

JOTE

Journal of Occupational Therapy Education

Volume 5
Issue 2 *Online and Simulation Learning in
Occupational Therapy Education*

Article 6

2021

Survey of Occupational Therapy Education in Telehealth

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Recommended Citation

Serwe, K. M., & Nissen, R. (2021). Survey of Occupational Therapy Education in Telehealth. *Journal of Occupational Therapy Education*, 5 (2). Retrieved from <https://encompass.eku.edu/jote/vol5/iss2/6>

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Abstract

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Keywords

Telehealth, telemedicine (MeSH), education (MeSH), andragogy

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JOTE

Journal of Occupational
Therapy Education

Volume 5, Issue 2

Survey of Occupational Therapy Education in Telehealth

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ABSTRACT

Telehealth delivered occupational therapy services are increasing, and students will need to be prepared to safely and ethically deliver telehealth services. Occupational therapy education standards require that students demonstrate knowledge of telehealth and related technology. However, there is a limited discussion in the literature on how programs are preparing students to deliver services via telehealth. This explanatory mixed methods study examined telehealth education in entry-level occupational therapy programs to understand if and how students are learning about telehealth. The quantitative portion involved a survey of 429 occupational therapy programs in the United States. The qualitative part involved four survey respondents in an interview. The low survey response rate (11.89%; N=51) brings into question if programs are comfortable talking about how they are meeting telehealth education standards. Survey respondents reported the use of lecture (98%) and electronic health records (55.1%) as the most frequently cited methods to deliver educational content about telehealth. Half of the programs did not include interactive content for students to apply telehealth knowledge and skills. The least frequently cited content included interaction with robotic arms (2.2%), telemonitoring (20%), provision of services through telehealth (20%), and use of gaming systems (23.9%). Three themes emerged from the interviews: educational activities, telehealth technology, and curriculum planning. Participants discussed a desire to add content and strategies for overcoming barriers to telehealth education such as utilizing existing technology and utilizing resources and experts. Telehealth education is not advancing as quickly as needed for application in practice. Students could benefit from added telehealth learning opportunities to become competent in telehealth service delivery.

Introduction

Use of technology to deliver health services is on the rise. Foley's 2017 Telemedicine and Digital Health Survey indicated 76% of health care organizations either offered or planned to offer telemedicine services, and 53% were expanding telemedicine services (Foley & Lardner LLP, 2017). Telemedicine encompasses any health care professional; however, the term telehealth is more reflective of this range of professionals and is the preferred term in occupational therapy as occupational therapy professionals provide services beyond the scope of medicine (American Occupational Therapy Association [AOTA], 2018). Telehealth has been defined as "the application of evaluative, consultative, preventative, and therapeutic services delivered through information and communication technologies... Occupational therapy services provided by means of a telehealth can be synchronous, that is, delivered through interactive technologies in real time, or asynchronous, using store-and-forward technologies. Occupational therapy practitioners can use telehealth as a mechanism to provide services at a location that is physically distant from the client, thereby allowing for services to occur where the client lives, works, learns, and plays, if that is needed or desired" (AOTA, 2018, p.1).

Occupational therapy practitioners use telehealth to deliver a variety of services across practice areas. Examples include providing physical rehabilitation and mental health services to people who have suffered a stroke (Hermann et al., 2010; Linder et al., 2015), providing services to families in birth to three programs (Cason, 2009), providing occupation-based coaching for families with young children who have autism spectrum disorder (Little et al., 2018), providing education in edema management (Faett et al., 2013), conducting assessments for autism in adults (Parmanto et al., 2013), facilitating education-based wellness programs for caregivers (Serwe & Walmsley, 2019), and providing services for the dementia-caregiver dyad (Nissen & Serwe, 2018). The type of information and communication technologies used for telehealth in different practice settings may vary by the focus of the services provided. Synchronous technologies such as video conferencing systems and telemonitoring devices can provide real-time interaction with the client. Asynchronous technologies allow for the practitioner to monitor and communicate with the client through store-and-forward systems such as wearable devices and messaging services (AOTA, 2018).

While telehealth is simply a method of delivering occupational therapy services, it does require additional knowledge related to documentation, billing and reimbursement, state practice acts, issues related to confidentiality as required by the Health Insurance Portability and Accountability (HIPAA) Act of 1996 and the Health Information Technology for Economic and Clinical Health (HITECH) Act, knowledge of technology options and use, and methods to facilitate rapport with clients in a virtual environment (Cason, 2014; Overby, 2017; Rutledge et al., 2017).

Occupational therapy practitioners must be educated in these areas to be prepared to deliver services via telehealth. The 2011 ACOTE Standards included one standard related to telehealth, B.1.8. This standard was the same for all three levels of occupational therapy education: doctoral, master's, and associate. "B.1.8. Demonstrate an understanding of the use of technology to support performance, participation, health

and well-being. This technology may include, but is not limited to, electronic documentation systems, distance communication, virtual environments, and telehealth technology” (ACOTE, 2011, p. 19). As of July 31, 2020, all occupational therapy programs must comply with the new 2018 ACOTE standards. In these new standards, the telehealth standard B.1.8 moved to standard B.4.15. The new standard changed from a less restrictive requirement of the incorporation of telehealth education to more affirmative language that requires the inclusion of telehealth education in the curriculum at all degree levels of educational standards. The new standard requires that students will demonstrate knowledge in electronic documentation systems, virtual environments, and telehealth technology (ACOTE, 2018). This standard is the same for all entry-level program formats for occupational therapy and occupational therapy assistant programs.

In January 2020, the first case of Coronavirus Disease 2019 (COVID-19) was reported in the United States (Centers for Disease Control and Prevention [CDC], 2020). By the end of June 2020, the CDC reported more than 2.5 million positive cases of COVID-19. The exponential rate of spread of this disease led to new guidelines issued at all levels of government entities from federal, state, county, and city to slow the spread. The recommendations included shelter in place orders and cancellation of in-person, non-essential medical services. In lieu of these in-person services, guidance was provided by the CDC on the benefits and potential uses of telehealth to treat patients as a means to provide distance healthcare service (CDC, 2020). On April 30, 2020, the Centers for Medicare & Medicaid Services (CMS) announced a temporary waiver on limitations to the approved healthcare providers of telehealth based services. This waiver allowed for occupational therapists to provide limited services to Medicare beneficiaries. Many private insurance companies also expanded the coverage of telehealth delivered services (CDC, 2020). Occupational therapy education programs also needed to adjust to provide education to students remotely. It is likely many programs increased use of telehealth as an education tool. However, these changes may represent a temporary change and may not yet be a permanent part of the curriculum. While this research took place prior to the COVID-19 pandemic, it provides valuable information for programs to consider as they reflect on changes made in response to the pandemic and the ongoing role of telehealth in education programs.

Literature Review

There is a limited discussion in the occupational therapy literature on how programs prepare students to deliver telehealth services. Occupational therapy students have provided telehealth services through a consultative model including healthcare professionals and clients in Guatemala (Foti et al., 2014). Occupational therapy students have participated in interdisciplinary telehealth education including both didactic and experiential learning components (Ciro et al., 2015; Randall et al., 2016). Occupational therapy students have also delivered supervised services via telehealth in an occupational therapy pro bono university clinic setting, conducting assessments in person and following up with telehealth delivered services to clients in their own homes (Serwe & Bowman, 2018). A scoping review of student experiences and learning indicated high student satisfaction with using telehealth (Serwe et al., 2020). However, the range and scope of telehealth education in occupational therapy are unknown.

It is not known if and how entry-level occupational therapy education programs are directly addressing telehealth. Telehealth is only one aspect of the B.4.15 ACOTE (2018) standard, and the standard also includes the use of electronic health records (EHR). This aspect of the standard was examined, and research indicates the standard may not be adequately addressed across occupational therapy curriculum. Specifically, Dmytryk and DeAngelis (2017) conducted a survey of curriculum content related to the use of EHRs in entry-level doctoral, master's, and associate occupational therapy programs. Eighty-four percent of responding programs provided instruction in EHR, while 16% did not. Programs reported common barriers to providing EHR instruction including difficulty accessing EHR related teaching resources, limited funding, not being affiliated with a healthcare system, and unfamiliarity with the approach (Dmytryk & DeAngelis, 2017). The authors concluded that EHR instruction is inconsistent and incomplete across entry-level occupational therapy programs.

Electronic health record instruction is one aspect of the 2018 ACOTE B.4.15 standard encompassing telehealth. It is likely that other aspects of this standard may not be adequately addressed in occupational therapy education. Electronic health record utilization is less complex than the various other technologies used in telehealth. Furthermore, more faculty have likely had experience with EHR use than with other telehealth technologies and service delivery methods. This study examined telehealth education in entry-level occupational therapy programs prior to the COVID19 pandemic. The purpose of this study was to understand if and how occupational therapy programs were introducing students to telehealth and related technologies.

Methodology

This mixed methods research received dual institutional review board (IRB) approval from the authors' institutions. The researchers used an explanatory mixed methods design (Creswell & Plano Clark, 2011) in which they gathered quantitative data in step one using a cross-sectional survey; then utilized the results of the survey to formulate a semi-structured interview to elaborate on findings through a qualitative interview with a sub-set of participants in step two. The quantitative portion of the study involved a survey of occupational therapy academic programs that took place in two phases (pilot survey and the revised survey). The qualitative portion involved an interview with a subset of participants identified in the survey. The researchers identified 429 entry-level doctorate, master's, and associate degree occupational therapy programs in the United States using the AOTA website. The team located email addresses for program directors and representatives of these programs through the public domain on the programs' websites or through open access on the AOTA listing of accredited programs.

Pilot Survey

The researchers emailed a survey to 429 identified occupational therapy programs in the United States on April 23, 2019. The email requested that one designated person respond to the survey within three weeks. The email disclosed the purpose of the study along with risks and indicated that participation was optional. The team sent a follow-up email reminder after two weeks. All programs received the reminder as responses were

anonymous to assure confidentiality. The survey closed at the end of the three-week time frame.

This first survey attempt resulted in 39 responses, for a response rate of 1%. The authors reviewed the survey responses and discussed potential barriers for respondents. The research team decided to use the data from the initial survey as pilot data to inform a revised survey with a goal for an increased response rate on a second attempt.

Revised Survey

The revised survey included additional information about the program such as program format (occupational therapy or occupational therapy assistant), degrees offered, region of the country in which the program was located, and the number of students and cohorts admitted each year. The authors revised formatting to streamline the survey, beginning with close-ended questions and ending with open-ended questions, with an option not to complete some open-ended questions. The team added additional close-ended response options and included an option to share contact information if interested to participate in an interview to share further details.

The researchers emailed the revised survey to 429 identified occupational therapy programs in the United States on August 6, 2019 and sent follow up emails after three and five weeks. The survey closed six weeks after the researchers sent the initial email.

Survey Data Analysis

The researchers analyzed survey responses for the frequency of response to explore the most frequent type of and methods to deliver telehealth education. The researchers reviewed open ended responses and included responses in the report of results.

Interview

The research team reviewed the quantitative survey data and created interview questions based on this data. The researchers used a case study approach for this qualitative portion of the study, with a semi-scripted format for the interview process (Creswell & Poth, 2018).

The last question on the survey served to recruit interview participants by asking, "Would you be interested in being interviewed about your current implementation of telehealth in your academic program?" Six people responded yes and shared their contact information. When the research team reached out, only four people responded that they were still interested in completing the interview. The authors each conducted two interviews for a total of four interviews. Each researcher transcribed her interviews, then shared with the other researcher in a final check for accuracy. The researchers initially summarized and coded responses individually using a process of open coding and inductive analysis (Creswell & Poth, 2018; Merriam, 2009) then met to discuss and revise the coding schema. The two researchers independently re-coded the manuscript, then compared and discussed any coding discrepancies, repeating this process twice to finalize the coding schema.

Results

Survey Results

There were 51 valid responses to the survey for an 11.89% response rate. Of the 51 respondents, 24 were from occupational therapy educational programs, 26 were occupational therapy assistant programs, and one was not reported. All occupational therapy assistant programs were at the associate degree level. Nineteen of the occupational therapist education programs were at the master's degree level. The average cohort size was 32.67 students, and the majority of programs (79.6%) admitted one cohort per year. See table 1 for complete demographic information.

Table 1

Educational Program Demographics

	OT	OTA	Not Reported	
Educational program	24 (47%)	26 (51%)	1 (2%)	
	Associate	Master	Doctorate	Not Reported
Degree type	26 (51%)	19 (37.2%)	5 (9.8%)	1 (2%)
	1	2	3	Not Reported
Cohorts per year	39 (76.5%)	7 (13.7%)	3 (5.9%)	2 (3.9%)
	Average		Range	
Cohort size	32.67 ± 21.80		16 – 144	

The most frequently cited method to deliver educational content about telehealth was through the use of lecture (98%). The second most frequent method to deliver telehealth content was through student use of an electronic medical record (EMR) or EHR system (55.1%). The most frequently cited telehealth lecture content included definitions (78.4%), state licensure and regulations (58.8%), ethics for the use of telehealth as a delivery method (56.9%), and barriers and limitations (54.9%). The least frequently cited content provided in the context of telehealth included interaction with robotic arms (2.2%), telemonitoring (20%), provision of services through telehealth (20%), and gaming systems (23.9%).

Furthermore, the respondents were asked about the barriers to implementing telehealth education into their educational curriculum. The most commonly cited reasons were lack of telehealth equipment (67.4%), cost (58.7%), and faculty knowledge (45.7%). See Tables 2 - 6 for complete survey response results.

Table 2

Survey Results: Lecture and Lab

Percent	Number of Programs	Content
<i>Select all lecture content about telehealth that your academic program includes (N=51)</i>		
78.4%	40	Definitions
58.8%	30	State licensure and regulations
56.9%	29	Ethics for use of telehealth as a delivery method
54.9%	28	Barriers and limitations
47.1%	24	Future trends in telehealth
43.1%	22	OT/OTA roles in use of telehealth as a delivery model
41.2%	21	Use for different service aspects
39.2%	20	Accessing specific underserved populations
35.3%	18	Use within different practice areas
33.3%	17	Best practice for use of telehealth as a delivery method
33.3%	17	Reimbursement for telehealth delivered services
33.3%	17	Different levels and types of telehealth technology available
29.4%	15	Organizational statements
25.5%	13	Current research
9.8%	5	Interaction with different disciplines
5.9%	3	Other
2%	1	None
<i>Select all types of interactive lab content provided to allow students the opportunity to use telehealth technology: (N=50)</i>		
50%	25	None
34%	17	Video/audioconferencing technology
32%	16	Store and forward technology
8%	4	mHealth
6%	3	Remote patient monitoring

Table 3

Survey Results: Communication Systems

Percent	Number of Programs	Content
<i>Select all electronic medical record (EMR) or electronic health record (EHR) systems that students use in the didactic portion of your academic program (N=49)</i>		
44.9%	22	None
16.3%	8	Neehr Perfect/HER Go
16.3%	8	Rehab Optima
16.3%	8	Other
10.2%	5	Epic
8.2%	4	Casamba
2 %	1	Fusion
0%	0	Meditech
0%	0	MedAffinity
0%	0	WebPT
<i>Select all videoconferencing systems used in your academic program that students interact with for the purpose of learning how to complete synchronous videoconferencing to deliver telehealth services (N=46)</i>		
54.3%	25	None
21.7%	10	Zoom
17.8%	8	GoToMeeting
13%	6	Other
2.2%	1	Doxy.me
13%	6	Skype for Business
4.3%	2	VSee
0%	0	Reflexion Health
0%	0	Health Recovery Solutions
0%	0	Theralinks
0%	0	TheraPlatform
0%	0	BlueJay
0%	0	eVisit

Table 4

Survey Results: Telehealth Services

Percent	Number of Programs	Content
<i>Select all methods of asynchronous information sharing systems used for the purpose of telehealth education (N=47)</i>		
55.3%	26	None
27.7%	13	Email
10.6%	5	Asynchronous assessment platform
17%	8	Pre-recorded video content
6.4%	3	Chat Rooms
6.4%	3	Remote patient monitoring system
4.3%	2	Other
<i>Select all telemonitoring technology provided for student interaction within your academic program (N=45)</i>		
80%	36	None
11.1%	5	Vital signs monitoring system
8.9%	4	Wearables
4.4%	2	Other
2.2%	1	Motion detection system to track daily movement patterns
<i>Select all types of occupational therapy services provided via telehealth to clients by students in your academic program (N=45)</i>		
80%	36	None
13.3%	6	Evaluation
11.1%	5	Consultation
11.1%	5	Education
11.1%	5	Treatment
6.7%	3	Prevention
4.4%	2	Supervision
0%	0	Case management

Table 5

Survey Results: Technology Devices

Percent	Number of Program	Content
<i>Select all types of electronic gaming systems used via telehealth in your academic program to educate students on its use for client rehabilitation via telehealth (N=46)</i>		
76.1%	35	None
10.9%	5	Wii
8.7%	4	eTablet
8.7%	4	Virtual Reality System
4.3%	2	X-Box
2.2%	1	Other
<i>Select all types of robotic arms used via telehealth for student education (N=46)</i>		
97.8%	45	None
2.2%	1	Milo Robot
2.2%	1	ArmeoPowero
2.2%	1	Other
0%	0	InMotion ARM

Table 6

Barriers to Implementing Telehealth Education

Select all items that are barriers to implementing telehealth into your curriculum (N=46)

<i>Percent</i>	<i>Number of Programs</i>	<i>Content</i>
67.4%	31	Lack of telehealth equipment
58.7%	27	Cost
45.7%	21	Faculty knowledge
32.6%	15	Lack of time to spend on this content
13%	6	Inability to provide lab content
8.7%	4	Other
6.5%	3	None
0%	0	Licensure laws in our state

Interview Results

Four people participated in an interview. Two of the participants were program directors, one was the faculty member who taught the telehealth content in her program, and the other was a faculty member involved in curriculum development. The participants represented one occupational therapy assistant program and three occupational therapy programs. All three occupational therapy programs offered an entry-level master's degree; one was in the process of transitioning to an entry-level doctorate program, and one was in the process of adding an entry-level doctorate program. All four programs were in the United States, three in the Midwest and one in the Northeast. Programs admitted a range of 24 to 76 students per year.

Three themes emerged from the inductive analysis of the four interviews: educational activities, telehealth technology, and curriculum planning. Figure 1 displays the seven subthemes that emerged within each major theme.

Figure 1

Three Major Themes and Subthemes with Number of Codes (n)

Educational activities	Telehealth technology	Curriculum planning
<ul style="list-style-type: none"> • Didactic learning (10) • Active learning (14) 	<ul style="list-style-type: none"> • Videoconferencing (7) • Asynchronous technology (10) 	<ul style="list-style-type: none"> • Desire to add more telehealth content (26) • New content (5) • Resources (8)

Theme 1: Educational Activities

The major theme educational activities included two subthemes: didactic learning and active learning. Participants described a variety of learning strategies in both categories.

Didactic Learning. The four participants discussed three didactic learning activities to teach telehealth: lectures, online discussions, and tests. Across participants didactic content included telehealth delivery systems, use of the EHR, supervision and telehealth, billing, ethics, telehealth applications in specific practice areas, an overview of the benefits and challenges of telehealth, legislation and licensure laws related to telehealth, and strategies for using telehealth including synchronous (real time) versus asynchronous (store and forward) aspects of telehealth. Participants described this content as introductory and included in only one course and/or uncertainty about coverage in other courses across the curriculum. Participants expressed the importance of addressing telehealth in the curriculum. “I think it's an up and coming area of practice we all need to be familiar with so I think it's important that our students are educated in how to provide it ethically and with as much rigor I guess as what we do with our face to face patients” (Participant 3).

Active Learning. Participants described five areas of active learning for telehealth education: practice with a simulated client, practice with a real client, practice with case studies, in-person discussions, and use of a real or simulated medical record. Telehealth learning experience with real clients included service delivery to one client under the supervision of an occupational therapy faculty member to deliver an intervention as part of a university pro bono clinic or consultation to practitioners in an underserved area in another country. Client simulation activities included occupational therapy students participating in a simulation as part of a specific course, occupational therapy and occupational therapy assistant students from two different schools collaborating in a simulation involving supervision aspects of practice, and activities involving an interdisciplinary team with students from a variety of healthcare disciplines involved in the simulation. Participants described these active learning activities as new and/or an evolving aspect of the curriculum.

Theme 2: Telehealth Technology

The major theme telehealth technology included two subthemes: videoconferencing and asynchronous technology. Telehealth services may be delivered synchronously in real-time or asynchronously using store and forward technology. Although synchronous methods can include technology other than videoconferencing such as using a telephone or video phone, participants only described the use of videoconferencing for synchronous telehealth service delivery.

Videoconferencing. Zoom was a specific software used for videoconferencing mentioned by two of the participants. Participant 1 described how Zoom was used in a specific assignment, “their students’ assignment [occupational therapy assistant students] is to analyze the goals that my students [occupational therapy students] wrote and then they have a Zoom meeting where they refine their goals and then do the clinical reasoning part of it.”

Asynchronous Technology. Asynchronous technology included applications of the program’s learning management system, use of purchased software for an EMR, pre-recorded video content, email, and use of various applications as an adjunct to occupational therapy. Activities that involved the program’s learning management system included simulated telehealth activities such as communicating information in an EMR, sharing and viewing recorded video files, and creating client education materials. Participant 2 described the use of the program’s learning management system: “she’s having them do an assignment through our learning management tool. They have a case and then they’re supposed to develop something and then do it over online; we used Blackboard.”

Participants discussed the need for strong interpersonal skills in the use of both synchronous and asynchronous technologies for telehealth service delivery. They described how communication is a bit different in the virtual world and that it may be more challenging for students to establish rapport with clients through telehealth delivery methods.

To me, that’s very important because it is so different. And it’s sort of what our students are used to but at the same point, I don’t think they necessarily lack, I don’t necessarily know if they have the skill to have it on a therapeutic relationship level. (Participant 1)

Theme 3: Curriculum Planning

The final major theme identified from the qualitative data was curriculum planning. This theme was identified as encompassing subthemes involving the planning process to deliver or for plans to improve the content for telehealth education. The participants identified a desire to add more content, new content recently added, and resources used to meet the needs to cover telehealth education adequately.

Desire to Add More. Participants expressed many desires to add more content in the area of telehealth education. There was an understanding that the current telehealth content in their curriculum was not sufficient for their standards of education. Though all the programs interviewed minimally met the standard for inclusion of education about telehealth in the curriculum, they expressed a desire to improve their current methods to incorporate a more rigorous education about telehealth for use in practice. This was clearly expressed with comments such as “I would like to do better or do more” (Participant 2) and “Yeah, I would like to have that part of it [*adding more interpersonal training skills aspects including asynchronous components*] in my dream world. Maybe someday. Maybe next year, I don’t know.” (Participant 1)

Planned Additions. The programs interviewed expressed direct plans that were already being added to their program. Though in different stages of this planning, the programs were identifying ways to increase the content on telehealth in their respective curriculums. Some programs were in the stage of brainstorming: “I would suggest instead of just all these face-to-face simulations that the students do, is to also have some simulations on email and videoconferences, and telephone interactions” (Participant 1). Another participant stated, “I think this year is asynchronous, but I suggested that maybe we can figure out a way to do it synchronous so that maybe one student, one of the students, they each have a different case and then they would role-play that out. I’m not sure how to do it synchronously, but that’s kind of where my thought process is right now” (Participant 2).

Other programs had clear plans to move from a passive lecture learning to more active learning. Participant 3 responded, “We’ve had requests from our alumni. We do on-site visits for all of our level 2 placements and the feedback we’re getting both from the fieldwork supervisors, as well as our students, was that they needed more hands-on experience with an EMR,” when asked about why they chose to purchase and utilize an EMR for student use.

Participants also discussed the challenges of improving their telehealth education component. There were clear challenges related to cost and technology constraints to incorporating an EMR system into the curriculum.

Participant 1: Yeah, well, it was the cost, um, we did have somebody who was willing to, I don’t know, like they were just starting out and they wanted to work with us. It was our IT people that didn’t really like the idea of merging their system with ours too well. So that became moot, although we were very excited to do that with them. I think it was free; they were trying to entice us over to them, but we didn’t end up using it. So I think we’re like sharing the resource with the pharmacy and the nursing and the PTs and the dietetics. I think that they are finding that that’s the best way to do it, and chiropractic, so sharing that medical record might be an ideal way to do that, right?

Participant 2: I had looked at Casamba University, and our college legal team decided they didn't want to sign the contract. But I went to an interesting technology thing at conference, at the Ed Summit, where this person used Adobe Captivate or was it another one? I forgot the name of it right now, but to develop an electronic documentation that would simulate one of the, like you know, like where you would push buttons to get dropdowns and stuff like that. So I'm looking into trying to do something like that where we'd create it on our own.

However, despite the challenges, there was an expressed desire to continue to add this content because of the benefit it would provide students. Participant 4 described this, "You know whether it's a standard or not is kind of irrelevant. They still need to do it because that's what they're going to be doing in practice....And people learn what they practice."

Adequacy of Content. Though it was clear the participants desired to improve the content of their telehealth education, it was not always clear how or if specific content areas were covered in the curriculum. This may have been because the interviewee did not directly teach that particular content, so she was not fully aware of the details of a specific lecture or lab. Responses to questions asked about the inclusion of licensure content and lab components were answered by stating, "I'm hoping so" (Participant 2) and "Not that I know of" (Participant 4). These were not a clear indication that this content was not included, but that it may have been more a lack of knowledge of the details of courses taught by other instructors.

There was also one participant who recognized the level of instruction on telehealth and desire to add more because she did identify this as an area of weakness. Participant 4 described, "We have probably some very basic information about electronic documentation; that is, uh, what I perceive to be an area of weakness in our curriculum."

New Content. The second sub-theme of Curriculum Planning that was evident in the qualitative data was of new content that was added and currently being implemented in the current academic year. The addition of the new content was in direct correlation to the desire to add more content in areas identifying as not providing an adequate education. There was content added to address occupational therapy-occupational therapy assistant supervision role through simulated intervention planning:

Participant 1: This is our first year doing it, and they're doing it this week, so it's sort of an experiment. It's a good chunk of their grade, about 10% of their grade, the whole collaborative effort of developing the goals, refining the goals and assessing and doing clinical reasoning worksheets for a young student, I think he's four - the simulated client, so it's in the peds intervention course.

While other new content was in response to adding an EMR system for the first time that will be used by multiple professional programs. “In January of 2020, we will actually be putting one in place for the school of health professions called Hello Note” (Participant 3).

Resources. The final subtheme of Curriculum Planning was Resources. The information gathered in this area addressed how the programs were identifying appropriate faculty and external resources used to provide adequate education about telehealth.

Faculty. It was important to the participant programs to identify someone who could provide expertise in the area of teaching telehealth. Some of the time, this came from the necessity to identify a person who was interested and started gaining expertise in this newer delivery model.

Participant 1: I don't even know how I became the telehealth person, because I've never used it before, I don't know I ended up with it as my, as one of my topics and then I ended up, you know, hitting submit that that was going to be my capstone question and then it kind of flew from there.

External. In addition to identifying faculty expertise in telehealth, the programs also identified external sources to cover this content area. External resources came in the form of professional documents and external experts. Professional documents provided an evidence-based resource for students to learn how telehealth fits in the scope of occupational therapy practice. Participant 3 described the use of AOTA resources: “We tend to provide the white paper from AOTA and then any pertinent research articles that might be appropriate.”

Participant 4 explained how the program brings in a local expert because the expertise is not available within their faculty.

We have, um, a person from our local health care organization come in, um, she happens to be an occupational therapist, but she's one of the leaders for telehealth at their health care organization. So, she comes in and does a presentation and PowerPoint lecture on telehealth and describes the benefits, the challenges, the legislation, licensure laws, um, the strategies for using telehealth; that kind of thing.

The three themes of educational activities, telehealth technology, and curriculum planning provide a glimpse of how four occupational therapy education programs were addressing education about the use of telehealth in practice, prior to the COVID 19 pandemic. The content areas of these themes demonstrated a wide range from basic education to applied applications for telehealth instruction. Though only four programs were represented, there was a clear indication that programs were working toward expanding the amount and type of education provided about how to use telehealth to deliver occupational therapy services.

Discussion

The purpose of this explanatory mixed-methods study was to examine telehealth education in entry-level occupational therapy programs. This purpose was accomplished first through the use of a survey to understand if and how occupational therapy programs were introducing students to telehealth and related technologies. The programs that responded to the survey primarily instructed on telehealth in lecture by providing a basic overview of what telehealth is through instruction on such topics as definitions, licensure, ethics, barriers and limitations, and future trends. Half of the respondents did not provide an interactive component to the instruction about telehealth. The inclusion of an active part was found to be important to the respondents in the interviews.

The follow-up interview with four different programs was completed to further explore the responses from the survey. The interviewees expressed a clear desire to continue to develop their telehealth content. The programs that responded to the interview were in the process of adding content and developing more interactive content to teach about telehealth in occupational therapy. The programs interviewed were just developing this content within the past year. This could be indicative of the place that many programs were in at the time of this study, but this cannot be confirmed. However, it does highlight the importance of developing resources for programs to identify how to modify the curriculum to meet the new 2018 ACOTE standard B.4.15 best to provide education about telehealth as a delivery method. The immediate need to provide telehealth education has been further heightened in light of the recent COVID-19 pandemic.

It is worthy to note that the response rate to this survey and the follow-up interview were low. This could be indicative of a lack of current experience with the delivery of telehealth education. One of the authors utilized the same contact list within a month of this study to send out a similar survey about the topic of mental health education. That survey had an approximate response rate of 30% with twice as many responses for a follow-up interview. Though this is not an identifiable reason for the low response rate for this study, it does lead to potential speculation that academic programs may not have been prepared to discuss their current means of providing telehealth education. There are clear differences between this study and the author's unpublished mental health education study that are not overlooked by the authors. Mental health content requirements are substantially more than telehealth requirements, the education of telehealth as a required standard is new to the 2018 standards, and the timing of the survey could have all affected the response rate between the two studies.

Furthermore, similar studies have reported inconsistent and incomplete instruction of EHR use in academic programs (Dmytryk & DeAngelis, 2017). The instruction of EHR was part of the same standard as instruction of telehealth in the 2011 ACOTE Standards. Accurate documentation in the EHR is important to quality service delivery and continuity of care for both in person and telehealth delivered services and in some applications of telehealth the EHR can be tied to other technologies such as telemonitoring that help inform quality and timely service delivery. The instruction of EHR is also now required with the adoption of the 2018 ACOTE Standards along with

virtual environments as part of the same standard that requires the student to demonstrate knowledge of the use of telehealth technology in practice (ACOTE, 2018). The current study responses confirm the lack of in-depth education on telehealth and related technologies of the respondent programs. A significant number of respondents were not providing an interactive component on the use of telehealth and related technologies, including EHR systems. The most cited reasons were the lack of equipment, cost, and faculty knowledge. Instruction through lecture does minimally meet the 2018 ACOTE standard, but it has been shown that student skills are enhanced through the use of an active learning component (Doherty & Lay, 2019; Goldbach & Stella, 2017; Knecht-Sabres, 2013). The results of the qualitative interview aspect of the study suggested that faculty who were providing education in telehealth service delivery had not had personal experience delivering telehealth services in occupational therapy practice settings, thus making it difficult to design learning activities.

The Need for Telehealth

Telehealth as a service delivery model has been increasing in occupational therapy as evidenced by publications in the literature and services offered in the public and private sectors. The COVID-19 pandemic of 2020 accelerated the use of telehealth service delivery methods. Telehealth service delivery during this time was necessary to provide services to at-risk populations such as the elderly and those who were medically fragile, as well as to slow the spread of the disease in the general population. The United States government supported this increase in telehealth service delivery with a temporary change in enforcement of HIPAA and HITECH Act regulations associated with security requirements for technology used to deliver healthcare services (U.S. Department of Health and Human Services Office for Civil Rights, 2020).

Occupational therapy education programs moved instruction to online only during the COVID-19 pandemic. This likely influenced telehealth educational instruction in the curriculum. Planned hands-on instruction moved to simulated methods and virtual service delivery methods. For example, at the first author's institution, a planned pediatric clinic experience for students was moved to a telehealth delivered handwriting camp delivered to children and their parents in their homes via videoconferencing. There may be a lasting impact on curriculum as programs may implement long term changes after a successful experience with telehealth delivery methods. It is our hope that this research provides information to support reflection on learning activities that best fit in-person delivery methods and those that may be incorporated into ongoing telehealth delivery methods to support student learning in this area. It will be important for occupational therapy students to be prepared to utilize telehealth to meet the increasing demand for telehealth and to be prepared to provide services under special circumstances such as demonstrated by the COVID-19 pandemic.

Limitations

This study was limited by the low response rate (11.89%) for the survey, and the small sample size of four volunteers for the interview. This could be an indication that people were not feeling prepared or ready to talk about how programs are meeting additional requirements in telehealth education, but there is no way to ascertain this from the data

we were able to collect. This study was designed and conducted before the COVID-19 pandemic. Interest in telehealth has changed in response to social contact restrictions implemented in efforts to contain the spread of infection. It is possible that response rates may be different now that the need for telehealth has become increasingly important.

Future Research

Future research is needed to explore how programs are addressing the new ACOTE (2018) telehealth education related standards after they were implemented on July 31, 2020. Future research can also explore how telehealth and related educational practices changed after the COVID-19 pandemic. Telehealth delivery methods are continually evolving based on changes in technology, consumers' desire for telehealth services, practitioners' desire for telehealth services, reimbursement rules and regulations related to telehealth, and both client and practitioners' comfort with technology and methods for telehealth service delivery. The qualitative results of this study revealed a desire to add more content related to telehealth education. This subtheme housed the largest number of codes in the study. Future research can explore what, how, and why telehealth education is changing in occupational therapy education.

Implications for Occupational Therapy Education

The survey portion of this study indicated the majority of occupational therapy education programs who responded were providing lecture content related to telehealth; however, half of the programs reported not providing any interactive lab content to allow students the opportunity to use telehealth technology. Respondents most commonly cited a lack of telehealth equipment followed by cost as the barriers to implementing telehealth education in their program. Faculty knowledge about telehealth followed as a close third most frequently cited barrier. Occupational therapy educational programs will need to implement more interactive content to allow students to use telehealth technology to meet the increasing demand for occupational therapists prepared to deliver telehealth services and to address the new ACOTE (2018) standards.

The interview portion of this study elucidated strategies to help programs provide this interactive content to prepare students to demonstrate their knowledge of telehealth technology, EMR, and virtual environments. Participants reported using existing educational technology such as online learning management systems to create simulations of both telehealth scenarios and the EMR. Utilizing existing technology can help overcome the barrier of lack of telehealth technology and cost. Two of the participants reported using Zoom to deliver simulated and/or actual telehealth services. Many universities use Zoom for videoconferencing and there is a HIPAA and HITECH compliant version of Zoom available for use in healthcare (Zoom, 2020). Two respondents to the survey reported using VSee software to deliver telehealth services. VSee software is designed for telehealth service delivery and the messenger version is free (VSee, 2020). Interview participants mentioned using AOTA as a reference for current information on telehealth. Many programs require students to be AOTA members and using this resource to learn more about telehealth would not incur an

additional cost. Participants also mentioned using new faculty or guest lectures to assist in telehealth education. Increased attention to telehealth delivery methods and recent increases in the use of telehealth may help address issues related to lack of experience in faculty and guest lectures available.

Conclusion

This explanatory mixed methods study examined telehealth education in entry-level occupational therapy programs to understand if and how students were learning about telehealth and related technologies. The low response rate of the survey brings into question if programs are comfortable talking about how they are meeting telehealth education standards. Survey responses indicated the majority of programs were addressing telehealth in lecture, and just over half were including experience with an EHR. Half of the participating programs reported not including interactive content for students to apply telehealth knowledge and skills. Experience with robotic arms, telemonitoring, provision of services through telehealth and use of gaming systems were not commonly included in the curriculum. The three themes that emerged from the interviews (educational activities, telehealth technology, and curriculum planning) all pointed to a desire to improve and develop additional telehealth and related technology learning experiences. The survey portion of the study revealed common barriers to telehealth education including lack of telehealth equipment, cost, and faculty knowledge. The interviews revealed strategies for overcoming these barriers such as utilizing existing technology and bringing in additional resources and experts. The need for telehealth education was established. Educational programs could benefit from added telehealth active learning opportunities for students to meet the growing demand for professionals competent in telehealth service delivery.

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