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“Can you hear me now?” Evaluating Virtual Interpreted Healthcare Simulations

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Abstract

In this paper, we evaluate virtual healthcare simulations with undergraduate American Sign Language/English interpreting students and undergraduate nursing students. To evaluate this educational innovation, we conducted a focus group interview with key stakeholders – undergraduate nursing and interpreting students, graduate interpreting student mentors, and deaf standardized patients – who participated in the simulations. The focus group data were thematically analyzed, which allowed for an evaluation of instructional effectiveness and identification of areas for quality improvement in future iterations. Taken together, the findings suggest that virtual simulations offer students a powerful experiential learning experience and the opportunity to apply theoretical knowledge in novel ways to develop soft skills necessary in a practice profession.

Keywords: Simulation, healthcare, video remote interpreting, telehealth, experiential learning

Introduction

As severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) impacted all sectors of public and private life across the globe in early 2020, institutions of higher education were not spared from the virus' path of destruction. The coronavirus disease 2019 (COVID-19) pandemic, which continues to impact education worldwide, forced educators and students alike to adapt to rapidly evolving conditions on the ground. Many educators transitioned to emergency remote education (ERE) to safeguard public health. In this paper, we explore and evaluate virtual simulations conducted with undergraduate American Sign Language/English interpreting students, undergraduate nursing students, and deaf community actors (standardized patients).[1] Our intent is to describe stakeholder perspectives on a set of simulations, which we hope may lead to quality improvement and development of best practices in planning and offering virtual healthcare simulations for students.

Literature Review

In this section, we explore the literature that lays the backdrop for our investigation. Specifically, we review deaf patients' experiences with health care in the United States, nurse education, and experiential learning.

Health Care for Deaf Americans

Deaf Americans have long faced health inequities compared to their hearing counterparts, including limited access to care, relatively lower levels of health literacy, and medication safety risks (Harmer, 1999; Iezzoni et al., 2004; Pollard & Barnett, 2009). Additionally, deaf patients receiving emergency medicine care report myriad inadequacies in the healthcare system. Barriers to health care in emergency departments include, for example, stress in achieving communication access, inaccessible written and spoken information, and a lack of cultural sensitivity from providers (James et al., 2021).

Research has also shown that the mere provision of interpreting services does not adequately alleviate inequities. For example, patient-centered care approaches and relationships with providers can be negatively affected for patients who perceive linguistic inadequacies in interpreters (Nicodemus et al., 2020). Further, even qualified interpreters do not eliminate all health inequities and barriers to care, as deaf patients "may still experience challenges in understanding healthcare information if they do not have access to other forms of follow-up materials" in a signed language (Napier & Sabolcec, 2014, p. 239). Negative experiences in healthcare settings are not unique to patients who are deaf; rather, health disparities are experienced by many users of minority languages. However, it is misguided to suggest that these patients present with language barriers. Instead, reframing the problem allows healthcare professionals to understand that "insufficient language access services in healthcare contexts create language barriers," shifting the onus of responsibility onto professionals and those who educate future professionals (Showstack, 2019).

Deaf Patients' Health Care and Video Technologies

Video technologies offer promising innovations in many aspects of daily life. However, the advent of new technologies also poses challenges to access and equity for marginalized populations. Remote interpreting, defined as "the use of communication technologies to gain access to an interpreter in another room, building, town, city or country," has increasingly been used in healthcare settings, particularly via video remote interpreting (VRI) and signed language interpreting (Braun, 2015, p. 352).

1 We use the term "standardized patient" because it aligns with the literature on healthcare provider education. Standardized patients are used in educating healthcare providers for a variety of reasons, including that they "can assist novice students learn how to utilize interpersonal communication skills and develop critical thinking skills" (Andrea & Kotowski, 2017, p. 312).

The increased use of telehealth and remote interpreting technology have increased accessibility to healthcare services for many and allowed for decreased transmission of diseases like COVID-19. However, remote technologies have been met with resistance from many deaf patients. For example, early research in telehealth with deaf patients and interpreters suggested that internet connectivity issues can cause significant delays and technical challenges (Hughes et al., 2004). Although broadband speeds and reliability have improved in the years since videoconferencing technologies debuted, problems persist.[2]

One study suggested that despite frequent technical challenges (e.g., frozen video), deaf people report high levels of satisfaction in mental health telehealth consultations (Wilson & Gawain Wells, 2009). Other studies have yielded conflicting findings when specifically examining patient perspectives on VRI. For example, in a survey of nearly 600 deaf patients in the United States who had used VRI in the preceding 12 months, just 41% indicated satisfaction with the services, and more than 60% indicated that VRI interpreter presence interfered with the disclosure of health information to healthcare providers (Kushalnagar et al., 2019). Further, semi-structured interviews with deaf emergency medicine patients have revealed that negative perspectives about VRI revolve around challenges to patient-centered care and effective communication, as well as inappropriate use of the technology (e.g., when patient mobility is limited) (James et al., 2021).

Patients are not the only ones who face problems in virtual healthcare delivery and VRI. A survey of healthcare providers and patients found that both groups report a lack of training for providers on how to effectively use VRI, as well as a preference for in-person interpreting services for critical care (Yabe, 2020). However, there are positive outlooks on video remote interpreting by some in the healthcare sector, as evidenced by providers who demonstrate an appreciation for the near immediate availability of services and an interest in using the technology, provided they are prepared to do so (Kletečka-Pulker et al., 2021).[3] Finally, we note that the National Association of the Deaf (NAD) in the United States has argued that while "VRI services are a valuable back up communication tool . . . hospitals [should] provide VRI services only when they are unable to secure the services of on-site qualified interpreters" (National Association of the Deaf, 2008, p. 3).

Nurse Education in the United States

The first formal nurse training program in the United States far preceded the academization of interpreting in the country. The New England Hospital for Women and Children began the nation's first nurse education program in 1872, comprised of a 1-year curriculum for aspiring nurses (Ervin, 2018). In the 21st century, nursing education in the United States operates at the associate, bachelor's, master's, and doctoral levels, with the first doctoral programs offered in the 1920s and 1930s at New York University. Today, baccalaureate and graduate nursing programs are accredited by the Commission on Collegiate Nursing Education (Commission on Collegiate Nursing Education, 2018) or by the National League of Nursing (n.d.).

The School of Nursing at the University of North Florida offers CCNE-accredited programs at the undergraduate and graduate levels. The School offers four Bachelor of Science in Nursing (BSN) tracks: regular prelicensure BSN, accelerated prelicensure BSN, freshman admit nursing program, and an online RN-BSN bridge program. In addition, several graduate tracks are offered: post-Master of Science in Nursing (MSN), Nursing Education MSN, and Nursing Leadership & Administration MSN, Doctor of Nursing Practice (MSN-DNP), BSN-DNP Family Nurse Practitioner, BSN-DNP Anesthesiology Nursing, and a Psych-Mental Health Nurse Practitioner Certificate.

2 And hence the title of our paper, a cultural reference to Verizon's widely used slogan "Can you hear me now?" Evaluating virtual interpreted healthcare simulations

3 Providers in this study primarily treated non-deaf patients and used VRI across a variety of spoken languages (Bosnian, Croatian, Serbian, and Turkish), with Austrian Sign Language representing just 9% of the services offered.

Educators have long argued for the importance of preparing healthcare professionals to work with patients who are deaf (e.g., Barnett, 2002). Despite this, historically, nurse education programs have not explicitly prepared future practitioners to work with patients who are deaf or signed language interpreters. Progressive change in recent years has encouraged educators from myriad disciplines to ensure students are prepared to serve increasingly diverse populations (see, for example, Hollins & Guzman, 2005), but the large number of patients who are deaf have been broadly overlooked in nursing classrooms and clinical labs. Despite a push to include interpreters in nurse education (Latimer et al., 2019), evidence suggests that nurses in the field are unprepared to care for patients who are deaf as well as they care for their hearing counterparts. For example, nurses tend to view deafness according to a medical rather than cultural model, and nurses have been shown to demonstrate a "lack of knowledge regarding effective interaction with DdHH [Deaf, deaf, and hard of hearing] patients by agreeing that it is acceptable to relinquish their autonomy and self-determination to a hearing person," in addition to assuming that patients are generally amenable to communicating with healthcare professionals without certified interpreters (Lewis & Keele, 2020, p. 14). In one study of Iranian senior nursing students, participants indicated that they did not receive education in caring for deaf patients, despite many of the students having gained field experience doing so (Adib-Hajbaghery & Ezaei-Shahsavarloo, 2015).

Simulations are a widely used educational practice in nurse education with potential benefits for student learning, assuming fidelity and authenticity of simulations (Cant & Cooper, 2009). Specifically, research has demonstrated "increased competence and safe practice of practitioners following exposure to simulation" (McCaughey & Traynlor, 2010, p. 831). However, as Alinier et al. (2004) emphasized, the skills of faculty are of the utmost importance in facilitating effective simulations. Finally, in recent years there has been an interest in leveraging technology for virtual simulations in nursing education to "support the existing curriculum" and "[provide] students with opportunities to safely practice and think through rare events in a low-anxiety environment [. . . and allow] educators to foster intradisciplinary and interdisciplinary education" (Foronda & Bauman, 2014, p. 417).

Experiential Learning and Healthcare Interpreter Training

Historically, signed language interpreter education has taken place in face-to-face formats. However, digital technologies have led to the online education of interpreters. Several undergraduate interpreter education programs accredited by the Commission on Collegiate Interpreter Education (CCIE) leverage distance learning or hybrid education, and faculty around the world shifted to emergency remote education due to the COVID-19 pandemic. This shift has also been documented in signed language interpreter education across the globe (Wessling et al., 2022), with results indicating that faculty demonstrated remarkable adaptability to unfolding conditions on the ground, often with limited or nearly nonexistent institutional support. Researchers continue to study distance learning in interpreter education. For example, online project-based learning has been shown to lead to positive learning outcomes for students, such as increased enrichment and implicature in signed language translation work (McDermid & Pope, 2019). Virtual learning environments (VLEs) have also been used in spoken language interpreter training. Results indicate that the use of VLEs may "support collaborative learning," but that there is "copious evidence for the crucial importance of learner preparation and continuous coaching support" (Braun et al., 2020, pp. 14 – 15).

Kolb (1984) argued that inherent in experiential learning is the premise that "knowledge is continuously derived from and tested out in the experiences of the learner" (p. 27). Simulations, sometimes called role-plays, are a key curricular component and form of experiential learning widely used in both interpreter and nurse education (see, for example, Beckem II & Watkins, 2012; Burnard, 1987; Halley & Connelly, 2022; Hill, 2017; Metzger, 2000; Miner et al., 2017; Ruiz, 2013; Wang, 2015). Simulation and corpus data teaching methods have also been applied in the training of healthcare interpreters across various working language combinations (see, for example, dal Fovo, 2018; Merlini & Favaron, 2009; Niemants & Stokoe, 2017).

Analyzing the extent to which experiential learning activities are incorporated into the curricula of American Sign Language/English interpreter education programs, Hunsaker (2020) defined simulations and role-plays as "educational activities with in-person Deaf and hearing consumers" (p. 47). We extend this definition to incorporate live virtual simulations conducted via videoconferencing technology. Of great importance in experiential learning is the *authenticity* of the simulations, a domain that may be influenced by factors including but not limited to the content, the environment, and the actors (Hunsaker, 2020). Emphasizing the two-fold benefits of experiential learning, Hunsaker (2020) concludes that simulations "allow students to apply theory in authentic, low-risk environments, [and] these activities also invite the Deaf community into the classroom to increase their participation in interpreting students' education" (p. 53).

Finally, we wish to note that although a thorough review of the literature yielded little into the widespread use of authentic healthcare simulations in signed language interpreter education, the simulations we conducted do not exist in a silo. Interpreting simulations with standardized patients have been used in other contexts (see, for example, Dean, 2018; Major et al., 2012; Mathews et al., 2011; Richards et al., 1999; Thew et al., 2012). In addition, resources approximating these experiences exist, and healthcare simulations are frequently used in interpreter education. The CATIE Center housed at St. Catherine University offers various resources for healthcare interpreting students, practitioners, and educators.[4] Among the resources are recordings of simulated interactions between deaf patients and non-deaf healthcare professionals. The simulations are paired with a multitude of supporting resources, including vocabulary reinforcement, video introductions to stakeholders, and reflections from the interpreters. In-depth resources like these enable educators to provide students with a rich backdrop of knowledge prior to engaging in simulations firsthand.

Method

In this section, we provide an overview of the method we used in this study. Prior to conducting a set of virtual healthcare simulations with nursing and interpreting students in the spring 2021 semester, the Institutional Review Board at the University of North Florida determined that a project to evaluate the simulations for refinement was exempt from ethical review.

The Case

Here, we describe the case and educational context in which this evaluation took place. Specifically, we offer a global picture of the simulation experience we devised and offered to students. Readers may use this holistic description of the simulations to make connections between the findings and recommendations explored later in the paper.

Simulations were conducted in an all-day (9 a.m. to 4 p.m.) virtual session with Zoom videoconferencing software. The Zoom meeting was attended by two full-time faculty members (one nursing, one interpreting), 17 undergraduate interpreting students, approximately 40 undergraduate nursing students, four graduate interpreting students who worked as mentors with undergraduate students, and six deaf standardized patients. Standardized patients were recruited via personal and professional contacts and were offered a small token of appreciation for their generous contributions. Interpreting/healthcare simulations have been conducted at least annually as a cross-disciplinary partnership at the University of North Florida since 2014 and are typically held in the university's nursing simulation labs. Due to the COVID-19 pandemic, this was the first year the simulations were conducted virtually. Beyond the need for safety and social distancing, we emphasize the potential benefit of virtual simulations in that they align with many aspects unique to telehealth and VRI and thus offer students a unique learning experience in virtual healthcare.

4 For more, see healthcareinterpreting.org.

In advance of the simulations, nursing students and interpreting students were given a list of topics to research. Nursing students were instructed to engage the deaf standardized patients in mock patient education encounters on their assigned topics.[5] Interpreting students were instructed to perform preparation activities that would enable them to effectively interpret simulations revolving around each topic. Nursing and interpreting students collaboratively conducted simulations with standardized patients on the following disease processes: deep vein thrombosis, hyperlipidemia, gastroesophageal reflux disease (GERD), peripheral artery disease, diabetes mellitus type 1 and 2, insulin administration, diabetic footcare, osteoporosis, and hypertension. The topics were chosen because they aligned with subjects nursing students were learning about in their first medication/surgery course.

The faculty created Zoom breakout rooms, where each of the simulations was conducted. Interpreting students were assigned partners (one group of three) and sessions were spread across the day so that each pair/group of interpreting students was scheduled to interpret each simulation once. Interpreting students were instructed to work together as a team in each simulation (i.e., working with their assigned partner(s) as they would in a professional interpreting team).

Prior to the simulations, deaf standardized patients were provided with the list of topics that would be addressed. Between each session, deaf standardized patients were asked which simulation they were most interested in participating in. Because there were more concurrent simulations than standardized patients, interpreting students were occasionally required to assume the role of the standardized patient. In such cases, the interpreting students who portrayed deaf patients both used American Sign Language and accessed the nurse's utterances through American Sign Language, without audio.

Following each 15- to 20-minute simulation, all participants were instructed to debrief on their experiences. The debriefing phase in simulation is crucial for learning, and to facilitate the learning we incorporated the use of small-group debriefing (Tosterud et al., 2014). Given the deaf/hearing dynamic present in the breakout rooms, interpreting and code switching were a necessity in the debriefing process. This enabled all parties to share perspectives with one another. For example, nursing students were able to educate interpreting students about their work and vice versa. Graduate students and interpreter mentors facilitated the debriefing process, supported by the faculty members, who rotated between breakout rooms throughout the simulations.

After each simulation and debriefing session, all participants returned to the main Zoom room. The faculty led several large-group discussion and debriefing sessions throughout the day, before beginning the next set of simulations.[6] Inspired by the United States Army's After-Action Review (AAR), we employed healthcare simulation AARs, a "structured format [that] addresses learning objectives and performance and can provide even novice debriefers with a concise and effective defining" (Abulebda et al., 2022, n.p.). Using AAR helps normalize what happened, identifying what went well and what could be improved in future iterations. The intent of AAR is not to identify wholistic success or failure, as it is based upon the premise that every event has value.

Materials and Procedure

Following an entire day of virtual simulations, a focus group was conducted in which each of the populations were represented. Focus groups, broadly defined as "small gathering[s] of individuals who have a common interest or characteristic, [are] assembled by a moderator, who uses the group and its interactions as a way to gain information about a particular issue," are helpful for eliciting perspectives from stakeholders (Williams & Katz, 2001, para. 4). In this case, the research team led the group of simulation participants in a discussion aimed at answering the following research question: How can virtual

5 The particular setting of each simulation was determined according to the assigned diagnosis. For example, a patient being treated for and learning about carpal tunnel syndrome was performed within the context of a simulated outpatient visit. Prior to beginning a simulation, each group was able to determine the particular context and ensure mutual understanding.

6 We note that this manuscript is a follow-up to an earlier publication (Halley & Connelly, 2022), which further details the logistics of this educational innovation.

simulations with undergraduate nursing and American Sign Language/English interpreting students be conducted to maximize learning? Prior to the focus group, the research team met to refine the questions for the interview guide.

Because the focus group comprised both hearing individuals not fluent in American Sign Language and a deaf individual[7] (the standardized patient in the simulations), a nationally certified American Sign Language/English interpreter was retained to provide services during data collection. Hearing bilingual participants in the focus group used English, while the deaf participant used American Sign Language. The focus group was conducted and recorded via Zoom (63 minutes). Focus group participants were selected by convenience according to their availability and willingness to share their experiences. Due to scheduling conflicts, the focus group was conducted approximately 1 month after the simulations.

Transcription and Analysis

A research assistant and native American Sign Language/English bilingual transcribed the focus group into written English. Transcription of utterances shared by the deaf participant were made according to their direct utterances, rather than transcriptions solely of the interpreter's renditions. The transcript was verified by a bilingual member of the research team, resolving minor discrepancies (e.g., word choice). Following transcription of the recording, the research team independently coded and analyzed the data using thematic analysis (Braun & Clarke, 2006).

Findings

In this section, we provide an overview of our analysis of the data. To do so, we describe our findings according to three overarching themes: positive experiences, learning outcomes, and areas for refinement.

Positive Experiences

Focus group participants described various positive experiences in the simulations. In addition to the learning outcomes outlined in the next section, they pointed to numerous aspects of the simulations that they perceived as facilitative of the learning process. Holistically, the participants described the simulations as informative and eye opening. For many, it was their first time engaging with adjacent professionals – in this case, student professionals – when attempting to do their work. Just as nursing students had not yet experienced working with patients who are deaf and American Sign Language/English interpreters, interpreting students reported the novelties of working with healthcare providers. As an interpreting student remarked, "I got to see nursing students in action."[8] The participants suggested that working with others who embodied the roles they were enacting contributed to an increased sense of authenticity.

The focus group participants reported overwhelmingly positive experiences in the simulations. They suggested that the simulations offered them authentic and engaging opportunities to practice their work and apply theoretical learning. For example, interpreting students were able to apply discourse analysis and turn-management techniques, and nursing students put patient education principles into practice when clarifying misconceptions. The participants suggested that similar simulations be incorporated across curricula at other institutions. As one interpreting student who completed a 2-year degree in interpreting at a community college opined, "I had never experienced anything like this at [my previous college], so this was very interesting to me." Her comments were echoed and reinforced by a graduate student mentor, who noted brief simulations in her undergraduate education that did not allow for the depth and breadth of experiences offered to current students.

7 We note that the standardized patient who joined our focus group identifies as deafblind.

8 Participant comments have been edited for clarity.

Learning Outcomes

Focus group participants highlighted a variety of outcomes because of their participation in the simulations. Both nursing and interpreting students described learning outcomes that focused on the requisite *soft skills*[9] of their profession, as opposed to technical linguistic or medical abilities. The soft skills they reported developing included those specific to telehealth and/or VRI, as well as healthcare interactions more generally.

Rather than recounting new medical vocabulary or treatment approaches, the students pointed to the ways in which the simulations offered them new lenses for exploring the intricacies of social dynamics inherent in their work as practice professionals.[10] One nursing student explained that "many of us haven't even worked in a hospital, or even interacted with deaf patients, so this was eye opening." Just as the experience offered nursing students the opportunity to refine their soft skills and learn about how to interact with deaf patients, the interpreting students suggested developing a variety of soft skills. For example, one interpreting student recounted the value of learning how to interact with healthcare professionals, noting that "some of the interpreters just sort of popped in and started interpreting, but they hadn't really quite explained what their role was . . . explaining, being the expert in the room, that was something that the interpreters were discovering."

In the same vein, interpreting students began to see the dynamic role they play in interpreted interactions, experiencing firsthand what it meant to be part of a healthcare team. As an interpreting student stated, "We're also advocating for ourselves, and what our role is, and what you can expect from us." In comments like these, students suggest a greater appreciation for the social dynamics at play and how they can build relationships with adjacent professionals while also advocating for their needs and adhering to standards of their respective professions. This realization was not lost on nursing students. In the words of one nursing student, "Just interacting with the interpreter and the patient themselves, we learned to make eye contact with the patients and keep it patient-centered and almost ignore the interpreter, in a sense. But you're working with everyone. It's a whole group effort." By recognizing the "whole group effort," the nursing student seems to hint at critical thinking on the co-constructed nature of communication, whether direct or interpreter-mediated. He later expanded upon this comment, adding, "I learned probably more about interpretation than the actual disease we were educating patients about."

Students suggested that while the simulations were conducted within the context of healthcare settings, their most valuable lessons related to what they learned about the interpreting process as a whole. When discussing the development of practical and technical skills during the simulations, interpreting students focused on the social rather than linguistic dynamics of interpreting. A key area of focus the students emphasized was the ways in which the simulations gave them opportunities to experiment with and refine their approaches to team interpreting, particularly in the context of remote work. As an interpreting student recounted: "We realized what we needed and how each of us could feed one another and accept feeds. The idea was to navigate this new world of virtual teaming . . . adding that virtual layer changes everything, and so we just had that conversation." To put it simply, interpreting students were faced with a changing technical landscape and were tasked with developing strategies and tactics to overcome these challenges with their peers.

Finally, the participants noted the value of both interpreters and healthcare providers being exposed to virtual healthcare with patients who are deaf. Participants described the challenges of navigating remote technologies. For example, the deaf standardized patient recounted an experience with a healthcare provider

9 In this paper, we use the term "soft skills" in healthcare settings to refer to skills that are "not strictly cognitive or technical" but rather "ones that include both intrapersonal and interpersonal competencies" (Dolev et al., 2021, p. 172).

10 Dean & Pollard (2018) emphasize that interpreting is practice profession, rather than a trade or technical profession, because "there are other skills needed to be effective that lay outside a traditionally heavy focus on technical (bilingual) skills" (p. 38). This distinction holds true for other professions charged with "applying their technical skills in dynamic, socially interactive settings" (p. 38), including nurses, who must engage in ethical reasoning in socially interactive settings with patients.

who was unfamiliar with how to communicate with and treat a deaf patient via remote technology. However, the patient shared her satisfaction once the provider learned how to effectively leverage the technology, recounting, "The second time I saw this doctor, she knew what to do. She had already experienced it once, so I struggled with almost nothing because she already knew what to do from our previous experience." The participants suggested that virtual simulations give healthcare professionals the opportunity to experience virtual healthcare delivery, ultimately leading to a better outcome for patients.

Areas for Refinement

Although the participants reported positive experiences and learning outcomes, they also identified a variety of challenges and areas for improvement in future iterations of virtual simulations. Suggested refinements centered around technical, logistical, and practical considerations.

First, the virtual nature of the simulations posed technical challenges for some participants. We recognize that Zoom is not a perfect representation of all videoconferencing software packages used for telehealth or VRI. However, this technology approximates what is used in industry and therefore requires students to work through technical issues that may be present outside the classroom (e.g., connection issues, camera placement). One technical challenge posed in our simulations was related to students' personal computers: some students joined using outdated operating systems and Zoom programs, limiting their ability to join breakout sessions (and thus the simulations). A potential refinement to the activity therefore is to provide all virtual simulation participants with instructions in advance detailing the specific technical requirements for participation.

The focus group participants also pointed to several logistical matters that complicated the learning process. For example, focus group participants noted role confusion in the Zoom sessions and suggested that all participants identify not only their names but also their roles, in their display names (e.g., "Interpreter – John" or "Nurse – Jane"). However, participants also noted that an individual's role is not always discernible from appearance alone in face-to-face interactions. As the deaf standardized patient remarked, "In real life, most of the time the deaf patient just meets the interpreter there. They may or may not know each other. But if the interpreter doesn't know the patient, it is a new face. It's the same with the medical professional. They don't know the interpreter personally." In this case, the deaf standardized patient is emphasizing the need for interpreters to know how to approach and interact with patients and providers with whom they may not be familiar. Participants also pointed out the challenges of navigating roles as team interpreters, as many had never worked with a team interpreter in a live, dialogic setting, particularly remotely.

A key theme we identified among participants was an interest in ensuring the deaf standardized patients are prepared in advance of the simulations. For example, the deaf standardized patient suggested that patients be assigned particular diseases or scenarios to maintain throughout the simulations, rather than being asked to assume multiple roles across simulations. As she noted, "For some of the diseases, I didn't know what they meant. I had to research, and with my work, I usually don't have a lot of time to really do research." The participants generally spoke in favor of providing deaf standardized patients with clear preparation materials in advance of the simulations, a practice that both bolsters authenticity and reduces the workload of members of the deaf community. Along these same lines, participants suggested that additional preparation materials for interpreting students – who may or may not have proficiency in medical terminology in English or American Sign Language – would be beneficial.

Participants also pointed to the challenges of working with adjacent professionals and learning in a "trial by fire" format, with limited preparation or forewarning of what to expect. To counteract this, participants suggested that they would benefit from a short introduction to the work of the adjacent field. This could be accomplished, for example, with a short lecture from interpreting faculty to nursing students on the fundamentals of working with interpreters and the roles of interpreters in healthcare settings. The reverse could also be done with nursing faculty and interpreting students. In this way, faculty arm students

with knowledge that can be applied, developed, and experimented with firsthand in the simulations, clearly positioning the students for success in Kolb's (1984) experiential learning paradigm.

Finally, participants emphasized the value of working with diverse populations. The deaf standardized patient noted, for example, simulations with children or family dynamics, underscoring the importance of preparing the interpreters and nurses of tomorrow to effectively work with and care for patients across diverse spectrums of age, race, ethnicity, gender identity, language use, socioeconomic status, and other critical attributes of intersectional identities. As the deaf standardized patient opined, "It's a good idea to try doing that, even though I understand there are limitations in pulling in enough deaf people, or even hearing people." Comments like these underscore the need for educators to engage in actions that promote diversity, equity, and inclusion (DEI), despite the challenges such endeavors may pose.

Discussion

Our work in preparing interpreters to work in healthcare settings is not unique. Due in large part to growing recognition of the need for specialized training for healthcare interpreters, in recent years there has been an increase in educational opportunities for those working or wishing to work in this area. These advances are a promising sign for the field and – we hope – for patients and providers who engage with interpreters. We emphasize graduate-level training in healthcare interpreting offered at the National Technical Institute for the Deaf (graduate certificate and master's degree in healthcare interpreting), the University of North Florida (graduate coursework in healthcare interpreting), and Gallaudet University (graduate coursework in healthcare interpreting), as well as the self-study courses created by the CATIE Center at St. Catherine University. These advanced training courses and opportunities for students and practitioners specializing in healthcare interpreting offer great possibilities for cross-program collaboration and the development of best practices in virtual simulations.

However, we note that the data in this study were not collected for the purposes of generalization. Rather, this paper is a report of virtual simulations with the limited populations outlined. As such, the findings may not be applicable to educators at other institutions and should be considered with caution. Above all, this article details the process by which we approached virtual simulations and improvement of educational outcomes and curricular delivery in future iterations. We hope this paper can begin a broader conversation about the development of best practices in virtual simulations for nursing and interpreting students. Such best practices should be developed and informed by data, with the consultation of a variety of stakeholders, especially deaf community members who access health care through interpreting services.

We also wish to note the value of the debriefing sessions in our simulations and how they fostered students' learning processes. Of particular interest is the importance of structured debriefing opportunities for students, facilitated or guided by faculty members.[11] This allows students to analyze their work on a deeper level, while also ensuring that all participants – including deaf stakeholders – can share critical perspectives and insight.[12] We suggest that debriefing led to valuable learning when offered both as small-group discussions (i.e., with students and standardized patients upon completion of a simulation) and class-level conversations with all participants. For instance, larger group conversations encourage students to identify connections across their individual experiences and draw conclusions about how to best provide

11 Prior to the initiation of simulations, the faculty explained the entire process of a simulation, including preconferencing, running the simulation, and debriefing. Students were instructed to focus their debriefing sessions on positive experiences worth replicating in future simulations and areas for potential refinement. The faculty emphasized that when blame is not assigned but students instead focus on lessons learned, the conversation flows and enables greater depth of discussion. The faculty also noted the importance of all parties, including standardized patients, sharing their experiences. Faculty took notes while observing simulations and summarized their observations to the entire class at the conclusion.

12 Although we did not record the simulations, we note the value in deaf stakeholders sharing valuable insights about their needs and preferences from both interpreters and healthcare providers. In the simulations that we have conducted over several years, deaf participants frequently share anecdotes about ineffective experiences with VRI due to technology and a lack of training for staff.

their services. We also wish to note that debriefing is a standard in International Nursing Association of Clinical and Simulation Learning (INACSL) practices, and we suggest that future research specifically focused on debriefing protocols and benefits of debriefing for interpreting and nursing students may be warranted.

Taken together, telehealth and VRI show no signs of disappearing. Although the inherent limitations of technology and virtually mediated healthcare encounters pose challenges, we also suggest that there is value in adapting to change rather than fighting it. For this reason, there is great merit in educating future healthcare professionals – including nurses and interpreters – on how to effectively leverage these technologies to deliver the best possible healthcare outcomes for patients.

Conclusions

In this paper, we have sought to describe virtual healthcare simulations conducted with interpreting and nursing students at one educational institution. Our subsequent evaluation of the simulations has allowed for not only an analysis of the benefits of experiential learning for both cohorts of students, but also for a critical look into developing best practices.

We also emphatically note the value of virtual simulations for nursing and interpreting students, even beyond the exigencies of COVID-19. As telehealth adoption and video remote interpreting (VRI) continue to rise in use across the United States and indeed the world, educators have the responsibility of ensuring that the practitioners of the future are prepared for the work of tomorrow. To do so, interpreter and healthcare educators engaging in collaborative simulations should consider incorporating telehealth and VRI content into their experiential learning opportunities for students. Further, as our findings demonstrate, engaging in these simulations leads to student growth across a wide range of skills, and learning is not limited to the particularities of interpreting in healthcare settings; rather, virtual healthcare simulations offer students an avenue to learn more deeply about interpreting itself.

Finally, we recognize the countless healthcare settings and situations in which telehealth and VRI are unacceptable alternatives to face-to-face care with on-site interpreting services. However, as interpreters and healthcare professionals adapt to a changing digital landscape in the 21st century and face the reality of virtual healthcare delivery and interpreting services, it is incumbent upon educators to facilitate this transition in ways that lead to the best possible outcomes for patients. While the onset of the COVID-19 pandemic and our shift to virtual learning posed many challenges, it also created the opportunity to experiment with new pedagogical approaches. These shifts have been borne out of not only logistical need but also the need to prepare today's students for tomorrow's world.

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