Featured Article

Snapshots of Simulation: Innovative Strategies Used by International Educators to Enhance Simulation Learning Experiences for Health Care Students

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Abstract

Background: Innovations in simulation in nursing and health care continue to be developed as creative and committed educators respond to challenges of providing pedagogically sound, engaging and effective learning experiences for large student cohorts. Time-pressed educators may find it difficult to network with others working in simulation-based learning, and thus, it is useful to provide summaries or snapshots to provide a brief overview of activities in various countries using simulation in a variety of ways.

Method: The purpose of this paper is to profile a diverse range of innovative, cost-effective, and tested simulation approaches that have been implemented in healthcare programs by nursing educators from a range of countries to spark creativity. Each strategy was designed to address contemporary and critical practice issues.

Results: They facilitate immersion in authentic clinical scenarios, increase students' awareness of cues in the environment that may compromise health and safety.

Conclusion: These snapshots of simulation prepare students for cultural or clinical realities that they may not routinely encounter because of the inherent restrictions associated with clinical placements.

A recent U.S. longitudinal study suggested that up to 50% of clinical placements can be safely substituted with simulated experiences (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014). This is good news for universities who are challenged by the ongoing issue of inadequate numbers of clinical placements. Yet, although simulation has become an almost ubiquitous learning approach in health care education, multiple challenges remain, such as trained and available staff, sufficient equipment and simulation facilities, and the time required to develop authentic high-quality clinically relevant simulation scenarios. Furthermore, although innovative and cost-effective simulations have been developed, they are not always shared for the benefit of the broader simulation community.

This article reports on diverse simulation approaches that are internationally relevant in nursing education; they include humanizing manikin-based simulations, learning to provide accurate and succinct clinical handovers, interprofessional collaboration, communicating with children, home-based nursing, the lived experience of disability, and environmental health and safety assessments.

Humanizing Manikin-Based Simulations

A common challenge when using manikins is humanizing manikins, which are often perceived as lifeless and unresponsive (Barry, Noonan, Bradshaw, & Murphy-Tighe, 2012). To address this issue, educators converted paper-based case studies into authentic online vignettes as preparation for manikin-based simulations. The approach has advantages: they engage multiple senses while telling an unfolding realistic story (Verleur, Heuvelman, & Verhagen, 2011), they encourage imagination, reflection, and problem-solving (Moorman, 2015), and they can be stopped and replayed, which is useful for reflection and for students whose first language is not English (McConville & Lane, 2006).

The online vignettes, developed from the team's clinical experience, portrayed people from a range of diverse backgrounds and social histories who were dealing with various health challenges. Rather than simply reading a case study, this approach allowed learners to assess the client by

observing and listening, to notice differences, idiosyncrasies, cultural vulnerabilities, and unique responses to care. The vignettes also allowed learners to consider and reflect on the professional behaviors portrayed by the nurses. After viewing the vignettes, students participated in a simulation where the manikins portrayed the same persona, had the same backstory, and wore the same clothes as the people portrayed in the videos.

An evaluation of the simulations identified that this approach humanized the manikins. Students reported that they felt more connected and invested in caring for the manikin, were more emotionally engaged with the unfolding storyline, and more aware of judgmental attitudes and biases (Power et al., 2016).

Key Points
- Time-pressed educators may find it difficult to keep up with innovations in clinical simulation around the world.
- A series of short case studies or snapshots of innovative and international simulation approaches are presented to stimulate creativity.
- Global innovations in simulation may spark creativity in educators.

Safe and Effective Communication During Handovers

Internationally, communication failures are identified as the primary cause of adverse patient outcomes, including safety incidents, ineffective teamwork, fragmented care, and unsatisfactory health care experiences (Baron, 2014). To improve collaborative communication during patient handover, the simulated practice activity was created. The experience was designed to occur at the end of a communication course and involved nursing students, service users/consumers, and service/clinical partners, such as practicing nurses. All stakeholders were first prepared for the encounter in a prebriefing session. Then, in groups of three students, took on the role of evaluator, mentor, or novice student. The student was asked to assess a client, played by a consumer, using the service partner's hospital admission form. The student then provided a handover to the service partner. The activity concluded with a guided reflection session, where all stakeholders provided constructive critiques about the handover and areas for improvement. Although resource intensive, this authentic simulation provided students with much needed practice in communicating with clients and colleagues.

Night Duty, Fatigue, and the Need for Information

Another issue affecting nurses globally, and yet something that many students may not understand fully because of restricted placement times, is the ravages of shift work. Han, Trinkoff, and Geiger-Brown (2014) recently showed that fatigue from shift work can hinder work performance and threaten both nurse and patient safety. Therefore, a simulation was designed so that students would be exposed to a series of video recordings of bedside handovers from tired night shift colleagues and asked to discern from this inadequate handover the comprehensive medical and nursing needs of the client. The range of client issues simulated included dementia, asthma, postoperative bowel resection, and the repair of a fractured neck of femur. After the simulation, students reflected on the experience and wrote an essay that focused on patient handover, clinical reasoning, and professional practice. Although, in some respects, this was a challenging experience, it did simulate the kind of situations many students were likely to encounter as graduates, and it raised their awareness of the responsibility that nurses have in ensuring that all required information is handed over safely, even if the circumstances are time pressed and difficult.

Interprofessional Communication and Collaboration

Nursing students across the world tend to spend most of their study time in uniprofessional groups and as a result, rarely get an opportunity to learn about the disciplines, world views, and unique practices of other professional groups. This approach does not prepare health care graduates with the requisite skills to collaborate and communicate effectively with all members of the interprofessional team (Thistlewaite & Nesbit, 2007). To address this concern, an interprofessional extracurricular immersive simulation was designed for nursing and paramedic students who aimed to explore a client's health care journey from the perspective of the client, rather than the discipline.

The simulations involved the sudden onset of chest pain and an epileptic seizure. All students were briefed together, and then each discipline facilitator conducted a discipline-specific briefing to ensure students were familiar with the equipment and environment. The simulation began with the client's experience of health deterioration. It was followed by paramedic students responding to an emergency call, attending, treating, and transporting the client, while being observed by the other nursing and paramedic students. The client was transported to a simulated emergency department, where the nursing students received a handover, assessed the client, and managed their care, while being observed by the other paramedic and nursing students.

Reflective debriefing occurred after the activity and explored professional role identities, effectiveness of interprofessional communication, and the health care journey from the client's perspective. Evaluation revealed that students found the activity relevant, exciting, and raised awareness of differing professional world views and approaches to critical thinking and clinical decision making.

Learning the Art of Communicating With Children

The challenge of communicating effectively with sick and injured children arises. Unlike adults, children may lack experience and the cognitive capacity to fully understand the meaning of illness, diagnoses, and treatment. Similarly, they may not have the psychological and social abilities yet to compose and contain emotions such as fear, distress, or frustration (Bjorklund & Causey, 2017).

A simulation was designed, incorporating the use of a silicone procedural puppet. The aim was to prepare students for undertaking vital signs with pediatric clients. The puppet was custom designed and included a movable face, an injectable abdomen, catheterizable genitalia, patent nares for nasogastric insertion, intravenous access via the arm, and a portacath for injections (Figure). One puppet can be used for around 25 students and costs 7000 Australian dollars. Tubing exists throughout the inner workings of the puppet so that fluid can be extracted or delivered, for example, simulating urination or being able to insert fluid into the portacath. The puppet can simulate sternal recession and abdominal breathing. It has a cartoonish appearance with larger head, engaging eyes, and smaller body to make the puppet friendly and appealing. Finally, the puppet was made of silicone for ease of cleaning and to address infection control issues identified in previous studies when using cloth puppets in the clinical environment (Reid-Searl et al., 2014).

Figure   Silicone procedural puppet.

A specific pedagogy has been developed and published on the use of puppets for health professional learning. This approach requires the educator to transform the puppet into a little person with a story and history relevant to the learning experience. The narrative then becomes the platform for learning and teaching, and the educator guides and facilitates the learning through the character puppet (Reid-Searl et al., 2017). Evaluation has shown that learning in this way, students do not experience the detachment that has been reported to commonly occur when students learn solely on manikins (Dean, Williams, & Balnaves, 2017). Yet, importantly, students learn how to simultaneously interact compassionately and even playfully, while implementing a nursing procedure effectively.

Case Managing in a Person's Home

In many countries across the world, home-based nursing is just as prevalent as hospital-based care, and students need practice to learn about the unique and challenging nature of working in a person's home, where access to clinical supervision and resources is limited (Savarese, 2016). Students need to be familiarized with and oriented to this new environment because, unlike in a hospital setting, students and nurses are guests in someone's home and surrounding community, and this requires a different dynamic for communication and interventions. Skills in environmental and psychosocial assessment and provision of safety require development (Unwin & Tatum, 2011).

Home visiting is one way that students case mange clients in one program's population health nursing course. In a simulation of home visiting, students participated in groups of two in four different home situations. Before the experience, students prepared by reading about interviewing (Frankel & Stein, 1999), therapeutic strategies to meet and intervene with clients in their homes (Unwin & Tatum, 2011), and guides for specific assessments, such as risk for suicide and child/older adult abuse. A home setting was established in the simulation center, and standardized patients were used to enhance the realism. These four scenarios presented students with health, social, and environmental challenges: (a) a new mom/newborn visit; (b) an older adult female who was frequently calling emergency services for nonemergencies; (c) a recently widowed male who was discharged from the hospital to home, after an exacerbation of heart failure; and (d) a middle-aged type I diabetic woman, who could not afford her medications and testing materials. Other professional health care students partnered with nursing students in simulated and actual home visits.

Although the simulations focused on individual clients, the debriefing widened the lens to consider populations experiencing similar issues and community resources. Evaluation has shown that students gained a new

appreciation for the importance of environmental and population-based issues that impact on health outcomes and confidence in conveying a respectful stance to support client autonomy.

Learning Clinical Skills Peer to Peer

A challenge for large schools of nursing globally is the sheer number of students who need to learn effectively in settings where time and resources are tight. Building on the idea that learning can be effective even when students are observing and critiquing, rather than directly acting—a term Spouse (1998) describes as *legitimate peripheral participatio*n, a simulation experience was designed to harness and potentiate the impact of peer learning.

Rather than the nursing educator-directing activities, their role was restricted to facilitate peer interaction. Students took responsibility for actively learning from each other through peer observation, critical review, and feedback discussion (Stone, Cooper, & Cant, 2013).

Groups of up to 30 students working in teams of four to five worked through four different client scenarios. The scenarios were approximately of 15-minute duration and took place in a simulated ward with six SimMan manikins, which could simulate human physiological functions when manipulated by a handheld SimPad® system (Laerdal.com.au).

The SimPads were programmed so that each of the scenarios allowed a number of pathways or stage tabs that varied in complexity. The person controlling the device chose a stage tab, according to the student's clinical reasoning process on encountering the clinical issue. Each stage tab had preset human physiological functions, for example, the manikin might deteriorate, die, or recover depending on the decisions made by the student. The student's actions and decisions could also be recorded and timed in the SimPad program. Standard recording activities in each SimPad scenario were listed on the right-hand side of screen and included hand hygiene, introduces self, effectively communicates, gains consent, comfort measures, reassures client, Identify, Situation, Background, Assessment and Recommendation handover framework, documents, team communication, and correct medication administration. The left-hand side of the screen predicted care activities pertaining to that particular stage of scenario were listed.

Each scenario required four student roles: one person to operate the SimPad® device, one to play a doctor, one to provide the client's voice, and one to play the nurse. On completion of each scenario, the group debriefed with each other, asking (a) What did you do well? (b) What did you not do not so well?, and (c) What would you do differently next time? Evaluation has shown that students found the peer learning to be as effective and challenging as the educator-led simulation experiences.

Taking an Empathic Stance Toward Illness and Disability

Thanks to advances in health care, more people worldwide are surviving serious injuries and illnesses, yet this also means that many people are living long lives with disabilities that range from physical to emotional (Vos et al., 2015). This requires that nurses move beyond the medical model, toward the psychosociocultural and spiritual so that they can support clients and communities in ways that are not only functionally useful but also emotionally empathic and uplifting. In preparing for this shift in practice, students need to learn how to listen empathically and communicate with clients that they are trying to understand and work with their unique needs and experiences (Anderson, Ford, & Thorpe, 2011).

Although empathy is integral to practice, many health professionals have a limited understanding of the experiences, needs, and preferences of people with disabilities, and clients continue to perceive discrimination from nurses and others (Flickinger et al., 2016).

To enhance students' empathy toward people with a disability, an immersive simulation experience was devised. Participants were allocated the role of either a person with an acquired brain injury (ABI) or a rehabilitation nurse. The simulated clients wore hemiparesis suits that replicated the experience of an ABI, and they were provided with the following information:

> You have recently been transferred to a rehabilitation unit after being in an acute care hospital for three months. You have an acquired brain injury as a result of being involved in a car accident three months ago. You have difficulty talking, difficulty swallowing, blindness over half of your field of vision and paralysis to one side of the body.

The students allocated the role of a rehabilitation nurse were given the following instructions:

> You have been allocated the care of a recently admitted patient with an ABI. Their long term prognosis is uncertain, but your goal is to help them become as independent, self-caring, and confident as possible. You will need to help the patient dress, take them for a walk, and help them pour and drink a glass of thickened juice.

Evaluation demonstrated that students' empathy levels improved, and students' stigmatizing beliefs were challenges and replaced. When the students assumed the role of the patient during the simulation, they gained new understanding of the personal experience of ABI.

Game-Based Simulation Learning

The digital revolution is not only changing the way health care and education are delivered but it is transforming the

very nature of social interaction, including the ways students learn (Mawhirter and Garofalo, 2016). The use of gaming technology, where a player solves a puzzle, advances to higher levels or wins rewards engages learners, building their interest in the subject matter, and personal self-efficacy (Sung, Hwang, & Yen, 2015).

A game-based simulation was designed to teach nursing students environmental health and safety assessment. In this game, learners were introduced to clients who live in a variety of contexts, including a cottage, long-term care, community park, and supermarket car park. Immersed in a three-dimensional virtual environment, learners' curiosity and sense of adventure were sparked as they entered and moved around dwellings, opened doors, switched on lights, and assessed for potential and actual hazards. More than a hundred different hazards were randomly generated each time the learner entered a level in the game. Using drop-down boxes, they identified and categorized hazards and selected interventions that contain, minimizes, and eliminate health and safety risks. This promoted learners' critical thinking and clinical reasoning skills and offered a practical opportunity to apply theoretical concepts and practice undertaking skills that are not often available to them in clinical environments. At the completion of the game, detailed analytics and individual feedback provided learners with information about the number of hazards found, correctly categorized, and managed. Evaluation has shown that students improved their detection and management of health risks and that the game technology is accessible, cost effective, and engaging.

Summary

During the last decade, the use of simulation has matured, and educators are increasingly using creative and pragmatic solutions to address contemporary practice and educational issues. As has been detailed in this article, simulation learning can introduce students to technical and nontechnical skills required for competent nursing practice. The article described strategies from the United Kingdom, Australia, and the United States to enhance realism within simulation to foster learner engagement—audiovisual enhancement of case studies, child-like puppets, and body suits that simulate the restricted movements experienced by a client with ABI are examples. The article also described activities to build confidence and accuracy in the processes of client assessment, clinical handover, and collaborative communication. Because nursing and health care are increasingly taking place beyond hospital borders, it is imperative that students learn to use a wider lens in their assessment of clients, families, and communities—beyond physiology. The article explored home-based simulation and a game to promote awareness of environmental hazards. In providing this series of snapshots from across the world, it is hoped that educators everywhere will be inspired to

incorporate and adapt these activities to continually improve the quality of simulation learning experiences and to build collaborative networks to capitalize on others' learning.

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