

# PHYSICAL RESTRAINT USE ON PEOPLE WITH DEMENTIA: A REVIEW OF THE LITERATURE

*Wei-Wei Wang, RN, BN, MGeroNurs, Regis Group PTY Ltd,  
Brisbane, Queensland, Australia*

*Professor Wendy Moyle, RN, PhD, MHS,c BN, DipAp Sci,  
Deputy Director of Research Centre for Clinical Practice  
Innovation, Griffith University, Nathan, Australia  
w.moyle@griffith.edu.au*

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## ABSTRACT:

### *Objective:*

To provide a critical review of contemporary literature published between 1992 and 2003 on the use of physical restraints on residents with dementia in long-term care.

### *Design:*

Forty-two manuscripts related to dementia (cognitive impairment) and physical restraint in long-term care settings were examined.

### *Results:*

Four dominant themes were identified in the literature: relationship between restraint use and cognitive decline; falls/related injuries and associated mortality; reduction/removal/alternatives to use; and, nurses' attitudes to restraints. It appears that despite nurses' desire to use physical restraint for protection there is no scientific evidence that physical restraint actually protects residents against injuries. A discussion of the methodological issues arising in the literature and recommendations for further research and implications for nursing practice are outlined.

### *Conclusion:*

To curb the practice of restraint use the concentrated assistance of Australia federal and state governments and peak geriatric and dementia organisations may be required.

## INTRODUCTION

Physical restraint is defined as any device attached or adjacent to the patient's body, which the patient is unable to remove easily and that restricts freedom of movement as well as access to one's body (Miles and Meyers 1994). Physical restraint use has had a long history in the management of aggressive patients and, in particular, the institutionalised mentally ill (Burton et al 1992b; Evans and Strumpf 1989). Although the restraint of the mentally ill was declared unnecessary, and never justifiable in the early part of the nineteenth century (Psychiatric Services 2002, p.661), it was not until psychotropic medications were introduced in the 1960s that the practice dropped dramatically in psychiatric institutions (Burton et al 1992b). However, the use of restraints has remained popular for frail older people, and a range of physical restraints have been used, at least since the 1900s, in long-term aged care (Castle and Mor 1998). The justification for this practice rests mainly in 'prevention', for example of falls, patient interference with treatments, injury to self and others, and aggressive behaviour and wandering.

In the 1960s the use of restraint was challenged as it was suggested that restraint use intensified the disorganized behaviour of patients (Castle and Mor 1998; Evans and Strumpf 1989). In 1979 the use of restraint on patients with a diagnosis of dementia was not recommended (Evans and Strumpf 1989). Throughout the 1980s restraint use was influenced by a number of external factors that focused on the potential negative consequences and the unethical nature of the practice. For example, a number of European countries issued a challenge to the practice of restraint as they commenced restraint-free care. In North America, legislation declared the right of residents to be free from restraint imposed as a disciplinary measure, or for convenience purposes. At the same time there was a general advocacy movement towards patient autonomy and a restraint-free environment, proposing alternative methods, and spearheaded by consumer groups such as National

Citizens Coalition for Nursing Home Reform (Castle and Mor 1998; Burton et al 1992b).

Most authors agree that cognitively impaired older persons are more dependent, less able to care for themselves and, therefore, at risk of falling and disturbing other residents and staff. Such factors place the person with dementia at an increased risk of being physically restrained. However, it is not clear to what extent restraint is used to protect the person, other residents or staff. As the person with dementia is unable to give their consent, or assent to such procedures, it is imperative for the protection of the rights of the person, as well as their health and safety, that physical restraint is used appropriately. This paper sets out to explore physical restraint use on people with dementia in long-term aged care.

## LITERATURE REVIEW

A review of research literature published in English between 1992 and 2003 is presented in this paper. Papers included or excluded in this review were chosen according to the following criteria:

### ***Inclusion criteria***

- Main focus on physical restraint use on people with dementia;
- Explicit research methodology was articulated within the paper;
- The research was based in long-term aged care.

### ***Exclusion criteria***

Papers excluded from the review were papers that meet the following criteria:

- Paper focused mainly on other forms of restraint (eg chemical restraint);
- Research did not focus on people with a diagnosis of dementia;
- Anecdotal and discussion papers, narrative reviews and papers with non-explicit methodology.

### ***Search strategy***

Three major databases, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Proquest and Medline were searched using the search terms 'dementia', 'physical restraint', 'cognitive', 'nursing home', 'long-term care', and 'nursing attitudes' within the time period of 1992-2003. A manual search of the reference list of the identified articles was also used to uncover further relevant articles.

The search found 42 papers related to dementia (cognitive impairment) and physical restraint in nursing homes or long-term care settings. Each paper was checked against the inclusion criteria and this resulted in 22 papers that are discussed in this paper.

## FINDINGS

Nurses, doctors, occupational therapists and researchers undertook the 22 studies. An interdisciplinary approach was adopted by 11 researchers (Capezuti et al 2002; Hantikainen and Kappeli, 2000; Karlsson et al 2000; Sullivan-Marx et al 1999a; Capezuti et al 1998; Capezuti et al 1996; Bradley et al 1995; Sundel et al 1994; Burton et al 1992a; Burton et al 1992b; Schnelle et al 1992); five papers were multidisciplinary (Middleton et al 1999; Ryden et al 1999; Sullivan-Marx et al 1999b; Cohen et al 1996; Werner et al 1994), and another six were undertaken by either doctors or nurses (Hantikainen 2001; Koch and Lyon 2001; Mayhew et al 1999; Hantikainen 1998; Hardin et al 1994; Miles and Irvine 1992).

The papers were published in a mixture of academic and professional journals. Seventeen studies were primarily quantitative and one of these included some qualitative data. The remainder used qualitative methods.

The papers were read and subsequently placed under the four dominant themes identified in the literature: relationship between restraint use and cognitive decline; falls/related injuries and associated mortality; reduction/removal/alternatives to use; and nurses' attitudes to restraints.

### **Relationship between restraint use and cognitive decline**

A limited number of studies considered the relationship between the use of restraint and the cognitive status of residents. Burton et al conducted two studies (1992a, 1992b). In their 1992a study they were able to establish an association between restraint use, the use of both restraints and neuroleptics, and cognitive decline: a finding significantly different from other studies, which identified cognitive impairment as a major predictor (Evans and Strumpf 1989). In their 1992b study, Burton et al also found that an inability to transfer from bed to chair, and the combination of difficulty with ADLs and severe cognitive impairment were significant predictors for restraint use. Similarly, Ryden et al (1999) highlighted the complexity of restraint use when examining aggressive behaviour in cognitively impaired residents. Ryden and colleagues found that residents, who were functionally dependent, cognitively impaired, and restrained, were more aggressive than non-restrained residents. Those residents on anti-psychotic medication exhibited a greater level of physical aggression than those who were not on such medication, and less physical aggression was noted in residents receiving antidepressant medication. Residents in secured units exhibited higher levels of physical aggression than those not secured, were more cognitively impaired, and tended to be on anti-psychotic medications. These three studies were unable to establish the direction of the effect nor fully examine the negative consequences of restraint.

## Falls/related injuries and associated mortality

A number of researchers examined the relationship between restraint reduction and injuries/death among nursing home residents. In 1996, 1998 and 2002 Capezuti et al undertook secondary analyses of data from a longitudinal study trial of moderately to severely cognitively impaired and functionally dependent residents. Capezuti et al (1996) found that non-confused ambulatory residents were rarely restrained while confused ambulatory residents were restrained. After controlling for the use of psychoactive medication, restraint use was not associated with lower fall risk among confused ambulatory residents. Despite strong evidence linking fall-risk and cognitive impairment the relationship was not linear. Confused residents with moderate functioning (ambulatory) had a greater risk of falling/injuries compared to the confused and non-ambulatory (most severely impaired) residents. The researchers did not demonstrate that restraint use in this confused ambulatory group of residents was associated with a lower risk of falls, recurrent falls or injuries.

Capezuti et al (1998) explored further the issue of restraint and injuries/death, but did not find a statistically significant association between removal of restraints and increased falls or injuries from falls. Approximately 25% of falls occurred on transfer of a resident from a bed, chair or toilet, and resulted in a minor injury. In older people such injuries had significant implications for morbidity and mortality. They also found that, although cognitive status contributes significantly to fall-risk, the impaired judgement of people with dementia is also a contributory factor. Ambulatory status and use of antidepressants were not associated with increased fall-risk, and restraint removal was associated with a lower fall rate. Capezuti et al (1998, 1996) failed to establish a causal link between restraint use and fall-risk.

In a later study Capezuti et al (2000) established that the use of bedrails did not reduce the likelihood of falls, serious injuries or recurrent falls. The researchers proposed that this could be attributed to the physical and cognitive impairment of residents over time, as well as nurses' awareness of falls, resulting in the use of preventative measures such as bedrails. However, bedrails add further challenges as they may lead to injuries and even to death (Capezuti et al 2002).

Miles and Irvine (1992) investigated the morbidity and mortality resulting from fall-related minor injury in older persons. A retrospective analysis of 122 deaths caused by vest and strap restraints found that the majority of the victims were older women (median age of 81) with dementia and most deaths (85%) occurred in nursing homes. Most of the deaths resulted from restraining residents in a chair or bed, and cognitively impaired residents were more likely to have been restrained and less likely to recognize the danger and negative consequence of removing the restraint.

Rather than definitive conclusions, the studies outlined offer directions to well-designed studies, causal links, and standard inquests providing finer detail, description of types of deaths or serious injuries caused directly by physical restraints, and evaluations of events where the restraint may have contributed to an injury or death. However, it appears that physical restraint use should not be used as a safety mechanism as there is no scientific evidence that physical restraints protect residents against injuries and in fact they may cause injuries.

## Reduction/removal/alternatives to use

Restraint reduction on cognitively impaired residents is particularly difficult. Researchers agree that cognitively impaired residents were viewed by nurses as a fall-risk and were most likely to be restrained (Mayhew et al 1999; Sullivan-Marx et al 1999a, 1999b). Age, health status, education, marital status, gender, ethnicity, former occupation and payment status, depression and occurrence of falls were not significantly associated with continued restraint use (Sullivan-Marx et al 1999a, 1999b; Mayhew et al 1999). Consistent with the findings of Middleton et al (1999), Mayhew et al found that an initial decrease in restraint reduction was accompanied by a higher level of nursing care/contact/assistance than that provided to non-restrained residents. Following the implementation of a restraint reduction program, the level of restraint use decreased over time.

Mayhew et al (1999) adopted a research-based approach to restraint reduction that involved a multidisciplinary team. Mayhew et al suggested using evidence-based education of staff and families, and encouraging staff to promote dignity and quality of life. Efforts to reduce or eliminate restraint use in nursing homes were found to be associated with existing government regulations, staff education and education with consultation from gerontological clinical nurse specialists (Sullivan 1999a, 1999b).

Werner et al (1994) demonstrated that the removal of physical restraints and implementation of care alternatives is a complex and costly process. Restraints were successfully removed in their study for over 90% of residents (n=63). Severely cognitively impaired residents required fewer care alternatives to physical restraint. Werner et al identified five different forms of care alternatives: environmental; nursing interventions; activities; physiological; and, psychosocial. They found a small number of residents required no restraints or alternative care provision. The most common alternatives to restraint use in rank order were: environmental (eg wheelchair adaptations and seating); nursing interventions (eg additional supervision and assistance); psychosocial (eg reality orientation); physiological (eg treatment of infection); and, activities (eg participation in structured activities). However, these findings must be viewed with caution, as it is not uncommon in aged care for environmental devices such as wheelchairs and chairs to be used to restrain older people.

Cohen et al (1996) and Koch and Lyon (2001) determined that, with the provision of alternative care, physical restraints could be safely and drastically reduced. Successful removal was grounded in staff education, commitment of staff, residents and families, and in alternative equipment. Cohen et al acknowledged that physical restraints were often used in the belief that they were for the safety of residents. However, they suggest physical restraints are not able either to guarantee against nor prevent serious injury. In a restraint-free environment, care plans became more individualised and led to increased communication and interaction between staff and residents. Information gained from family members and their cooperation assisted greatly in the removal of bedrails, and the development of a new and individualised care plan that focused on relaying issues of concern to management. Adequacy of the care plan was maintained through ongoing communication with the family and commitment from all in the partnership of care. Contrary to Werner et al (1994), Cohen et al (1996) and Koch and Lyon (2001) found most alternatives were inexpensive and additional staff were not required when physical restraint use was removed.

Koch and Lyon (2001) argued that success for a restraint-free environment was facilitated through the commitment of senior staff. However, in spite of the commitment to be restraint-free they found that over 65% of residents remained restrained in some way, mainly through the use of bedrails in response to the staff's perception that bedrails were necessary for the maintenance of residents' safety.

Schnell et al (1992) found that a simple management system, designed to improve staff adherence to a restraint-release government regulation, was effective in improving consistency in the provision of care. From an inappropriate baseline of restraint use for longer than two hours, restrained residents were released and repositioned every two hours. The management program made it impossible for staff to ignore the regulation and the documentation of release times on resident's charts by supervisory nurses supported the management system.

Education programs to improve staff awareness and knowledge of alternatives to physical restraint have been found to effectively change established work practices (Middleton et al 1999; Bradley et al 1995). However, further research is needed to empirically test well-developed programs and nurses need to have regular access to these programs if work practices are to change.

### **Nurses' attitudes**

Some studies considered the relationship between nurses' attitudes and restraint use. All researchers allowed for a previous history of concern about the use of physical restraints and the responsibilities confronting nurses when deciding to apply the restraint. Hardin et al (1994) showed moderately positive but ambivalent attitudes existed toward restraint use. Nurses were involved in all decisions

to restrain, but were happier when the decision was made in association with other health care professionals. Sundel et al (1994) administered a 16-item closed-ended questionnaire. They found restraint use in-service training assisted nurses to distinguish between bedrails as restraints and as enablers, and between their use as a convenience and a positive restraint for residents. However, even following in-service education over 50% of the nurses still believed there were no alternatives to bedrails as a restraint mechanism. It is not clear in these studies whether organisational policies influenced nurses' use of restraint.

Hantikainen (1998; 2001) questioned nurses caring for older people with physical frailties and/or moderate cognitive impairments. Rank-ordered reasons for restraint-use were protection and safety; preventing injury and harm to other residents; restlessness/aggressiveness; resistance to treatments; and confusion. Another reason for the application of restraint was as a sanction to control a situation perceived by nurses to be unacceptable behaviour, or a deliberate attempt to cause distress to the staff member. Nurses held differing views of restraint use and what it involves and exhibited both positive and conflicting attitudes toward its use. They likened the decision-making task of restraint use to walking a moral and ethical tightrope. Yet, often restraint decisions were largely based on nurses' rights and environmental considerations rather than the well-being of residents. As a way of absolving themselves from the responsibility of decision-making, staff believed that residents' behaviour would need to change before staff could limit restraint use.

Karlsson et al (2000) also found that it was unclear whether nurses were confronting the dilemma of ethics or merely absenting themselves from the decision-making process. They asked nursing staff to read a clinical vignette to measure nurses' reasoning in a hypothetical situation. The nurses found 'caring' to be a complicated task and requested more contextual detail before making a decision to apply restraint. Their decision to apply restraint was made from a disease perspective: for example, the resident had dementia and did not comprehend what was good for them. Removal of a restraint was closely linked with resident autonomy, or to reduce residents' suffering and to make them feel good. The nurses found the decision-making process was complicated and the majority stated they would change their decision under different circumstances.

Hantikainen and Kappeli (2000) also found resident safety was stated as a justifiable reason for restraint use. Most nurses agreed that there were both negative and positive aspects of restraint, and many saw physical restraint as a protection of staff members from liability. Restraint use was also seen as a legitimate means of controlling aggressive/disrupting behaviour and maintaining the peace and harmony of the environment for the well-being of all residents. Nurses were broadly in



agreement that the decision to apply restraint was one for the nurse handling the situation rather than an institutional policy. Because restraint was understood in a variety of ways, decisions were often based on 'routines, emotions and attitudes rather than empirical facts' (Hantikainen and Kappeli 2000, p.1200).

## METHODOLOGICAL ISSUES

Several methodological issues arise from the literature reviewed. Literature reviews in one-quarter of the studies were of a high quality and provided comprehensive background information (Hantikainen 2001; Hantikainen and Kappeli 2000; Karlsson et al 2000; Middleton et al 1999; Sullivan-Marx et al 1996b; Bradley et al 1995; Hardin et al 1994; Burton et al 1992b) and some others provided limited background information (Hantikainen 1998; Werner et al 1994; Schnelle et al 1992). References quoted in the studies surveyed ranged from nine (Koch and Lyon 2001; Sundel et al 1994) to 89 (Hantikainen 2001).

Sampling issues included a failure to calculate the number of subjects required to establish significant differences, if they did exist. The presence of power calculations would have enabled the reader to correctly identify if an effect was there (Polit and Hungler, 1999). Sample sizes in the studies ranged widely from 20-335 nurses and 63-633 residents. Although there is no simple formula for sample size in quantitative studies, it is acknowledged that the larger the better for representativeness of the total population, and that small samples create sampling error (Polit and Hungler 1999, p.289). Qualitative studies adopted a phenomenological approach with an appropriate sample size of 20 (Hantikainen 2001; Hantikainen and Kappeli 2000).

Sample settings involved long-term care facilities and the study populations included a mixture of residents, registered nurses (RNs), training staff and nursing assistants. Overall, resident subjects were people who were physically restrained. Most of the studies used physically restrained residents (eg Sullivan-Marx et al 1999a; Werner et al 1994; Schnelle et al 1992); another used both restrained and non-restrained residents (Capezuti et al 1996); and only one study used non-restrained residents (Sullivan-Marx et al 1999b). Information on the characteristics of the sample varied, with some studies providing a detailed socio-demographic profile (eg Hardin et al 1994; Hantikainen, 1998; Capezuti et al 1998, 2002), while others provided limited detail, making comparisons between studies difficult.

Very few studies included an explicit statement regarding inclusion/exclusion criteria (eg Ryden et al 1999; Burton et al 1992a); others provided few details (eg Capezuti et al 1996); and some others failed to provide any details (eg Bradley et al 1995). Age range was not a criterion for inclusion in any of the study populations

and the differential effect of age could not always be considered.

Sampling procedures were also an issue of concern. Generally, the researchers failed to mention sampling methods and strategy. This knowledge is important because the type and appropriateness of the strategy 'are crucial elements in the analysis and interpretation of data' (Haber 1998 p.271). It would appear that the majority chose the relative ease of non-probability sampling. Purposive sampling was used by Hantikainen and Kappeli (2000) and Hantikainen (2001). Hantikainen (1998) used convenience sampling, and Cohen et al (1996) used random sampling. In the absence of a stated sampling strategy, it is difficult to evaluate the degree of possible selection bias and the disadvantages of individual sampling methods that could affect the rigour of the studies.

Very few researchers mentioned the study design (eg Capezuti et al 2002; Sullivan-Marx 1999a, 1999b; Capezuti et al 1996, Sundel et al 1994; Schnelle et al 1992; Burton et al 1992b). Three of the studies used a one-group pre-test post-test design (Sullivan-Marx 1999a, 1999b; Sundel et al 1994); one used a cross-over design (a multiple base line-delayed intervention) (Schnelle et al 1992); three studies were longitudinal (analysing secondary data) (Capezuti et al 2002 1996; Burton et al 1992b); and one was a pilot study (Sullivan-Marx 1999b). All of these designs appear to be appropriate for the situations described.

Psychometric tools used in the studies had been well-validated and details of their reliability and validity were included. Questionnaires were either created by the author (eg Karlsson et al 2000), or developed by others and replicated (eg Middleton et al 1999). Interview schedules were both semi-structured and unstructured (eg Hantikainen 2001; Karlsson et al 2000). In one study data were extracted from government databases (Miles and Irvine 1992), and another used patient charts and institutional reports (Werner et al 1994). Trustworthiness for qualitative data was complete and demonstrated by the authors (Karlsson et al 2000; Hantikainen 2001).

The majority of the researchers discussed issues of reliability and validity, but only five of the studies reviewed addressed study limitations. Identified limitations of study designs included: causal effects (Capezuti et al 1998, 1996); sample size (Sullivan-Marx 1999b); participant bias created by a focus on residents who are consistently aggressive (Werner et al 1994); and staffing factors limiting whether staff would participate. Factors identified were difficulties with participant anonymity, unavailability of staff at designated times when research was being conducted, and unwillingness to participate in longitudinal studies (Bradley et al 1995).

The methodological issues addressed above raise concerns of generalisability and rigour in the majority of the studies. Whilst acknowledging study limitations, the

authors recommend that the reader proceed with caution when interpreting the findings of these studies, and that future research requires larger samples to ensure representativeness. Studies ranged from descriptive/survey/phenomenological to longitudinal studies making comparison of data difficult. Causal modelling techniques were not used in the studies and the non-experimental designs did not permit researchers to manipulate the independent variable(s), or to establish a cause/relationship effect. However, this might be related to the ethics of manipulating restraint as an intervention, given the concerns with its use.

## RECOMMENDATIONS FOR PRACTICE

This literature review raises questions about the use of physical restraints on people with dementia. Although it may be premature to make specific practice recommendations, several suggestions that may be beneficial to nursing practice can be derived from this literature. However, the authors are mindful that this review has been limited by an exploration of three major databases and that there may be research that has not been uncovered or reviewed in this appraisal. Thus, the reader is cautioned to be mindful that the following recommendations are based only on the literature reviewed for this paper.

The papers reviewed are inconclusive in their findings and it appears that in spite of nurses' desire to use physical restraint as a form of protection for residents there is no scientific evidence that physical restraint actually protects residents against injuries. It appears in fact that physical restraint may actually cause injury (Capezuti et al 2002, 1998, 1996, 1998; Miles and Irvine 1992). Thus, to avoid the potential for injury and resident discomfort an adequate assessment of the resident and their environment must be taken into account prior to physical restraint being considered. To assist with this, employers need to supply ongoing education in restraint use, including creative alternatives. Such education should encourage nurses to consider different behaviour patterns of residents to identify ways to reduce and prevent resident agitation, rather than to act upon it once it occurs. Nurses are also encouraged to reflect on whether their current practice is evidence-based and to work towards a restraint-free environment.

One of the challenges for aged care is the growing number of unlicensed care workers (ie assistants in nursing and personal carers) (Richardson and Martin 2004) in the industry whose limited health education encourages a focus on reaction rather than assessment and evaluation of care as a means of preventing resident agitation. Although all levels of staff should be involved in restraint education, it is ultimately the RN who must be accountable for both assessment and evaluation of restraint use. If physical restraint use is deemed appropriate then the resident's safety must be placed at the forefront of this decision so that restraint is not used

for staff convenience, is not left in place and is removed as soon as practical. Thus, the RN must ensure that institutional policies and state laws on the use of restraint are adhered to prevent inappropriate restraint use.

Another challenge that affects restraint use is the shortage of RNs (Richardson and Martin 2004). At times shifts will need to be worked by agency staff, whose lack of knowledge about residents may influence both the frequency and accuracy of restraint assessments. At times, such as when there is a shortage of staff on a shift, physical restraint may be used as a staff convenience to prevent, for example, residents' wandering or physical aggression. Ultimately, in order to dramatically remove or curb the practice of using restraint for staff convenience the concentrated assistance of federal and state governments and peak geriatric and dementia organisations may be required.

This review of literature indicates that further research on physical restraint use is important and should continue, and in particular, attention needs to be given to alternatives to the routine practice of restraint (Best Practice 2002). At the same time, there is a need to encourage a focus on issues of relative paucity in the literature, such as the efficacy of restraints (including bedrails) versus interventions; alternative to uses involving policy, institutional guidelines and legislation; and the precise nature and direction of changes in attitudes and practices of nurses over time.

Finally, this review of literature allows the opportunity for discussion and illustration of the use of restraint and may serve to strengthen nurses' understanding of the use of physical restraint in people with dementia. Nurses are in an ideal position to promote changes in practice and to ensure that such practice is evidence-based.

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