



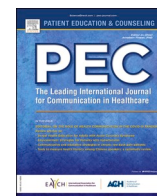
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## Exploring cancer patients', caregivers', and clinicians' utilisation and experiences of telehealth services during COVID-19: A qualitative study

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## ABSTRACT

**Objectives:** The COVID-19 pandemic has significantly impacted oncology. With pandemic restrictions limiting close contact between individuals, telehealth (the use of teleconferencing/videoconferencing to conduct real-time medical consultations) has been increasingly utilised. This qualitative study aimed to explore adult cancer patient, caregiver, and clinician (doctor, nurse, allied health) telehealth experiences during COVID-19 in urban and rural Australian settings and identify potential enablers and barriers to sustained telehealth implementation.

**Methods:** English-speaking participants completed semi-structured interviews regarding their telehealth experiences since March 2020. Interviews ceased when data saturation occurred. Iterative thematic analysis was conducted using NVivo 12 Pro.

**Results:** Thirty-four interviews (clinician=14, patient=13, caregiver=7) were conducted from April to August 2021. Analysis generated seven themes relating to telehealth use: 1) Acceptability as a form of consultation, 2) Impacts on healthcare provision, 3) Communication & relationships, 4) Efficient form of consultation, 5) Comfort of conducting telehealth in different environments, 6) Technological barriers and 7) Future preferences.

**Conclusions:** The rapid uptake of telehealth during the pandemic has mostly been well-received, and telehealth can be appropriately used in oncology.

**Practice implications:** Barriers including providing appropriate facilities, technology, and telehealth training; and selecting appropriate patients must be addressed to enable sustained telehealth use in future cancer care.

## 1. Introduction

Cancer is one of the leading causes of morbidity and mortality in the 21st century, with approximately 18.1 million new cases, and 9.6 million cancer deaths globally in 2018 [1]. In 2021, an estimated 150,782 cases of cancer were diagnosed in Australia and the average five-year survival from 2013 to 2017 was 69.7% [2]. In the 2015–2016 financial year, 8.6% of the Australian government's healthcare expenditure was on cancer care [3], reflecting the significant burden of disease.

Traditionally, face-to-face specialist care has been the predominant model of care in oncology. However, since the onset of the COVID-19 pandemic, telehealth, namely the use of technology (through

telephone and/or videoconferencing) to facilitate real-time communication between health professionals, patients, and caregivers has increased exponentially. In Australia, 455,104 telehealth consultations were conducted between January 2018–December 2019, largely with rural patients. During the pandemic (March 2020–June 2021), this increased to 62.2 million [4].

The use of asynchronous telehealth interventions (e.g. mobile applications, emailing, internet-based interventions) in oncology has been extensively researched [5–9]. The personal experiences and preferences of telehealth amongst users have also been examined. Positive themes from qualitative studies with oncology clinicians and patients include: increased frequency of patient interactions [10], more efficient workflow [11] and job satisfaction [11], high quality of telehealth

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consultations [12]; increased convenience [13,14] and access to medical professionals during the pandemic [15]. Negative themes include: limitations with physical examinations [10,14,15], impacts on patient-clinician relationships [10], communication barriers [10,12], and technology barriers [12–16]. Literature demonstrates mixed views regarding the quality of communication through telehealth versus in-person consultations [17].

There are some gaps in the current oncology telehealth literature. Although use of telehealth in regional and rural areas is well established [12,13,16,18–20], limited research has explored its use in urban populations, where it has not been widely adopted until now [10,14,21]. Secondly, studies exploring end-users' perspectives of telehealth usually assess individual patients [12–15,21,22], clinicians [10,11], or patient-caregiver [23]/patient-clinician dyads [16,20,24]. A single Australian study has simultaneously explored the telehealth experiences of clinicians, patients, and family members [25], allowing direct comparison. However, the small sample of Indigenous people, with low representation of caregivers, limits generalisability of the findings. Studies exploring oncology telehealth use during COVID-19 are emerging [11,15,21,26–33], with findings including: the comparable quality of telehealth and in-person visits, cost and time savings, increased access to healthcare, desire to continue telehealth after the pandemic, and inability to perform physical examinations with telehealth. However, it must be highlighted that most of these studies have utilised questionnaires to quantitatively capture these experiences, and detailed insight into the reasoning behind these views cannot be gained from quantitative studies.

Telehealth is a viable solution where physical distancing, quarantining and/or lockdowns are required and may enhance the efficiency of certain aspects of oncology care, such as long-term follow-up/survivorship care. Qualitative studies can shed light on the factors underlying the broad acceptability of telehealth found in quantitative studies by providing a more detailed perspective on what works, for which users, and in what context.

This study aimed to compare and contrast first-hand perspectives of telehealth use during the COVID-19 pandemic in cancer patients, caregivers, and clinicians from urban and rural backgrounds to guide the sustained implementation of telehealth in future cancer care in varied contexts. The two primary research questions were (1) What are the experiences of cancer patients, caregivers, and clinicians using telehealth services during the pandemic? and (2) What are the potential enablers and barriers to the sustained implementation of telehealth in future cancer care?

## 2. Methods

The study was approved by South Western Sydney Local Health District (SWSLHD) Human Research Ethics Committee (2020/ETH03248).

This qualitative study recruited participants from urban (Liverpool Hospital, SWSLHD, NSW, Australia) and rural (Mid North Coast Cancer Institute, Port Macquarie Base Hospital, Mid North Coast Local Health District [MNCLHD], NSW, Australia) settings. SWSLHD is a metropolitan area consisting of six hospitals, serving a population of over 820,000 people [34], comprising 12 % of NSW residents. Its communities are socially, economically, culturally, and linguistically diverse, with a smaller proportion of South West Sydney residents born in Australia (47.3 %), compared to NSW residents overall (65.5 %) [35]. The area contributes 10 % of the total new cases of cancer load in NSW. MNCLHD is a regional/rural area, serving more than 218,000 residents across seven hospitals. The district's population is anticipated to grow by 13 % over the next decade [36] and has a higher age-standardised rate of cancer incidence, when compared to the rate for Australia [37].

The primary researcher (S.S.) was a medical student at the University of New South Wales (UNSW) with technological competence and experience in various telephone and video telehealth platforms. S.S. was

supervised by an experienced qualitative researcher (B.S.) and broader team, who provided training and guidance throughout the study. S.S. had prior contact with some participants through clinical placements and initially introduced the study to some of the participating clinicians.

All participants were  $\geq 18$  years old, proficient in English, and had used telehealth since March 2020. Additional inclusion criteria were that patients received cancer treatment at a participating study site, caregivers provided informal care to someone with cancer, and clinicians (medical, allied health, and nursing) worked at a participating study site and were involved in cancer care delivery.

Purposive sampling was used to identify suitable participants. After the initial participants were recruited, snowball sampling was utilised where some clinicians informed the research team of other suitable participants. Participants were invited to the study through face-to-face clinics, telephone calls, videocalls and email. The invitation included a participant information sheet and links to online consent forms. Participation was voluntary, and no compensation was provided.

Demographic data including age, country of birth, language spoken at home, educational attainment, current work status and distance from the hospital was collected during interviews. Participants underwent a semi-structured interview informed by an interview guide containing prompts that explored telehealth experiences during the pandemic. The guide was based on the team's relevant research experience, and existing literature [10,22]. S.S. underwent training and practiced interviewing with members of the research team. Interviews were conducted by S.S. either face-to-face in clinical and casual settings, via telephone, or videocall (using a secure UNSW Zoom account). For patient-caregiver dyads, participants were interviewed separately. Interviews were audio recorded with the participants' consent. Data was transcribed verbatim and identifying information omitted for anonymity. Participants were given the opportunity to review their transcript to ensure their views had been accurately captured.

Thematic analysis occurred simultaneously to data collection, allowing researchers to determine data saturation (i.e. when no new relevant information emerges, and further coding is unfeasible [38,39]). Thematic analysis was conducted using NVivo 12 Pro software [40]. The critical realist paradigm was employed which incorporates aspects of objectivism (deduction and positivism) and subjectivism (induction and social constructivism), allowing researchers to delve deeper and understand causal relationships underlying empirical findings [41,42]. Braun and Clarke's guidelines for thematic analysis [43] were utilised, where transcripts were initially read to gain familiarity with the data before coding important concepts. S.S. was the primary coder and developed the initial coding tree from all interviews. Duplicative coding of three interviews (one from each participant group) was conducted by the second author and experienced qualitative researcher, B.S., to ensure codes systematically captured relevant data. After B.S. reviewed the initial coding tree, codes were subsequently grouped by S.S., with similar subthemes creating overarching major themes which were then named and defined. B.S. reviewed the themes to ensure they were both internally consistent and distinct from other themes.

## 3. Results

Fifty-two people were invited to participate, of whom 35 consented, with 34 completed interviews analysed (Fig. 1). Data collection ceased at 34 interviews, as data saturation was reached. The main reasons for exclusion were disinterest and non-reply. Nineteen interviews were conducted via telephone, nine via videocall, and six face-to-face. Average interview time was 26 min (range: 15–66 min). Due to the 2021 COVID-19 outbreak in Australia, we experienced difficulties recruiting urban participants, particularly caregivers. Whilst we aimed for an equal distribution of urban and rural participants, the distribution was 13 urban and 21 rural.

Participants included 14 clinicians, 13 patients, and seven caregivers, of which five were patient-caregiver dyads. Average participant

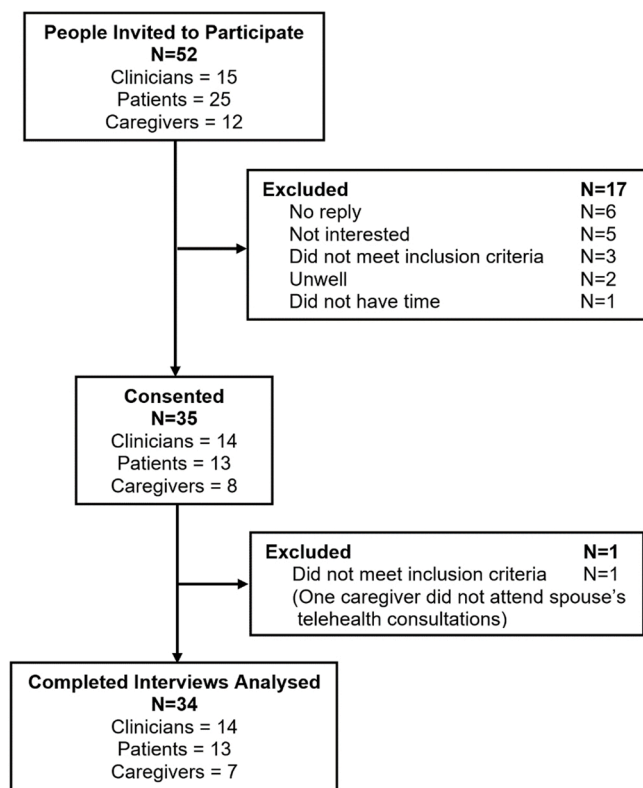


Fig. 1. Flowchart of qualitative study recruitment, data collection and analysis.

age was 56.6 years (range: 24–83 years), with averages for patients/caregivers and clinicians being 65.6 and 43.8 years respectively. Most (76.5%) participants were born in Australia. All participants used telephone telehealth, including nine who utilised both telehealth modalities. Patients had various cancer diagnoses. Caregivers were either a spouse or child of a patient. Clinicians were from various backgrounds (see Table 1).

Thematic analysis generated seven major themes: 1) Acceptability of telehealth as a form of consultation, 2) Telehealth impacts healthcare provision, 3) Communication & relationships through telehealth, 4) Efficiency of telehealth consultations, 5) Comfort of conducting telehealth in different environments, 6) Technological barriers encountered with telehealth and 7) Future preferences regarding telehealth use.

### 3.1. Theme 1: Acceptability of telehealth as a form of consultation

Most participants in all groups viewed telehealth as an acceptable temporary solution and appropriate form of consultation (Table 2). However, some participants expressed dissatisfaction in situations where they felt face-to-face consultations were more appropriate. For instance, there were mixed preferences among patients and caregivers for receiving bad news via telehealth versus face-to-face. However, clinicians stressed the importance of face-to-face consultations when disclosing a new cancer diagnosis or discussing emotionally provoking topics.

Participants, particularly patients and clinicians, also discussed the positive and negative effects of telehealth on their mental and physical health. Clinicians commented on the fatiguing nature of consistent technology use, whereas patients and caregivers mentioned that being away from the hospital environment benefited their mental health.

### 3.2. Theme 2: Telehealth impacts healthcare provision

Participants acknowledged the impacts of telehealth on different

aspects of cancer care (Table 3). Some patients believed that their cancer diagnoses were delayed due to the use of telehealth, rather than having face-to-face appointments. Some clinicians felt their approach to telehealth consultations was different than those conducted face-to-face and acknowledged limitations with physical examinations, providing paper referrals and resources, and inability to show test results.

Most patients and caregivers believed that telehealth provided the same quality of care as face-to-face consultations. However, many clinicians felt that the quality of care through telehealth was different, even sub-optimal. Most participants highlighted that continuity of care was maintained through telehealth, and some clinicians commented that appointment attendance improved.

### 3.3. Theme 3: Communication & relationships through telehealth

This theme reflects the strengths and weaknesses with communication and relationships between patients, caregivers, and clinicians through telehealth (Table 4). Whilst many experienced no communication problems, concerns were raised over those with hearing impairments and missing non-verbal cues with telephone telehealth. Complications using telephone interpreters for non-English speaking patients was raised more frequently by urban clinicians than rural.

The relationship between patients and clinicians was also raised. Some clinicians commented on the difficulty of establishing and maintaining rapport, especially with new patients and caregivers. Contrastingly, most existing patients and caregivers commented on minimal disruption to the relationship through telehealth. Participants in all groups commented that telehealth allowed involvement of extended family, something not always possible in face-to-face clinics. The impersonal nature of telehealth, particularly with telephone, was also discussed.

### 3.4. Theme 4: Efficiency of telehealth consultations

Participants in all groups commented on the efficiencies of telehealth over face-to-face consultations (Table 5). Some found telehealth to be convenient, causing minimal disruptions to daily routines. The majority acknowledged having shorter consultations with telehealth. However, clinicians had mixed views on whether workflow, efficiency and flexibility were improved or impaired with telehealth. Patients and caregivers mentioned the cost- and travel-savings, whereas some clinicians had difficulty receiving financial reimbursement for telehealth consultations.

Participants had mixed experiences regarding the logistics of telehealth. Issues such as confusion around appointment times, difficulty contacting the hospital or cancer clinic, and inopportune timing of telehealth appointments were highlighted in all groups.

### 3.5. Theme 5: Comfort of conducting telehealth in different environments

Patients and caregivers frequently commented on the benefits of having telehealth in their own comfortable home environment (Table 6). However, some did raise issues of being unexpectedly rung for an appointment when at work, whilst driving, or in public spaces like the library. Clinicians worked in different environments, with some in hospitals only, whereas others worked both at home, and in clinics, and each environment had positives and negatives.

Another important factor was the impact telehealth had on the safety of participants, particularly patients and caregivers, in terms of exposure to COVID-19 and other contagious diseases. Whilst many found telehealth to be a safety measure, particularly urban patients, a minority of rural participants did not perceive the pandemic to be of high concern, thus not impacting their safety.

**Table 1**  
Participant demographics.

Clinician Demographics									
Identity	Urban or Rural	Age bracket (years)	Country of birth (Australia, Overseas)	Language spoken at home	Highest level of education	Current work status	Type of telehealth used (video, telephone, both)	Time and/or distance to hospital	Position
Clinician 1	Urban	30–39	Overseas	English	Tertiary	Employed	Both	30 min, 15 km	Radiation Oncology Registrar
Clinician 2	Urban	40–49	Overseas	English	Tertiary	Employed	Telephone	35–45 min	Radiation Oncology Consultant
Clinician 3	Rural	60–69	Australia	English	Tertiary	Employed	Telephone	18 min, 21.9 km	Breast Cancer Nurse Specialist
Clinician 4	Rural	30–39	Australia	English	Tertiary	Employed	Telephone	7 min, 5 km	Oncology Social Worker
Clinician 5	Rural	30–39	Overseas	English	Tertiary	Employed	Telephone	10–15 min	Radiation Oncology Registrar
Clinician 6	Urban	50–59	Overseas	English	Tertiary	Employed	Telephone	1 hr	Radiation Oncology Consultant
Clinician 7	Urban	50–59	Australia	English	Tertiary	Employed	Telephone	30 km	Clinical Psychologist
Clinician 8	Urban	20–29	Australia	English	Tertiary	Employed	Both	1 hr	Radiation Oncology Registrar
Clinician 9	Rural	40–49	Australia	English	Tertiary	Employed	Telephone	10 min	Prostate Cancer Specialist Nurse
Clinician 10	Urban	40–49	Australia	English	Tertiary	Employed	Both	15 km	Radiation Oncology Consultant
Clinician 11	Urban	30–39	Overseas	English	Tertiary	Employed	Telephone	20 min	Prostate Cancer Nurse
Clinician 12	Rural	50–59	Australia	English	Tertiary	Employed	Both	10 min	Medical Oncologist
Clinician 13	Rural	30–39	Australia	English	Tertiary	Employed	Both	8.6 km	Haematologist Consultant
Clinician 14	Urban	60–69	Australia	English	Tertiary	Employed	Both	25 km	Haematologist Consultant
Patient Demographics									
Identity	Urban or Rural	Age bracket (years)	Country of birth (Australia, Overseas)	Language spoken at home	Highest level of education	Current work status	Type of telehealth used (video, telephone, both)	Time and/or distance to hospital	Cancer diagnosis and treatment
Patient 1	Urban	70–79	Australia	English	Secondary	Employed	Telephone	1 hr 53 min	Kidney, Combination
Patient 2	Rural	40–49	Australia	English	Vocational	Employed	Telephone	45 min	Bowel, Chemotherapy
Patient 3	Rural	80–89	Overseas	English	Tertiary	Retired	Telephone	5 min	Breast, Combination
Patient 4	Rural	70–79	Australia	English	Tertiary	Retired	Telephone	10 min	Lung, Combination
Patient 5	Urban	70–79	Australia	English	Secondary	Retired	Telephone	5 km	Lung, Combination
Patient 6	Rural	60–69	Australia	English	Secondary	Unemployed	Telephone	5 km	Prostate, Combination
Patient 7	Rural	60–69	Australia	English	Tertiary	Unemployed	Telephone	1 hr 30 min	Breast, Combination
Patient 8	Rural	60–69	Australia	English	Secondary	Retired	Telephone	20 km	Prostate, Combination
Patient 9	Rural	60–69	Australia	English	Tertiary	Retired	Telephone	5 km	Haematological, Immunomodulators
Patient 10	Urban	30–39	Australia	English	Tertiary	Employed	Both	30–60 min	Brain, Combination
Patient 11	Rural	70–79	Australia	English	Tertiary	Retired	Telephone	5 km	Haematological, Combination
Patient 12	Urban	80–89	Australia	English	Vocational	Retired	Telephone	9 km	Lung, Radiotherapy
Patient 13	Rural	60–69	Australia	English	Secondary	Employed	Telephone	30–35 min	Prostate, Combination
Caregiver Demographics									
Identity	Urban or Rural	Age bracket (years)	Country of birth (Australia, Overseas)	Language spoken at home	Highest level of education	Current work status	Type of telehealth used (video, telephone, both)	Time and/or distance to hospital	Relationship to the person they are caring for
Caregiver 1	Rural	70–79	Overseas	English	Secondary	Retired	Telephone	8 min, 5 km	Spouse
Caregiver 2	Rural	80–89	Australia	English	Secondary	Unemployed	Telephone	15 km	Spouse
Caregiver 3	Rural	80–89	Overseas	English	Tertiary	Retired	Telephone	5 min	Spouse
Caregiver 4	Rural	70–79	Australia	English	Tertiary	Retired	Telephone	3 km	Spouse
Caregiver 5	Urban	30–39	Australia	English	Vocational	Unemployed	Both	20–30 min	Spouse
Caregiver 6	Rural	70–79	Australia	English	Secondary	Retired	Both	40 min	Spouse
Caregiver 7	Rural	20–29	Australia	English	Secondary	Unemployed	Telephone	1 hr	Child



Key: min=minutes, hr=hours, km=kilometres, Combination = a combination of more than one of the following: chemotherapy, immunotherapy, hormone therapy, targeted therapy, surgery, and/or radiotherapy.

**Table 2**

Subthemes related to Theme 1: Acceptability of telehealth as a form of consultation.

Subtheme name, description, and <i>illustrative quotes</i>
<p><b>Attitudes towards telehealth</b> Most participants were satisfied with telehealth. However, one caregiver claimed that telehealth was insufficient for patient care, and therefore deemed inappropriate. Some clinicians commented that telehealth interactions were less satisfying than face-to-face, and others experienced decreased job satisfaction. <i>“I think the mental exhaustion of having no, sort of, biofeedback from your patients was really prominent. Like you do lose that positive relationship-building rapport that I think is what makes a job rewarding... That if it’s all on the phone, yes, your efficiency is better, but you actually lose a lot of job satisfaction”.</i> (Clinician 5)</p> <p><b>Appropriate and inappropriate circumstances to use telehealth</b> Patients commented that telehealth was useful for routine check-ups, and this was echoed by clinicians. Some commented on the unsuitability of delivering bad news via telehealth, whereas others accepted this, stating that it allowed them to be informed of the bad news earlier and avoid becoming upset. <i>“So to be told you’ve got a terminal cancer over the phone, it doesn’t worry me... My doctor wanted a face-to-face yesterday with me... and I thought, I don’t think I really want to go and see [Clinician’s name] face-to-face, because I know I’m going to get myself upset”.</i> (Patient 12)</p> <p><b>Impacts of telehealth on physical and mental health</b> Some patients and caregivers discussed that telehealth allowed them to avoid the hospital environment, which positively benefitted their mental health. Comments were also made regarding the physical comfort of not wearing face masks during telehealth. <i>“Sometimes when you go to oncology...it gets you a bit down... not having to go in there and see other people, be faced with that, it kind of makes you feel a little bit freer”.</i> (Patient 2)</p>

**Table 3**

Subthemes related to Theme 2: Telehealth impacts healthcare provision.

Subtheme name, description, and <i>illustrative quotes</i>
<p><b>Changes in clinician’s approach to a consultation</b> Participants in all groups commented on limitations with virtual physical examinations, and the inability to receive paper prescriptions and resources, and view test results. Clinicians noted that telehealth made them more direct in their consultation approach. One clinician commented on the inability to teach students and junior doctors during telehealth consultations. <i>“It’s [telehealth] not the same medical assessment as seeing the patient. There’s a lot of subconscious assessment that takes place and of course, you can’t examine the patient. So it’s certainly not the same as a standard clinic review”.</i> (Clinician 13)</p> <p><b>Changes in diagnosis and management of patients</b> There were mixed comments on the ability to convey health concerns, and whether these were addressed by clinicians through telehealth. Concerns were also raised about clinicians potentially missing information from patients through telehealth. <i>“I don’t think the person you are communicating with... represents really what you’re dealing with at all. I think people put on a telephone attitude, which is totally different from what is going on in real life”.</i> (Caregiver 3)</p> <p><i>“You also end up leaving the [telehealth] consultation feeling like you’re missing things. There’s definitely a sensation of I really hope I haven’t missed something, or just not asked the right question for this patient”.</i> (Clinician 5)</p> <p><b>Continuity and quality of care</b> Some patients and caregivers commented on the changed quality of care with telehealth, whereas others thought it was the same, or even improved. Clinicians commented on the increased number of interactions with patients and caregivers, and continuity of care through telehealth. <i>“I feel like it’s [telehealth] not providing the service that I would like to provide to the patients. I feel like it’s sub-optimal... it has impacted on the quality. I don’t feel like I’m giving them the best sort of care that we could provide”.</i> (Clinician 11)</p> <p><i>“The fact that they [clinicians] called him [patient] between every cycle, which I don’t think we would have had that if he didn’t have the telephone consults... I’d say he’s probably been able to be in contact with them a lot more. He’s able to email his doctors, and they can call him straight away if they need to as well, which has been quite helpful”.</i> (Caregiver 5)</p>

**Table 4**

Subthemes related to Theme 3: Communication & relationships through telehealth.

Subtheme name, description, and <i>illustrative quotes</i>
<p><b>Relationships and rapport through telehealth</b> Some participants commented on the increased ability to involve extended family through telehealth. However, some caregivers commented on merely listening during telehealth consultations, and were not actively involved. Clinicians also reported difficulties building rapport, and the missed opportunity to gather a collaborative history from caregivers with telehealth. Some patients and caregivers acknowledged their comfort with telehealth was due to confidence in their specialists. <i>“I think the most positive thing about the telehealth was really that I could involve people that aren’t here. Especially in this current situation. So being able to involve my parents was really positive”.</i> (Patient 10)</p> <p><i>“I had less information to work on in terms of not getting that additional information... I have to work harder with their intonation, trying to pick up emotion in their voice... on the phone, I can’t see if they have tears in their eyes, I can’t respond to that”.</i> (Clinician 7)</p> <p><b>Misunderstanding and miscommunication through telehealth</b> Clinicians had concerns for misunderstanding amongst patients and caregivers through telehealth. An important issue raised more so by urban than rural clinicians was the use of telephone interpreters for non-English speaking patients. Whilst acknowledging that interpreters usually increase consultation time, issues unique to telehealth were problems with three-way telephone calls, lengthy wait times, and interrupted communication. <i>“Language barriers as well was a really hard one... I’d always have to get a phone interpreter on the line as well, and their line wasn’t always that great at having to connect three phones, and there was always a lot of time delays”.</i> (Clinician 1)</p> <p><b>Impersonal nature of telehealth</b> Telehealth was described as an impersonal experience, due to the inability to recognise who you were speaking with. Importantly, these comments were raised by telephone-users only. Those who used both telehealth modalities found video to be more personal than telephone. <i>“I’m sitting here on my own, it’s like, you know, who am I talking to”?</i> (Patient 6)</p> <p><i>“When you’re dealing with your metastatic patients and they know that, you know, going to die from their disease, it kind of allows you to spend that time and even though we’re not supposed to touch...just having that reassurance goes a long way. So over the phone, I find that missing”.</i> (Clinician 9)</p>

### 3.6. Theme 6: Technological barriers encountered with telehealth

Whilst some participants encountered no technology issues and felt comfortable using either telehealth modality, others lacked confidence in the technology (Table 7). Some patients and caregivers acknowledged low technological literacy as a barrier for trialling video telehealth. Reception and connectivity issues were raised more frequently by rural participants than urban. Clinicians commented that the onus is on patients to improve their technology and confidence, and this was another barrier preventing the more widespread use of video telehealth.

Participants in all groups recounted telehealth experiences where technology had failed, with issues including poor internet and telephone reception, problems with email, and security, confidentiality, and privacy concerns. Clinicians also commented on the provided technology and equipment. Issues raised were hospital policies restricting which video platforms were used, inadequate technological support, and use of private caller identity (ID).

### 3.7. Theme 7: Future preferences regarding telehealth use

Almost all participants in the study expressed a future preference for combined telehealth and face-to-face care, with only two caregivers preferring face-to-face only for their spouses’ care (Table 8). No participants chose telehealth consultations only. Those who experienced both video and telephone telehealth described situations where each was appropriate, but a preference for video telehealth was indicated. Others who only used telephone telehealth speculated that videoconferencing may lead to an improved experience.

**Table 5**  
Subthemes related to Theme 4: Efficiency of telehealth consultations.

Subtheme name, description, and illustrative quotes
<p><b>Convenience</b></p> <p>Patients commented on the convenience of telehealth, especially when they were physically unwell, meaning they could still have medical consultations without leaving home. Others discussed that telehealth allowed them to remain working and not have to take leave, and the improved ease of access to medical care.</p> <p><i>“Just the fact that I knew I always had some way I could get what help I needed, I suppose, without having to get in the car and go 40 min to the nearest doctor, yeah. Especially when I was unwell, really unwell”.</i> (Patient 7)</p> <p><b>Time</b></p> <p>All groups generally found telehealth to be timesaving. However, a few clinicians flagged issues with impaired workflow due to the time inefficiency of setting up telehealth, and problems with patients not answering their calls.</p> <p><i>“I think for me personally, it [telehealth] meant that I had a bit more flexibility. If my clinic was running on time or early, I could call the patient earlier, or if something had cropped up and my clinic was running late, I could still touch base with the patient later, and the patients not physically... sitting in the waiting area, stressing out”.</i> (Clinician 2)</p> <p><b>Cost</b></p> <p>Some participants commented on the benefits of bulk-billed telehealth consultations, and savings on petrol money. Some clinicians also discussed the difficulty with patients trying to make payments over the telephone after telehealth consultations, therefore meaning reduced income. Importantly, this was described as a minor issue.</p> <p><i>“They didn’t charge me for the over the phone consultations. And being a pensioner, I appreciated that”.</i> (Patient 6)</p> <p><b>Travel</b></p> <p>Participants commented on travel-savings with telehealth.</p> <p><i>“Most of the time in that period that I was going in and back from the clinic, we didn’t have any transport because my wife couldn’t drive and I couldn’t drive, so we used to have to book a car... telehealth sort of saved us having to do that”.</i> (Patient 4)</p> <p><b>Logistical Factors</b></p> <p>Participants commented on issues with organising telehealth consultations for example, difficulty contacting patients and the hospital, and the sometimes-inconvenient times that clinicians would ring patients and caregivers. Clinicians were also asked about receiving training to conduct telehealth, with a majority having none.</p> <p><i>“There’s quite a lot of chasing, particularly for some patients, like you know, call them three times, four times. So that being cumulatively more time than actually seeing them”.</i> (Clinician 10)</p>

**Table 6**  
Subthemes related to Theme 5: Comfort of conducting telehealth in different environments.

Subtheme name, description, and illustrative quotes
<p><b>Different environments</b></p> <p>Most patients and caregivers had positive experiences with utilising telehealth at home. However, one caregiver commented that having telehealth at home felt no different, as they still experienced nervousness whilst waiting for the appointment. One patient commented on interruptions from their children whilst having telehealth at home. Clinicians who conducted telehealth in shared office spaces commented on background noise and the potential inability to maintain privacy and confidentiality.</p> <p><i>“My world’s very busy, because I’m not the typical stereotype age... So, I’ve still got kids at home...so sometimes when I’m on the phone, even though you said to them ‘Look, the doctor’s going to ring at 10 o’clock’ they would run in and go ‘Mum where’s my lunch box?’...and I would just go ‘Stop’ and then they go ‘Oh, sorry’ ”.</i> (Patient 2)</p> <p><i>“I work in a shared office with a part-time colleague...So on the days where she isn’t here, it’s [telehealth] much easier, just in terms of background noise. On the days where she is here, and she’s on a call, and I’m on a call, it actually doesn’t work that well in terms of background noise and, you know, confidentiality issues”.</i> (Clinician 7)</p> <p><b>Safety in terms of exposure to COVID-19</b></p> <p>Most patients and caregivers described feeling safe with telehealth, as it prevented exposure to COVID-19, whereas others did not perceive any increased safety.</p> <p><i>“This week’s appointments with seeing [COVID-19] outbreaks in all three hospitals that he [patient] had to go to, we were really, really nervous about going this week. And so, when they called and asked if we’d like to do telehealth appointments, we felt much more comfortable in taking that”.</i> (Caregiver 5)</p>

**Table 7**  
Subthemes related to Theme 6: Technological barriers encountered with telehealth.

Subtheme name, description, and illustrative quotes
<p><b>Confidence with equipment and platforms used</b></p> <p>Clinicians commented on the unnecessary stress associated with setting up and learning how to use videoconferencing, especially for less technologically savvy patients. Others commented on the unreliable nature of equipment during telehealth consultations.</p> <p><i>“I would have been a bit more stressed if I had to do Zoom or something, because I’m not that yeah, technically strong. The phone was easy”.</i> (Patient 7)</p> <p><i>“Our patients were literally on the brink. Their level of stress was 11 out of 10 and to facilitate [video telehealth] something else of a learning nature for them, would have been not do-able...anyone knows setting up any sort of FaceTime call, Zoom, Skype, there’s always a level of technical difficulty. There’s more confidence in picking up the phone and just being able to talk”.</i> (Clinician 4)</p> <p><b>Reception, connectivity, and privacy issues</b></p> <p>Participants had mixed experiences regarding internet connectivity and telephone reception issues. One rural patient-caregiver dyad explained how poor data bandwidth prevented them from using video telehealth. Clinicians commented on the inability to conceal their personal telephone number with telehealth, creating privacy issues.</p> <p><i>“There are times when out in the rural property, video would not be feasible... we wouldn’t have had enough data reception to run a video”.</i> (Caregiver 7)</p> <p><i>“You have private mobiles being used, which I think on occasion, you forget to put it on private, and then the patient has your private number, and then you get called out of hours...that was quite difficult”.</i> (Clinician 5)</p> <p><b>Issues with the technology used in and provided by hospitals</b></p> <p>Some clinicians used hospital-provided equipment for telehealth, and commented on the slow provision of technology, and that technology support was inadequate. The issue of private caller ID was also discussed. Others commented on hospital directives regarding which platforms could be used for telehealth, and that less well-known platforms were more difficult to use.</p> <p><i>“I spent a lot of time trying to figure out, well what format can we use, what platform can we use and found out that the area health...had lots of stipulations on what formats we could use. So that became a real barrier to utilising video”.</i> (Clinician 3)</p> <p><i>“I’ve had some men that have never picked up my call because they have blocked all private numbers, and so when I ring them, it just goes dead”.</i> (Clinician 11)</p>

**Table 8**  
Subthemes related to Theme 7: Future preferences regarding telehealth use.

Subtheme name, description, and illustrative quotes
<p><b>Preferences with regards to video or telephone telehealth</b></p> <p>Users of both telehealth modalities typically stated that video was their preference. However, some justified situations where both were appropriate. Others who did not use video telehealth commented that this was a future consideration.</p> <p><i>“I think the bigger appointments like...the radiation oncologist, now we only see every three months, I think that we would prefer video, ‘cause we don’t see her regularly. But the phone calls that he [patient] gets regularly from his cancer coordinator, I think just a telephone call is more than enough”.</i> (Caregiver 5)</p> <p><i>“I think I would use it more [video telehealth]. I would use it more than the phone consult. I don’t think it would replace the face-to-face, but it would probably just make the phone consultations better”.</i> (Clinician 3)</p> <p><b>Future use of telehealth and face-to-face care</b></p> <p>Most participants preferred future consultations to be a combination of face-to-face care and telehealth. Two caregivers preferred face-to-face care, giving reasons such as the complexity of the cancer required face-to-face consultations. Some clinicians discussed that telehealth could be incorporated into future models of cancer care, and they would support the patient’s consultation preference, highlighting the importance of providing patient-centred care.</p> <p><i>“As long as they [patients] get the care and they’re understanding everything and they’re happy with it, it’s fine. It’s not about me, it’s about them... I would be more than happy to take on [telephone] telehealth or video even, if that’s what they preferred”.</i> (Clinician 11)</p> <p><b>Adjustments needed for continued telehealth use</b></p> <p>Clinicians were generally quite accepting of the future role of telehealth but suggested areas to improve. Some commented that private caller ID should be removed, to increase patient compliance and time efficiency. Interestingly, a caregiver commented that if telehealth continues, training should be provided to clinicians. Many clinicians acknowledged that only selected patients should use telehealth in future.</p> <p><i>“It would be lovely if the hospital phones had an ID that said, you know, Cancer Therapy Centre Clinic, or something, so that the patients know that you’re not some random telemarketer just hassling them. Then I think they would be more likely to pick up”.</i> (Clinician 2)</p>

Clinicians also highlighted the need for adjustments to current telehealth procedures, including easier ways to organise consultations, providing training or a guideline for consultations, and selecting specific patients for telehealth.

## 4. Discussion and Conclusion

### 4.1. Discussion

Our study is one of few oncology studies that has simultaneously explored urban and rural patient, caregiver, and clinician telehealth perspectives during the COVID-19 pandemic. The seven themes derived from qualitative interviews demonstrate the overall acceptability and positive impact of telehealth, but also illustrate some of the pitfalls and potential improvements needed to optimise the sustained implementation of telehealth in oncology beyond the pandemic.

Participants were generally satisfied with telehealth, a well-known finding [13,18,21,25,28,33,44]. Interestingly, one study found that patient telehealth satisfaction varied with reason for visit, with patients on treatment feeling less satisfied than new or follow-up patients [28]. In our study, all patients, regardless of the stage of their cancer journey, were generally satisfied with telehealth. Literature demonstrates that clinician satisfaction is lower than patient satisfaction [33], which was also seen in our study.

The delivery or acceptance of bad news through telehealth was discussed, with patients and caregivers having opposing views. Two previous studies indicate indifference regarding patient preference for bad news delivery via telehealth or face-to-face consultations [14,25]. Clinicians in our study generally stated that bad news delivery should occur face-to-face, which is supported in literature [10]. Prior to the pandemic, guidelines for the delivery of bad news have been described in face-to-face settings [45]. The appropriateness of delivering bad news via telehealth has been discussed during the pandemic [46], and tools have been created to assist clinicians with virtually delivering bad news [47].

Participants commented on the physical and mental health impacts of telehealth which have not been previously described. Clinicians mentioned the fatiguing nature of constant technology use, whilst others described not having to wear facemasks during telehealth consultations as a positive. The impact of hospital environments on the quality of life and mood of cancer patients has been studied [48]. In our study, some patients and caregivers commented on the benefits of avoiding the ‘depressing’ clinical cancer environment through using telehealth.

Some participants discussed perceived delays in their cancer diagnoses due to initial telehealth use, rather than face-to-face consultations where examinations and investigations could occur. A recent Australian study estimated 2530 cancers were delayed or undiagnosed in Victoria during the initial stages of the pandemic [49]. The reduction in screening and access to diagnostic procedures during lockdown would be the main factor behind this, however, it is possible that the increasing use of telehealth in primary care may have affected timely care.

The limitations with physical examinations and providing paper resources was discussed in our study and are previously recognised [10, 14–16,28]. One clinician commented on the inappropriateness of visual inspection of genitalia for prostate cancer patients through video telehealth, with similar findings in another study regarding visual inspection of breasts over video telehealth [11]. The inability to provide prescriptions over telehealth for drugs of addiction, such as opioids, was raised by a caregiver, and was also discussed in a study exploring telehealth use in palliative care patients [22]. As telehealth becomes more prominent and replaces face-to-face care in some cases, reassessment of what procedures and prescriptions can be delivered via telehealth may be needed.

Most patients and caregivers generally found the quality of telehealth interactions to be similar to face-to-face, whereas some clinicians perceived a diminished quality. A survey of oncology clinicians found

that 26.1% perceived a decrease in the quality of care with video telehealth [33]. Telehealth may be more suitable for follow-up consultations, rather than new or symptomatic patients. The benefits of not having to attend hospital can be achieved, and some of the limitations previously noted become less of an issue.

Mostly urban clinicians encountered issues with simultaneously calling three people and gathering sufficient information with telephone interpreters for non-English speaking patients. These findings are prominent in literature [11], especially one study where mental health providers with refugee clients experienced greater difficulty with telehealth interpreters than those face-to-face [50]. To enable the future use of telehealth, training of clinicians and interpreters on how to undertake three-way telehealth consultations may be needed. This would be especially important for those in urban areas, as there is greater cultural diversity in patients and a need for telehealth interpreting services, rather than rural locations.

Some participants acknowledged their comfort with telehealth was based on prior relationships with their specialists, a finding also seen in general practice telehealth literature [51]. Some clinicians raised concerns over establishing and maintaining rapport with new patients, also previously recognised [10,50]. Importantly, those who used both telehealth modalities in our study commented that relationships were stronger through video telehealth, compared to telephone. While it may not always be required, greater support for video telehealth may overcome some rapport-building and communication issues.

The benefits and challenges of family involvement in patients’ cancer care has been researched [52,53], with generally favourable views. Participants in our study appreciated the ability to involve extended family through telehealth, thus reinforcing the important role of family in a patient’s cancer care.

Most participants commented on time-, cost-, and travel-savings with telehealth, and the minimal disruptions to daily routines, findings that are previously known [10,12–16,18,20–22,25,32,51,54]. Clinicians experienced increased, but sometimes impaired workflow and job flexibility with telehealth, and some discussed burnout, with similar views in a recent study [11]. Whilst the efficiencies of telehealth support its continued use, concerns for impaired workflow and clinician burnout need to be addressed, to ensure all users are satisfied with telehealth.

Patients and caregivers commented on the benefits of having telehealth at home, similar to previous studies [22,32]. An emerging finding in recent studies [14,15,32] is the perceived safety associated with decreased exposure to COVID-19 through telehealth. In our study, patients and caregivers appreciated this decreased exposure, however clinicians did not perceive this safety personally. Contrastingly, a recent American study found that specialists embraced telehealth as a safety measure for themselves, and their patients [54]. These somewhat differing findings may be due to the pandemic reaching different levels of severity in America and Australia.

Problems with poor internet and telephone reception were raised primarily by rural, but also urban participants, whereas others encountered difficulties with video telehealth, findings that are previously known [15,16,23,28,44]. It is important to recognise that these reception issues may impact the modality of telehealth offered in rural areas in future use. Clinicians anticipated challenges with video telehealth for those with low technology literacy, such as elderly and non-English speaking patients. This was highlighted by one caregiver who received assistance from grandchildren with learning videoconferencing. This barrier has been previously recognised [50,54], and one study has demonstrated the benefits of providing telehealth training for elderly diabetic patients [55], which could potentially be used to enable increased future use of video telehealth.

A new finding from our study is regarding the use of private caller IDs. Clinicians who utilised hospital telephones commented that calling from a private number prevented some patients from answering, thus delaying appointments. Future telehealth could utilise hospital-identified phone numbers to increase patient compliance.



Most participants supported the future use of telehealth with a combination of face-to-face and telehealth consultations, and recent studies have demonstrated this desire to continue telehealth post-pandemic [21,28,32,33,51,56]. Participants in our study who experienced both telehealth modalities had mixed views regarding which was better. A study using hypothetical clinical scenarios found that oncologists typically preferred video to telephone [56]. Both patient and clinician preferences should be accommodated where possible.

A crucial finding from our study was that telehealth is not appropriate for all patients. Clinicians described patients being seen in follow-up settings, with uncomplicated needs, and not requiring the discussion of emotionally provoking topics to be appropriate. Studies have demonstrated that established patients [33], those receiving follow-up [14,28], and not requiring physical examination [11,51] are suitable for telehealth. The future use of telehealth needs to be based on patient preferences, and suitability determined by clinicians.

Factors that facilitate telehealth use in future cancer care include high user satisfaction; time, cost, and travel conveniences; ease of access to medical care; increased safety through decreased exposure to COVID-19; and the involvement of extended family. Barriers which need to be addressed include providing appropriate facilities and technology for telehealth consultations and selecting appropriate patients. Importantly, whilst most of the aforementioned enablers and barriers apply to both urban and rural settings, issues with telephone/internet reception and telehealth interpreting services may be more pertinent for those in rural and urban locations respectively. It is important to note that some of the issues with time wasted setting up virtual consultations are likely to be overcome once telehealth and supporting infrastructure become more established. However, there was a steep learning curve for those that first utilised telehealth.

Our study's qualitative design was crucial, as it allowed experiences to be captured in the participants' own words. This has deepened our understanding of the factors that underpin the broad acceptability of telehealth seen in quantitative studies. The use of semi-structured interviews provided a more detailed perspective of the enablers and barriers to sustained telehealth use. We captured a variety of perspectives from patients, caregivers, and clinicians with differing demographic details; those in urban and rural locations; and both telehealth modalities used, broadening our understanding of how telehealth works in different contexts and for different users. The study is also strengthened by its relatively large sample size, in comparison to a similar, smaller study [25].

Despite these strengths, our study has some limitations. As with similar telehealth studies [14,51], all participants were English-speaking. Patients with limited English proficiency have lower rates of telehealth use than those with proficient English [57]. This group may have unique telehealth needs and experiences that should be explored. Another limitation was that most interviews were conducted via telephone, meaning that we may have captured a cohort of people who are comfortable with telehealth, leading to more favourable views. Since most participants utilised telephone telehealth only (as this was often the only telehealth modality offered), it may be important to explore more video telehealth perspectives.

Barriers such as low technological confidence, and inappropriate environments for telehealth may be overcome through strategies including the provision of video telehealth training for all users; and providing designated telehealth workspaces and equipment for clinicians. This could be explored in future research.

#### 4.2. Conclusion

The rapid uptake of telehealth during the pandemic has mostly been well-received. Our findings align with existing literature and provide new insights to the use of telehealth in oncology, including the benefits of telehealth on physical and mental health, and the importance of having hospital-identified phone numbers to increase patient

compliance.

#### 4.3. Practice Implications

Enablers such as high satisfaction, and convenience will support the continued use of telehealth. However, barriers including inadequate facilities and technology, and the inappropriateness of telehealth for some situations must be addressed if telehealth is to be used in future cancer care.

#### CRediT authorship contribution statement

**Sarah Smith:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Ben Smith:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – review & editing, Supervision. **William Kennett:** Conceptualization, Methodology, Formal analysis, Writing – review & editing, Supervision. **Shalini Vinod:** Investigation, Writing – review & editing, Supervision.

#### Declaration of Competing Interest

The authors declare that there is no conflict of interest.

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