

Telemedicine in The Context of Covid-19- A Qualitative Study of Cancer Patients and Clinicians

Dylan Chan Tai Kong (✉ z5143222@ad.unsw.edu.au)

UNSW Sydney

Ashfaq Chauhan

UNSW Sydney

Anais Tiffany Ah Leung

University of Newcastle Australia

Melvin Chin

UNSW Sydney

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Abstract

Background:

Prior to the Covid-19 pandemic, telemedicine was only used to deliver health care to patients living in remote areas of Australia. However, the spread of the Covid-19 virus pushed the widespread uptake of telemedicine across Australia, including in metropolitan regions. This qualitative study will explore the medical oncology (MO) patient and clinician experience of telemedicine in a metropolitan setting as a result of Covid-19.

Method:

Participants were selected and invited to participate by theoretical sampling from MO clinicians and patients attending MO clinics at Prince of Wales Hospital. Data was collected by in-depth semi-structured interviews. Thematic analysis was performed to analyse the interview data. Transcripts were coded using the grounded theory approach to identify overarching themes.

Results:

Twelve participants were recruited to the study. Most participants viewed the adoption of telemedicine positively because it was considered as convenient, efficient and could be used in order to reduce the spread of Covid-19. Nonetheless, participants complained about the poor implementation of telemedicine, technical difficulties and lack of proper training. Finally, providers expressed mixed views over the lack of personal interaction and the lack of physical examination from telemedicine. However, both clinicians and patients viewed telemedicine as acceptable to be used in the context of routine follow-ups.

Conclusion:

Although some operational improvements are necessary, the role of telemedicine in the follow up of MO patients seems likely to continue beyond Covid-19.

1. Background And Rationale

Telemedicine is defined as the delivery of health care services via information and communication technologies (1). Prior to the Covid-19 Pandemic, telemedicine was already established for use in managing cancer patients from remote areas around the world (2, 3), including in Australia (4). In rural Queensland, telemedicine has been a successful alternative to face-to-face consultations to improve the access to health care to people living far away from health care centres (5).

Research into telemedicine prior to the Covid-19 Pandemic demonstrated the usefulness of this technology in clinical practice (6-9). However, in its practical use many clinicians viewed telemedicine as a disruptive and complex technology (9, 10) that increased their workload (10, 11). Regarding the

patient's perspective, a majority reported being satisfied with the quality of virtual consultations (12). In particular, patients have praised telemedicine for its convenience and reduced disruption to their daily life (13). However, some patients felt a lack of personal connection when using telemedicine (12, 14). Furthermore, the accessibility of telemedicine may be problematic for patients without a device capable of supporting telemedicine (15) or who lack the technical competence to use it (16).

Nevertheless, for patients living in rural areas telemedicine can be used to reduce travel time and increase their access to health care (5, 14). However, patients living in metropolitan areas such as Sydney do not generally have the same issues with access to health care centres compared to their rural counterpart (17). As a result, it is unknown if telemedicine might be as attractive to people living in metropolitan areas.

Recent Development:

In 2019, a highly infectious strain of novel Coronavirus caused a worldwide pandemic (18). This pandemic raised concerns over the possibility of hospital-based transmission of the virus (19, 20). In order to reduce the nosocomial spread of Covid-19, a shift from in-person to remote consulting occurred across Australia (21, 22). Although, telemedicine was already used in Australia, it was mostly limited to rural areas (23). On 13th March 2020, in response to the Covid-19 pandemic, the Australian Government introduced temporary Medicare Benefit Schedule (MBS) codes to allow for the payment of telemedicine for patients at risk of Covid-19 leading to a rapid adoption of telemedicine across all of Australia (24). Indeed, according to the Household Impacts of Covid-19 Survey from the Australian Bureau of Statistics, 17% or 3.3 millions of Australians have used a telemedicine service between early April to early May 2020 (25). Switching to telemedicine may especially be important for cancer patients to reduce their potential exposure to infections due to their propensity to contract opportunistic infections (15, 26). Telemedicine can also be used to combat the personal protective equipment (PPE) shortage across hospitals (15, 27). It has not been established, beyond rural areas, if telemedicine can be used as a safe and preferred alternative to in person consultations. It is also unknown if in the post Covid-19 world, if telemedicine can be a new standard of care for oncology consultations.

While numerous studies explore the patient's experience of telemedicine in rural areas, none have been made for metropolitan patients who have used it out of necessity. This qualitative study aims to fill a gap in our understanding of the cancer patient and clinician experience of telemedicine during this pandemic. A qualitative approach was selected to gain an understanding of the patient's and clinician's attitude towards telemedicine, including the nuances of individual experience of telemedicine, in order to understand how context and setting can influence the one's experience.

2. Methodology

This qualitative study used the grounded theory method as the theoretical framework for the analysis and interpretation of the data. Theoretical sampling of participants, considered to be likely to provide information rich data, included medical oncology clinicians and patients who had used telemedicine.

Data was collected from participants through semi-structured in-depth interviews. Semi-structured interviews allow the researcher to collect information in an open-ended and flexible manner (29). The interview protocol (IP) consisted of: 1) open-ended questions about the experience telemedicine including differences to usual care 2) questions about barriers to access telemedicine services 3) recommendations from the participants to improve the service. The IP was used to guide the interview; however, the wording and order of the questions were flexible. The IP was modified and adjusted using an iterative process as new themes emerged from the concurrent data analysis. Data collection occurred until thematic saturation was reached. Thematic saturation is defined as the point where additional interviews no longer create new themes.

2.1 Study population and recruitment

Medical oncologists and Cancer Nurse Coordinators from the Prince of Wales Hospital (POWH) Nelune Comprehensive Cancer Centre (NCCC) who have used telemedicine received a written invitation from the chief investigator. Clinicians that agreed to participate in the study were asked to suggest patients who would be able to communicate their experience of telemedicine in an articulate and reflective manner to participate in the study. Patients with a broad range of experiences, both positive and negative were preferred.

The study invited patients who had used telemedicine, hence producing a biased sample as the opinions of patients who have not used telemedicine or who had refused are not represented. Furthermore, participants were invited by email. As a result, our sample is limited to participants who had access to an email address and sufficient technological knowledge to use it.

2.2 Data collection:

All the interviews were conducted by DC. Prior to the commencement of the study, DC had never conducted or participated in a telemedicine consultation, thus reducing the chances of introducing bias during the data collection. The study sample comprised of 12 participants: 9 staffs and 3 patients. The participants were interviewed in-person or by phone or video conferencing in accordance with their choice. Although qualitative interviews are usually conducted in-person, there is sufficient evidence to suggest that Zoom™ or telephone interviews are acceptable methods to collect data (30-33). Written informed consent including permission to audio record the interview was obtained from each participant prior to commencing. The interviews took place between August and November 2020. Each interview lasted between 15 to 40 min. Some interviews were cut short due to staff work commitment or patient schedules. Transcription was performed by DC from the audio-recorded interviews.

2.3 Data analysis

Applying the grounded theory approach, data was concurrently gathered and analysed. A general theory was generated from the data that was gathered. The interview data was coded and indexed in stages. A code is defined as a word or a short sentence that captures the essence of a piece of data (34, 35). In the

open coding stage, repeating sections of the data were identified, then keywords or short sentences were assigned. In the axial coding stage, the codes were examined at a more conceptual and abstract level. In the final selective coding stage, concepts were linked together (28). This provided a final core theory that emerged from the data. NVIVO 9 software was used to thematically analyse the interview transcripts

Data analysis was performed independently by 4 researchers: AC, MC, AA, and DC. Points of contention in the interpretation of the transcripts were identified and discussed as a group.

3. Results

3.1 Sample Characteristics:

Twelve participants were recruited to the study. Eight interviews were conducted in-person, two interviews were conducted on Zoom™, a video communication platform and two interviews were conducted by telephone. The sample consisted of 6 males and 6 females' participants. Nine participants were clinicians and three participants were patients. Amongst the clinicians, 5 consultants, 2 advanced trainees and 2 cancer nurse coordinators have been interviewed. Amongst the 3 patients, we interviewed patients that were being treated by 3 different consultants for respectively lung cancer, breast cancer and Ewing's sarcoma. Table 1 describes in more details the demographic information of the participants.

Table 1: Sample Characteristics

Sample Characteristics	Number	%
Age (years)	<i>Total n =11</i>	
<30	2	18
31-40	3	27
41-50	3	27
51-60	1	9
61-70	2	18
Sex		
Male	6	55
Female	5	45
Non-Binary	0	0
Status		
Clinician	8	73
Patient	3	27
Interview Method		
In person	8	66
Zoom	2	17
Telephone	2	17

3.2 Thematic Analysis

Three primary themes and numerous subthemes were identified from the semi-structured interviews. The primary themes are:

- I. Telemedicine adoption was welcomed but rushed
- II. Not the same as being in the same room - inherent issues of telemedicine
- III. Telemedicine can be useful beyond Covid-19 but needs to be improved

Quotes from clinicians and patients have been respectively labelled as C and P.

I. Telemedicine adoption was welcomed but rushed

Telemedicine was introduced towards the end of March 2020 at the NCCC in response to the surge of Covid-19 cases in Sydney. For video conferencing, the NCCC adopted the use of PEXIP, a New South Wales Health approved internet-based video consultation platform. Both patients and clinicians positively welcomed the initial transition to telemedicine as a way to continue providing MO services to the community. However, providers felt that the transition from in-person appointment to telemedicine was rushed. In particular, several clinicians cited the lack of equipment such as a good quality camera and headphones as a barrier to use telemedicine. Patients also described a lack of access to video conferencing equipment. Furthermore, some patients reported lacking sufficient technological knowledge in order to set up online telemedicine consultations. Older patients generally expressed having more difficulties with using telemedicine than younger patients.

Several clinicians also found PEXIP not user friendly. The system was described as “clunky” (C11) and with poor connection quality. Setting up a telemedicine appointment with PEXIP was viewed as difficult and time consuming.

The technical issues of telemedicine were compounded by a lack of staff education on how to use video conferencing for telemedicine. While using the telephone to call patients was considered generally simple, some clinicians thought that training on how to set up video conferencing could have improved the service. Clinicians also reported a poor awareness of telemedicine guidelines.

Finally, some clinicians reported issues regarding the support framework around telemedicine. Indeed, the introduction of telemedicine created additional workload for the administrative staff in coordinating and setting up patient telemedicine consultations. Clinicians also criticised the difficulty of organising interpreters for non-English speaking patients. The opinion of clinicians is that when telemedicine was implemented, there was no provision for a strong support system to facilitate the operationalization of telemedicine.

A summary of representative quotes can be found in table 2.

Table 2: Representative quotes from theme 1, a welcome but rushed adoption of telemedicine

Main Theme: Telemedicine adoption was welcomed but rushed	
Subthemes	Representative quote
A rushed adoption of telemedicine	<p><i>"It was poorly organized, poorly thought through, poorly run, rapidly on the fly with people doing their best to try to cope" (C11)</i></p> <p><i>"We didn't do it well in the beginning. It was rushed [...] you had to cut corners to solve problems" (C11)</i></p>
A lack of equipment for providers	<i>"My computer does not have a camera firstly. So, they can't see me but I can see them, I can hear but they can't hear me. I was set up in another room, but 5 other people are using that room. So, I can't really lock myself in that room for hours to do a meeting." (C3)</i>
A lack of equipment for patients	<i>"There's only 1 patient out of all my patient who can do video consultation. The rest of them are all phone consultations because they did not have the mean to access video consultation" (C6)</i>
Technical difficulties with the use of telemedicine	<p><i>"Hard to get into, hard to activate, drops out... Often not good at speech delivery over the mess. It's not a good system." (C11)</i></p> <p><i>"Particularly (difficult) with elderly patients or patients who may not be used to the technology." (C2)</i></p>
Lack of telemedicine education	<i>"I was not really told what to avoid, what to do. So, we are not really taught how to use any of the technology" (C3)</i>
Poor awareness of telemedicine guidelines	<i>" Guidelines were not understood or thought through a great deal beforehand. The guidelines exist, there are no executive summary so busy people have to go through lots and lots of computer pages to take it out" (C11)</i>
Deficiency in Administrative support	<p><i>"Appointments are not made, bookings are not done, imaging are not done or setting up referrals are not actually complete." (C6)</i></p> <p><i>"It's not just seeing a patient, it's coordinating their care subsequently in between the consultations. And this needs to be completed as well." (C6)</i></p>

II. Inherent issues with the use of telemedicine

Being able to establish rapport with patients is essential for most medical oncologists. However, our study found mixed perceptions over the quality of the interaction over telemedicine amongst the sample interviewed. Some clinicians found it more difficult to establish rapport with their patients, especially with new patients whom they have never met before. On the other hand, some clinicians reported that their interaction was mostly unchanged when using telemedicine, especially if they were able to use video conferencing.

“That relationship is not as easy to establish, particularly if you’re the one who is going to be following them up over the next few months.” (C2)

“It’s kind of the same especially, in a way I can still see my patients and chat with them as if they are in front of me [...] For the patients that I know, it’s actually quite the same.” (C6)

For patients, telemedicine was perceived as an acceptable and appropriate way to communicate with their doctor. Patient reported feeling comfortable having sensitive discussions with their doctor over video or phone consultation.

“I find it convenient, and I’ve got no problem discussing. I don’t feel not comfortable asking any questions or you know having any frank discussions over the phone as opposed to doing it in person.” (P9)

All interviewees agreed that a major limitation of telemedicine was that an adequate physical assessment cannot be performed. Although video consultations can offer more information than telephone consultations, in the opinion of the clinicians involved, it remained an inadequate substitute for an in-person physical examination. Clinicians agreed that exclusively using telemedicine to manage patients would likely lead to an incomplete patient assessment. As a result, clinicians often felt more worried for their telemedicine patients. But if telemedicine was used in conjunction with regular in-person appointments, clinicians acknowledged that telemedicine would not be of significant detriment to the assessment of patients.

Another issue that was raised by providers was that telemedicine disturbed the usual team dynamics and liaison process. During an initial visit, the nurse coordinator and the doctor typically attended the consultation together with their patient. However, when using telemedicine, doctors usually attended the consultation alone. As a result, nurses relied on notes written by the doctor on the electronic medical record which may not contain all of the content of the interaction or tasks that need to be done.

Finally, some patients expressed concerns over the privacy of telemedicine. In particular, a patient mentioned that she was worried that when using telemedicine without the video someone else could be listening in the room without their knowledge. Another clinician mentioned the possibility of hackers infringing on patient’s privacy.

A quote table summarising the inherent issues with the use of telemedicine can be found in table 3.

Table 3: Inherent issues with the use of telemedicine

Main Theme: Not the same as being in the same room - inherent issues with the use of telemedicine	
Subthemes	Representative quote
Harder to establish rapport and show empathy	<i>“when you are face to face, you can provide better empathy, better counselling, you are viewing the patient.” (C3)</i>
Inability to perform a physical examination	<i>“The limitations are that I can’t actually do a physical examination [...] I get a better sense of my patients usually with non-verbal cues. Just by the fact that they walk through that door. You can tell a lot about them already. Whether they are walking fine, whether their mobility is fine, whether they are coping, the way they dress. All these non-verbal cues are an important of us managing patients.” (C6)</i>
Disruptive to the team	<i>“So, when we talk like this (on zoom), in order to get a nurse to come in is actually quite difficult. And they don’t share the same quality of interaction that we have. And to pass the message, they can’t really understand what the situation is. And on top of it with telehealth you kind of just hand over paperwork to the nursing and administrative team. They don’t have that kind of interaction with the patient so sometimes things get missed.” (C6)</i>
Concerns for privacy	<i>“Hackers and anybody. It’s private, it’s important to have privacy. But it’s also important to have the right programs to be able to do this without this fear.” (C3)</i> <i>“Sorry, if I’m speaking to a particular doctor, and that’s the arrangement that’s who I want to speak to. And it’s very important that if they have somebody else in the room that they tell me that.” (C8)</i>

III. Telemedicine can be useful beyond Covid-19 but needs to be improved

Interviewees agreed that one of the main drivers to use telemedicine was to reduce community transmission of Covid-19. Clinicians and patients alike reported their willingness to use telemedicine in order to limit the spread of Covid-19. Indeed, telemedicine was viewed as a mean to provide continued access to care while keeping patients away from the hospital. Telemedicine was also a useful tool to provide medical care to patients who refused to attend in-person consultation. In fact, fear of contracting Covid-19 caused some patients to decline their in-person consultation. However, we observed a shift in

the attitude towards Covid-19. Indeed, as the number of active Covid-19 cases diminished in Sydney at the end of 2020, clinicians and patients developed a more relaxed attitude towards Covid-19. Furthermore, up to the point of writing this paper no oncology patients at POW contracted Covid-19. As a result, clinicians lowered their threshold to bring patients in for an in-person review and patients were less concerned about Covid-19.

“Probably at the first wave, everyone is a bit more cautious. But suddenly the second wave, people are more relaxed. And people tend to be less cautious when they are relaxed. Hence, they will favour face to face consultation more, particularly in my clinic practice.” (C6)

The other motivator to use telemedicine was convenience. Commuting to the hospital caused some physical and mental stress to patients. The use of telemedicine allowed them to have their appointments at home. Even patients who did not live far away from the hospital found telemedicine appointments to be convenient. Telemedicine was viewed as less disruptive to their daily routine compared to an in-person appointment. Moreover, patients reported that waiting at home for their appointment was more enjoyable than waiting in a hospital waiting room. Patients found it less bothersome if their medical consultation was late if they were waiting at home.

On the other hand, clinicians also found it convenient for their schedule if the clinic was running late. Physicians reported postponing their telemedicine consultation to the end of the day in order to review their in-person consultations more quickly. The other appealing aspect of telemedicine was that it could be more time efficient for clinicians. Indeed, telemedicine appointments are typically shorter than in-person appointments.

A summary of quotes relating to the drivers to use telemedicine can be found in table 4.

Table 4: Drivers to use telemedicine

Subthemes	Representative quote
Limiting the spread of Covid-19	<p><i>"I think it (Covid-19) is obviously the main driver towards using telemedicine. I think, a lot of our patients are very vulnerable because they have ongoing malignancies, and they are immunosuppressed. So, I think it is really important to minimize their exposure to unnecessary sources of infection." (C7)</i></p> <p><i>"Early on that was a really strong concern, we were worried about the first wave and the health system becoming overwhelmed and seeing a lot of health care overseas contracting Covid, that was definitely also a concern." (C7)</i></p>
Fear of patients to go to hospital	<p><i>"So, I think that since Covid there's a lot of patients that have this phobia! That coming to the hospital is going to cause them to die of Covid, so they will refuse to come in" (C3)</i></p>
Continued access to care	<p><i>"Something we are achieving is to reach the patient. That's the whole idea. Instead of providing no service, we are providing some service [...] Because of Covid they can't come, how are the patients going to reach us?" (C1)</i></p>
Convenience for clinicians	<p><i>"I think that it is more convenient for me because you can fit in the phone consults whenever you have a break in the clinic. So, I think that it helps with the clinic's flow" (C4)</i></p>
Convenience for patients	<p><u>Reducing travelling:</u></p> <p><i>"It's easier for me to have because we live so far away from my treating doctor. I don't have to drive 300K for a 15min appointment." (P10)</i></p> <p>-</p> <p><u>No waiting room:</u></p> <p><i>"But, when you are just coming in for an appointment, waiting room is a torture. So, that's sort of another benefit of the telehealth, is you don't have to sit in a waiting room with other people regardless of Covid." (P10)</i></p> <p><i>"I think it's better to wait at home. I feel like at the hospital some people look very very sick and it's a little bit distressing at times to sort of see that." (P8)</i></p> <p><u>Less disturbing:</u></p> <p><i>"It means that I can be at home or at work. You know. I can continue doing what I'm doing until I have heard from the doctor." (P9)</i></p>

Participants expressed that telemedicine still had a role in the care of cancer patients beyond Covid-19. Patients and clinicians agreed that telemedicine could be used for follow-up and triage purposes as long as it was interspaced with regular in-person appointments.

"I think it depends on what kind of a consultation it is. I think if it is just a follow up or treatment review, it's (telemedicine) pretty similar. As long as you feel like you have assessed the patient adequately and you are happy with the process. I think the things I do find less satisfying, are like difficult conversations, bad news or trying to change the management plan because you are not able to really react to how they are reacting. You can't give them a box of tissue if they are upset." (C7)

However, participants have expressed the limitations of telemedicine for Oncology. Indeed, compared to other specialties oncologists often need to have sensitive discussions with their patients.

"I think there is a difference in intensity of the nature of the consultation." (C6)

Some clinicians have expressed their concern over external pressure to use telemedicine in the future. Indeed, telemedicine is a cost-effective measure and according to one of our interviewees clinicians may receive financial pressure from NSW health to increase their usage of telemedicine.

"I think that there will be financial pressure to do it, it might not be justified. And it will be about saving time and money and getting through more consultation rather than because it is for the benefit of the patient. That worries me quite a lot actually." (C11)

Finally, participants were asked practical suggestions to improve the delivery of telemedicine. Most suggestions revolved around adequate access to equipment and appropriate training. A summary of these suggestions can be found in table 5

Table 5: Suggestions from clinicians to improve telemedicine

Suggestions	Representative quotes
Allow clinicians to use a more common video call platform	<i>"Spend the money and the time and make Zoom work, recognize that this is what patients know how to use and don't burden them with something else." (C11)</i>
Improve access to video conferencing	<i>"I would probably make sure that everything was in place in terms of equipment." (C11)</i>
Improve training	<i>"Like I said, I would probably have a flying team that you go to each individual doctors and nurses, book a time and carefully went through how to do it. What are the potential pitfalls, how to deal with the fact that connection might be loss etc." (C11)</i>
Implement an electronic virtual waiting list	<i>"there is no easy way in the middle of the clinic to keep alerting telehealth people that there is a queue of patients [...] Telehealth does not lend itself to the normal way a clinic runs. It would require an electronic system that would say "there are 10 people ahead in the queue, you have moved from the 2:30 appointment to a 3:15 appointment". There are no facilities to do that and it fails to recognize the true nature of medical interactions." (C11)</i>

4. Discussion

To our knowledge this is the first study of Australian medical oncology clinicians' and patients' attitudes towards telehealth in a metropolitan setting in response to Covid-19. This study revealed several insights regarding the user's experience.

The Covid-19 pandemic considerably changed the landscape of how medicine was practiced in Australia. Telemedicine, a practice that had a limited uptake and had been reserved for the rural setting was suddenly adopted on a nationwide scale. Most clinicians and patients welcomed the transition positively in light of the Covid-19 outbreak. The convenience, effectiveness and potential to reduce Covid-19 transmission were all drivers for the adoption of telemedicine. Multiple papers studying various medical specialties also found the adoption of telemedicine to be acceptable to both patients and clinicians (36-39).

However, our respondents suggested many flaws within the implementation of telemedicine at their institution. One issue was the lack of specific training on telemedicine, particularly the technical aspects. Each clinician adopted telemedicine individually. A 2020 quantitative survey of medical students from Queensland showed that 68% (n=43) of their respondents were interested in receiving telemedicine training (40). Practically, this suggests that if telemedicine training was available to clinicians, they would be willing to receive it. We hypothesise that appropriate telemedicine training could improve the delivery

of telemedicine care. However, more work will need to be done on what best practice in telemedicine is and what optimal telemedicine training should consist of.

Furthermore, another issue that was raised was that the transition to telemedicine did not consider the increased indirect administrative burden resulting from the implementation of telemedicine. The increased work takes the form of sending emails to patients to set up the telemedicine consultation, troubleshooting and setting up referrals. This is echoed in a New York study this year that described similar problems (41) and has been described prior to the Covid-19 pandemic (42, 43). As no administrative staff were interviewed, this study is unable to confirm this for this context.

With the use of theoretical sampling, this study was biased towards understanding the attitudes of patients who had used telemedicine. We hypothesise that groups of patients may potentially have difficulties with telemedicine including those with lower socioeconomic status (SES), from culturally and linguistically diverse backgrounds and/or are older. A barrier to the utilisation of telemedicine is the limited access to video conferencing equipment. The use of telemedicine has raised concern over equity issues. A patient population of lower SES might not have access to a device capable of supporting telemedicine. However, a 2018 prospective study of an endocrinology outpatient clinic demonstrated that patients of low SES background are nearly equally interested and equipped to attend telemedicine clinics (44). This finding was corroborated by a similar study (45). On another hand, culturally and linguistically diverse (CALD) patients may face additional issues such as access to health care interpreters during telemedicine consultations. Indeed, a recent study showed a decrease in the attendance of non-English speakers after the implementation of telemedicine (46). Furthermore, a 2013 survey from Mansouri-Rad et al., demonstrated that the adoption of telemedicine was heavily influenced by cultural norm (47). As none of the patients that were interviewed were CALD, this study is not able to explore the attitudes of this particular group.

To most physicians being able to establish an appropriate doctor-patient relationship (DPR) is very important (48). It has been demonstrated that a good DPR is associated with higher medical compliance (49). However, our interviews highlighted that there is no consensus on whether telemedicine is detrimental to the DPR. Some providers affirmed that telemedicine, especially without video negatively impacted the communication and personal interaction with their patients. Previous surveys have also showed mixed response from their participants (41, 50, 51). But, paradoxically, the introduction of telemedicine may also offer an opportunity to strengthen the doctor-patient relationship by offering additional modalities to connect. For instance, asynchronous telemedicine modalities such as text messages and video recording can be used to interact with patients (52). Indeed, some researchers found that rapport and relationships were established to a similar degree while using telemedicine (53, 54). As a result, there is a lack of consensus over the impact of telemedicine on the DPR and it is likely that telemedicine offers both advantages and disadvantages to establish patient rapport. What is yet to be discovered is to what degree does telemedicine impact real patient outcomes in the setting of this pandemic.

The main driver for the nationwide implementation of telemedicine in Australia was the Covid-19 pandemic. As the number of cases started dropping in Sydney towards the end of 2020, patients and clinicians started having a more relaxed attitude towards Covid-19. As a result, does telemedicine still have a role in the metropolitan MO consultation? The attitudes of the participants demonstrated that the utility of telemedicine goes beyond simply keeping patients away from hospitals. It can be used for convenience, even in an urban setting where people do not live far from the hospital. It can be speculated that the adoption of technology with telemedicine may break barriers to using other virtual applications such as remote clinical monitoring. However, specific to medical oncology, a physical examination is needed for a complete patient assessment (55) and medical oncologists often need to have sensitive discussions with their patients (56, 57). As a result, it is probable that MO will never fully rely on telemedicine and that its use will be limited to routine follow ups, surveillance, and triage. A survey of clinicians has demonstrated that oncologists have a lower level of satisfaction with telemedicine compared to other specialty (12).

5. Conclusion

Our study highlighted similar advantages and drawbacks that were described in the literature about telemedicine before the Covid-19 pandemic. The widespread implementation of telemedicine has led to users opining that telemedicine can be used as a new standard of care in the setting of routine follow ups if it is used in conjunction with regular in-person appointments. It is unknown what the future holds for telemedicine in the metropolitan MO setting, especially once Covid-19 is no longer a threat or if the MBS subsidies are withdrawn, but we hypothesise that telemedicine will be acceptable and normalized if it is financially supported to continue.

To conclude, there may be a role for telemedicine MO patient care beyond the Covid-19 pandemic. However, there should be improvements to its operationalisation, in particular around training and administration.

Abbreviations

MO
Medical Oncology
MBS
Medicare Benefits Schedule
PPE
Personal protective equipment
POWH
Prince of Wales Hospital
IP
Interview protocol
DC

Dylan Vincent Chan Tai Kong

AC

Ashfaq Chauhan

MC

Melvin Chin

AA

Anais Ah Leung

C

Clinicians

P

Patients

NCC

Nelune Cancer Centre

NSW

New South Wales

SES

Socioeconomic status

CALD

Culturally and Linguistically Diverse

DPR

Doctor-Patient relationship

Declarations

Ethics approval and consent to participate

Ethics approval was granted by the South Eastern Sydney Local Health District Ethics research committee under the low negligible risk pathway (2020/ETH01650) on the 10/08/2020.

This research has been performed under the ethical standards set by the declaration of Helsinki for research on human participants.

Consent for publication

Written consent for publication was obtained from each participant prior to their interview.

Availability of data and materials

The datasets generated and analysed during the current study such as the interview transcripts and recordings are not publicly available due for confidentiality reasons but are available from the

corresponding author on reasonable request.

Competing interests

Dr Melvin Chin has financially benefited from telemedicine consultations through receipt of Medicare Billings for patients seen.

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Authors' information

z5143222@unsw.edu.au

a.chauhan@unsw.edu.au

c3295833@uon.edu.au

Melvin.chin@health.nsw.gov.au

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