invitations.

Patient–doctor familiarity varied as not all patients had previously encountered the clinicians that delivered either consultation. Consultant consent was sought prior to patient contact and, while none declined, a handful did not respond to the invite, so their patients were excluded. Full exclusion criteria included patients with severe hearing impairment, memory deficits and those pre-identified as lacking capacity to give informed consent. Exclusion took place during patient selection by the project lead prior to sending invitation letters or during the time of data collection, if applicable.

Consultants and registrars across all hospital-based specialties at the host trust were invited to participate. This was extended beyond the four specialties that patients were recruited from due to their small clinician sample size to increase the richness of our data pool.

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Ethical approval was granted by the research and development department with informed consent gained from participants after provision of detailed study information.

Care delivery

The four specialties from which patients were recruited delivered telemedicine entirely through telephone consultations, as such, this is the focus of this study. While some of the clinician participants from other specialties used video-enabled consultations, this was a small minority.

Measures

For patient data collection, a structured 10-point questionnaire was designed using a peer review process by the authors within the respective specialties.

The questionnaire focused on domains where resistance and acceptance of telemedicine is prevalent in the literature. Questions covered ease of communication, apparent empathy, overall understanding, convenience, confidentiality, timing to treatment, missed appointments, relevance of examination, preferred future consultation method and an overall consultation rating. Participants answered using a five-point Likert scale (from strongly disagree to strongly agree) regarding both forms of consultation, with a free-text box to allow for elaboration.

For clinician data collection, a 12-point questionnaire was designed through the same process, mirroring the themes of the patient survey (supplementary material S1).

All participants were given four options for their preferred modality of future consultation (telephone, video, in-person and no preference) from which the participant answered in a mutually inclusive fashion.

Data collection

All eligible patients were sent an invite including an online questionnaire link, with a follow-up telephone call inviting them to complete the survey over the telephone. Data collected over the telephone was directly transcribed online. All eligible clinicians were invited to complete the questionnaire online by email.

Data analysis

Statistical analysis was performed using MS Excel and an online statistical analysis resource.²² Categorical variables were reported as frequency and percentages. Comparison analyses for categorical data were performed with chi-squared goodness of fit test, chi-squared test of independence and Fisher's exact tests. A $p < 0.05$ was considered statistically significant. Continuous data have been expressed as mean and standard deviation (SD); the categorical values of strongly disagree – strongly agree were analysed by converting them to continuous values (1–5, respectively) and so have been expressed similarly. Qualitative data were analysed using inductive thematic analysis couched in a critical realist paradigm.²³ The data were coded independently by two researchers, using analytic memos to maintain an audit trail. Through discussion, the two researchers created descriptive then analytical themes, triangulating the resultant framework against the quantitative data to ensure credibility.

Table 1. Demographics of the patient cohort, n = 118

Gender, n (%)	
Men	63 (53)
Women	55 (47)
Age, n (%)	
<60 years	42 (36)
>60 years	76 (64)
Specialty consulted, n (%)	
Cardiology	27 (23)
Respiratory	23 (19)
Gastroenterology	23 (19)
Endocrinology	25 (21)
Unknown ^a	20 (17)

^aThe unknown group had consulted one of the four listed specialties, however, the participant did not answer the question detailing which specialty they had encountered, so have been grouped as 'unknown'.

Results

Quantitative results

Demographics

There were 118 responses to the patient survey split mostly evenly across specialties. The majority were aged >60 years (74%) and men (53%; Table 1). Sixty-nine clinicians responded to the survey (Fig 1).

Initial analysis showed that patients and doctors agreed with each statement posed to them. For each question, there was a statistical significance ($p < 0.001$) of both groups agreeing with statements for in-person and telephone appointments.

Survey responses

Patients found it significantly easier to communicate and ask questions in person ($p < 0.001$). At sub-group analysis, endocrinology ($p = 0.030$) and respiratory ($p = 0.013$) specialties, men ($p < 0.001$), women ($p = 0.011$) and patients aged >60 years ($p < 0.001$) showed significance, while cardiology ($p = 0.093$),

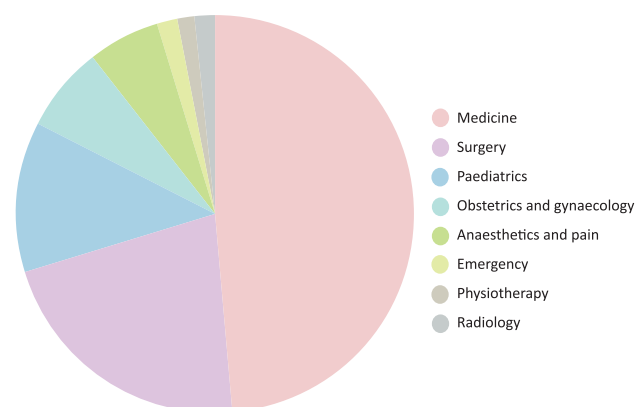


Fig 1. Responses to the doctors' survey by specialty.

gastroenterology ($p=0.247$) and patients aged <60 years ($p=0.060$) did not.

No statistical difference was seen looking at patient understanding, perceived empathy, convenience of the appointment, confidentiality, attendance and timely treatment commencement (Table 2). Sub-group analyses for gender found that perceived understanding of diagnoses and treatment was significantly poorer over the phone in men ($p=0.031$). Analysis of age found that the phone consultations were rated lower by those aged >60 years for perceived empathy ($p=0.049$), understanding of their diagnosis ($p=0.026$) and concerns over confidentiality ($p=0.020$).

When rating the overall quality of the consultation, patients preferred in-person consultations ($p=0.009$); this was also seen in the subgroups of cardiology ($p=0.022$), women ($p=0.028$) and those aged >60 years ($p=0.003$).

The clinicians' survey showed communication ($p<0.001$), empathy ($p<0.001$), patient understanding ($p<0.001$), time effectiveness ($p=0.007$), confidentiality ($p<0.001$), pre-clinic preparation ($p=0.016$), timely treatment ($p<0.001$) and overall quality of consultation ($p<0.001$) all demonstrating statistical significance favouring in-person appointments. No difference was found in convenience when comparing the two consultation modalities ($p=0.643$; Table 2).

Patients gave the importance of being examined a mean response of 2.56 (interquartile range (IQR) 2), where 5 indicates not being important. Sub-group analysis showed no significant variation in response. Clinician results showed a mean average of 2.76 (IQR 2). Extra administrative burden produced by telephone consultations displayed a mean score of 3.14 (IQR 2), where 5 indicates a higher burden. Preference for in-person follow-ups in patient and clinician groups were 55% and 62%, respectively (Fig 2). For expanded results analyses, see supplementary material S2.

Qualitative results

Themes common to patients and clinicians

Communication difficulties:

Doctors and patients both reported phone consultations negatively impacted ease of communication. The formal tone and lack of natural pauses in conversation limited patients' thinking time and comfort, subsequently restricting their contribution during the consultation. A lack of non-verbal cues frustrated both parties, impeding clinical assessment and relationship building. Some patients used spousal support to ease the telephone communication challenge.

Some clinicians' described confusion when patients involved multiple parties; others, however, welcomed input of family members often missed over the phone. One doctor described overcoming multiple narratives by asking all parties to introduce themselves at the appointment onset.

Clinicians identified that telephone consultations posed additional challenges for specific patients, including those requiring interpreters, young children and those with hearing and/or cognitive impairments. Discussing certain topics were also challenging, particularly breaking bad news.

Relationship building:

Patients regularly expressed that telephone consultations had a more transactional nature, intrinsically lacking the personal

touch that encourages joint decision-making. Both patients and clinicians highlighted relationships previously established in person improved telephone consultations. Importantly, patients often reported that the demeanour of, and personality match with, a clinician was more important than the modality in the success of the appointment.

Convenience:

Patients described some advantages of telephone appointments: lower time and stress associated with travel; no requirement to navigate or wait in hospital buildings; and no need to take leave from work. However, these benefits were felt to be of minimal significance, and most expressed these did not impact their future consultation modality of choice.

The strongest inconvenience for patients was missing telephone calls from clinicians with subsequent rescheduling of appointments; it was reported that telephone appointments were easier to forget than in-person ones. Patients were also frustrated at phone calls not occurring on time, leaving them unprepared.

Clinicians expressed frustration at difficulties reaching patients over the phone but were positive about being able to work remotely and fitting calls around other tasks.

Confidentiality:

Patients had minor concerns regarding confidentiality, specifically a third party listening, and the inability to confirm the clinician's identity. Conversely, clinicians expressed major concerns around the possibility of third parties listening without their knowledge, particularly when consulting with vulnerable groups eg those experiencing abuse.

Role of examination:

Patients articulated distrust in professional opinions formed without an examination, on the basis that an examination may find hidden signs of illness. The importance of examination was dependent on their current health and underlying diagnosis.

Clinicians also expressed a lack of clinical confidence when unable to examine patients. Some feared this would result in over investigation and more prescriptions. Clinicians agreed this was dependent on underlying diagnosis, severity of the disease and if the patient was a new referral or follow-up. Many were frustrated at the assumption that all follow-up appointments did not require examination.

Efficiency:

Clinicians disagreed regarding the efficiency of phone appointments. Some welcomed them for simple tasks (eg check-ups) but generally felt that telephone clinics increased administrative burden with additional tests requested and chased, prescriptions posted, and extra letters written. There was also felt to be a heavier reliance on general practitioners (GPs) to perform these administrative tasks that delayed care and unfairly assigned work to primary care. A safety concern was raised that clinicians previously reviewed test results when approving clinic letters, delays in these investigations being conducted and, therefore, chased separately after a telemedicine appointment risks crucial results being missed. Additionally, clinicians felt that phone appointments were not always time efficient with subsequent in-person consultations needed to complete the assessment and make management decisions. Patients expressed similar concerns regarding delays in starting treatment plans. Some clinicians felt

Table 2. Fisher's exact test used to compare in-person and phone consultations for patient answers and against questions from the doctors' survey

	Ease of communication	Perception of empathy	Understanding of diagnosis and treatment	Convenience of consultation	Concerns regarding confidentiality	Likelihood to miss consultation	Initiation of treatment post-consultation	Overall rating of consultation
Overall, n = 118	<0.001^a	0.061	0.077	0.819	0.062	0.292	0.606	0.004^a
Gender								
Men, n = 63	<0.001^a	0.052	0.031^a	0.617	0.063	0.582	0.686	0.203
Women, n = 55	0.011^a	0.742	0.230	0.810	0.614	0.543	0.614	0.028^a
Age								
>60 years, n = 76	<0.001^a	0.049^a	0.026^a	0.355	0.020^a	0.568	0.947	0.003^a
<60 years, n = 42	0.060	0.731	0.425	0.181	0.841	0.498	0.330	0.390
Specialty								
Cardiology, n = 27	0.093	0.227	0.214	0.898	0.583	0.660	0.970	0.022
Endocrinology, n = 23	0.030	0.310	0.484	0.457	0.478	0.741	0.355	0.224
Gastroenterology, n = 23	0.247	0.554	0.574	0.457	0.607	0.769	0.302	0.424
Respiratory, n = 25	0.013	0.636	0.221	0.326	0.608	0.636	0.939	0.108
Clinicians' answers for like questions	<0.001^a	<0.001^a	<0.001^a	0.643	<0.001^a	n/a	<0.001^a	<0.001^a

^aStatistically significant results all in favour of in-person consultations.

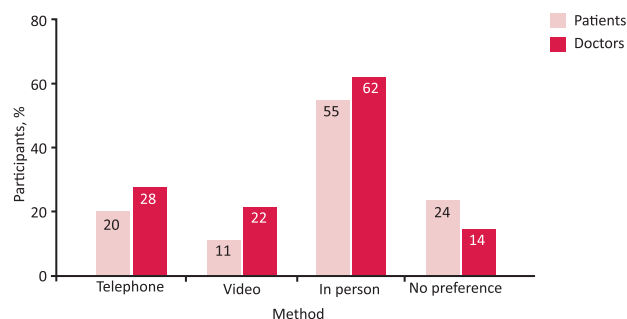


Fig 2. Preferred method for future follow-up consultations.

they were losing clinical time by repeatedly triaging clinic lists into telephone versus in-person reviews.

Patient generated themes

Reassurance:

Patients felt any appointment was reassuring, but more so if in person and examined. The familiarity and ritual of an in-person review was validating. When consulted via telephone, the detailed clinic letter that followed from their clinician provided reassurance.

Clinician generated themes

Visual inspection as a clinical tool:

Clinicians heavily valued in-person inspection and non-verbal communication for effective patient care. It was felt to help build rapport, express emotions and enable psychosocial discussions. Non-verbal cues were useful in determining patient comprehension and sign-posting consultation stages, including indicating its completion.

Holistic care and the multidisciplinary team:

Clinicians raised concerns that remote consultations prevented 'one-stop shop' patient reviews by multiple healthcare professionals within one clinic appointment. The loss of this wrap-around care model, particularly the support of specialist nurses, and the inability to conduct multiple bedside tests succinctly, was felt to adversely impact delivery of patient-centred care.

Appointment modality preference

Overall, patients preferred future appointments to be in person. Some, particularly those in employment, would prefer to have a choice. Patients generally accepted that future outpatient medicine will include a mixture of modalities but were nervous about phone clinics being implemented as a blanket approach. Patients expressed mixed views regarding video consultations, with some strongly against these due to a lack of skills or access to technology. Others felt that it offered advantages, particularly improving remote communication.

Clinicians also generally desired in-person appointments in the future, although many hoped remote reviews would continue alongside this. Clinicians feared hospital management would enforce remote reviews and strongly felt decisions around modality should rest solely with them rather than non-medical teams or patients.

Clinicians favoured video over telephone appointments due to the potential benefits of non-verbal information. They

also cited the advantages of other models, such as patient-initiated follow-up, as an alternative to in-person routine appointments.

Discussion

Patients expressed a general equivalency between in-person and telephone consultations, supporting existing published literature.^{1,2,4,5,7} The exceptions to this in our cohort regarded communication difficulties and ability to ask questions, with consistently lower ratings in telephone consultations.

Patients aged >60 years particularly expressed concerns regarding understanding, confidentiality and empathy over the phone. The overall quality was also rated lower in this age group. Studies identifying successful implementation of telemedicine in older patients typically involve video technology in a community or care home setting with a healthcare professional helping the patient, rather than alone at home.^{24,25} This additional support may explain the discrepancy between published studies and our findings.

Clinicians' views about telemedicine appointments were largely negative, stressing both an increased administrative burden and the loss of visual inspection as a clinical tool. This provides insight into concerns clinicians have towards telemedicine in contrast to publications citing overall satisfaction.⁵ However, the pandemic forced rapid deployment of telemedicine, and implementing a more carefully designed system may lessen frustrations; for example, introducing reminders for telephone appointments may reduce non-attendance, and triaging patients to telemedicine and in-person appointments may be unnecessary in a gradually introduced system.²⁶ It is, therefore, possible that clinician experience of telemedicine could be improved. Even if re-designed, it is unclear if telemedicine truly saves time and money. Our study showed mixed views from clinicians regarding time-efficiency due to administrative sacrifice. Additionally, current economic evaluations are largely outdated, focusing on the price and maintenance of expensive equipment, which are now more affordable.²⁷

Wide-scale successful implementation of telemedicine hinges on appropriate utilisation. Our results highlight some common factors determining to success: familiarity with the patient/doctor; patients' state of health; purpose of the appointment (initial assessment or follow-up); nature of discussion (especially sensitive/complex subjects); underlying condition; and patient vulnerability (those with cognitive or sensory impairments, young children or language barriers). Such factors should be used to establish triaging pathways for patients appropriate for telemedicine.

Many clinicians and patients anticipate telemedicine becoming a routine part of outpatient care. Clinicians are clear that consultation modality should be an exclusively clinician choice, not management's. They described concerns regarding their responsibility to uphold clinical standards without sufficient support; a realistic concern as evidence suggests in-person diagnoses are more accurate compared with conclusions from telemedicine alone.^{18,28} Similarly, some clinicians feared telemedicine would create excess investigations and prescribing to compensate for lack of clinical assurance. Evidence as to whether this happens in practice is, however, mixed.^{2,6,29,30}

Strengths and limitations

Our study benefits from observing real-world practice. While randomised controlled trials provide useful data, in telemedicine they are often designed in a way that is challenging to apply to everyday practice. Our results are, therefore, more representative of real-life usage. Similarly, while clinicians were able to conduct some pre-screening of who they could review over the phone, the included patient group was relatively unselected in comparison with other studies, allowing more generalisable results. Thirdly, the mixed methods approach provides detailed explanatory insights into patients' and clinicians' experiences of telemedicine.

The data we present does have limitations. There was often a delay between experiencing a clinic and answering the survey, introducing recall bias. The surveys conducted over the phone were carried out by doctors, possibly impairing some patients' ability to answer honestly. We hope to have countered this during the qualitative section by working reflexively. In addition, while all patients were sent an online survey link, those who were telephoned were selected chronologically working down lists. By not using a formal randomised approach to patient selection, we may have introduced selection bias. Although we did not record those who declined to take part, almost all contacted consented, with few exceptions.

A further limitation is the absence of demographic data for clinicians meaning we could not assess for any age or gender impact on results. Additionally, the novelty of telephone appointments for both the clinicians and the patients may itself have affected the results of the study. This was unavoidable, but it is possible that if the study is repeated after a longer time using this modality, then the results may be different, although in what direction is unclear. Finally, the mean age of outpatient attendees nationally during our research period was 57 years, thus, our data is skewed to the older age group.³¹ If the study was repeated with a larger cohort, the effect of the >60 years subgroup concerns may diminish.

Future research

Our study focused on telemedicine within specialist hospital services, however, a significant amount of telemedicine is conducted in primary care. As such, similar studies analysing similar experiences are required in general practice.

As telemedicine was largely delivered over the telephone in the host trust, our study has concentrated on this. While the use of video-enabled technology has significant barriers in terms of both patient and clinician technical ability as described earlier, further research is required to explore its feasibility.

Conclusion

Our findings highlight the main concern regarding telephone consultations remains inferior communication. Other minor inconveniences result in a perceived poorer quality of overall consultation with the emphasis on the loss of examination, confidentiality concerns, time efficiency and relationship building difficulties. Streamlining the current telemedicine systems will be required before patients and clinicians fully embrace it. For now, both cohorts exhibit mild preference for future outpatient care to be delivered in person. ■

Summary

What is known?

SARS-CoV-2 has mandated a shift to telemedicine to deliver patient-centred care in an outpatient setting. The evidence base for telemedicine includes a diverse group of interventions with very few focusing on its use in delivering specialist-patient consultations with the patient in their own home.

What is the question?

What are patients' and clinicians' experiences of delivering specialist outpatient care through telephone lead clinics? What are the disadvantages and advantages of such an approach and what mediates them?

What was found?

The patients' main concern regarding telemedicine is poorer communication. The cumulative effect of other inconveniences resulted in overall poorer quality of consultation using telemedicine. Clinicians perceived almost all aspects of telemedicine as inferior, particularly the loss of visual inspection as a clinical tool, confidentiality concerns, time efficiency and relationship building difficulties. The following factors were identified by both parties as being important to a successful telemedicine interaction: familiarity with the patient/doctor; patients' current state of health; purpose of the appointment (initial assessment or follow-up); nature of discussion (especially sensitive/complex subjects); condition being assessed; and the involvement of particular vulnerable groups (those with cognitive impairment or sensory impairments, young children or those with language barriers).

What is the implication for practice now?

For clinicians to see telemedicine as a viable option in the long term, any system introduced will need to incorporate mediating factors that are likely to promote a successful interaction as described herein. Extra administrative burdens associated with telemedicine will also need to be streamlined if this modality is to aid in healthcare efficiency. If this can be achieved, patients are reasonably open to having some of their consultations at home and the advantages of telemedicine may come to the fore.

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