

J. P. H. Hamers
A. R. Huizing

Why do we use physical restraints in the elderly?

Warum fixieren wir ältere Menschen?

■ **Summary** The use of physical restraints in the elderly is a common practice in many countries. This paper summarizes the current knowledge on the use of restraints in home care, hospitals and nursing homes. Between 1999–2004 the reported prevalence numbers range from 41–64% in nursing homes and 33–68% in hospitals; numbers of restraint use in home care are unknown. Bed rails and belts have been reported

as the most frequently used restraints in bed; chairs with a table and belts are the most frequently reported restraints in a chair. It is evident that physical restraints in most cases are used as safety measures; the main reason is the prevention of falls. In the hospital setting, the safe use of medical devices is also an important reason for restraint use. Predictors for the use of physical restraints are poor mobility, impaired cognitive status and high dependency of the elderly patient and the risk of falls in the nurses' opinion. Furthermore, there are indications that restraint use is related to organizational characteristics. Finally, many adverse effects of restraint use have been reported in the literature, like falls, pressure sores, depression, aggression, and death. Because of the adverse effects of restraints and the growing evidence that physical restraints are no adequate measure for the prevention of falls, measures for the reduction of physical restraints are discussed and recommendations are made for future research.

■ **Key words** Physical restraints – elderly – nursing homes – hospital – home care

■ **Zusammenfassung** Die Anwendung von Fixierung ist in vielen Ländern üblich. Dieser Artikel

fasst unsere Kenntnis über die Anwendung von Fixierung in der häuslichen Pflege im Krankenhaus und im Pflegeheim zusammen. Zwischen 1999–2004 betrug die gemeldete Prävalenz 41–64% in Pflegeheimen und 33–68% in Krankenhäusern; die Prävalenz in der häuslichen Pflege ist unbekannt. Bettgitter und Fixierungsgurte werden am meisten angewendet im Bett; Stühle mit einem Brett und Fixierungsgurte werden am meisten angewendet im Stuhl. Es ist evident, dass eine Fixierung meistens als Sicherheitsmaßnahme angewendet wird; der Hauptgrund ist die Prävention von Stürzen. Die sichere Anwendung von medizinischen Interventionen ist ein wichtiger Grund zum Gebrauch der Fixierung im Krankenhaus. Eingeschränkte Mobilität, Verringerung der kognitiven Funktion, große Hilfsbedürftigkeit des älteren Patienten, und das Sturzrisiko nach der Meinung des Pflegepersonals, sind Faktoren die die Anwendung von Fixierung voraussagen. Daneben gibt es Hinweise dass die Anwendung von Fixierung zusammenhängt mit organisatorischen Abläufen. Schließlich sind viele negative Konsequenzen von Fixierungsmaßnahmen in der wissenschaftlichen Literatur beschrieben wie Stürze, Dekubitus, Depressionen, Aggression und Tod. Wegen dieser

Received: 1 December 2004
Accepted: 10 January 2005

PhD, RN, FEANS J. P. H. Hamers (✉)
MSc, RN A. R. Huizing
Universiteit Maastricht
Department of Health Care Studies
Section of Nursing Science
PO Box 616
6200 MD Maastricht, The Netherlands
Tel.: +31 43/3881549
Fax: +31 43/3881462
E-Mail: jph.hamers@zw.unimaas.nl

negativen Konsequenzen und dem verstärkten Beweis, dass eine Fixierung keine angemessene Intervention ist für die Prävention von

Stürzen, werden Maßnahmen zur Reduzierung von Fixierung besprochen und Empfehlungen gemacht für zukünftige Forschung.

■ **Schlüsselwörter** Fixierung – Ältere – Pflegeheim – Krankenhaus – Häusliche Pflege

Introduction

Physical restraint can be defined as any limitation on an individual's freedom of movement using devices such as a geriatric chair with table, belts tied to a chair or a bed and bedrails [31]. The use of physical restraints in elderly during admission to acute and residential care facilities is a common practice in many countries like Australia, Ireland, Korea, the Netherlands, Sweden and the USA [7, 17, 26, 29, 31, 35, 42, 48]. There are also indications that restraints are used in home care [1, 33]; however systematic research on the prevalence of restraint use in home care is lacking.

The use of physical restraint has received increasingly more attention from researchers, institutions and governments in the last few years. Questions have been raised about the reasons and effectiveness of the use of physical restraint, and the consequences for patients. In a qualitative study by Gallinagh and colleagues [25], the majority of elderly patients who experienced restraints in an acute care hospital reported negative feelings about physical restraints, like discomfort and indifference. The question is: 'why do we use physical restraints in the elderly?' The relevance of this question is further stressed by the knowledge that the use of physical restraints may increase the risk of death, falls and serious injury [21, 45].

The purpose of this paper is to answer this question by summarizing the current knowledge on the use of restraints in the elderly. Therefore, the following research questions will be successively answered:

- What is the prevalence of restraint use in the elderly in home care, hospital and nursing home?
- Which factors are related to the use of physical restraints in the elderly?
- What are the consequences of the use of physical restraints in the elderly?

Finally, based on the results of the review of the literature we will discuss possibilities for the reduction of restraints in clinical practice.

Methods

To answer the research questions we reviewed relevant publications on the use of restraints in the elderly from 1990 until 2004, using Medline, CINAHL and PubMed using restraint(s), physical restraint(s)

and mechanical restraint(s), as key words. The search was limited to nursing homes, hospitals, home care and elderly (and synonyms of these words). Furthermore, additional references were collected using reference lists.

Results

■ Prevalence

The prevalence of restraint use reported in the literature, ranges between 15% [50] and 66% [59] in nursing homes and between 8% [43] and 68% [26] in hospital settings. Looking at the studies published most recently (from 1999 until 2004), the prevalence numbers range from 41–64% [11, 48] in nursing homes and 33–68% in hospitals [26, 55]. As far as we know, prevalence values of restraint use in home care situations are not available. However, a study by Bakker et al. [1] in the Netherlands indicated that bedrails and belts are commonly used in home care. This finding has recently been confirmed in a qualitative study [33].

Although the use of various modalities of physical restraints has been reported in the literature, bilateral and unilateral bedrails and belts have been reported as the most used restraints in bed. Chairs with a table and belts have been reported as the most frequently used restraints in a chair [e.g., 21, 26, 29]. Other measures reported are, for example, tipping chairs, blankets or sheets, vests, wrist and elbow restraints, and manipulation of furniture [e.g., 17, 26, 41].

A study in Dutch nursing homes showed that 90% of the restrained elderly patients have been restrained for at least 3 months and that restraints were used as a routine measure [29]. In other countries, especially the use of bed rails has been reported as a routine measure that translates to safe patient care [32]. These findings raise the question whether the use of restraints is irreversible and safe.

■ Factors relating to the use of physical restraints

Factors that are related to the use of restraints can be classified as reasons for the use of restraints, characteristics of the elderly, characteristics of health care organizations, nurses' attitudes and legislation. They will be discussed in succession.

■ Reasons for the use of restraints

Without doubt, the main reason to use physical restraints in health care is the prevention of falls [e.g., 7, 29, 61]. Furthermore, it has been found that patients' falls-risk in the opinion of the nurse is a predictor of restraint use [29, 56].

In the hospital setting the protection of medical devices or the safe use of medical devices is also an important reason for restraint use [17, 18]. Other reasons are the prevention of wandering, the control of behaviors like aggression and restlessness, and the promotion of positional support [7, 17, 26, 31, 51].

■ Characteristics of the elderly

In the literature [e.g., 17, 26, 29, 35, 51, 56] numerous characteristics of elderly patients have been related to the use of physical restraints, like gender, age, mobility, ADL performance, medical diagnoses, medical devices, psychosocial performance, care dependency, cognitive status, incidence of falls, psychoactive drug use and continence. Restrained elderly patients sometimes differed on these characteristics compared to unrestrained elderly. To illustrate, Choi & Song [17] found differences between the type of medical device and the use of restraints in the hospital setting (ICU); restraints were used more often in patients with a nasogastric tube. However, these results often are not replicated in other studies. Nevertheless, there is growing evidence that poor mobility, high dependency and impaired cognitive status are predictors for the use of physical restraints [6, 7, 26, 29, 56].

■ Characteristics of health care organizations

With regard to the relationship between organizational characteristics and the use of physical restraints, research findings are less consistent. It has been suggested that there is a relation between staff mix and the use of restraints; residents who received care from more experienced nurses had a lower risk to be restrained [4, 13, 56]. Furthermore, Bourbonniere et al. [4] found an increased likelihood of restraint use on weekend days. Finally, Castle and colleagues [14] found that the number of FTE registered nurses (RN) per resident and occupancy rate were predictors for restraint use; nursing homes with high FTE RN's per resident and those with average occupancy were less likely to use restraints.

■ Nurses' attitudes

Different researchers [e.g., 36, 60] assume that nurses' attitudes have an influence on the use of physical restraints in clinical practice. Werner and Mendelsson [62] concluded in a study among nurses working in an elder care hospital in Israel that attitudes were associated with the intention of nurses to use physical restraints. However, this finding was not confirmed in an Australian study [42]; nurses' attitudes did not predict their self-reported use of restraints.

In a Swedish study [36] on 33 nursing home wards and 12 group living units for older people with dementia, it was found that the nursing staff attitudes on the use of physical restraints were strongly associated with their use in practice. Nurses working on 'restraint-free' wards were having more negative attitudes (were least prone to use restraints) towards restraint use than nurses working on 'high-use' wards.

■ Legislation

It is evident that legislation has a clear impact on the use of restraints in clinical practice. In some countries, like Denmark and Scotland, the use of restraints in the elderly is prohibited. As a result, these measures are hardly used in these countries. Furthermore, it is known from the USA that the introduction of new legislation (the Omnibus Budget Reconciliation Act (OBRA)) in 1987 resulted in a strong decrease in the use of physical restraints to prevent falls in nursing homes [e.g., 5, 13, 15, 20].

Recently, in the USA, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) introduced standards for long-term care which: prohibit the use of restraints for purpose of discipline, staff convenience, or to prevent wandering; prohibit the use of restraints except to treat medical symptoms; and allow residents to refuse restraints [19]. According to these standards (JCAHO standards for restraint and seclusion, as well as FDA alerts and guidelines based on the OBRA'87 regulation for nursing homes [53]), restraints are used only if alternatives are ineffective or if absolutely required to ensure the safety of the resident, other residents or staff [19]. Furthermore, these standards redefined restrictive bedrails use as restraints and are expected to lead to further decreases in bedrail use [7]. However, new prevalence figures are not yet available.

■ Consequences of the use of restraints

The use of physical restraints has negative physical, psychological and social consequences for the elderly. Both prolonged and short period of physical restraint use had linked to poor physical, psychological and social functioning [6, 15, 29, 45]. In the literature [e.g., 7, 15, 18] in addition to mortality, many physical and psychological consequences have been reported like falls, pressure sores, loss of muscle strength and endurance, joint contractures, problems with balance and coordination, incontinence, demoralization, humiliation feelings of low self worth, depression, aggression and impaired social functioning. Evans and colleagues [21] conducted a systematic review on patient injury and physical restraint devices. The review highlighted the potential danger of using physical restraint in acute and residential health care facilities. The use of physical restraints, especially the use of vest restraints and bedrails, may increase the risk of death, serious injury and increased duration of hospitalization. However, the magnitude of the problem remains unclear [21]. Although physical restraints often are used as a measure to prevent falls, Kron et al. [38] found that the use of trunk restraints is a predictor of falls. Some studies investigated the experiences of restrained elderly. Minnick et al. [44] concluded in a qualitative study that most of the patients ($n=15$) in an ICU did not remember great distress specifically related to the use of restraints. However, in a qualitative study by Gallinagh and colleagues [25] among 17 elderly patients who experienced restraints in an acute care hospital, the majority reported negative feelings about physical restraints, like discomfort and indifference. These findings are confirmed in a Dutch 'experiment' [29], in which four caregivers were voluntarily restrained for 24 hours. These caregivers reported very unpleasant experiences, like the complete absence of privacy, freedom of movement and independence.

Discussion

Physical restraints are still highly prevalent in health care settings in many countries. Between 1999 and 2004 reported prevalence numbers range from 41–64% in nursing homes and 33–68% in hospitals [7, 18, 26, 48, 55]. The variance in the prevalence numbers can be explained by the definition of physical restraints used by different researchers; in some studies, bedrails were excluded as a measure of physical restraints. Furthermore, different data collection methods (observation versus questionnaires) and different sample sizes undoubtedly add to the

level of variance. Prevalence numbers of restraint use in home care are unknown and as a result, future research in home care is strongly recommended. In nursing homes and hospitals the most used restraints are belts (bed and chair), table (chair), and bedrails (bed) [e.g., 21, 26, 29].

It is evident that physical restraints in most cases are used as safety measures [e.g., 7, 29, 39, 61]. In the hospital setting, the protection of medical devices and the safe use of medical devices, seem to be 'acute care-specific reasons'. However, overall (in acute and long term care) the main reason to use physical restraints is the prevention of falls and falls-related injuries. Clearly related to the main reason are the predictors for the use of restraints: the patient's poor mobility, impaired cognitive status and high dependency [6, 7, 26, 29, 56], and the risk of falls in the nurses' opinion [29, 56].

The last predictor suggests a key role of nurses in decision-making regarding the use of restraints, which has partly been confirmed in studies on nurses' attitudes and decision-making [30, 39, 40, 54]. It is therefore remarkable that, in a recent study on attitudes among 83 registered nurses who use physical restraints, only 18% of the nurses agreed with the proposition 'when I'm old and admitted to a nursing home, hopefully the nurse will decide to apply physical restraints when he/she thinks that this is appropriate' (Hamers and Huizing, in preparation). Knowing that decision-making is mainly based on individual's experiences [39] and often is ambiguous [27, 28], the development of evidence-based guidelines to support decision-making regarding the (non)-use of physical restraints is highly recommended. These guidelines especially should focus on elderly 'at risk' for restraint use (e.g., elderly with poor mobility and impaired cognitive status).

Furthermore, there are indications that the use of restraints is related to organizational characteristics, like the number of nursing staff [4, 14, 56]. However, more research is needed to investigate the influence of organizational characteristics on physical restraints.

Finally, it should be stressed that the use of physical restraints in the elderly has adverse effects and negative consequences [e.g., 6, 7, 15, 45]. First, it is known that the use of restraints may increase the risk of death and serious injuries. Second, restraints often lead to a lot of negative physical and psychological consequences. It is remarkable that among reported negative consequences are 'falls' and 'problems with balance and coordination' [e.g., 7, 38]. Knowing that most restraints are used to prevent falls, a vicious circle has been created. Therefore it is questionable whether the use of physical restraint is an adequate measure to prevent falls.

There is growing evidence that reducing the number of physical restraints does not lead to an increased number of falls or fall-related injuries [8, 9, 15, 22, 23, 48]. This holds also true for the use of bedrails [10, 11, 32]. Knowing that the use of physical restraints has been shown to be ineffective and sometimes even hazardous, the question is how to reduce the use of restraints?

■ Reducing physical restraint use

Reducing the use of physical restraint in health care is a complex process. According to Strumpf and colleagues [53] a 'paradigm shift' in clinical practice regarding the interpretation and response to behavior is necessary. Change in this standard of practice depends on breaking established myths and assumptions on the use of restraints [3]. A philosophy of an individualized care approach for frail elders could be the key to understanding older adults and to providing restraint-free care [53]. From this point of view, the use of restraints symbolizes a poor quality of care because of failure to address real needs of the person [53].

To make the transition to restraint-free care, staff education on the use of restraints, consultation and alternative interventions should be offered [e.g., 7, 22, 37, 48, 53]. For instance, consultation by an Advanced Practice Nurse (APN) has been found to be important for changing practice and maintain change in nursing homes [49]. Several studies [11, 22, 46, 52, 57] demonstrated that restraint-reduction programs resulted in a decrease in the number of restraints in nursing homes in the USA. Evans and

colleagues [22] showed, for example, a decrease in restraint use without increased falls, falls-related injuries, and the use of psychoactive drugs. Currently, comparable studies on the effects of education and consultation by specialized nurses are ongoing in the Netherlands [34] and Germany (C. Becker, personal communication, July 2004). The Dutch study employs a randomized clinical trial (400 elderly, 15 nursing home units) to examine the effect of an education program for nurses and a nurse specialist on the use of physical restraints in cognitively impaired nursing home residents.

Measures for falls prevention play an important role in restraint reduction programs. With regard to prevention of falls, numerous interventions have been suggested in the literature [e.g., 2, 10, 16, 24, 32, 58], like floor mats, hip protectors, position alarms, motion devices, anti-slip mats, height adjustable beds, bed next to wall and multi-factorial falls risk assessment and management programs. However, as Capezuti [7] indicated, more research on the effects of alternative interventions for physical restraints is needed.

Finally, legislation seems an important measure in the reduction of restraints. When law prohibits the use of physical restraint to prevent falls, the prevalence of restraints will decrease. As already mentioned, this was demonstrated in the USA with the introduction of OBRA in 1987 [e.g., 14, 15]. However, more than legislation is necessary to ensure good patient care [40]. The challenge of clinicians and researchers still remains to find the ideal mix of interventions to expel the use of physical restraints from clinical practice.

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