Simulation-Based Interprofessional Education in a Rural Setting: The Development and Evaluation of a “Remote-In” Telehealth Scenario

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Abstract

Simulation-based interprofessional education (IPE) is challenging to implement, especially on rural campuses. This article describes an innovative approach to IPE implementation using telehealth technology. Twenty-nine interdisciplinary students (nursing, pharmacy, and medical) participated in a simulation-based IPE scenario using a telehealth robot. Student experiences were evaluated using a mixed-methods approach. Surveys and video-recorded debriefing sessions revealed the majority of students felt the experience was superior to their previous IPE experiences, facilitated better understanding of disciplinary roles, and provided experience using telehealth tools. Programs considering this approach should have strong community partnerships, institutional support, and shared vision among key stakeholders.

Keywords

Collaboration; Health Care Education; Interprofessional Education; Rural; Simulation; Teamwork; Telehealth

A single disciplinary approach to health care education does not give students the opportunity to practice effective communication and collaborative skills essential to interdisciplinary, real-world patient care. To address these limitations, health care educators increasingly use interprofessional education (IPE) strategies, in which students from a variety of health care disciplines (e.g., nursing, medicine, pharmacy) work collaboratively to develop skills necessary for efficient teamwork. Although an interdisciplinary educational approach yields higher quality patient care and improved patient outcomes (Decker et al.,

2015), there are challenges that may affect IPE experience implementation. This article describes how faculty located on a rural campus addressed these challenges using an innovative strategy of “remote-in” telehealth technology to implement simulation-based IPE with senior nursing students.

CHALLENGES TO SIMULATION-BASED IPE IMPLEMENTATION

Health care educators employ student-centered clinical education models, in which experiential learning enhances the retention of knowledge and skills. As clinical placements have become more difficult to secure due to increased demand for clinical sites and reduced inpatient beds, educational programs have incorporated high-fidelity human patient simulators (HPSs) or computerized, lifelike manikins in controlled and structured learning experiences (Lee & Souder, 2016; Parker & Myrick, 2009). Simulation-based clinical experiences require students to incorporate specific actions (e.g., knowing, doing, and being in the learning process), allow for safe and repetitive practice, and yield improved collaborative teamwork associated with safe patient care (Decker et al., 2015).

Hands-on practice with simulation-based IPE allows students to develop and master core competencies, promotes interdisciplinary collaboration and communication skills, and protects patients (Decker et al., 2015). Such experiences are administered on site, with students from different disciplines coming together in clinical simulation labs to practice patient scenarios. However, implementation of this approach can be challenging for rural programs. Rural campuses often do not house interdisciplinary programs, which inhibits the development of professional relationships between health care educators that are essential to designing interdisciplinary educational opportunities. The logistics of coordinating student schedules and travel times are also problematic for rural campus faculty, who often must utilize clinical simulation laboratories located on the main campus (Palaganas, Epps, & Raemer, 2014). Telehealth tools can be part of an innovative solution to address the logistical challenges of implementing simulation-based IPE.

Telehealth is health care provision to patients at distant sites using technology-based tools. Remote patient monitoring or “remoting in” uses audio-video equipment to permit two-way, real-time interactive communication (Lee & Souder, 2016). Through telehealth, patients and other health care professionals can gain access to providers and specialists through a virtual network. In resource-limited rural settings, the use of telehealth tools by health care providers and health care systems can enhance patient-centered, team-based care and promote a collaborative clinical environment (Lee & Souder, 2016). Health care students in rurally located training programs are more likely to live and eventually practice in the rural community (Rural Health Information Hub, 2017). A simulation-based IPE experience using telehealth tools not only provides these students the opportunity to work with technology designed to enhance access for rurally located patients but also addresses issues inherent in providing IPE experiences to rurally located students.

PROJECT IMPLEMENTATION

This evidence-based project was conducted in the southeast United States in an area designated as rural according to US Census Bureau (2017) parameters. Fifteen percent of residents live in poverty and health care access is problematic; the availability of family practice physicians is between 1 and 2.9 per 10,000 residents (Bureau of Labor Statistics, 2017). This setting is home to a regional campus of a large state public university located 60 miles south. The college of nursing located on the main campus offers a collaborative program with selected regional campuses; students attending these regional campuses can earn a bachelor of science in nursing on their local campus. The regional campuses are unique in that they each have a clinical simulation laboratory but do not offer other health care educational programs.

In order to pilot a simulation-based IPE experience on a rural campus, faculty recruited prelicensure health care students from the regional campus nursing program, the university school of pharmacy located on the main campus, and the local Allied Health Education Consortium, which helps arrange rotation sites for rurally placed medical students. The 29 students who participated included 16 senior nursing students, 8 third-year medical students, and 5 fourth-year pharmacy students. The students were assigned to one of five IPE groups consisting of five to seven students (three to four nursing students, one to two medical students, and one pharmacy student).

The clinical simulation laboratory, located in the nursing building, was designed to replicate a hospital setting and included three private simulation hospital rooms connected to an open floor practice setting and classroom seating, a private debriefing room, and a separate observation/control room for faculty. These spaces, as well as an additional classroom outside the laboratory, were used as the scenario simulation area or were designated as a presimulation waiting area, a simulation-ready room, and a debriefing room for project participants.

Two weeks prior to the project date, students were emailed a packet to review containing an advanced cardiac life support pocket guide, video links regarding team communication, and instructions on operating the telehealth robot, which consisted of a computer tablet on a rolling stand. One faculty member facilitated the scenario simulation from the observation/control station, and another member facilitated the face-to-face debriefing session; the third served as the overall logistics coordinator, making sure each group was in the assigned area.

Once all groups completed the orientation, one group rotated through the simulation and debriefing areas while the others went to the waiting area. At the completion of the scenario, the same process occurred with the remaining groups, minimizing the potential for communication between groups during the entire process. Each simulation was video-recorded and ran for approximately 12 minutes.

The simulation was developed to mimic how telehealth might be utilized in a real-life, emergent situation, with all students performing their discipline-specific roles. During the scenario, the HPS and telehealth robot were located in one of the simulation hospital rooms; two nursing students were at the bedside gathering information and performing a general

assessment with the simulator. Approximately two minutes into the scenario, the faculty facilitator located in the observation/control room initiated cardiac arrest, requiring the nursing students to call a code. The “code team,” composed of the remaining nursing students and pharmacy student, responded with resuscitation equipment from the adjoining simulation ready room; they activated the telehealth robot to initiate a consult with the medical students who were located in the outside classroom. The medical students were able to remotely activate and drive the telehealth robot using two-way audio/video conferencing, enabling them to see and hear the code team in action with the HPS.

The entire group assisted in providing care, and all team members performed their discipline-specific role, with the medical student serving as code team leader, the pharmacy student being in charge of medications, and the nursing students performing airway management, compressions, documentation, and drug administration. At the conclusion of the scenario, each group attended the faculty-facilitated, video-recorded debriefing session, and each student completed both postscenario questionnaires.

PROJECT EVALUATION

The project was evaluated using a mixed-methods approach. Individual student experiences were assessed before and after the scenario using the Student Perceptions of Interprofessional Clinical Education-Revised tool, which assesses teamwork, roles, and patient outcomes (Dominquez, Fike, MacLaughlin, & Zorek, 2016). Students were also asked to rate the simulated IPE experience using the National League for Nursing Simulation Design Scale, which evaluates information, support, problem solving, feedback/guided reflection, and realism (National League for Nursing, 2005). Quantitative data were analyzed using SPSS (Version 21). Nonparametric Wilcoxon signed-rank tests were calculated to assess changes in students’ prescenario and postscenario scores. After the video-recorded debriefing sessions were transcribed verbatim, the first two authors independently read and coded the transcripts. Subsequently, they met to reconcile the minor differences in coding and identify relevant themes.

All students rated it was important or very important to have real-life factors, situations, and variables built into the simulation; 94 percent rated “agree” or “strongly agree” that the simulation included all three items. In addition, all students rated it was important or very important to them that the scenario resembled a real-life situation; 93 percent rated agree or strongly agree that the scenario resembled a real-life situation. In the debriefing sessions, students agreed that the simulation-based IPE using telehealth technology was far superior to their previous traditional IPE activities. A medical student related, “It was better than getting a phone call because I could see what was happening with my eyes and [I could] visualize teamwork.” The students also felt this experience prepared them for practice in a rural setting, increased their confidence in clinical decision-making, and fostered teamwork and better role understanding of other disciplines. As a nursing student stated, the experience “helped me to be better prepared and confident in talking and working with a team of other disciplines.”

LESSONS LEARNED

For an IPE program to be effective, key elements include adequate funding, institutional support, good communication, and shared vision among the key stakeholders (Lawlis, Anson, & Greenfield, 2014). This project success was due in part to the strong community and university partnerships. For example, the initial recruitment goal was 20 students; recruitment exceeded expectations due to existing relationships with the Allied Health Education Consortium and university partners.

The technical challenges with the equipment, including difficulty in hearing and limited visualization for the students using the telehealth robot, ultimately became a learning opportunity. As a result, students had to work collaboratively as a team and rely on one another's expertise to solve the issue and optimize patient outcomes. However, some issues arose that will inform IPE experience refinement. Lack of familiarity with the robot's capabilities hindered full student participation in the scenario. Although the main objective of this project was not to teach telehealth, adding a more deliberate orientation to the equipment and practice time with the robot will not only enhance the IPE experience but will increase telehealth process knowledge. Future plans include the development of other scenario types, such as a grand round simulation.

CONCLUSION

Complex health care requires that health care professionals work as a collaborative team to ensure patient safety, provide quality health care, and share skills and knowledge appropriately (Decker et al., 2015). The Institute of Medicine recommended incorporation of IPE into the curriculum as an effective form of education in achieving safe, quality, patient-centered care (Lee & Souder, 2016). IPE with a simulation-based experiential learning approach allows for the development and mastery of collaborative teamwork competencies while protecting patients. Using "remote-in" technology is an innovative way to foster IPE in a rural setting.

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