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3

Patient preferences using telehealth during COVID-19 pandemic in four Victorian tertiary hospital services

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Abstract:

Introduction: To measure patients' evaluation of telehealth, preferences for telehealth versus in-person appointments, and potential cost savings by patient characteristics.

Methods: A cross-sectional online survey (including patient and appointment characteristics, telehealth evaluation, preferences for care and costs) of adult patients using video telehealth in four metropolitan tertiary hospital services in Melbourne, Victoria.

Results and Discussions: A total of 1045 patients (44 years - IQR 29-59) participated with an overall response rate of 9.2%. For 98.7% patients telehealth was convenient, 96.4% stated that it saved time, 95.9% found telehealth acceptable to receive care and 97.0% found that telehealth improved their access to care. Most (62.6%) preferred in-person consultations, although 86.9% agreed that telehealth was equivalent to an in-person consultation. Those in regional and rural areas were less likely to prefer in-

person consultations. Patients attending for medical reasons were less likely to prefer in-person consultation compared to patients with surgical reasons. Patient preference to telehealth were independent of level of education, appointment type, self-rated health status and socio-economic status. Patients saved an average of $120.9 (SD $93.0) per appointment, with greater cost savings for patients from low and middle socioeconomic areas and regional or rural areas.

Telehealth video consultations were largely evaluated positively with most patients considering the service to be as good as in-person. Understanding patient preference is critical to consider when implementing telehealth as mainstream across hospital health services.

Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic has had a major impact on healthcare services with many changes to healthcare delivery[1]. Telehealth (TH) is a broad term referring to the delivery of health care via technology, such as telephone or internet[2], enabling the delivery of health care beyond the physical environment to alternative locations such as local clinics or directly to the client at a location of their choice[3].

To reduce the risk of COVID-19 transmission, the majority of health care services shifted to being delivered via TH[4]. In March 13 2020, the Australian Government introduced new TH item numbers for patients, allowing for phone or video TH consultations to be reimbursed by Medicare[4]. This led to a rapid growth in the provision of TH in health care services[5] with well documented benefits for patients[6,7,8,9]. TH may

remove barriers to accessing health care such as time to travel, travel expenses, time taken off work, socioeconomic, and mitigate social and cultural barriers[10]. The potential benefits and challenges of further expanding implementation of TH have been well documented in primary care[11] and rehabilitation settings after acute interventions with high patient and carer satisfaction[12,13]. However, these studies were limited by poor study design, small target populations, and most studies were conducted in primary care[6,10]. More information is needed about the patient perspective of TH in hospital services[10], and the potential costs and benefits for patients[6,14].

The aim of this study was to measure patients' evaluations of TH and preferences for video TH versus in-person hospital outpatient appointments, associated patient characteristics and costs in four metropolitan tertiary hospitals in Melbourne, Australia.

Methods

Study design and setting: Data were collected as part of a cross-sectional multi-site study of patients' views on TH. An anonymous survey was offered to all patients participating in video TH at four metropolitan tertiary hospital services in Melbourne, Victoria: Melbourne Health (MH), Peninsula Health (PH), The Royal Women's Hospital (RWH), and Western Health (WH).

The survey was open to patients between 6th August 2020 to 21st September 2020 (PH and WH) or 17th August 2020 to 21st September 2020 (MH and RWH). Patients were sequentially recruited to allow for a broad sampling of the type of patients using TH. Exclusion criteria were patients aged 17 years and younger and telephone only consultations.

Survey: Information about the survey was offered at the end of the video consultation with a link to the anonymous questionnaire consisting of 30-items with an estimated completion time of 15 minutes. The survey included fourteen questions on patient and appointment characteristics, eight questions on TH evaluation, five questions on preferences for care and three cost questions. Patient characteristics included gender, Aboriginal and Torres Strait Islanders status, main language spoken at home, highest level of education, Index of Relative Socioeconomic Advantageous and Disadvantageous (IRSAD)[14] and remoteness (stratified by regional/rural and metropolitan) derived from postcode using data available from the 2016 Australian census[15] and self-rated health. Appointment characteristics included reason for the visit, new versus review consultation, having had a previous TH consultation, and if TH was chosen by the patient.

The TH evaluation and preferences for care questions were adapted from the Telehealth Usability Questionnaire[16] and Agency for Clinical Innovation Patient Evaluation Survey[17]. Cost questions were adapted from those used in previous studies and shown to be validated measures of patient-reported costs[18,19]. Sample characteristic questions were adapted from a previously published study.[19] A choice of 'prefer not to answer' was given for the questions. For analyses purposes, prefer not to answer were grouped together with missing data.

Data collection and statistical analysis: Data were collected and stored in REDCap.[20] Data were cleaned and analysed using Stata (version 16.0; College Station, Texas, USA). Normally distributed data are summarised as mean and standard deviation (SD) and non-normally data as median and interquartile ranges (IQR). Categorical data are described with overall frequency and percentage (%).

Response rate: To calculate response rate, de-identified data on video consultations were extracted from the video TH platform (Healthdirect). Consultations that were abandoned (as specified by Healthdirect, cancelled (only one participant in the call), with a duration of two or less minutes or with technical difficulties (insufficient audio quality and connectivity, and switch from TH to telephone) were excluded.

Cost Analysis: Costs of paid and unpaid time and costs of transportation were considered. Cost savings on time were calculated from patient self-reported time saved from the TH consultation and how that time would normally have been spent (i.e., in a paid or unpaid work). Unpaid time was included in the analysis as it has been long recognized that an individual's time is a scarce resource and hence has economic value[21]. The paid time was estimated based on Australian average wages in 2020 ($1558.40 per week for female; $1812.00 per week for male).[22] Unpaid time was estimated based on the 2020 Australian minimum wage ($19.84 per hour).[23] Costs saved on transport were estimated based on patient self-reported travel mode to hospital (i.e., personal car or public transport). For patients who would normally drive to the physical hospital consultation, distance from the household to the hospital were measured using home and hospital postcodes. The Australian Taxation Office rate was used as unit cost ($0.72 per km).[24] Parking fees were reported by the patients in the survey. For patients who usually travelled to appointments on public transport, the close travel zone in metropolitan Melbourne rate was applied ($9.00). Costs are reported in Australian 2020 dollars.

Ethics approval: The study was approved by the ethics committee at The Royal Children's Hospital HREC (Project number: 64852) and subsequently approved by the participating sites.

Results

The four health services delivered a total of 17,301 Healthdirect videocalls during the data collection period. Of those, 3,359 (19.4%) were abandoned and 1377 (8.0%) were cancelled, leaving a total of 12,565 calls. Of the 12,565 calls, calls of 2 minutes or less duration were excluded (1,180 (9.4%), leaving 11,385 calls of which in 1045 cases surveys were completed (overall response rate of 9.2%). Table 1 shows the response rate per health service. **(Table 1)**

Table 1 Response by health services

Patients: The patient characteristics are shown in **Table 2**. The age range 17 to 90 years with median age of the patients who completed the survey was 44 years (IQR 29-59).

Table 2. Patient Characteristics

Telehealth evaluation **(Table 3)**: The vast majority of patients agreed that TH was convenient and saved them time. Almost all felt comfortable with using the TH platform and agreed that joining the call was easy. Likewise, almost all agreed that their safety and privacy was maintained, and that TH gave them the opportunity to ask questions about their care. Most participants reported that their questions and concerns about their health condition were adequately addressed in their TH consultation.

Preferences for care: Most patients agreed that TH is an acceptable way to receive healthcare services and improved access to care. Almost all patients would prefer to have the option of a TH consultation. When asked to choose their preferred consultation method, 62.6% preferred in-person consultations over TH. However,

86.9% of patients, reported that TH consultations were "as good as" an in-person appointment.

Table 3. Telehealth evaluation of the total group

Evaluation of TH and preferences for care were largely consistent across sub-groups **(Supplementary Table 1)**.

Cost Analysis: Most patients (95.3%) agreed that the TH appointment saved them time, more than (50.5%) said it save them more than 2 hours. Costs saved by these patients averaged $120.9 (SD $93.0) **(Table 4)**. Cost savings associated with time were greater for patients living in low and middle socioeconomic areas and regional or rural areas compared to those in high socioeconomic and metropolitan areas.

In the group of patients who provided their usual travel mode to hospital (n=897), most patients would have driven to the hospital appointments with a personal carer (n=626, 69.8%) and the rest would have used public transport (n=271, 30.2%). The median distance for those who drove was 19.1 Km (IQR 9.2-45.0) each way. The average cost saving for these patients was $55.5 (SD $86.5) per person per appointment. Cost savings associated with travel were greater for patients living in low and middle socioeconomic areas and regional or rural areas compared to those in high socioeconomic and metropolitan areas**.**

Table 4. Cost saved on time and transport

Discussion

This is the first study to report patient perspectives on TH across a broad range of conditions and socioeconomic status. Overall, most patients reported that TH was highly convenient with considerable savings in cost and time by increased access and use of technology, satisfied with their care and considered TH to be equivalent to an

in-person consultation. Subgroup analyses did not show any significance differences between groups.

The reason for attending a consultation was often associated with the patient' preference for TH; hence patient's preferences are an important consideration in health care delivery planning. Our finding that certain patients prefer in-person appointments over TH should be considered while planning and delivering care. Our main study finding of patients' overall positive experience in using TH is consistent with other similar Australian studies[5,25] as well as international studies [10,26]. An Australian national cross-sectional survey[25] found that more than half of the respondents (n=369, 61.9%) stated that their telehealth experience was "just as good as" or "better than" their traditional in-person medical care experience. In addition, also aligned with our finding, the study[25] evidenced that people having a history of both depression and anxiety had a poorer experience using TH compared in-person consultation. However, our other findings that patients' socioeconomic status, education levels, or self-perceived health status were not associated with preferences for in-person consultations differ from this study[25] which indicated than patients who used telehealth services had higher levels of education; and had poorer self-reported general health compared to those who did not use telehealth services. The latter might be related to a smaller population (n= 596) compared to our population of (n= 999), however, in our study 628 patients (62.9%) indicated poor/fair/good health compared to 374 patients (52.7%)[25]. This difference also might be explained by that our population were recruited within our services compared to a general Australian public in the national survey.

Understanding patient preference to how best to provide tertiary care considering both in-person and telehealth is critical for future health care delivery. Planning of TH

service beyond pandemic in tertiary care is likely to be a priority for governance, policy maker and clinicians as the Australian Government is subsiding TH permanently[4] in future health care deliver planning.

Strengths and Limitations: The main limitation was an overall low response rate and survey participation was self-selective, and overall response rate was low, therefore the representativeness of the sample cannot be fully assessed. As for all online surveys, those with lower computer proficiency or English fluency or without internet access may have been under-represented. There is potentially an over-estimation of positive experiences from patients who have successfully used video TH. Considering that most responses were from one centre, this might 'dilute' some of the responses from other hospital service. The focus in this study is on consultations and given TH is also used for delivering therapy such as thrombolysis, chemotherapy and clinical trials, this could be a limitation. No conclusion could be drawn for Aboriginal and Torres Strait Islanders patients and patients referred with cancer and women's health concerns due to their low number.

Implications for health policy and practice:

As telehealth services continue to be integrated in hospital service delivery[27], it is important for policymakers to consider patients' preferences in use of TH compared to in-person service across different patient groups beyond the pandemic. Importantly TH increases access for many patients through reducing patient costs associated with time and travel. Patient preferences of TH need to be evaluated on ongoing basis to inform provision of TH that meet the need of different patient groups and possible provide in choice for patients between in-person and TH

Conclusion

Overall, patient satisfaction engaging with TH consultation is high relatively to low-response rate. Understanding patient preference how best to provide tertiary care considering both in-person and telehealth is critical when health services consider the implementation of TH as mainstream across hospital health services. Treatment and care planning must be based on patient preferences and designed to meet individual needs and circumstances, for example language barriers, to try to minimise barriers when using TH.

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Table 1 Response by health services

Health Service	Connected calls, n	Finalised surveys, n	Response %
Peninsula Health	1857	97	5.2
The Women's Hospital	836	28	3.3
Melbourne Health	6618	825	12.5
Western Health	2074	95	4.6
Overall	**11385**	**1045**	**9.2**

Table 2. Patient Characteristics

Age range from 17-90 Median 44 years (IQR =29 -59)		
	n	%
Gender	999	
Male	414	41.4
Female	565	56.6
Other	8	0.8
Prefer not to answer	12	1.2
Background	998	
Aboriginal and Torre Strait Islanders	10	1.0
Other	933	93.5
Prefer not to answer	55	5.5
Language spoken at home	997	
English	881	88.4
Other	104	10.4
Prefer not to answer	12	1.2
Highest level education	998	
Secondary school or less	251	25.2
Trade or other certificate	239	23.9
Bachelor degree	254	25.5
Postgraduate qualification	212	21.2
Prefer not to answer	42	4.2
Remoteness	876	
Regional and rural	122	13.9
Metropolitan	754	86.1
IRSAD	874	
Low	154	17.6
Middle	309	35.4
High	411	47.0
Self-rated health	999	
Poor/Fair/Good	628	62.9
Very Good/Excellent	355	35.5
Prefer not to answer	16	1.6
Reason for visit	998	
Medical	430	43.1
Surgical	114	11.4
Mental Health, Alcohol & Drug	137	13.7
Cancer	36	3.6
Women's Health	16	1.6
Multiple Concerns	38	3.8
Other Concerns	179	17.9
Prefer not to answer	48	4.8
Type of Consultations	1040	
New	340	32.7
Review	668	64.2
Unsure	24	2.3
Prefer not to answer	8	0.8
Previous Telehealth Experience	1042	
Yes	683	65.5
No	352	33.8
Unsure	4	0.4
Prefer not to answer	3	0.3
Why did you choose telehealth?	1041	
Didn't choose TH	619	59.5
Reduced risk contracting Covid-19	73	7.0
Reduce travel time and cost	14	1.3
Difficulty with travel due to illness	4	0.4
Reduced burden on family members or carers	1	0.1
Satisfied with a previous telehealth consultation	3	0.3
Curiosity	2	0.2
Multiple	313	30.1
Other	7	0.7
Prefer not to answer	5	0.5

IRSAD = Index of Relative Socioeconomic Advantageous and Disadvantageous

Tabe 3. Telehealth evaluation of the total group

Question	N	Agree n	%
The TH appointment was convenient for me	1041	1027	98.7
The TH appointment saved me time	1033	996	96.4
I was comfortable using the TH technology	1039	1013	97.5
Joining the TH call was easy for me	1042	1014	97.3
My safety and privacy were maintained during the consultation	1042	1018	97.7
TH is an acceptable way to receive healthcare services	1025	983	95.9
TH improves access to healthcare services	1015	985	97.0
I would prefer to have the option of a TH consultation when I need it	1015	955	94.1
I prefer an in-person consultation over TH	959	600	62.6
The TH service gave me the opportunity to ask questions about my care	1018	1002	98.4
I felt that my questions or concerns about my health condition(s) were adequately addressed during this TH service	1024	1001	97.8
The TH service I received was as good as an in-person appointment	1002	871	86.9

Table 4. Cost saved on time and transport per telehealth appointment, by index of relative Socioeconomic Advantageous and Disadvantageous (IRSAD) and remoteness

	Cost saved on time (A$)			Cost saved on transport (A$)		
	n	mean	SD	n	mean	SD
IRSAD						
Low	146	173.5	124.3	138	135.3	162.6
Middle	296	126.3	97.8	273	62	71.8
High	389	101.6	69.6	343	28.5	34.8
Remoteness						
Regional, rural	119	239.7	128.3	108	229	154.2
Metropolitan	714	103.9	72.3	648	32.1	25.6

Table 5. Cost saved on time and transport per telehealth appointment, by index of relative Socioeconomic Advantageous and Disadvantageous (IRSAD) and remoteness

	Cost saved on time (A$)			Cost saved on transport (A$)		
	n	mean	SD	n	mean	SD
IRSAD						
Low	146	173.5	124.3	138	135.3	162.6
Middle	296	126.3	97.8	273	62	71.8
High	389	101.6	69.6	343	28.5	34.8
Remoteness						
Regional, rural	119	239.7	128.3	108	229	154.2
Metropolitan	714	103.9	72.3	648	32.1	25.6