

## Healthy work environments for the ageing nursing workforce

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*Aim* The aim of this article is to describe the physical challenges that ageing nurses experience and the facility design features that can promote healthy work environments to motivate nurses to continue working.

*Background* Older nurses are working longer and beyond the usual retirement age. They often experience chronic fatigue and the usual physical and cognitive changes associated with aging. Nursing is a physically demanding profession and many older nurses work in pain while providing direct patient care. The literature is replete with studies focusing on the organisational factors that retain older nurses, but little research addresses design factors that facilitate nurses working longer and more safely in direct patient care.

*Evaluation* Electronic databases in medicine, nursing, psychology, and architecture were searched and evidence-based, non-evidence-based, and review articles and government and organisational newsletters were evaluated.

*Key Issues* Hospital design can help address the physical work challenges that older nurses experience.

*Conclusions* Older nurses have a wealth of knowledge and expertise, and the design of nursing units can optimize their work experience.

*Implications for nursing management* Nurse Managers must participate in design efforts and advocate designs that support aging nurses.

*Keywords:* ageing nurses, healthcare facility design, nurse injuries, nursing workforce, older nurses, retention

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## Introduction

Before the economic downturn of 2009, the early retirement of older nurses was causing concern and strategies were being devised to retain these nurses in the workforce. Currently, with a challenging economic climate and the reported loss of net worth, more nurses over the age of 60 years are remaining in their jobs (ageing in place), trying to recover savings origi-

nally earmarked for retirement. In addition, because of the same economic necessity, a large number of older nurses have returned to the workforce. The USA now has the largest cohort of registered nurses (RNs) between the ages of 50 years and 69 years ever experienced in the profession. At present, the average age of a RN is 46.8 years, and it is estimated that one-third of all nurses in the US workforce are between the ages of 50 years and 64 years (Valencia

& Raingruber 2010, Juraschek *et al.* 2012, Buerhaus *et al.* 2013). The same trend has been noted in other countries, with 20% of the nurses in the UK and 33% in Canada aged 50 years and older (Keller & Burns 2010). This shift in demographics calls for consideration of not only retaining older nurses, but also providing for their health and wellbeing at work.

Although a number of studies have focused on why nurses continue to work beyond the usual retirement age (Palumbo *et al.* 2009, Storey *et al.* 2009a, Kirgan & Golembeski 2010) and how organisations can retain older nurses (Cyr 2005, Bell 2006, Moseley & Paterson 2008, Storey *et al.* 2009b), there is a paucity of research addressing the physical needs of ageing nurses or how environmental design can facilitate nurses working longer and more safely while providing direct patient care. It is important to identify features in the work environment that will prevent injury of ageing nurses and ensure their retention in the workforce.

## Aims

The aims of this article are: to synthesise quantitative and qualitative studies related to the physical challenges experienced by ageing nurses who provide direct patient care in health-care settings; to share evidence from the literature related to the effect of hospital design on ageing nurses; and to share the author's personal observations and experiences in hospital design that addresses the needs of ageing nurses. For the purposes of this article, the ageing nurse is defined as one who is 55 years or older, which is the US Department of Labor's definition of 'older worker' (Centers for Disease Control & Prevention 2012). This article focuses on the ageing nurse in the USA but the observations and recommendations may also be appropriate for nurse managers and the hospital design industry in other countries. Clearly, the concerns of ageing nurses in the workplace are universal; many of the studies and reviews cited in this paper originated from countries such as the UK, New Zealand, Australia and Canada.

## Background

A review of the literature was conducted using the method described by Polit and Beck (2008). Eight electronic databases were searched for materials from 2002 to 2013; references for relevant papers were also reviewed. The search was limited to papers published in English. Databases included ScienceDirect, Ovid,

ProQuest, PubMed, CINAHL, PsychINFO, The Center for Health Design, Avery Index and Google Scholar. The following key words and MeSH terms were used for the search: 'older nurses', 'ageing nurses', 'nursing musculoskeletal disorders', 'nursing physical job demands', 'nurse retirement', 'nurse retention', 'nurse work injury', 'healthcare design' and 'healthcare design for older workers'. Articles were included if their focus was the ageing nurse, workplace injuries, and design features in the healthcare environment. Articles were excluded if the primary focus was human resource retention strategies for older nurses, such as providing flexible work schedules, showing appreciation and respect, and realising differences among intergenerational nurses. Of the 35 articles and reviews initially identified, 25 met the sample inclusion criteria. These 25 studies included three systematic reviews, 18 quantitative studies, and four qualitative studies. Other non-evidence-based articles included government bulletins, organisational newsletters and review articles focusing on health-care facility design, strategies for retaining ageing nurses, overviews of barriers and the advantages of retaining older nurses.

## The effects of ageing as related to older nurses

Older workers often suffer from chronic disease and impairments that may limit their life activities, including full-time employment. Some older nurses experience visual and hearing impairments, balance issues, weight gain, aches and pain associated with musculoskeletal disorders (MSDs) or arthritis, loss of muscle mass and a reduction in core strength and flexibility. All of these issues are normal age-related changes that have the potential to negatively affect the functional abilities of older nurses (Cameron *et al.* 2008, Letvak 2009, Keller & Burns 2010, Heiden *et al.* 2013). According to the Centers for Disease Control (2012), older workers have fewer workplace injuries, but when they do incur an injury they tend to be more severe and entail a longer recovery. The types of injuries often reported by older workers include complaints of low back pain, shoulder pain, carpal tunnel syndrome, tendonitis and other disorders of the hands and feet. Some authors indicate that older workers are reluctant to report injuries because they fear losing their jobs or that they will be asked to retire (Fraser *et al.* 2009, Keller & Burns 2010). Physical limitations and workload demands were often given as reasons for older workers' retirement (Blakeley & Ribeiro 2008).

Gabrielle *et al.* (2008) reported that nurses in their study (aged 40–60 years) indicated that they experi-

enced many aches and pains associated with the ageing process but that they often neglected their own health as a result of work demands. They reported not eating properly, not drinking enough water or not taking the breaks necessary for toileting or rest periods while at work. Many indicated that they simply 'worked through the pain' (chronic neck, shoulder or back pain) and they had to adjust emotionally to the loss of physical fitness they had experienced when younger. Many reported being tired much of the time, leaving them little energy for regular exercise after work to maintain a healthy weight and mental attitude.

Similarly, in a study using a phenomenological design, nurses reported that they struggled daily with pain during and after work, and their physical pain was a constant reminder that they were ageing (Letvak 2009). Many of the nurses in this study reported experiencing chronic pain and being depressed to the point of falling asleep on the job or having difficulty focusing on the tasks at hand.

Whereas some nurses reported using positive coping strategies, such as sharing their health problems with others in their work group because they were obvious anyway, other nurses used more negative coping strategies such as calling in sick more frequently or eating more. Some indicated that they had to get away to the chapel or bathroom for a few moments of respite to recover from the physical pain, but that their inner strength, courage, and in some instances faith in God, sustained them. Letvak (2009) reported that all of the nurses indicated that their practice of nursing had changed as they aged: they walked more slowly, responded less quickly and sat whenever possible rather than standing to complete patient-care tasks.

Although the nurses may have been slower in performing their work than in their younger years, they indicated that experience and wisdom compensated for their lack of speed. They also reported that they stayed on the job because of caring relationships with co-workers and team members who helped them with caring tasks that they could no longer accomplish alone.

### Physical demands of nursing practice

Nursing is difficult work, physically demanding for nurses of all ages, and one of the professions with the highest incidence of work-related back injuries (Nelson *et al.* 2003). Authors report frequent neck, shoulder, and upper- and lower-arm injuries in addition to upper- and lower-back injuries (Gabrielle *et al.* 2008, Keller & Burns 2010). Ankle, knee and thigh

injuries have also been reported as frequent work-related injuries (Cameron *et al.* 2008). In the Cameron *et al.* study (2008), 70% of the nurses in the 56-year and older group reported having a musculoskeletal injury at work. These injuries not only interfere with their ability to perform their daily work, but for some nurses these injuries may be career ending.

Older nurses who elect to continue working experience many physical challenges, including a reduced ability to perform some physical care-taking tasks, meeting the demands of heavy workloads with multiple patients, managing their fatigue during 12-hour shifts, working several 12-hour shifts consecutively, or being on call in addition to regularly scheduled shifts. There is evidence that older nurses have a higher incidence of workplace injuries and are more likely to complain of musculoskeletal disorders, sleep deprivation and physical fatigue and exhaustion (Santos *et al.* 2003, Spetz 2005, Gabrielle *et al.* 2008) as a result of increasing workloads and the physical demands of patient care. Shift work and long (12-hour) shifts exacerbate age-related health deterioration and are likely the cause of chronic fatigue and lack of sleep. Older workers relate that it takes them longer to recover from the long shifts or off-shift assignments (Keller & Burns 2010).

Using a focus group methodology with nurses aged 46–73 years to understand their perceptions of the work environment, Mion *et al.* (2006) reported that participants indicated that the physical demands of patient care were difficult to manage. Participants cited physical difficulties in providing direct patient-care activities such as pushing and pulling patients on beds or stretchers while transporting them, lifting, turning, or positioning patients in bed, pushing equipment or carts, stretching or reaching for equipment or supplies on high shelves, or reaching for electrical plugs or other types of medical equipment located near the floor or behind the head of the bed.

Recognising the physical demands of nursing practice on older nurses, several authors have cited the need to implement improvements in the workplace to recruit and retain older nurses, such as opportunities for flexible schedules, the option of 8-hour rather than 12-hour shifts, an organisational culture that supports teamwork and collegiality, meaningful recognition of the contributions of older workers, financial incentives to stay, more days off between work days, self-scheduling or shift sharing and job opportunities in less physically demanding patient-care units (Moseley & Paterson 2008, Fraser *et al.* 2009, Palumbo *et al.* 2009, ASNA Commission on Professional Issues 2010). These organisational changes address the con-

cerns of ageing nurses related to fatigue, the aches and pains associated with ageing and the physical demands of nursing practice, but more research must be done on how the built environment can alleviate the limitations of ageing and the physical demands of patient care. Ageing nurses represent an ever-increasing population of caregivers who bring wisdom and experience to the patient-care setting, but they also have special physical needs that must be addressed to retain them in the workplace and to prevent physical and emotional injuries. Adapting the workplace to make it safer for older nurses presents some challenges, but addressing their needs can also provide many rewards for the ageing nurses and the organisations for which they work.

### Recommendations for alterations of the work environment

Although there is clearly a serious need to consider the needs of ageing nurses and other health professionals when designing new or renovated health-care facilities, there is a paucity of published evidence, anecdotal or empirical, that addresses the specific needs of ageing nurses with regard to the design of health-care facilities. It is unclear how much employing organisations can accommodate older nurses in terms of adapting the work environment, patient-care assignments or workloads, but if employers are to retain older nurses in the workforce, adaptations to the physical environment and the organisation of work need to be made (ASNA Commission on Professional Issues 2010, Keller & Burns 2010). According to these authors, having a safe and well-designed workplace will reduce injuries for all nurses, especially older nurses who may be more vulnerable to work-related injuries.

A major focus of the health-care design industry is designing health-care facilities specifically to create healing environments that are patient-centred, patient safety oriented and supportive of family involvement using design features that are flexible, adaptive and promote staff efficiency. The term 'healing environment' applies not only to patients and families, it is expanding to include design features that promote a healthy, safe working environment for all health-care professionals (Stichler 2009a). Ergonomic design features must be considered when designing work environments that specifically address the needs of older nurses and other health-care professionals. Ergonomics is the 'science of fitting or matching workplace conditions and job demands to the capabilities of the

working population' (Waters 2010). According to Waters, when an environment is adapted to the needs of the worker, productivity improves, injury and illness decrease and overall employee satisfaction improves, leading to worker retention. Several design implications should be considered when designing environments that address the needs of older nurses.

Some of older nurses' major complaints are the diminished physical capacity to move, push, pull or lift patients, supplies and equipment. The prevalence of back injuries among all nurses is higher than in most professions, and older nurses are particularly vulnerable to back injuries (Cameron *et al.* 2008). Older nurses have difficulty bending, twisting, reaching, squatting or stooping and many of the physical stressors and strains of these movements can be eliminated or greatly reduced with ergonomically correct designs and equipment to support safe patient handling. Although costly for renovation projects and new construction, overhead or ceiling-mounted lifts in all patient rooms substantially increase the use of these devices to position patients in bed, transfer them from bed to chair and assist them to the bathroom. Evidence indicates that the use of these devices for lifting and transferring patients greatly reduces the perceived risk of injury and actual injuries with the associated work days lost because of nurses' discomfort in the neck, shoulders, back, hands and arms (Tiesman *et al.* 2003, Engst *et al.* 2005, Vieira & Miller 2008).

In Engst and colleagues' study, worker compensation costs were reduced by 68% when ceiling lifts were installed and used to lift and transfer patients compared with units that did not install ceiling-mounted lifts. Although these studies were not specific to the ageing nurse, it seems reasonable that such lifts would be helpful to ageing nurses who are working with the physical limitations associated with ageing. It has been noted anecdotally that installing ceiling-mounted lifts in only a few rooms per unit diminishes their use by nurses who quickly forget how to use them because they are not used consistently. The universal installation and use of these devices enhance the culture of safety with an emphasis on preventing employee injury. Some state nursing organisations recommendations of 'Best Practices for Retention of Older Nurses' have included providing mechanical patient lifts and devices to aid in patient handling or developing transport and lift teams to prevent injury to all nurses, but particularly to address the needs of older nurses (ASNA Commission on Professional Issues 2010).

Decentralised linen and supply storage and decentralised nursing stations with a nursing work area

between every two rooms or with a cluster design of four to eight rooms around a nursing work area diminish walking distances for older nurses (ASNA Commission on Professional Issues 2010, Zborowsky *et al.* 2010). Ergonomic seating with the correct height for charting tables at the decentralised nursing station, the bedside (for intensive patient monitoring) and the centralised nurse station are helpful for reducing back strain or prolonged standing for older nurses. Ensuring the appropriate height of countertops for charting, either standing or sitting, with adequate space for both keyboarding and writing prevents the constant strain of working in an improper body position (Cooper 2003). For correct positioning for any task, the body should be in a neutral position, meaning that strain and torsion of the body are eliminated (Stichler & Feiler 2011). Although computers on wheels (COWS) are useful in terms of flexibility, adjustability and their ability to be moved to the point of care, they can also demand more standing as the nurse documents care activities, unless ergonomically designed chairs are provided.

Older nurses may have a fear of falling while walking in hospital corridors, so adequate lighting and non-slip floor surfaces will help address their safety concerns. An adequate number of equipment and supply storage areas will prevent clutter and may reduce the danger of trips and slips during care-giving activities (Moseley & Paterson 2008).

Because physical fatigue is one of the most significant issues for older nurses (Spetz 2005), elimination of what this author calls the 'run and fetch' design is important. Locating frequently used supplies and equipment at or near the point of service is a critical design element to reduce walking distances on patient-care units. Decentralised linen and supply storage areas can be located in patient rooms with access from the hallway for stocking or between every two rooms or small cluster of rooms, or they can be stocked inside the patient room. Some hospitals are locating a closed and locked cabinet referred to as 'the nurse server', which holds the supplies and pharmaceuticals necessary for patient care, inside the patient room, and this greatly reduces walking distances for older nurses (Lorenz 2012).

Because bending, stretching, and reaching are difficult for older nurses, placing electrical and medical gas outlets on either side of the patient bed at an easily accessible height, rather than behind or above the head of the bed, prevents nurses from having to move the bed or stretch to plug in equipment. Similarly, properly sized and arranged equipment storage areas

with electrical outlets at the mid-wall level minimises the need to stretch to plug in or move equipment to get to the piece of equipment desired (Stichler & Feiler 2011).

True rest breaks are needed for all staff members but particularly for the older nurse. In the USA, hospital building codes require that all patient care units have staff lounges or break rooms (Facility Guidelines Institute 2010), but most are noisy, social spaces where nurses eat, converse and in some cases watch television. Some of these spaces also include the locker and change area for staff. Recognising that break rooms do not provide the staff with a stress-reducing environment, some hospital decision makers are electing to build or designate 'respite rooms' in addition to the break rooms. Respite rooms are designed to be quiet with dimmed lighting and little to no stimulation. These rooms are often equipped with a reclining chair and in some cases eye masks and quiet, meditative music. The intention is to allow nurses the time and space to truly meditate or rest for 10–15 minutes without the distraction of others conversing, eating or watching television. Respite rooms provide a restful space for older nurses to cope with their work demands (Moseley & Paterson 2008), and there is mounting evidence that they are effective for reducing nurse stress levels (Stichler 2008a, ASNA Commission on Professional Issues 2010, Sitzler 2013).

Centralised nursing stations have become a gathering place for interdisciplinary collegial interaction and should be designed to promote social interaction and the exchange of information. In addition to the computer systems for physician order entry and nurse and physician documentation (both computerised and paper charting), comfortable seating areas around small tables promote social interchange and offer nurses the opportunity to sit while conversing with each other or with professionals in other disciplines (Cooper 2003). Some designers include a small conference space adjacent to the nursing station where nurses and their interdisciplinary partners can talk. When building decentralised nursing stations adjacent to patient rooms, some designers still include a centralised nursing station to provide a common and easily assessable area where visitors can be greeted and nurses and other professionals can sit while documenting care or conversing with colleagues.

Because visual acuity diminishes with age, older nurses often require glasses to read or conduct detailed tasks such as suture removal, wound care, dressing changes and intravenous insertion. Enhanced task lighting options over the bed or on swing arms

helps older nurses' visual acuity when they are engaged in such tasks. Multiple lighting options in the patient room and in nurses' work areas ensure maximum flexibility and adaptability for various lighting needs not only for nurses but also for patients.

Storage closets or cupboards should be placed low enough to be useful for nurses while ensuring that they are in a location where staff and families will not injure their heads when walking past or under them. Space between the bed and visitors' sofas, counter space at the footwall or chairs should be adequate to prevent nurses from hurting themselves as they squeeze between spaces that are too small.

Bathrooms and shower designs are some of the most dangerous spaces in acute care settings, with safety challenges for both patients and nurses. Some designers have adopted an open-shower design that shares the shower space with the toilet and hand-washing sink with no physical barriers to contain water in the shower area. Instead of having physical barrier to the shower area, the floor of the shower is sloped toward the drain. The intention of this design feature is to prevent patients with IV poles from tripping over barriers when entering the shower; however, although the barrier-free design resolved the patient tripping problem, it created a number of other problems that present safety challenges for both patients and nurses, particularly older nurses (Stichler 2007a, 2009b). With no barrier to contain water from the shower, the entire bathroom floor, toilet and sink get wet, thereby increasing the potential for slips and falls for patients and nurses. Nurses are innovative and resourceful, and recognising the potential danger for patients and themselves, they have developed 'workarounds' to solve this problem. Each time a patient needs to be showered, a nurse must create a barrier from bath blankets, towels or bedspreads, which become saturated and heavy to lift. Older nurses have difficulty bending, stooping, and carrying the wet linens used for this purpose. Newer designs for barrier-free showers have additional linear floor drains and shower curtains to contain the water in the shower area and reduce the need for blanket barriers.

Nurses are cognitively challenged by the multiple data points inherent in coordinating and providing patient care. Older nurses also comment that they are often challenged by memory loss, decreased reaction time and the demands of integrating traditional methods of documentation with electronic medical record and order-entry systems (Fraser *et al.* 2009, Keller & Burns 2010). To help older nurses manage these multiple mental and cognitive challenges, design

features that include bedside documentation stations, COWS or decentralised work areas can aid in the retrieval of information and documentation of patient information, interventions and responses. Nurse server cabinets that enclose a patient's non-controlled medications can be designed into the patient room, minimising the steps needed to retrieve medications and the potential for medication errors. The need for remembering multiple data points is greatly reduced because the medication and documentation (electronic or paper) are located in the patient's room. The use of electronic tablets, COWs and other electronic data and recording devices with point-of-service information retrieval, note recording, and documentation lessens the need to remember details. Designers will need to consider the optimal locations for storing and using these devices and for bedside paper documentation.

## Conclusions

Older nurses indicate that they stay in nursing because they are satisfied with their jobs, enjoy the patient contact and their caring role, appreciate the support of colleagues and work teams, and need the pay and benefits (Storey *et al.* 2009a). Although older nurses may be physically challenged while working, the physical design of health-care facilities can address many of the physical and cognitive demands of nursing work, making it easier and more efficient for older nurses and nurses in general. Careful attention to the limitations of the ageing body and the functions of nursing care should inform structural design decisions intended to address the needs of ageing nurses, who provide meaningful value to the care team.

Older nurses bring a wealth of experience and knowledge to the workplace, but they are also confronted with the cognitive and physical demands of providing patient care. Although the literature is replete with evidence regarding the factors needed to recruit and retain older nurses with organisational solutions, there is little evidence on the physical design factors that could make nursing work easier for older nurses. Simple attention to detail in combination with knowledge of the physical and cognitive challenges of the ageing nurse could facilitate design decisions that would create safe, healthy work environments for all nurses.

## Implications for nursing management

Increasingly, nurse managers are assuming leadership roles in design efforts for new health-care facility pro-

jects or renovations (Stichler 2007b). Knowing the physical and cognitive challenges of ageing nurses, nurse managers can advocate specific design features that will help older nurses remain active and engaged in the nursing profession. Empowering older nurses by involving them in design efforts with architects would also ensure that their physical needs would be addressed in design features that would conserve their strength, prevent slips and falls, minimise the risk of injury and ensure adequate rest and rejuvenation areas. By using resources such as the Nursing Institute for Health Design (<http://www.nursingihd.com>) or the Center for Health Design (<http://www.healthdesign.org>), nurse managers can educate older nurses about the phases of design and where their input with architects is most valuable to ensure that their specific needs for safety, visual acuity and efficiency to conserve energy are addressed.

Nurse managers must also improve their own knowledge of and competency in working with architects and designers and assume leadership to ensure that the clinical nurse's voice is heard in design meetings. Once schematic and design development plans are completed, the nurse manager can meet with the clinical nurses to review these plans in detail and ensure that their initial vision and requests have been considered and addressed (Stichler 2008b). Older nurses can also be encouraged to participate in work-site inspections or healthy work environment committees so that their concerns about the work environment can be represented.

Considering the vast experience of older nurses, nurse managers may want to make job assignments where older nurses can mentor less experienced nurses (Clauson *et al.* 2011) or create positions where older nurses can have slower, self-paced work that allows for rest breaks and less standing for prolonged periods. Because hand injuries are a concern, positions that have fewer repetitive hand movements may be an option. Nurse managers should ensure that work stations for older nurses provide comfortable, ergonomically correct and adjustable seating, and better illumination for task lighting that reduces glare.

This review identifies a number of challenges that older nurses face when working in the hospital setting and ways that the physical design of the 'built environment' can improve their work experience, motivating them to stay healthy, safe and employed, and to share their knowledge and skill to the benefit of both younger colleagues and patients.

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