In-demand, interactive and an appetite for more: Analysis of learner enrolments and feedback in an open-access introductory telehealth course during COVID-19

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Abstract

Introduction: The use of telehealth has accelerated with health service delivery restrictions experienced during the COVID-19 pandemic. This research assessed learner enrolments and feedback in an introductory, online, open-access, rural-focused telehealth training course to inform future telehealth education design.

Methods: Differences in enrolled learner demographics "before" (n = 331) and "after" (n = 3,776) COVID-19-related changes in Australia were assessed. Content analysis of learner feedback was conducted to understand the beneficial aspects of the course and to inform future telehealth education and training development.

Results: Concurrent with telehealth changes announced in Australia in March 2020, enrolments in the course sharply increased. While students comprised most enrolments, initial growth was strongest amongst health educators and health professionals. More learners enrolled from major city areas and other countries. User feedback indicated the flexible delivery mode, policy, links to resources and multimedia content were the most beneficial aspects of the course. Learners would like more client perspectives as well as discipline- and context-specific information. There is also an appetite for more practice-based telehealth education.

Conclusions: Growth in demand for the course and positive learner feedback showed it was filling an important introductory training gap. Learner feedback also highlighted several perceived barriers among learners in being able to implement best-practice telehealth in their current or future practice. This feedback could be used to inform the design of further telehealth training for health professionals and students to, ultimately, enhance the use of telehealth technologies.

Keywords: telemedicine; education; COVID-19; health occupations

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Introduction

The need for health service delivery by distance surged worldwide in 2020 (WHO, 2020). In Australia, telehealth was a niche delivery mode of healthcare prior to the COVID-19 outbreak (Thomas et al., 2020), directed towards combating health practitioner shortages in rural communities (Smith et al., 2020). During the pandemic, telehealth became a mainstream mode of health service delivery (Smith et al., 2020; Snoswell et al., 2021).

In Australia, the Medicare Benefits Scheme (MBS) lists health services that are subsidised by the federal government (Commonwealth of Australia, 2022). While temporary changes to the MBS allowed subsidisation of telehealth services and removed a key barrier to the uptake of telehealth in Australia, barriers to its effective and sustained use remain (Snoswell et al., 2021; Thomas et al., 2020; Warr et al., 2021). There is limited evidence of telehealth being embedded in health curricula in Australia and other nations (Edirippulige & Armfield, 2017; Edirippulige et al., 2018). Thus, health students may graduate without training in a key mode of service delivery for rural and other populations who have restricted access to locally delivered services, such as populations in pandemic lockdowns. Training is now needed for professionals in areas where telehealth service delivery has become necessary or preferred (Filbay et al., 2021; Smith et al., 2020), as perceived technological incompetency is a barrier to sustained telehealth uptake or its use in similar future emergencies (Maleka & Matli, 2022).

Although there are broader concerns about the accessibility and equity of telehealth (Maleka & Matli, 2022; Warr et al., 2021), Thomas et al. (2020) argue that now is the time to make changes to future and current health workforce education if the use of telehealth is to be sustained and progressed post pandemic. Embedding telehealth modules into tertiary curricula is one way to achieve this (Martin et al., 2022; Thomas et al., 2020). In terms of broader educational changes brought on by the shift to distance learning, there is a need for further development of telehealth education and for it to be informed by a greater understanding of what educational interventions work best in different contexts (Daniel et al., 2021).

This paper assessed learner enrolments in an online, open-access telehealth training course before and after COVID-19-related changes to Australia's MBS. The course was developed at Charles Sturt University, a regional university in New South Wales (NSW), Australia, with the intention to provide relevant information on current telehealth technologies and their use at an introductory level for a multidisciplinary audience. The course Telehealth: Embracing Technology in Healthcare consisted of four modules: "Telehealth overview", "Technology", "Telehealth in practice" and "Sustainable telehealth". A previous paper has described the collaborative design of the course by a multidisciplinary working group of clinicians and academics based in rural NSW (Cox et al., 2022). The course was promoted through industry networks, with the primary intended audience being staff and students from the university, as well as health professionals working in the surrounding rural areas.

Aims

This paper addresses two research questions:

• How did course demand change given pandemic-related changes to the service delivery landscape?

• What did learners find most beneficial about the course and what are their additional telehealth learning needs?

This research aimed to inform the development of future educational resources by assessing how telehealth education demand changed with the COVID-19 pandemic and what the current and future health workforce may be looking for as part of telehealth education.

Methods

Selection and description of participants

To enrol in the course, learners filled out a form, indicating their discipline area, current primary role (student, health professional, technician, health academic or educator, or other), organisation and postcode. To address the first research question, this paper used the enrolment enquiry form data to analyse learner demographics in the first 14 months (August 2019 to October 2020) of course availability.

The second research question was addressed using learner feedback from two voluntary open-ended questions submitted at the end of the course as part of a feedback and certificate of completion request form. The questions were: "What aspects of this course did you find most beneficial?" and "What aspects of telehealth would you like more information on?".

Analytical approach

Summaries of enrolment data by learner demographics and date are presented and discussed. To assess uptake among rural health professionals and students, learners' postcodes were categorised by Australian state or territory as well as the Australian Statistical Geographic Standard-Remoteness Areas (ASGS-RA) 2016 (Australian Bureau of Statistics, 2018). The state and remoteness areas of the regional university staff and students were imputed as New South Wales and "inner regional", respectively, as all six university campuses fall within these areas.

To assess changes in enrolments associated with increased interest in telehealth, 1 March 2020 was used as a cut-off point. This date was chosen as MBS changes expanding telehealth coverage were posited in early March (RACGP, 2020) before being formally announced on 11 March 2020 (Prime Minister of Australia, 2020). For the remainder of this paper, enrolments from 1 March to 31 October 2020 are referred to as occurring "after" COVID-19-related changes. Enrolments from August 2019, when the course opened, to 28 February 2020 are referred to as "before".

The feedback data were unable to be broken down by learner characteristics and are presented as an overall assessment of learner feedback across the first 14 months of the course.

Analysis

Summary statistics of enrolment data were calculated for learner characteristics before and after COVID-19 changes to assess differences in learner demographics. Month-on-month growth rates in enrolments by learner role type were also calculated and graphed to further assess changes over time. Broken down by role type, the growth rates enabled relative change among the role types to be examined.

For the learner feedback, duplicate form submissions and identifying information were removed prior to analysis. The responses to the two open-ended feedback questions were exported and transferred into NVivo 12 for analysis. An inductive approach to content analysis using the phases suggested by Erlingsson and Brysiewicz (2017) was used, and content analysis was conducted using NVivo by one member of the research team (EG). As the data were short-answer responses, each answer was treated as a "meaning unit" and was not further condensed. To generate the initial codes, word searches were undertaken to identify the phrases and words most commonly used. A reliability check was then conducted by hand coding the first 200 responses to each question. Once the code list was complete, the remainder of the data were allocated codes. Codes were organised into categories then amalgamated into themes.

Ethics approval

This research was approved by Charles Sturt University's Human Research Ethics Committee, protocol number H20200.

Results

Pandemic-related changes to course enrolments

There were 4,107 enrolments from August 2019 to 31 October 2020. Learner demographics are presented in Table 1, with demographic characteristics of learners shown before and after COVID-19 changes. Overall, three quarters (74.8%) of all learners identified their primary role as being a "student", 17.2% as "a health professional", 6.1% as an educator or academic in health and 2.0% as "a technician or in a professional role" or "other". Most learners (62.0%) were from major city areas and the eastern Australian states. There were 135 enrolments identified as coming from international organisations and/or postcodes. There were a substantial number of enrolments from the Philippines (44), with New Zealand and Vietnam the next most represented countries with six enrolments each.

Table 1

Enrolled Learner Demographics "Before" COVID-19 Changes in Australia on 1 March 2020 and "After" to 31 October 2020

	Before		After		Total	
	N	%	N	%	N	%
Role						
Health professional	59	20.0%	646	17.1%	705	17.2%
Student	225	68.0%	2,845	75.3%	3,070	74.8%
Tech/professional	13	3.9%	18	0.5%	31	0.8%
Educator/academic in health	25	7.6%	227	6.0%	252	6.1%
Other	9	2.7%	40	1.1%	49	1.2%
Organisation						
Host university (Charles Sturt)	248	74.9%	340	9.0%	588	14.3%
Other Australian university	5	1.5%	2,672	70.8%	2,677	65.2%
Other organisation	78	23.6%	764	20.2%	842	20.5%
Remoteness area[a]						
Major cities	18	5.4%	2,530	67.0%	2,548	62.0%
Inner regional	303	91.5%	947	25.1%	1,250	30.4%
Outer regional–very remote	9	2.7%	160	4.2%	169	4.1%
Australian state or territory						
New South Wales	318	96.1%	1,766	46.8%	2,084	50.7%
Queensland	2	0.6%	417	11.0%	419	10.2%
South Australia	2	0.6%	202	5.3%	204	5.0%
Victoria	6	1.8%	862	22.8%	868	21.1%
Western Australia	1	0.3%	320	8.5%	321	7.8%
ACT, NT, Tas	1	0.3%	75	2.0%	76	1.9%
International	1	0.3%	134	3.5%	135	3.3%
Discipline area						
Occupational therapy	81	24.5%	1,029	27.3%	1,110	27.0%
Physiotherapy	145	43.8%	536	14.2%	681	16.6%
Speech pathology	27	8.2%	446	11.8%	473	11.5%
Social work	6	1.8%	355	9.4%	361	8.8%

	Before		After		Total	
Exercise physiology	3	0.9%	286	7.6%	289	7.0%
Nursing	16	4.8%	152	4.0%	168	4.1%
Midwifery	0	0.0%	167	4.4%	167	4.1%
Nutrition & dietetics	6	1.8%	138	3.7%	144	3.5%
Medicine	3	0.9%	96	2.5%	99	2.4%
Psychology	6	1.8%	78	2.1%	84	2.0%
Paramedicine	1	0.3%	26	0.7%	27	0.7%
Dentistry or oral health	6	1.8%	17	0.5%	23	0.6%
Other disciplines[b]	3	0.9%	30	0.8%	33	0.8%
Other not listed	5	1.5%	316	8.4%	321	7.8%
Not asked	22	6.6%	58	1.5%	80	1.9%
Total enrolments	331		3,776		4,107	

[a] International and unattributable responses not reported

[b] Aboriginal health, audiology, optometry, pharmacy, medical imaging disciplines

Additional breakdowns show learners predominately came from allied health disciplines, with occupational therapy the most represented discipline among learners (27.0%) followed by physiotherapy (16.6%) and speech pathology (11.5%). Across these three disciplines, learners were overwhelmingly students (83.0%), rather than educators/academics or health professionals, while health professionals made up the majority of learners from nursing (81.5%), medicine (74.7%) and psychology (60.7%) disciplines.

The increase in enrolments after COVID-19 changes predominately came from those who identified as "students". Whereas students from the regional university previously comprised three quarters of the course, they made up less than one tenth of enrolments from March 2020, as enrolments from learners in other universities increased. Learners not from an Australian university overwhelmingly identified as health professionals, and their relative representation in the course was stable across both time periods.

Enrolments before COVID-19 changes were predominately from inner regional areas (91.5%) and New South Wales (96.1%). From March 2020, major city enrolments and international learners were increasingly represented, with little change in outer regional or remote enrolment proportions. Looking at changes by Australian states, the greatest increase in enrolments came from Victoria, where COVID-19 infections and associated restrictions were highest in 2020 (COVID-19 National Incident Room Surveillance Team, 2021), followed by Queensland and Western Australia.

Growth in telehealth course enrolments showed expected initial increases in September 2019 after the course opened in August 2019 (see Appendix). This was followed by increased growth predominately among health professionals and small and steady overall increases over October 2019 to February 2020. Large growth (55.29%) in enrolments occurred in March, led by strongest growth in health professionals and health educators and academics, who more than doubled their February numbers. April 2020 showed continued large growth in enrolments from health professionals and health educators, while the number of student enrolments also doubled. May demonstrated slower but continued growth in enrolments across roles, at that point led by growth in student enrolments, which were also the largest in number. While the growth rate continued to slow from May, the absolute number of new enrolments remained large, and the new enrolments were led predominately by students.

What learners found most beneficial about the course

The question "What aspects of this course did you find most beneficial?" had a total of 1,712 recorded responses out of the 2,239 submitted forms (76.46%). The analysis identified codes, which were categorised and organised into themes. These are presented in Table 2.

Table 2

Codes, Categories and Themes Resulting From Feedback in Response to the Question "What Aspects of This Course Did You Find Most Beneficial?"

Codes	Categories	Themes
Case studies Videos Barriers and enablers to telehealth use Practicalities of telehealth use i.e., "real" examples	Telehealth in practice	Content
Funding Legalities Governance Sustainability	Telehealth policy	
Links Relevant research Further resources Access to guidelines and evidence	Link to external resources	

Codes	Categories	Themes
Own time Flexibility	Convenience	Delivery mode
Functionality Ease of use Activities	Online design	
Collaboration Interaction Diversity Other disciplines/people Benefits of reading others' comments Discussion	Interaction with other learners	

Most of the responses referred to specific content of the course. This theme of "content" was divided into the categories of "telehealth in practice", "telehealth policy" and "link to external resources". Results indicate learners appreciated that the course content was relatable to their current or future practice. The "telehealth in practice" category represented the case studies, videos and other direct links to practical uses of telehealth to engage with clients.

The second theme identified as a perceived benefit of the telehealth course was the "delivery mode". This was further divided into the categories of "convenience", "online design" and "interaction with other learners". The participants stated that the delivery of the course was convenient for them in regards to being able to access it from home in their own time and the flexibility of being able to pause and recommence the module according to their availability. The online platform was viewed as a beneficial aspect of the course due to its functionality, ease of use and activities. The participants also valued being able to interact with other learners.

What learners would like more information on

The question "What aspects of telehealth would you like more information on?" had a total of 1,011 recorded responses (45.15%) after removal of 199 answers stating only terms such as "none", "not sure" and "not much". The analysis identified codes, which were categorised and organised into themes and are presented in Table 3.

The two themes that were identified from the data were "setting up telehealth programs and conducting consults" and "telehealth in specific contexts". Overwhelmingly, the participants stated that videos or mock scenarios of telehealth being used in practice would be beneficial for further learning to exemplify its use, including a script that they could apply in their practice.

Participants would like further content on the practical implementation of telehealth, including information that would assist with funding, governance and choosing technology. They were also interested to learn about the use of telehealth from a client-focused perspective, including more information on using telehealth to work with culturally and linguistically diverse groups, older people and people with a disability.

Table 3

Codes, Categories and Themes Resulting From Feedback in Response to the Question "What Aspects of Telehealth Would You Like More Information on?"

Codes	Categories	Themes
Specific Clients Patient Cultural safety Older people Disability	Use with specific client groups or within specific settings	Telehealth in specific contexts
Discipline	Discipline-specific information	
Practical Use/using Troubleshooting and barriers	Practical implementation	Setting up telehealth programs and undertaking consults
Examples Videos	Practical examples	
Funding Documentation Confidentiality	Financial, governance, legal considerations	
Equipment Software platforms	Technology-specific information	

Discussion

Rapid growth in enrolments in the telehealth course among domestic health professionals occurred at the time of the initial Australian MBS telehealth changes in March 2020. Results suggest demand for the course increased because of COVID-19-related health service delivery challenges and changes, despite the timing being concomitant with the start of the new university semester. This is evidenced by the rapid growth in enrolments from learners in major city areas who identified as health professionals.

While the initial impetus of the course was to provide locally relevant training to university staff, students and clinicians in rural NSW, learner feedback indicated that this course had broad appeal because of the sudden, widespread relevancy of the content

coupled with an accessible delivery mode. This resulted in increased enrolment numbers from interstate, major city and international learners with the onset of the pandemic. The representation of health professionals from the Philippines may be indicative of limited locally accessible telehealth training opportunities. The demand for this course further reflects that, despite the growth in using telehealth in clinical practice, such as in medicine, there have been limited opportunities for engaging in telehealth education (Daniel et al., 2021).

In this telehealth course, there was greater growth in enrolments of health educators and academics in March and April 2020 than students, followed by sustained student enrolment. A possible interpretation is that health educators and academics enrolled in the online course before embedding the course in student curricula. This potential "flow-on" effect has been previously discussed by Cox and colleagues (2022)**.**

Offering this course as a set of four short, online modules positively contributed to learners' experience, as they appreciated the flexibility of asynchronous delivery. Although not directly assessed in this study, using an online learning modality is a convenient way for busy health professionals to participate in professional development (Reeves et al., 2017). Online learning has also expanded significantly in response to the ongoing COVID-19 pandemic (Stovel et al., 2020). Reflecting previous research on the benefits of interprofessional and online learning (Rutledge et al., 2020; Smith et al., 2019), learner feedback showed the interdisciplinary, mixed cohort and interactive design of the course enhanced the learning experience by facilitating the exchange of different perspectives on telehealth use. This may also reflect the reality of working with interprofessional teams using telehealth in practice (Hovaguimian et al., 2021).

Despite the benefits of engaging with a multidisciplinary perspective and its widespread relevancy at the introductory level, this course was not intended to be comprehensive. Participant feedback indicated learners required more discipline-specific training and, relatedly, more specific examples of telehealth in practice. This includes how to troubleshoot and support accessibility in different contexts. The feedback from this study showed an appetite for simulations or practicums that can offer learners the opportunity to grow their confidence and self-efficacy in telehealth delivery (Edirippulige et al., 2012; Martin et al., 2022; Rutledge et al., 2021).

While these additional learner needs are largely outside of the capacity and scope of the introductory, online course, learner feedback highlights the importance of telehealth being further embedded in health curricula, reflecting the results of Stovel et al. (2020). Educators can continue to embed this course as an up-to-date, open-access, asynchronous and flexible introductory resource that facilitates picking and choosing from the four modules to fit their curriculum design alongside opportunities for practice and assessment.

For the online course administrator (JM), results from this analysis are informing ongoing course development. Learners expressed a need for more insight into client perspectives and the application of different and developing technologies. This includes practical information on consultations administered via telephone alone, given the vast majority of Australian telehealth service delivery during the pandemic has been via this medium (Snoswell et al., 2021).

Limitations

This study used data initially collected for internal reporting purposes that provided no capacity to examine group differences in learner feedback, such as between learners from different disciplines or between current health professionals and students. The utility of these findings for more specific recommendations for education and training opportunities is limited by the generalised nature of the feedback items and use of cross-sectional self-report data that did not examine changes in learner motivation, knowledge or behaviour.

Some caution should be taken with interpreting the feedback data, particularly regarding course benefits, as responses may be prone to social desirability bias as learners are seeking course completion certificate approval. The two open-ended questions examined here, however, were not mandatory fields.

Conclusions

The findings of this research suggest that the telehealth course is meeting an increased and sizeable demand for introductory-level telehealth training. Learner feedback from the course indicated that it provides current health professionals and students with relevant information on telehealth practice and policy and does so in an engaging way through first-hand clinician accounts, interactive tasks facilitating learner discussion and up-to-date content. Many learners were seeking more discipline-specific training and would like to hear more from the client perspective. Learners would also like advice on accessing and implementing available technology, with many concerned about the ethical use of telehealth technology and patient confidentiality. This feedback should be considered by those designing future telehealth training opportunities for health professionals and students in Australia and other nations where telehealth is likely to remain a key mode of health service delivery.

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Appendix

New Enrolments and Month-on-Month Enrolment Growth Rate by Learner Role

Health professionals
Students
Health educators or academics
Technicians professionals, other
⋯⋯ All enrolments

Note: Month-on-month growth rate calculated as: (total cumulative enrolments at end of prior month) / (new enrolments of current month). Because of the nature of enrolment data, the enrolled course population does not capture withdrawals or course inactivity. The growth rate can, therefore, only be calculated as positive. Interpretation of growth rates should be made with consideration of absolute new enrolment numbers as detailed in the top graph.