

# Simulation on sensory impairment in older adults: nursing education

Leah Macaden, Annetta Smith and Suzanne Croy

**S**ensory impairments are identified as some of the most common chronic and disabling conditions of later life that can impact significantly on quality of life and safety in older adults and their ability to carry out activities of living (World Health Organization (WHO), 2017a; 2017b). Hearing loss disorders are projected to be among the top 10 causes of burden of disease in high and middle-income countries (WHO, 2015); age-related visual impairments and cataracts are projected to move up three or more places in the WHO disease burden rankings by 2030 (Mathers and Loncar, 2006; Office for National Statistics, 2016; WHO, 2017c). Dual sensory loss, which is concurrent loss of both vision and hearing, affects 21.9–22.5% of older adults (Brennan et al, 2006; Harada et al, 2008). In the UK currently there are around 250 000 people with both hearing and vision loss, most of whom are over the age of 70, and the number of older adults with hearing loss is estimated to rise to 15.6 million people by 2035 (that is one in five people) (Action on Hearing Loss, 2015). Given the strong association between sensory impairment and older age, as the proportion of older people in the population is rising, the prevalence of sensory impairment is also expected to rise. This epidemiology has significant implications for both planning and delivery of health and social care services for older adults globally and nationally.

## Background

Population demographic transition and age-related sensory impairments are both significant healthcare issues and it is therefore pertinent that nurses, health and social care professionals are knowledgeable and confident to care for older adults with sensory impairments. However, health professionals, including nurses, often have a very limited understanding of the psychosocial consequences of a dual sensory impairment (Pacala

## ABSTRACT

Sensory impairments are identified as the most common chronic and disabling conditions of later life, impacting significantly on the quality of life and safety of older adults. Hospitals and care environments can present significant challenges to older adults with sensory impairments. Therefore, it is important to raise awareness on sensory and cognitive impairments with all health professionals, and nurses in particular, both to help develop an empathetic awareness of the impact of impairment and to minimise risk of adverse events. This article reports on a pedagogical innovation on the development and use of a simulation resource—primarily on sensory impairments in older adults—with first-year nursing students in an undergraduate nursing programme in a Scottish university. The article also reports on students' reflections on their experience of participating in this simulation.

**Key words:** Education and training ■ Simulation ■ Reflective practice  
 ■ Older people ■ Person-centred care ■ Empathy

et al, 2006; Bodsworth et al, 2011). As nurses will frequently assess, plan, implement and evaluate care for older adults with sensory impairments, it is important that they possess the knowledge and skills to carry out informed and empathetic care.

Age-related sensory loss and its profound impact on the older adult seem neither to feature significantly in pre-registration education, nor in continuing professional education programmes. There is a dearth of reported evidence on the development of education interventions that are tailored around sensory impairments specifically (Pacala et al, 2006). One of the most resourceful ways to address any healthcare challenge is through education to build capability and confidence among future practitioners (Macaden, 2016).

Nursing education must be fit for purpose and relevant to health and social care needs and the demographic transitions that are now universal. This poses a need for nurse educators to be creative and resourceful in the design and delivery of nurse education that not only considers social, constructive and experiential aspects of learning but is also clinically relevant. The use of simulation as an effective pedagogical method for the clinical component of nurse education has been endorsed by educators and students (Cant and Cooper, 2010; Kelly et al, 2016).

Simulation is an instructional process that substitutes real patient encounters with artificial models, live actors or virtual-reality patients, giving students the opportunity to be able to practice relevant educational principles and self-reflection (Gaba, 2004; Okuda and Quinones, 2008).

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Following a review on students' fitness for practice at the point of registration in the UK, the Nursing and Midwifery Council (NMC) (2005) launched a pilot on simulation and practice learning for pre-registration nursing programmes across 13 universities in the UK. Outcomes from this pilot recommended that simulation in a controlled environment to teach clinical skills can be valuable in addition to clinical experience (NMC, 2007). Simulation, while facilitating learning through the creation of 'microworlds' of reality (Wilford and Doyle, 2006) also enables students to improve their professional confidence (Pike and O'Donnell, 2010) and refine their interpersonal communication skills (Pearson and McLafferty, 2011) in a well-supported and non-threatening environment. Simulation activities can be delivered either as process or action activities (Schiavenato, 2009).

Simulation through action has the aim of developing competence in specific clinical skills—such as venepuncture or cardiopulmonary resuscitation—that are learned using a simulator and has outcomes such as manual dexterity and procedural efficiency that are measurable (Schiavenato, 2009). Process activities using simulation are most commonly used to teach critical thinking on concepts such as empathy, patience compassion and interpersonal communication (Ricketts et al, 2012). Simulation also provides the scope to integrate knowledge, clinical skills, relevant skills in assessment and critical

thinking in a real-time, clinical situation (Prion, 2008) and develop reflective practitioners (Murray et al, 2008).

Simulation as a pedagogical method has been well researched, especially within the education and training of health professionals as an interesting, interactive and useful learning method (Pearson and McLafferty, 2011) with positive association and student satisfaction (Foronda et al, 2013). Effective simulations enable nursing students to understand and anticipate what is likely to be expected of them in real life situations and influence their practice in the long term (Kelly et al, 2014).

### Theoretical framework

The theoretical underpinnings of simulation are largely grounded in Kolb's (1984) theory on experiential learning and Tanner's (2006) model of clinical judgement, which proposes noticing, interpreting, responding and reflecting as skills that are integral to any simulated activity. Simulation activity that integrates feedback and guided reflection forges the theory-practice link, promotes insight and leads to better synthesis of knowledge on the subject (Bruce et al, 2003). This simulation resource was based on Kolb's theory on experiential learning with the aim of sensitising nursing students at an early stage in their programme on sensory impairment in older adults, and Tanner's model of clinical judgement incorporating reflection as a key component of student learning.

### Design of the simulation resource

The literature on the use of simulation as a pedagogical approach to teach sensory impairments in older adults is limited. However, simulation is perceived to be an appropriate experiential learning strategy (Prion, 2008) that could facilitate nursing students to experience first-hand some effects of sensory impairments and help them develop empathetic insight into the challenges associated with these conditions. Furthermore, it would be reasonable to assume that such insight would increase student nurses' skills and confidence in caring for older adults with these impairments. The authors developed a simulation-based teaching resource that recreated a number of sensory challenges to provide adult and mental health student nurses with opportunities for experiential learning on sensory impairment in older adults.

The aims of the simulation were:

- To create opportunities for students' experiential learning on sensory impairment in older adults
- To enable students to gain new insights on sensory impairment in older adults
- To enable students to appreciate the day-to-day challenges faced by older adults with sensory impairment.

Six learning stations, with each station having a clearly outlined activity involving at least two or more sensory impairments, created 'microworlds' (Wilford and Doyle, 2006) for students to experience a combination of either visual, hearing, taste, smell or peripheral sensory impairments (*Table 1*). The learning stations simulated common changes in sensory perceptions associated with the ageing process (Schiffman, 2007) that tend to be exacerbated during critical illnesses or medications (Schiffman and Zervakis, 2002), which students are particularly likely to encounter while caring for older adults in acute care settings.

**Table 1. Simulation stations on sensory and cognitive impairments in older adults**

Station	Simulation focus	Activities	Low-fidelity equipment used
1	Visual, hearing and peripheral sensory impairments	Sorting buttons	Multi-coloured buttons in various shapes and sizes, simulation goggles for macular degeneration, woollen mittens, ear plugs, alcohol rub and wipes
2	Visual and peripheral sensory impairments	Reading the newspaper	Simulation goggles for cataract and macular degeneration, woollen mittens, newspaper pages with small print, alcohol rub and wipes
3	Visual, cognitive and mobility impairments	Setting the table	White table cover, white crockery, brightly coloured crockery (to emphasise the relevance of contrast especially for people with cognitive impairment), cutlery, elbow crutches, simulation goggles for tunnel vision, clear jug filled with water, alcohol rub and wipes
4	Visual and gustatory impairments	Being fed when blindfolded	Blindfolds, external nose plugs, teaspoons, flavoured jelly, flavoured crisps/chips and biscuits/cookies, alcohol rub and wipes
5	Visual and smell impairments	Aroma activity	Blindfolds, external nose plugs, aroma kit containing vials of different aromas, alcohol rub and wipes
6	Visual, hearing, cognitive and peripheral sensory impairments	Completing a form in a foreign language	Simulation goggles for cataract, macular degeneration and retinal detachment/floaters, ear plugs, woollen mittens, pens, form printed in a foreign language.

## Delivery of the simulation

In total, 125 nursing students (119 female, 6 male) in their first semester (year 1) participated in the simulation prior to their first practice learning placement. The nursing students were studying either for the adult nursing field (n=98) or mental health nursing field (n=27). Each session ran for 90 minutes with 24 students in groups of four, rotating simultaneously around the six stations. Facilitators (academic staff) ensured that students were supported with activities and were alert to students who may have indicated anxiety, vulnerability or became overwhelmed with the experience (Nielsen and Harder, 2013).

A 10-minute briefing prior to the simulation (Rudolph et al, 2014) involved discussion of the learning outcomes, description of each station and the option for students to speak to the facilitator if they found any station particularly difficult or overwhelming. The students then spent around 10 minutes (6 minutes for the activity and 4 minutes to reflect) at each station. In each group, two students assumed either the role of the older adult (participant) with the impairment or the role of a nurse/observer. The students were encouraged to change roles as appropriate at each station to gain both experiences. The observer's role was to read out the instructions to the participant at each station and capture the participant's reflections on the thoughts, feelings, emotions and insights that they experienced during the activity (Table 2).

The classroom environments were adapted to recreate the noise and light levels that are often found in an institution-type setting, such as a hospital or care home. For example, controllable/dimmable lights were used to modify the amount of light available and constant background noise, including people talking and music, mimicked the normal environment that older adults often have to negotiate, particularly in a care home or hospital setting. These additional sensory challenges were created to highlight the difficulties of working in dim light and issues relating to visual or aural sensory overload that older adults with sensory and cognitive impairments may need to negotiate in their care environments (Brush et al, 2002).

The final 20 minutes of the session were allocated for a debrief, which involved facilitated discussions around the recorded reflections for each station, particularly focusing on the emotions experienced and insights gained on the sensory impairments experienced by student nurses and their relevance to nursing practice. Debriefing is considered an important stage of simulation (Parker and Myrick, 2010) that reinforces

and helps consolidate learning (Yeun et al, 2014) and student nurses were supported by the facilitators to explore and discuss the thoughts, feelings and emotions that they experienced. For example, student nurses discussed the relevance of colour contrast between fabric and buttons after having participated in station 1. The activity at station 6 also highlighted the importance of informed consent when older adults complete registration/application forms and the potential vulnerability when students signed forms without a good understanding of the content. Thus, debriefing not only allowed student nurses to reflect on their practice from any previous care experience but also provided insights that were relevant in day-to-day situations (Sinclair and Ferguson, 2009).

Feedback during the debrief also demonstrated how student nurses without previous care experience were able to communicate their understanding of the complexities and challenges with activities of daily living for older adults with sensory impairment.

## Students' reflections on simulation activities

The range of emotions and feelings that the students reported through reflection following participation in the simulation is illustrated in Figure 1. These emotions were not always directly attributable to any one station but were more generally expressed across the activities at all six stations.

Table 3 illustrates students' reported benefits of participation in the simulation and the impact on their learning. First, enhanced knowledge and understanding on the impact of sensory impairments was identified, including the vital role of senses in executing daily tasks. Students reported that they found stations 1, 3 and 4 to be the most challenging and complex to negotiate but that they helped to develop an appreciation of the difficulties older adults with sensory impairments experience performing ordinary daily tasks that are often taken for granted. Second, new insights into the challenges of living with sensory impairment in older adults and experience of the associated frustration and vulnerability were highlighted. Third, students articulated awareness of the need for empathy, good communication, compassion, a caring and respectful attitude, and patience in caring for older adults with these impairments. The relevance of these professional values to nursing practice was explored during the debrief, and reflected students' appreciation of a person-centred approach to care (Broderick and Coffey, 2013).

## Discussion

The aim of simulation was 'to replicate some or nearly all of the essential aspects of a sensory impairment so that these situations may be more readily understood and managed when it occurs for real in clinical practice' (Hovancsek, 2007). Previous findings have shown that simulation-based medical education (SBME) is a powerful intervention to increase learner competence with transferable skills to improve patient care (McGaghie et al, 2011).

The sensory simulation resource was aimed at creating opportunities for students' experiential learning on sensory impairment in older adults, to enable them to gain new insights into the daily challenges older adults with these impairments encounter with routine tasks and activities of daily living.

**Table 2. Form used for record of reflections on experiential learning**

Station	Feelings/emotions experienced	Difficulties encountered	Insights gained	Relevance to practice
Station 1				
Station 2				
Station 3				
Station 4				
Station 5				
Station 6				

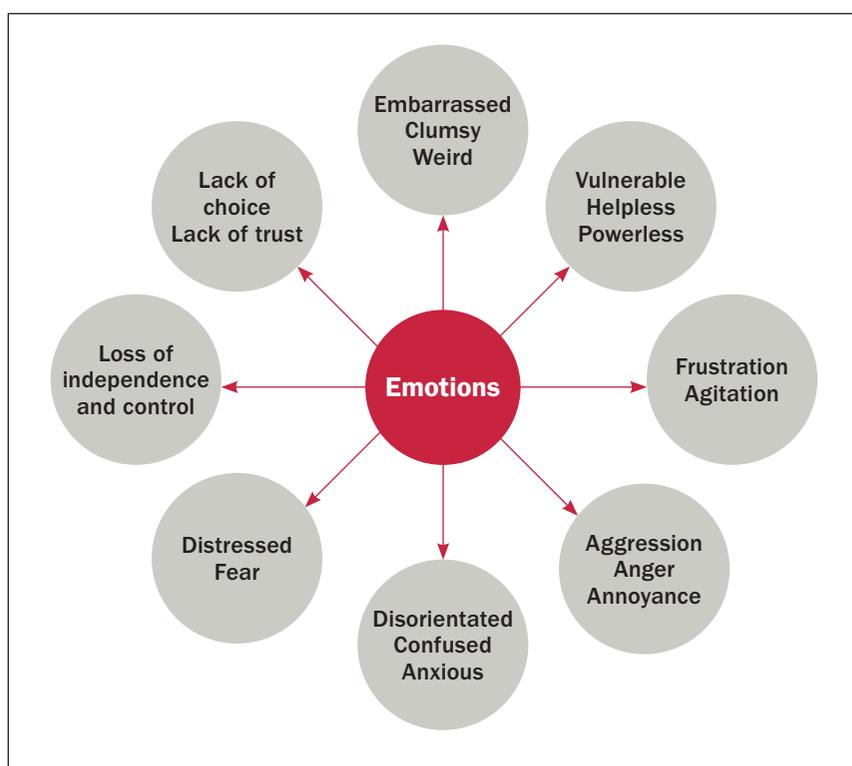


Figure 1. Emotions experienced during the simulation: students' reflections

Significantly, for older adults with a sensory impairment, hospitals and care environments can be challenging places to negotiate, and the added complexities of memory and communication deficits (Brush et al, 2002) can compromise the effective and safe delivery of nursing care. These challenges are particularly salient if nurses and other health professionals are unaware of the impact of such deficits on their patients (Aulagnier et al, 2005; Shakespeare and Kleine, 2013).

Simulation that incorporates the affective (emotional) component of learning can be effective (Kneebone, 2005) provided that the experience replicates real clinical encounters to the best extent possible. Students who participated in this

simulation identified a range of emotions and feelings (Figure 1), many of them negative as a result of the frustration experienced when participating in the activities while being visually and hearing impaired. Students with previous experience in care settings also reflected that the emotions they experienced helped them to improve their insights to better understand and relate to some of the emotional responses of some older adults in their care retrospectively. They were able to apply new learning to previous care experiences, leading to renewed understanding of the emotions and behaviour of older adults witnessed in previous practice (Liaw, 2011). They also discussed that their approach to caring for the resident would be very different with the new insights gained through this experiential learning. It is therefore possible that the affective emotions and feelings derived from this simulated learning will resurface as triggers or prompts when similar situations are encountered in practice.

Simulation is a teaching method that allows multiple learning objectives to be taught in an environment without risking patient harm. Designing and delivering this simulation has reinforced that being creative while designing pedagogical resources for nurse education can stimulate critical thinking and reflective practice and instil confidence (National League for Nursing, 2003). Four critical elements for effective learning were employed in this activity: a pre-briefing session that clearly outlined the purpose of the simulation activity with the intended learning outcomes, a well-equipped and resourced simulated environment to practice, time built in for reflection followed by an interactive discussion and debriefing. Reflection and debriefing were critical elements of this simulation activity as provision was made for students to explore their feelings associated with the impairments that they encountered, the impact on patients and possible solutions for practice (Neill and Wotton, 2011).

The value of debriefing, reflection and guidance from academic facilitators were ranked as the three most highly valued components of a simulation on clinical judgement by student nurses (Kelly et al, 2014). Reflection is an essential professional attribute, therefore, it is important to encourage nurses to be reflective from early on in their practice (Tanner, 2006)—these students were in the early stages of their studies. The lasting impact of participation in simulation can be more effective since simulation as a pedagogical approach seems to trigger reflection not just while students participate in the simulation but also beyond (Kelly et al, 2014). This prolonged impact is an important factor for nursing students as it is highly probable they will care for older adults with sensory impairments throughout their programme and in a variety of care settings.

This simulation was a relatively simple, low-tech intervention creatively designed to maximise the opportunity for experiential learning on sensory impairments in older adults. Students' reflections and feedback illustrate that they not only gained knowledge and insights into the complex phenomena of sensory impairments in older adults, but were also able to appreciate the emotions that older adults with these associated disabilities experienced. This was an important outcome as attitudes of nursing staff towards older adults influence the quality of care provided in long-term care facilities (Alfarah et

Table 3. Knowledge, insights and professional values gained through experiential learning

<b>Knowledge and understanding</b>	<ul style="list-style-type: none"> <li>■ Sensory impairment (SI)</li> <li>■ Dementia/cognitive impairment</li> <li>■ Sensory deprivation</li> <li>■ Importance of senses for daily tasks</li> <li>■ Negative impact of sensory overload</li> </ul>
<b>Improved/new insight</b>	<ul style="list-style-type: none"> <li>■ Vulnerability of an older adult</li> <li>■ Frustration and challenges arising from SI</li> <li>■ Time taken to complete simple daily tasks</li> <li>■ Disorientation</li> <li>■ Glimpse into the world of SI</li> </ul>
<b>Professional values</b>	<ul style="list-style-type: none"> <li>■ Empathy</li> <li>■ Respect and dignity</li> <li>■ Personal reflection</li> <li>■ Care and compassion</li> <li>■ Person-centred communication</li> <li>■ Teamworking skills</li> </ul>

al, 2010). Students also reflected that this experiential learning enabled them to develop, for example, communication skills and teamwork skills (Stirling et al, 2012)—particularly when they interacted at the stations, took turns at being either the participant/observer and reflected in groups of four at each station—that were transferable across a range of situations in nursing practice beyond this particular simulation context.

### Implications for practice

This sensory simulation activity, including the reflection and debrief, supported students' ability to develop knowledge and insight on the impact of sensory impairment and the additional vulnerability experienced by some older adults. Exposure to simulation has significant clinical relevance as students care for older adults with these impairments. Understanding what may be required of them in the practice setting and anticipating what is likely to happen in real patient situations is highly valued by both students and newly qualified nurses (Kelly et al, 2014). Therefore, the knowledge and insights gained through this simulated activity have the potential for transferability across a range of real clinical situations to influence nurses' attitudes and behaviours and the quality of care provided to various patient groups with sensory impairment.

### Limitations

Student reflections discussed in this paper are anecdotal and were captured during reflection and debrief as part of the simulation. This article primarily focuses on the design and delivery of simulation on sensory impairment in older adults and is therefore descriptive rather than evaluative in its approach. However, plans for a systematic and prospective evaluation of this simulation as a pedagogical approach within pre-registration nurse education are currently in progress.

### Conclusion

Although endorsed in the nursing curricula (NMC, 2007), the sustained effectiveness of simulation has not been widely evaluated—in particular simulation around sensory impairment. This simulation has helped students to appreciate the complexity of helping to support patients with sensory impairments. Further research is required to explore the longer-term impact, if any, of this simulated activity. Nurses will, with increasing frequency, encounter older adults with sensory impairment in all care settings. It is important that educators develop teaching strategies that can effectively prepare nurses early on in their careers to appreciate the impact and disability experienced through sensory impairment. As this vulnerable population of older adults is increasing, nurses need to be able to assess and manage risk as well as provide empathetic and person-centred care to older adults. **BJN**

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### KEY POINTS

- Sensory impairments are some of the the most common chronic and disabling conditions of later life
- Nurses should be knowledgeable and confident to care for older adults with sensory impairments
- Learning through simulation can facilitate insight into sensory impairment
- As well as the actual simulation of impairments, pre-briefing, time for reflection and an interactive debriefing session were key aspects of the educational activity described here

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## CPD reflective questions

- How significant do you think is the problem with sensory impairment in older adults within your experience/practice?
- What are some of the safety issues for older adults with sensory impairment in your clinical setting?
- Are you able to identify or recognise some of the emotions (Table 2) in patients you have cared for with sensory impairments?
- What can you do to enhance quality of life and safety for patients with sensory impairments in your care?

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