Simulation for At-Home Care of Seniors
An Environmental Scan

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Karen MacDonald, RN, MA
Faculty & Program Coordinator, Georgian College

Yvonne Galbraith, RN, BFA
Simulation Technologist
Georgian College

Karen Halliday, BA (Hon.), MLIS
Health Sciences Librarian
Georgian College

Katherine Smith, MHSc
Manager of Analytics
SIM-one

Timothy Willett, MD, MMEd
Director of Research and Development
SIM-one
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Executive Summary

Given the aging population structure in Ontario, and the Ministry of Health and Long-Term Care’s (MOHLTC’s) commitment to helping older Ontarians stay healthy, live at home longer, and receive the right care at the right time in the right place, the purpose of this scan was to review the current research and practices related to simulation activities for providing care to seniors aging at home in the community, with a focus on the role of the Personal Support Worker (PSW) in the home environment. The specific objectives were to (1) review the literature, (2) present a summary of at home simulation practices in a select group of Ontario community colleges, and (3) determine established or promising best practices.

From the literature review it was determined that the most relevant information on the topic comes from the nursing literature. In this context, simulation-based education has been shown to result in increased student confidence and decreased anxiety, improved critical thinking and clinical judgment, improved ability to self-reflect on behaviours, improved communication and teamwork, and, most importantly, increased safety for the client. There was no specific information related to the use of simulation for PSWs. What does emerge from the literature is a discussion of simulation activities related to home care visits by nursing students, teaching safety competencies in undergraduate nursing, simulation as a tool to improve communication and inter-personal skills, simulation activities related to aging and care of the geriatric client, as well as simulation and the virtual world. While not specific to PSWs, many of these studies can be related, and adapted, to providing care to seniors at home and the role of the PSW in providing this care.

PSW programs are found in 23 of the 28 Community Colleges in Ontario. Conestoga, Georgian, Loyalist and St Clair Colleges were identified as leaders with respect to simulation in the at home environment, and educators at these Colleges provided information on current and best practices. Strongly recommended were apartment training environments, limitation suits, and audio-visual capabilities. Georgian College provided suggestions for future simulations in Ontario’s PSW programs, including specific examples of simulations of safety, family, health and hygiene issues commonly encountered by PSWs in seniors’ homes.

In summary, this scan provided valuable background information on the topic of simulation and at home care. It is thought that simulation in this setting will continue to grow based on the demands for increased safety in healthcare, lack of clinical placements, and the enhanced role of the PSW. Further research is needed in this area, and healthcare educators should work together to develop case studies and simulation activities that reflect the real world of home care practice.
Introduction

The purpose of this paper is to provide an environmental scan of current research and practices related to simulation activities for providing care to seniors aging at home, with a focus on Personal Support Workers (PSWs). This scan is being conducted to support the Ontario Ministry of Health and Long-Term Care (MOHLTC) Seniors Strategy, and is being done in partnership with SIM-one's (the Ontario Simulation Network's) initiative to enhance simulation education at Ontario's Community Colleges for the training of PSWs to provide at-home care to seniors. The specific objectives were to (1) review the literature on simulation activities as it relates to the at-home care of seniors, (2) present a summary of current at-home simulation practices in a select group of Ontario Community Colleges and (3) determine established or promising best practices for the provision of simulation activities to improve care for seniors aging at home.

Background

The Aging Population

The number of aging people continues to grow world-wide: “Population aging—the process by which older individuals become a proportionally larger share of the total population—was one of the most distinctive demographic events of the twentieth century. It will surely remain important throughout the twenty-first century” (United Nations, 2002, p.1). A later report by the United Nations Department of Economic and Social Affairs, Population Division (2009) describes the major findings in the process of population aging as unprecedented, pervasive, profound and enduring. In 2011, individuals 65 years and older in Ontario comprised 14.6% of the population (Statistics Canada, 2012). This number is predicted to double over the next 20 years (Sinha, 2012). While many aging people remain in good health, Sinha (2012) reports that there is a minority (10%) that have multiple, complex, inter-related health issues and this minority accounts for 60% of total health care spending for this age group in Ontario. This aging population, with multiple and complex healthcare issues will undoubtedly pose challenges for the Ontario healthcare system (Sinha, 2011). While healthier lifestyles and advances in medical technology can be viewed as a demonstration of successful public health policy and social advances (World Health Organization, 2002), the aging population has significant implications for our health and social systems. The Canadian Research Network for Care in the Community (CNRCC) suggests our systems may be falling behind the population trends (Williams, Deber, & Lum, 2009).

The Role of the Ontario Ministry of Health and Long-Term Care

In an effort to alleviate the significant impact and challenges the aging population presents to the healthcare system, the Ontario MOHLTC introduced the Aging at Home Strategy (AAH) in August 2007. Implemented over 4 years and delivered by the 14 Local Health Integration Networks (LHINs) the strategy provided seniors and their caregivers access to support services to allow them to maintain their independence and avoid premature admissions to long-term care facilities (MOHLTC, 2007). Then, in January 2012, the Action Plan for Health Care was introduced with three priorities: keeping Ontario healthy, faster access to stronger family healthcare, and ensuring the right care, at the right time, in the right place (MOHLTC, 2012). Part of this Action Plan, the Seniors Care Strategy, is aimed at helping Ontarians 65 years and older stay healthy, live at home longer, and receive appropriate care (MOHLTC,
The Seniors Care Strategy is of critical importance, both for its potential to improve the lives of seniors and to ensure the sustainability of the healthcare system.

Dr. Samir K. Sinha, the Provincial Lead for the Seniors Care Strategy, began a provincial consultation process and submitted recommendations to the MOHLTC to support implementation of the Seniors Care Strategy. He advised that “continuing and strengthening this commitment to invest more in home care and community services will do much to support Ontarians staying healthy and staying at home longer” (Sinha, 2012, p.16). While an analysis of all of Dr. Sinha’s recommendations is not within the scope of this paper, those relating to care provided by PSWs in the home or community setting are of specific interest. Chapter 12: Necessary Enablers to Support a Seniors Strategy recommends specialty training in geriatrics for all health and allied health professionals should be a priority for the Ontario government. The following recommendations relate to the role of the PSW:

141. The Ministry of Health and Long-Term Care should provide more support to its PSW workforce by strengthening its new PSW Registry by requiring mandatory registration, requiring a common educational standard for all future registrants and developing a complaints process that can protect the public and the profession.

142. The Ministry of Health and Long-Term Care, in partnership with Ministry of Training, Colleges and Universities, should work towards defining a common PSW education standard that includes training in the care of older adults for new and existing workers.

143. The Ministry of Health and Long-Term Care should look at innovative policies and ways to develop programs and initiatives to stabilize the existing PSW workforce and enhance existing skill sets in a way that promotes quality improvement. (Sinha, 2012, p. 204).

The Role of the PSW in providing at-home care

According to Lilly (2008), the Canadian Home Care Human Resources Study Survey of Formal Caregivers estimates that PSWs carry out most (70–80%) of all paid home care work in the country. In 2009, the Canadian Research Network for Care in the Community (CRNCC), the Personal Support Network of Ontario (PSNO) and Ontario Community Support Association (OCSA) collaborated and conducted a survey of 364 PSWs working in Ontario, and determined almost 64% of PSWs work solely in the home and community care sector (Lum, Sladek & Ying, 2010a). They note that “personal support workers have a unique role in Ontario. It is different from that of any other health care or support provider. Simply put, PSWs do for a person the things that the person would do for herself, if she were physically and/or cognitively able.” The role may include personal care, home management, family responsibilities and social and recreational activities. Assisting seniors with these tasks enables them to stay at home in the community safely, maintain their well-being, independence, and peace of mind, and also contribute to the overall sustainability of the formal health system. PSWs provide the right care, at the right time, in the right place (Lum, Sladek & Ying, 2010b) and are therefore essential to the success of Ontario’s Seniors Care Strategy.
Methods

Literature Review

A literature review was conducted with a search strategy that included keywords for simulation for seniors’ and at-home care, from 2000 to the current date. The databases used included Academic Search Premier, CINAHL Plus with Full Text, PubMed, Google and Google Scholar. This literature review does not claim to be a systemic review of the topic, but rather presents a sampling of current trends in simulation research related to seniors aging at home and the home care health setting.

The resulting journal articles were obtained from various disciplines including geriatric medicine, medical informatics, rehabilitation/physical therapy, nursing, geriatric education, multimedia studies, information and communication technology (ICT) and psychology.

The most relevant information on the topic of simulation for seniors living at home emerged from the nursing literature. This literature focused on aspects of home care and simulation, but described the topic as “community-based care”, “community-based setting”, “public health nursing” and “home healthcare management”. Within this literature, the discussion frequently centered on the concepts of falls and geriatric home safety assessments. The following keywords emerged from the nursing literature, and were included in the search strategy: home healthcare, community-based care, public health nursing, home healthcare management, functional assessments, patient safety, activities of daily living, services for the elderly and persons with disabilities, older people – home care, simulated patients, simulation methods, computer simulation, study and teaching – simulation methods, geriatric simulation education and geriatric home care simulation experiences.

From an ICT perspective, this topic of simulation and at home care is addressed through journals such as Technology in Health Care. Generally speaking, it is interesting to note that the topic conjoined with virtual reality software, 3D computer games and haptics. The keywords used to find literature in this field included gerotechnology, virtual reality, virtual patients, virtual world, standardized patient, computer simulation, artificial intelligence, high fidelity simulation and digital computer simulation.

Current State Assessment

Conestoga, Georgian, Loyalist and St Clair Colleges were identified as innovation leaders with respect to simulation in the at-home environment. Telephone or email interviews were conducted with educators at these Colleges to provide information on current simulation practices in use. This information is not meant to be all-inclusive, but rather represents a sample of innovative activities happening in Ontario at this point in time.

Personal Support Worker Training and Practice

Training and Education

Across Canada it is worth noting there are several terms used to describe this supportive care role, including healthcare aid (HCA), community health worker, home support worker (HSW), continuing care assistant and personal support worker (PSW). There are also a variety of methods to acquire training in this field. In Ontario, the PSW program is offered at 82% (23) of Ontario’s 21 Community
Colleges, and 151 Ministry of Training, Colleges and Universities (MTCU) registered colleges. The length of the program varies from 21 to 29 weeks. The program can be completed on a full-time or part-time basis, or through continuing education. In Ontario, PSWs are unregulated healthcare providers and therefore not governed under the Regulated Health Professions Act of 1997. This has led to some imprecision: “Due to a lack of regulation and standardized training there is considerable ambiguity surrounding the PSW role in health care” (Collins, Hogan & Piwkowski, 2012). Keefe, Martin-Mathews & Legare (2011) noted that recruitment and retention of PSWs is a current concern in Canada as well as other countries such as Australia, Denmark and the United Kingdom. The authors attribute this to a decreasing supply of formal caregivers due to cost containment measures, difficulty attracting people to long-term care work, and a high percentage of PSWs nearing retirement age.

**Current State of Simulation for At-Home Care**

All Ontario Colleges offering PSW training provide simulation-based PSW training for clinical, institutional or long-term care environments. Typically, PSW learners are trained in the nursing labs. As of the writing of this report, only five out of 23 Colleges currently provide simulation training for PSWs in a designated ‘at home’ environment. Nine other Colleges had varying components of an ‘at home’ environment. Unfortunately, no information is available at the current time with respect to simulation training at other MTCU approved training courses (e.g. Boards of Education).

In addition to PSWs, Colleges also reported using simulation to train students in at home care environment for the following programs: Nursing (BScN), practical nursing, occupational and physical therapy assistants, developmental service workers (DSW), and paramedics.

All Colleges strongly recommended home setting apartment training environments that simulate all aspects of living at home: cooking, bathing/showering, making beds, and other activities of daily living. Working appliances (e.g. stove, microwave, washer/dryer) are recommended so the full home environment can be simulated. Conestoga College reported having outside access for entry into the apartment. St. Clair and Loyalist College reported cooking labs for their students. Beds and bathrooms typical of home environments are important because they are different, and often smaller, than hospital style facilities. None of the Colleges interviewed have laundry labs, but this was recommended for future iterations of PSW curricula.

Loyalist College uses a dual purpose setting with a knee wall, with one side an institutional setting, and the other a home setting. Students learn skills (e.g. bed making, transfers) on the institutional side, and then adapt the skills to the home setting. In addition to finding this approach efficient for learning, teaching and planning, educators find this strategy works well because students learn the difference between the two settings, and what works (or doesn’t work) in each one.

Specific simulation activities were also discussed. Conestoga College reported having scenarios in the PSW curriculum that simulate what PSWs may encounter in a home setting. These involve areas such as professionalism, safety, reporting, communication, boundaries, and physical and mental health issues. One example was an older resident has a fall at home, and the paramedics come to the home. The interaction is videotaped and debriefed. Another example was how to have a conversation with an elderly person.

Loyalist educators use mock-up ambulation activities where students can learn to help seniors move around the house, and improve home safety. Students also practice medication administration. A palliative care simulation is run in a home setting for practical nursing students.
Educators at Georgian College believe the “1 minute assessment exercise” could be adapted for use in the home apartments to simulate safety, family, health and hygiene scenarios commonly encountered by PSWs in seniors’ homes. This activity is currently used in their Nursing Program. A room with a client/scenario is set up with multiple identifiers. Students get one minute to observe the scene, then are asked to list the identifiers they observed. Then students are put in groups, and together the students collaborate on identifiers observed. Students learn to look at the environment and the client for information required for planning care. They also learn the benefits of collaboration. Conestoga College reported a similar exercise where students are taught to assess a home and an elderly client to determine what is not right (e.g. senior has new bruising) and report back to the manager.

Emerging from some of the interviews were specific ideas for future simulation scenarios: an elderly client not letting a PSW in the door; a family meeting/interaction/conflict; an elderly client wearing the same clothes for many days and not bathing; and exposing the PSW to common issues encountered by seniors in the home such as congestive heart failure, diabetic ulcers, or communication issues.

Loyalist College is exploring the possibility of using a home setting built into the College’s virtual learning environment for PSW, PN, and DSW programs. Should this project go forward, appropriate aspects for supporting seniors at home will be built into the virtual setting. Virtual learning environments have the potential to simulate community placements, but with the added benefit of student supervision and assessment.

Educators also recommended limitations suits, role playing of family members, standardized patients, audiovisual capabilities, sufficient time for debriefing and discussion, review of case scenarios by other professions, inter-professional scenarios, and areas where students/educators can observe. Conestoga College reported using volunteer seniors as standardized patients where they participate in role playing activities and debrief with students afterwards.

With respect to collaboration with community organizations, all Colleges have Advisory Committees for the development of PSW education; the committees are comprised of representatives from their surrounding community organizations, including long-term care homes, hospitals, home care agencies and universities. The mandate of the Committee includes identifying future training or service needs, specifying the knowledge and skill competencies required by employers, suggesting appropriate facilities and equipment and recommending curriculum/program changes.

Healthcare Simulation – General Overview

Simulation-based medical education (SBME) has been traced to 17th century France, evolved in the 20th century for use in teaching and testing of healthcare professionals, and is now considered to be an integral component of healthcare education (McGaghie, Issenberg, Petrusa, & Scalese, 2010). Healthcare simulation can encompass various modalities and products that replicate a real clinical situation, with or without technology, with the goal of creating an immersive and guided experience for participants. Simulation may include case scenarios, standardized patients, part-task trainers, static manikins, low, medium or high-fidelity patient simulators, and computer-based virtual worlds (Gaba, 2007; Cook et al., 2011; Leblanc, 2012).

Many models for best practices in simulation education have been formulated by researchers and simulation experts. McGaghie et al. (2010) include factors such as feedback, deliberate practice, curriculum integration, outcome measurement, simulation fidelity, skill acquisition and maintenance, mastery learning, transfer to practice, team training, high-stakes testing and instructor training. Gaba
(2007) presents 11 dimensions of simulation practice, each of which represent a different attribute of simulation. Similarly, Jeffries and Rizzolo (2006) present a framework that involves five major components and variables related to simulation activities: teacher factors, student factors, educational practices, design factors, and outcomes. While several models or frameworks for simulation activity exist in the literature, what clearly emerges is the recommendation that the following considerations significantly contribute to quality learning experiences for students:

1) the use of a specific model, with specific learning outcomes;
2) adequate instructor and student preparation;
3) authentic experiences;
4) timely feedback and debriefing mechanisms; and
5) integration of simulation into the curriculum.

The literature suggests there are many benefits related to simulation activities: increased student confidence and decreased anxiety, improved critical thinking and clinical judgment, the ability to self-reflect on clinical behaviors, improved communication and teamwork and increased safety for the client (CPSI, 2005; Barker, 2002; Jeffries & Rizzolo, 2006; McGaghie et al., 2010; Nelson, 2008; Smith & Barry, 2013a). Other benefits from simulation activities may include improvement in many aspects of care such as error reduction and infection control. Growing public awareness of the use of simulation in healthcare may also lead to increased public trust in healthcare professions and the healthcare system (CPSI, 2005).

The effectiveness of simulation has also been highlighted in two recent meta-analyses, which demonstrated the frequent superiority of simulation-based approaches to standard curricula or other, more traditional, learning interventions (Cook et al., 2011, 2012). The authors conclude that, “the question is not ‘Do we need simulation?’ or ‘Is simulation useful?’ The answer to both questions is clearly ‘Yes!'” (Cook, 2010).

Some of the barriers to the growth and development of simulation-based learning, as identified by the Canadian Patient Safety Institute (2005), include underfunding and under-resourcing, overcoming traditional attitudes and practices, generating institutional, faculty and clinician support, lack of champions with simulation training and expertise, insufficient space allocation, and the constant challenge of keeping up with ongoing evidence-based practices and incorporating them into meaningful simulations.

According to a survey of 51 different groups using a simulation program in Canada, “the primary users of simulation programs in Canada are physicians, nurses, respiratory therapists and paramedics” (CPSI, 2005). PSWs are not mentioned in the survey, nor does the literature related to simulation activities reveal any significant findings related to the use of simulation by PSW training programs or PSWs in practice. What does emerge from the literature is a discussion of simulation activities related to home care visits by nursing students, teaching safety competencies in undergraduate nursing, simulation as a tool to improve communication and interpersonal skills, and simulation activities related to aging and care of the geriatric client. While not specific to PSWs, many of these studies can be applied to providing care to seniors at home and the role of the PSW in providing this care.

Simulation and Home-Care

Baccalaureate nursing students have identified challenges in making the transition from hospital-based to home-based care. Identified student concerns include (Dalton, Aber, & Fawcett, 2009; Richards, Simpson, Aaltonen, Krebs, & Davis, 2010; Simones, 2008; Smith & Barry, 2013b):
• the differences in the physical environment;
• the equipment and approaches to care;
• fear for their safety; and
• lack of familiarity and perceived control in the home setting.

These concerns prompted Simones (2008) to create two realistic life-sized puppets and use garage sale items and donations from friends to replicate the home of older clients. She described that, “by encountering older clients in a simulated home setting, students have a heightened awareness of many of the negative stereotypes that surround older adults” (Simones, 2008). Students were able to experience what is required to maintain a safe home environment while allowing for the client’s personal preferences, and by doing so, progress beyond their uncertainty and fear of the home environment. By creating a low-cost home care environment in an existing nursing lab, students were able to practice in a safe setting, and develop an increased comfort level when making their first home visit.

The traditional focus of simulation activities using high fidelity human patient simulators (HPS) in nursing labs has been the acute care setting. It has been suggested that as inpatient costs continue to increase and length of hospital stays continue to decrease, the focus of care will become the home setting (Richards et al., 2010; Smith & Barry, 2013a; Yeager & Gotwals, 2010). In the United States, “a 33% growth in home care and community-based nursing positions is expected over the next 8 years” (Smith & Barry, 2013a). Therefore, it is important to include HPS technology in a simulated home environment within undergraduate nursing programs. Yeager and Gotwals (2010) conclude that there are a variety of methods illustrated in the literature to portray clients in a simulated home environment, including the use of actors, role playing by faculty or students, or traditional medical mannikins, but noted the literature at that time did not reflect the use of high-fidelity patient simulators in a simulated home setting. Similarly, the goals of the simulated home visit identified in the study by Yeager and Gotwal (2010) were akin to other studies, namely to decrease student anxiety about home visits and increase student familiarity with the processes of the home visit.

Dalton et al. (2009) evaluated junior and senior nursing students’ perceptions about home visits with maternity clients, and while anxiety decreased in senior year students, it still remained an issue for some students. Richards et al. (2010) investigated whether use of a high fidelity simulation scenario prior to the first home visit would increase student confidence. Findings from this exploratory study suggest that new nursing graduates are not typically well prepared to work in a home care setting, experience anxiety related to working alone in this setting, and struggle to apply skills learned in the acute care setting to the home care setting (Richards et al., 2010). It is suggested, “the use of simulation allows faculty to assess, teach and evaluate students before the students initial visit in the home” – thereby increasing student confidence prior to the first home visit (Richards et al., 2010).

Smith & Barry (2013a) note that the use of high fidelity HPS is increasing in both undergraduate and graduate nursing programs, as well as in continuing education of healthcare professionals. Further, Smith & Barry (2013a) recognize that evidence supporting outcomes related to the use of simulation is emerging, but that little research has been done on the simulation of community health content. As nursing programs continue to increase simulation experiences due to a decline in the number of clinical placements, research related to the use of simulation scenarios will be essential: “Understanding the outcomes of this teaching strategy for community health-specific content will assist in understanding how to best use simulation experiences for community health clinical courses” (Smith & Barry, 2013b).

Jeffries & Rizzolo (2006) and Smith & Barry (2013a) found that learning outcomes were similar for students whether they participated in the high fidelity simulation experience as a student nurse or as an observer. Smith and Barry (2013a) suggest that this could mean that positive outcomes may be
obtained with larger student groups or with simulation scenarios in a classroom setting, where the majority of students may be in an observational role.

Nelson (2008) discusses the benefits of simulation related to the prohibitive costs for home-care agencies. While most agencies cannot afford to establish their own simulation lab, partnerships with colleges or hospitals with simulation centres may be a viable alternative. As home care professionals work independently, often double-staffing is required to teach necessary skills to new graduates, new employees, or those unfamiliar with a particular skill. The ability to use established simulation laboratories for this purpose would be cost effective.

Simulation and Patient Safety

The Canadian Patient Safety Institute (CPSI) believes that “patient safety will be a defining issue of healthcare in Canada over the next 20 to 30 years” (2005). In its first Strategic Business Plan, CPSI identified a number of priority areas upon which to focus its efforts over the next five years. One priority focuses on the use of patient simulation to improve the safety of Canada’s health system strategy. The use of simulation activities to improve safety has been in use from as early as 1910 by commercial aviation and the military (Salas, Wilson, Burke, & Priest, 2005). Salas et al. (2005) suggest that simulation activities can also be used in healthcare to improve patient safety and reduce errors, but in order for this to happen, simulation must be properly designed and delivered. They also recommend eight guidelines to ensure that simulation is properly designed and implemented within the healthcare community, and suggest that healthcare can gain significantly from well-designed simulation activities, but remind the reader that “simulation is just a tool to enhance training, and it alone will not lead to improved patient safety” (Salas et al., 2005). Therefore, the design of the simulation activity is key to providing learners with a safe environment to practice competencies and improve patient safety. More recently, two review articles have concluded that simulation is an effective means to improve patient safety (Naik & Brien, 2013; Schmidt et al., 2013).

A framework for simulation in nursing education proposed by Daley and Campbell (2009) suggests inclusion of the three fidelities of simulation “that contribute to making the simulation as realistic as possible: equipment fidelity, environmental fidelity and psychological fidelity,” as these make the suspension of reality possible. The final step in their simulation framework argues “the ultimate product is a student who learns vigilance.” They state that vigilance has been identified as an aspect of the overall concept of surveillance in nursing because of the focus on quality outcomes, and that vigilance, once mastered, contributes to improved safety, quality care, and reflective practice. Gantt and Webb-Corbett (2010) also noted that teaching vigilance is important in nursing, and suggest that simulation activities in a nursing lab provide students with the opportunity to repeatedly practice skills such as hand washing and proper patient identification until they become second nature, thereby improving patient safety.

Grenier, Campbell and Carson (2009) identify that the current climate of focus on improved client outcomes and improved safety in healthcare settings provides an opportunity for academic institutions to incorporate patient safety and quality-of-care indicators into nursing education. They state there is a disconnect between education and clinical practice, as front line caregivers often have limited information about patient safety and quality outcomes. In order to bridge this gap, the authors recognized the possibility of linking simulation case studies with an electronic medical documentation system to further support student learning and provide an understanding of how the integrated patient documentation systems can improve the quality of healthcare services, resulting in improved patient outcomes.
In a multi-site study, Ironside, Jeffries and Martin (2009) explored the impact of a simulation experience on the patient safety competencies of senior level nursing students. The six competencies identified for the purposes of this study were safety, patient-centered care, collaboration/teamwork, informatics, quality improvement and evidence-based practice. They identified that it is important for “aspiring nurses have the knowledge, skills and attitudes required to continuously identify threats to patient safety, implement error prevention strategies, and promote and engage in an interdisciplinary culture of safety.” In most acute care clinical settings, students rarely have the opportunity to provide care to more than two patients at a time. In this study, simulation was used as the mechanism to allow pre-licensure students to care for four patients at a time, on two occasions prior to the transition to practice. Results of the study indicate that immersing students in a simulated environment to care for multiple patients resulted in direct improvement of the identified safety competencies.

Again, we see little information in the literature relating to safety and care in the at-home environment, but there is transferrable knowledge and lessons to be learned from the literature examining the role of simulation for improving patient safety in other contexts.

Simulation and Communication Skills

Effective communication among healthcare professionals and between healthcare providers and patients is vital and contributes to improved safety and care. Yet direct observation and assessment of student communication is difficult due to time constraints, the nature of clinical practice, and student-faculty ratios (Pagano & Grenier, 2009). As faculty cannot be present to witness each interaction, evaluation of student communication is often based on third-party reports or student self-assessment. Pagano & Grenier (2009) also note there can be an impact on communication with direct observation. Simulation scenarios provide the opportunity to evaluate student communication and interaction with the patient, the team and family members. Recording these sessions provides the opportunity for students to view their own behaviours and can also be used as training for other students. Practicing communication strategies for challenging situations in the safety of the simulated environment can alleviate the anxiety and risk of saying something that could be harmful or embarrassing, and it can also provide insight into interpersonal and small group communication (Pagano & Grenier, 2009). In a review article, Lewis, Strachan and Smith (2012) found that high fidelity simulation is effective at providing students with a safe and controlled environment to develop such non-technical skills.

Ramsey, Keith and Ker (2008) used actors to play the role of simulated patients (SPs) who had difficulty communicating (aphasia) after a stroke, and noted that “sequential training steps were used to ensure the SPs were capable of portraying an aphasic patient realistically.” Second year nursing students were asked to assess and identify, through an interview with the SPs portraying a patient with aphasia, care that would be required to promote personal hygiene needs. Post-simulation survey results revealed the nursing students felt there were positive changes to their practice following the simulation activity. These positive changes resulted from relieved feelings of inadequacy, decreased emotional stress and an increased willingness to communicate in challenging situations.

In the complex and challenging world of healthcare, the successful transfer of health information is of critical importance and requires well-developed verbal and non-verbal communication skills. Simulation scenarios provide educators with the opportunity to both assess and teach these non-technical skills to students, thereby improving communication in the healthcare setting (Lewis, Strachan & Smith, 2012).
Simulation, Aging and the Geriatric Population

Increased awareness of normal aging processes, key geriatric issues, and understanding one's own attitudes toward aging have been the focus of simulated aging experiences and games. Yu & Chen (2012) suggest that without this understanding, it would be difficult for nursing assistants to provide quality care. Bagri, Roos and Ruiz (2009) refer to The Aging Game, in use at Duke University since 1989, and now adopted at several educational institutions, in which an introductory lecture is followed by role-playing exercises where participants age and progressively acquire age-related deficits. In a similar project in Taiwan, Yu & Chen (2012) recruited nursing assistants from several institutions, and provided them with a one-hour lecture on the changes of aging, followed by a simulation experience. Both articles conclude that participation in the simulated aging activities resulted in greater understanding of the aging process and improvement in attitudes toward older adults.

The Expanded Learning and Dedication to Elders in the Region (ELDER) project (Mager et al., 2012) educated over 100 care providers (nurses, nursing assistants and allied health providers) working in nursing homes, clinics and long-term care agencies over a three-year time frame, about best practices in providing care to elder clients. Using case studies, role playing and journaling, the goals of the project were to have care providers integrate best practices and encourage shared decision-making and communication amongst care providers. The authors suggest that since nursing assistants are of vital importance to the quality of life for patients, strong interpersonal relationships and effective communication, particularly when handing over patient care, between nursing assistants and other care providers improves the quality outcomes for the resident, and decreases rate of turnover for nursing assistants within facilities. The authors conclude this project was successful because it incorporated the entire healthcare team including administrators, occurred onsite at the facilities, therefore taking the classroom to the student, and presented scenario topics that were relevant to the practice setting (Mager et al., 2012).

Bagri et al. (2009) state there are educational and biological challenges for the use of simulation in geriatric education. These issues include variations in the aging process; complex and concurrent chronic illnesses, which are often hard to portray in simulated scenarios; a lack of geriatric educators trained in simulation; and a lack of availability of age-appropriate simulators. Also, with the predicted move of geriatric care to the community setting, geriatric simulation should replicate care provided in a variety of settings, including transitional care. Despite these challenges, the authors conclude that simulation and technology will offer many benefits to geriatric education, by providing the opportunity to practice and maintain skills with no threat to patient safety (Bagri et al., 2009).

The results of these studies indicate that simulation activities related to the aging process may result in improvements the attitudes towards and care provided for the elder patient. Simulation related to the aging process may be applicable to students in health programs as well as for continuing education for those employed in professions providing care to aging clients.

Simulation, Home Technology, and Virtual Worlds

The Canadian Institute for Health Information (CIHI) (2011) identified the potential for new and emerging technologies to assist seniors to stay in their homes as they age. The use of telephone healthcare systems which provide seniors with immediate access to healthcare information has the potential to reduce hospital admissions and visits to emergency rooms and may expand to include the use of videoconferencing capabilities. Some countries are in the early stages of investigating the
potential role of robots to assist seniors with daily chores or provide medical surveillance (CIHI, 2011). This report also indicates that new technologies aimed at augmenting at-home senior services, such as wander management systems, flexible bed mats with pressure sensors, personal emergency response programs, and medication management and monitoring systems, will be tested with the aim to make more efficient use of home care services, reduce emergency hospital visits, and allow seniors to remain in their homes.

Falls prevention is a challenge to an aging population. The numbers of falls increase in magnitude as the numbers of older adults increase in many nations throughout the world. There exists potential in the virtual worlds to address this issue. In a 2012 study, Esculier, Vaudrin, Bériault, Gagnon and Tremblay (2012) used a Nintendo Wii Fit game with a balance board in home environments of patients with Parkinson’s Disease (PD) to determine whether use over a 6-week period would improve balance. Results of this pilot study concluded that “a home-based training programme using visual-feedback with the Wii and Wii Fit could lead to improved static and dynamic balance, global mobility and functional abilities of PD-affected persons” (Esculier et al., 2012). They also found there was improvement in healthy elder participants, but to a lesser extent. The findings are significant, both for PD patients and seniors living at home, as a demonstration of potential improvements to health, using readily available gaming systems.

Along with changes in the use of technology in the home, there has also been a growth in the use of virtual worlds in education. Warburton (2009) contends that virtual worlds have existed since the early 1980s, however a definition of these worlds has been difficult. Warburton suggests “a virtual world provides an experience set within a technological environment that gives the user a strong sense of being there” (2009). Virtual worlds have emerged from and share characteristics with the gaming world, including a shared space for multiple users, use of an avatar (a 3-D virtual representation of the user), interaction and immediacy of action in the 3-D world, and similarity to the real world (Warburton, 2009). While in the gaming world there is usually an identified purpose or end result, this is not necessarily the case in the virtual world, unless it is created.

There are well established and viable virtual world technologies (such as Second Life, OpenSim and Unity) available for use in education. Such programs provide the ability to create realistic worlds, an immersive experience, and relatively low initial costs. Warburton (2009) states “the immersive nature of the virtual world, crossing physical, social and cultural dimensions, can provide a compelling educational experience, particularly in relation to simulation and role-playing activities.” Boulos, Hetherington and Wheeler (2007) support the use of virtual worlds for the education of healthcare students as they provide a psychologically safe environment with experiential learning where students can practice skills, using hypothetical scenarios, and make mistakes without serious repercussions: “Second Life may therefore prove to be an ideal simulation resource where medical students can gain new skills without risk of harm to patients or themselves.” The authors also suggest that seniors at home could use virtual worlds for entertainment purposes and to help combat social isolation and loneliness.

The use of virtual patients in medical geriatric education (Andrade et al., 2012; Ruiz & Leipzig, 2008; Tan, Mulhausen, Smith, & Ruiz, 2010) is discussed as a method to offer a realistic, controlled and non-threatening environment for practice of clinical skills. Ruiz & Leipzig (2008) discuss the use of GeriaSims, virtual patients in an interactive computer program that allow the learner to obtain a history, complete a physical examination, and make therapeutic decisions. Tan et al. (2010) identify that virtual environments with simulated patients are a method to consider in order “to increase the geriatric competence” of the healthcare workforce. Andrade et al. (2012) note that geriatric home safety assessments for medical students, while an integral part of training, are often difficult to implement due to the impracticality of organizing this for large groups of learners. They realize that many of the safety
hazards that can contribute to falls in the home can be reproduced safely and effectively in the simulated virtual environment, and in fact more emphasis can be placed on these hazards in the virtual world, making them easier to identify. Findings of their study indicate it is feasible to use a virtual 3-D world to evaluate home safety hazards. Factors influencing successful use of the virtual 3-D world include the age of the learner, visual spatial ability, and familiarity with the virtual world (Andrade et al., 2012).

The use of virtual simulated worlds in healthcare education allows for the creation or reproduction of contexts that may be limited by physical constraints or be too costly to reproduce in real life. The virtual learning experience can also be adapted for distance education, offers flexibility in delivery, and will work in both formal and informal learning situations. The possible contexts for providing simulated environments to assist students and healthcare workers to provide enhanced care for seniors living at home are almost limitless. Potential barriers related to the use of virtual worlds in education have been identified by Warburton (2009) and include limitations to technology, potential problems with social isolation and collaboration, economic considerations, and standardization. As has been identified with other simulation methods, proper planning, identification of the desired outcomes, and proper design of the simulation activity are key considerations. Virtual worlds are currently in use for educational purposes in a variety of programs in Ontario Community Colleges.

Another example of virtual world technology for healthcare education is The Canadian Neighbourhood, a virtual community specifically designed for nursing education and featuring an online community with 11 households and several community agencies (Giddens & Stalkie, 2012). There are several feature characters representing diverse backgrounds that interact in a variety of healthcare settings, including home, community agencies, acute care agencies, clinics and a seniors’ centre. The characters evolve and students see the stories as they unfold. Another e-product has health assessment simulation scenarios for nursing learners (Jarvis, 2012). Examples of suggested uses for specialty courses include mental health nursing, geriatric nursing, and community health.

An educational initiative currently underway in Ontario is The Pathways for Interactive Narrative Education (PINE) project, a collaboration of the Northern Ontario School of Medicine, Laurentian, McMaster, and Ryerson Universities, and Confederation College. The project has produced 60 public access virtual patient cases which cover a wide range of topics, challenges and approaches to healthcare, all of which are presented in distinctly Canadian settings with all of the cultural, social, economic and political dimensions found in Canada today. Many of the cases are specifically about the nature of healthcare provision in Northern Ontario (PINE collaboration, n.d.).

Many of the existing scenarios in virtual world settings could be adapted for use as part of simulation activities in PSW programs in Ontario and to provide enhanced learning related to seniors aging at home for any health professional.

Conclusions

With the predicted increase in the aging population, a continual growth in the demand for at home care for seniors will remain a healthcare priority. The focus on the right care, at the right time, in the right place will continue to evolve and develop, and our healthcare system will need to adapt to meet the changing needs of this specific group of clients.

There is a growing body of research in healthcare education about the effectiveness of simulation-based education for a variety of purposes. Multiple review articles and meta-analyses, representing multiple professions and context, have demonstrated the usefulness of simulations to
improve learning, technical skills, non-technical skills (such as communication), and patient safety. However, there are very few reports specifically describing the simulation of the home environment for healthcare or human service training, or for the training of personal support workers (PSWs). Nonetheless, there are numerous findings from the simulation literature generally that are transferrable to the at-home context, and that could be adapted to PSW training.

Simulation-based approaches hold much potential for enhancing the competencies required of PSWs or other healthcare professionals to provide care in the home. A number of simulation modalities – such as life-like manikins, standardized patients, sensory or ability restriction suits, virtual patients, and virtual worlds – may all have a role to play.

Simulation activities and education must continue to grow in the response to the demands for increased safety in healthcare settings, lack of clinical placements, inter-professional collaboration, increasing expectations for graduates’ competencies, and the enhanced role of the PSW. While the PSW role in caring for seniors aging at home was the focus for this discussion, simulation to enhance inter-professional care of our aging population will become a necessary part of both our educational system and the continuing education of healthcare professionals.

Recommendations

There has been very little research specifically examining the role of the PSW or on seniors aging at home and the care required in this situation. Additional research related to the role of the PSW in home healthcare scenarios, into simulation for PSW training, and simulation for the at-home environment to determine best practices for education is recommended.

In the current healthcare climate, with an aging population and more seniors aging at home, the healthcare educational system should increase the focus on care provided at home for seniors. Educators and subject matter experts in providing care in the home setting should work together to develop case studies and simulation activities that reflect the real world of PSW home care practice in order to enhance the knowledge and skill of the care providers in the home.

Subsequent needs assessments are necessary to further clarify the nature of at-home and community-based care provision and its challenges, and the needs of healthcare professionals to meet those challenges. Needs assessments will also set the stage to determine best practices and models of simulation for community-based care providers, develop relevant case scenarios and improve knowledge related seniors aging at home. It would be prudent for educators and subject matter experts to work together and share in the creation of these models and scenarios.
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