

## Attitudes of Dutch, German and Swiss nursing staff towards physical restraint use in nursing home residents, a cross-sectional study

Jan P.H. Hamers<sup>a,\*</sup>, Gabriele Meyer<sup>b</sup>, Sascha Köpke<sup>c</sup>,  
Ruth Lindenmann<sup>d</sup>, Rald Groven<sup>a</sup>, Anna R. Huizing<sup>a</sup>

<sup>a</sup>Maastricht University, The Netherlands

<sup>b</sup>University of Bremen, Germany

<sup>c</sup>University of Hamburg, Germany

<sup>d</sup>Heime und Alterssiedlungen Stadt Luzern, Switzerland

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### Abstract

**Objective:** To investigate the attitudes of nursing staff towards restraint measures and restraint use in nursing home residents, and to investigate if these attitudes are influenced by country of residence and individual characteristics of nursing staff.

**Methods:** A questionnaire on attitudes regarding restraints (subscales: reasons, consequences, and appropriateness of restraint use) and opinions regarding the restrictiveness of restraint measures and discomfort in using them was distributed to a convenience sample of nursing staff in The Netherlands ( $n = 166$ ), Germany ( $n = 258$ ), and Switzerland ( $n = 184$ ).

**Results:** In general, nursing staff held rather neutral opinions regarding the use of physical restraints, but assessed the use of restraints as an appropriate measure in their clinical practice. Gender and age were not related to attitudes of nursing staff, but we did find some differences in attitudes between nursing staff from the different countries. Dutch nursing staff were most positive regarding the reasons of restraint use ( $p < 0.01$ ), but were less positive than German and Swiss nursing staff regarding the appropriateness of restraint use ( $p < 0.01$ ). Swiss nursing staff were less positive than German nursing staff regarding the appropriateness of restraint use ( $p < 0.01$ ). Nursing staff with longer clinical experience showed a more negative attitude towards restraint use than nursing staff with less experience ( $p < 0.05$ ) and charge nurses had the least positive attitude towards restraint use ( $p < 0.05$ ).

Opinions regarding restraint measures differed between the three countries. The use of bilateral bedrails was considered as a moderate restrictive measure; the use of belts was rated as the most restrictive measure and nursing staff expressed pronounced discomfort on the use of these measures.

**Conclusions:** Nursing staff from three European countries have different attitudes and opinions regarding the use of physical restraints. The results underline the importance of more tailored, culturally sensitive interventions to reduce physical restraints in nursing homes.

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**Keywords:** Physical restraints; Nursing homes; Attitudes; Opinions; International comparison

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\* Corresponding author at: Maastricht University, Faculty of Health, Medicine and Life Sciences, School for Public Health and Primary Care, Department of Health Care and Nursing Science, PO Box 616, 6200 MD Maastricht, The Netherlands. Tel.: +31 433881549.

E-mail address: [jph.hamers@zw.unimaas.nl](mailto:jph.hamers@zw.unimaas.nl) (J.P.H. Hamers).

### What is already known about this topic?

- The use of physical restraints in nursing homes is common practice in many countries.
- The use of physical restraints in most cases is an inadequate safety measure and has many adverse effects.
- Attempts to reduce the number of restraints, using educational interventions, have shown weak or no effects.

### What this paper adds?

- Nursing staff from three European countries have different attitudes and opinions regarding the use of physical restraints.
- In general, nursing staff consider the use of physical restraints in their own clinical practice as appropriate.
- The most applied measures, bilateral bedrails, are viewed as a moderate restrictive measure and nursing staff report little discomfort in using them.

## 1. Introduction

The use of physical restraints still is common practice in the nursing home care of older people with dementia in many countries. Physical restraints can be defined as any limitation in an individual's freedom of movement (Hantikainen, 1998). Examples of restraint measures are the use of (all types of) bilateral bedrails, belts and chairs with a table. The prevalence of restraint use in nursing homes reported in the literature ranges from 15 to 66% (Hamers and Huizing, 2005a).

In most cases physical restraints are used as safety measures; the main reason is the prevention of falls (e.g., Capezuti, 2004; Hamers et al., 2004; Werner, 2002). The use of physical restraints is associated with many adverse effects, like pressure sores, depression and death (e.g., Capezuti, 2004; Castle and Mor, 1998; Miles and Irvine, 1992) and there is growing evidence that physical restraints are no adequate measure for the prevention of falls (Capezuti et al., 1998, 2002; Neufeld et al., 1999). Several attempts have been made to reduce the number of restraints in clinical practice (Becker et al., 2007; Capezuti et al., 2007; Evans et al., 1997; Huizing et al., 2006; Testad et al., 2005). Most studies used educational approaches, aimed to improve nursing staff knowledge and confidence to avoid physical restraints and to use alternative measures (Evans et al., 1997; Huizing et al., 2006, 2008; Testad et al., 2005; Wagner et al., 2007). All studies delivered intensive training sessions and introduced a nurse specialist as a consultant. However, the success rate of these interventions in different countries has been variable; a successful educational intervention in the USA (Evans et al., 1997) proved to be ineffective in The Netherlands (Huizing et al., 2006, 2008).

It is unclear if these contradictory results can be explained by cultural differences and differences in health care systems or educational level of nursing staff in nursing homes between the countries. There are indications that the success of the educational intervention in the USA has also

been supported by changes in regulations (OBRA'87) covering the use of restraints (Dunn, 2001; Marek et al., 1996).

The reduction of physical restraints in clinical practice remains a difficult task and probably should be regionally tailored, taking into account differences in characteristics of both residents (e.g., levels of care dependency) and nursing staff (e.g., educational levels). Knowing that nursing staff play a key role in the decision to use physical restraints (e.g., Hamers et al., 2004; Koch et al., 2007; Wagner et al., 2007), an important question is how attitudes and opinions are influencing the decision-making process.

Studies on attitudes of restraint use among nursing staff are rare, demonstrating differing results. In an Australian study (Meyers et al., 2001) it was found that attitudes of nursing staff did not predict their self-reported use of restraints. However, Karlsson et al. (2001) reported that the attitudes of Swedish nursing staff towards the use of physical restraints were strongly connected towards their use in practice. Nursing staff working on 'restraint-free' wards had more negative attitudes (were least prone to use restraints) towards restraint use than nursing staff working on 'high-use' wards. Finally, other researchers (Hamers et al., 2004; Koch et al., 2007) found that a large proportion of nursing staff often do not classify the use of bedrails as a restraint measure, indicating that nursing staff do have different opinions regarding the definition of physical restraints. Undoubtedly, these opinions will affect decision-making regarding the use of physical restraints in clinical practice.

For improvement of interventions aimed to reduce restraints, more insight into the attitudes and opinions of nursing staff regarding restraint measures is needed and it remains important to investigate if nursing staff differs across countries.

Therefore, the aim of the present study is to explore attitudes of nursing staff regarding restraint measures and restraint use in nursing home residents, and to investigate if attitudes are influenced by country of residence and individual characteristics of nursing staff. Four research questions have been formulated:

1. What are the attitudes of nursing staff regarding the use of physical restraints in nursing homes?
2. What are the opinions of nursing staff about the restrictiveness of physical restraint measures and discomfort in using these measures?
3. Do attitudes and opinions differ between nursing staff from different countries?
4. Are characteristics of nursing staff associated with their attitudes regarding the use of physical restraints?

## 2. Methods

### 2.1. Design and sample

We conducted a cross-sectional study, including a convenience sample of nursing staff employed in (psycho)ger-

iatric nursing homes in The Netherlands (cities of Maastricht and Heerlen), Germany (cities of Bremen and Hamburg) and Switzerland (city of Luzern). On each site a minimum of 150 nursing staff members were invited to participate. Nursing staff were defined as charge nurses, registered nurses, practical nurses, and nurse aides (cf. Simoens et al., 2005).

Although the three countries in this study at first sight seem rather comparable, the characteristics of nursing homes, staff, the national policy regarding nursing home care (e.g., Carpenter et al., 2004; Ribbe et al., 1997), and the prevalence of restraint use are different (e.g., Hamers et al., 2004; Meyer and Köpke, 2007; Lindenmann, 2006). Several studies suggest that comparable interventions on quality of care improvement are differently effective throughout European countries (Meesterberends et al., 2007; Tannen et al., 2006). This has been shown for approaches on restraint reduction too (Becker et al., 2007; Huizing et al., 2008).

## 2.2. Data collection

Characteristics of nursing staff were assessed including age, gender, position, and years of clinical experience. Positions have been rated according to the terminology used in the different countries. For country comparison five categories were used: charge nurses, registered nurses, practical nurses, nurse aides (cf. Simoens et al., 2005) and others.

We delivered the Maastricht Attitude Questionnaire (MAQ) on restraint use (Hamers and Huizing, 2005b; Hamers et al., 2007). It has been translated from Dutch into German (backward–forward procedure) and pre-tested with Swiss nursing home staff (Lindenmann, 2006).

The first part of the MAQ contains 22 items of three sub-scales: reasons for restraint use (8 items,  $\alpha = 0.81$ ), consequences of restraint use for the resident (10 items,  $\alpha = 0.73$ ), and appropriateness of restraint use (4 items,  $\alpha = 0.65$ ) (Lindenmann, 2006; Hamers et al., 2007). Examples of statements are: ‘The use of physical restraints prevents serious injuries in residents’ or ‘Residents will fall, if no physical restraints are in place’ (reason subscale); ‘Physical restraint use has a negative influence on the resident’s quality of life’ or ‘Residents experience the application of physical restraints as a punishment’ (consequences subscale); or ‘At my ward, physical restraints are applied to often’ or ‘Physical restraints are used too quickly’ (appropriateness subscale). The answers are to be rated on a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree). The total MAQ score is calculated by adding up the scores of the 22 items and dividing the score by the total number of items. The total MAQ score ranges from 1 to 5. The internal consistency of the 22 items of the MAQ is high; Chronbach’s  $\alpha$  ranges from 0.83 to 0.86 (Hamers and Huizing, 2005b; Lindenmann, 2006; Hamers et al., 2007). In the present study, Chronbach’s  $\alpha$  for the 22 items was 0.81, and for the sub-scales reason, consequences and appropriateness, 0.77, 0.71 and 0.58, respectively.

The second part of the MAQ contains 14 items on opinions regarding the effect of restraint measures. Nursing staff are asked to rate on a 3-point scale the restrictiveness for residents (not restrictive, moderate restrictive, very restrictive) and the extent of discomfort (not discomforting, moderate discomforting, very discomforting) they do experience in using these measures. An overview of the measures included can be found in Tables 3 and 4.

## 2.3. Procedure

Nursing homes that have not been involved in former research on restraint reduction interventions, were approached via the nursing home director. After approval (all directors replied positively), nurses were invited to participate in this study on a voluntary basis. The questionnaires were handed out by the researcher on nursing home wards and the nurses were asked to fill in the questionnaires during sessions in presence of the researcher. It was emphasized that questionnaires should be filled in on an individual level and that there were no right or wrong answers. Data-entry was conducted on the different sites and the data-files were sent to Maastricht University for analysis.

## 2.4. Ethical considerations

The participation of the nurses in this study was on a voluntary and anonymous basis. The return of a completed questionnaire was taken as consent to participate. In Switzerland approval for the study was obtained from the Ethical committee of the Kanton Luzern. Approval of the study from the ethical committee was not necessary in The Netherlands and Germany.

## 2.5. Analyses

Descriptive statistics were computed for the characteristics of the nursing staff and the scores on the questionnaires regarding their opinions. To investigate the effects of characteristics of nursing staff on the MAQ total and the MAQ sub-scales, one-way ANOVAs were conducted. To determine differences in opinions of German, Swiss and Dutch nursing staff we conducted one-way ANOVAs, using Tukey’s test for post hoc analyses. Because multiple testing will lead to increases in type I error rates, a Bonferroni type adjustment was made.

## 3. Results

### 3.1. Sample

The sample consisted of 608 respondents; 166 Dutch, 184 Swiss and 258 German nursing staff. The majority were women (81%,  $n = 490$ ); mean age was 41.5 (S.D. = 12.1)

Table 1  
Characteristics of the sample

	The Netherlands	Germany	Switzerland	Total sample	<i>p</i> -Value
Mean age (S.D.)	40.2 (10.9)	44.0 (11.4)	39.3 (13.3)	41.5 (12.1)	<0.001
Gender					<0.05
Male	28 (17)	40 (16)	44 (24)	112 (18)	
Female	138 (83)	212 (82)	140 (76)	490 (81)	
Experience					<0.001
0–3 years	17 (10)	29 (11)	41 (22)	87 (14)	
4–10 years	44 (27)	79 (31)	56 (30)	179 (29)	
11–20 years	60 (36)	114 (44)	66 (36)	240 (40)	
>20 years	41 (25)	35 (14)	21 (11)	97 (16)	
Position					<0.001
Charge nurse	6 (4)	20 (8)	15 (8)	41 (7)	
Registered nurse	14 (8)	36 (14)	61 (33)	111 (18)	
Practical nurse	69 (42)	103 (40)	2 (1)	174 (29)	
Nurse aide	58 (35)	75 (29)	87 (47)	220 (36)	
Other	18 (11)	23 (9)	19 (10)	60 (10)	

Note: Values are numbers (%) unless stated otherwise. Total percentages count not to 100 due to missing values.

years. Characteristics of nursing staff are summarized in Table 1.

The samples of the three countries are somewhat different. Mean age of nursing staff is highest in Germany. The Dutch sample has the largest proportion of nursing staff with more than 20 years of clinical experience, while the Swiss sample has the largest proportion of nursing staff with 0–3 years of experience. There are also some differences in positions: the

Swiss sample consists of large proportions of registered nurses and nursing aides, but almost no practical nurses. The Dutch sample has the smallest proportion of registered nurses.

### 3.2. Attitudes of nursing staff regarding restraint use

The mean score on the total scale (3.05, S.D. = 0.50, range = 1.67–4.48) and the sub-scales ‘reason’ (2.74,

Table 2  
Bivariate relations between opinions and characteristics of nursing staff

	MAQ total	<i>p</i> -Value	Reason	<i>p</i> -Value	Consequences	<i>p</i> -Value	Appropriate	<i>p</i> -Value
Age	−0.07	0.12	−0.08	0.05	−0.09	0.03	0.11	0.01
Gender								
Male	2.97 (0.49)	0.25	2.71 (0.67)	0.83	2.84 (0.55)	0.47	3.96 (0.73)	0.19
Female	3.07 (0.51)		2.74 (0.70)		2.92 (0.62)		4.06 (0.69)	
Country								
The Netherlands	3.06 (0.50)	0.84	2.93 (0.65)	<0.001	2.89 (0.55)	0.95	3.78 (0.67)	<0.001
Germany	3.05 (0.47)		2.63 (0.70)		2.90 (0.62)		4.23 (0.62)	
Switzerland	3.03 (0.55)		2.70 (0.75)		2.91 (0.64)		4.02 (0.75)	
Experience								
0–3 years	3.04 (0.42)	<0.01	2.71 (0.63)	0.01	2.94 (0.52)	0.02	3.95 (0.56)	0.24
4–10 years	3.08 (0.49)		2.80 (0.67)		2.93 (0.58)		4.05 (0.71)	
11–20 years	3.10 (0.51)		2.79 (0.75)		2.95 (0.63)		4.11 (0.69)	
>20 years	2.87 (0.56)		2.52 (0.76)		2.72 (0.63)		4.00 (0.77)	
Position								
Charge nurse	2.72 (0.49)	<0.001	2.14 (0.60)	<0.001	2.71 (0.66)	0.02	3.98 (0.71)	0.65
Registered nurse	2.98 (0.53)		2.57 (0.74)		2.85 (0.62)		4.11 (0.74)	
Practical nurse	3.09 (0.47)		2.84 (0.63)		2.89 (0.60)		4.07 (0.68)	
Nurse aide	3.13 (0.50)		2.84 (0.73)		3.00 (0.59)		4.02 (0.72)	
Other	3.02 (0.46)		2.79 (0.67)		2.82 (0.55)		3.96 (0.59)	

Note: Items were rated on a 5-point Likert-scale indicating 1 as strong disagreement and 5 as strong agreement. Values are means (standard deviations). The correlations between age and MAQ total and sub-scores were calculated using Pearson’s correlation coefficients; differences between gender, country, experience, position and MAQ-scores were analysed using one-way ANOVAs.

S.D. = 0.71, range = 1.00–4.88) and ‘consequences’ (2.90, S.D. = 0.61, range = 1.33–4.44) indicate rather neutral opinions regarding the use of physical restraints, the reasons for using restraints and the consequences of restraint use. However, the scores on the sub-scale ‘appropriateness’ (4.04, S.D. = 0.70, range = 1.50–5.00) show positive attitudes indicating that nursing staff do assess the use of restraints as an adequate measure in their clinical practice.

Table 2 summarizes the results of relations between the total scores on the MAQ, the scores on the MAQ sub-scales, and characteristics of nursing staff.

Gender and age were not related to attitudes of nursing staff. No differences were found in attitudes between nursing staff in the three countries on the total MAQ score, but there were differences in ratings on the sub-scales ‘reason’ ( $p < 0.001$ ) and ‘appropriateness’ ( $p < 0.001$ ). Dutch nursing staff were most positive regarding the reason of restraint use ( $p < 0.01$ ), but were less positive than German and Swiss nursing staff regarding the appropriateness of restraint use ( $p < 0.01$ ). Swiss nursing staff were less positive than German nursing staff regarding the appropriateness of restraint use ( $p < 0.01$ ).

Experience was related to scores on the MAQ total ( $p < 0.01$ ), and the sub-scales ‘reason’ ( $p < 0.05$ ) and ‘consequences’ ( $p < 0.05$ ). More experienced nursing staff showed the lowest scores on MAQ total ( $p < 0.01$ ) and the sub-scales ‘reason’ ( $p < 0.05$ ) and ‘consequences’ ( $p < 0.05$ ), indicating a more negative attitude regarding restraint use than nursing staff with less experience.

A relation was found between the position and the total MAQ score ( $p < 0.001$ ) and the sub-scales ‘reason’ ( $p < 0.001$ ) and ‘consequences’ ( $p < 0.05$ ). Charge nurses showed the lowest scores on MAQ total

( $p < 0.05$ ) and sub-scale ‘reason’ ( $p < 0.05$ ), and had a lower score than nurse aides on the sub-scale ‘consequences’ ( $p < 0.05$ ). These results indicate that charge nurses had a more negative attitude regarding restraints than other nursing staff.

### 3.3. Opinions of nursing staff regarding restraint measures

Mean scores of the counted ratings of individual measures towards restrictiveness in the Dutch, German and Swiss sample were different ( $p < 0.001$ ). The same result was found for the counted ratings regarding discomfort ( $p < 0.001$ ). Dutch nursing staff rated restraint measures as less restrictive ( $p < 0.05$ ) and felt less discomfort ( $p < 0.01$ ) in using the measures than both German and Swiss nursing staff.

The opinions of nursing staff about the restrictiveness of restraint measures and discomfort in using the measures are summarized in Tables 3 and 4.

Wrist and ankle belts are unanimously rated as the most restrictive restraint measures by both Swiss and German nursing staff. These measures are not applied in Dutch nursing homes and have therefore not been inserted in the Dutch version of the questionnaire.

In the three samples, belts in bed are rated as the most restrictive measure and nursing staff feel rather uncomfortable using them. Unilateral bedrails and sensor mats are rated as the least restrictive and nursing staff indicate that they do not feel uncomfortable using them. Bilateral bedrails are rated as a moderate restrictive measure and nursing staff feel little uncomfortable using them. The same results were found for belts in a chair and chair with a table.

Table 3  
Opinions of nursing staff regarding degree of restrictiveness of physical restraint

Measure <sup>a</sup>	Total	The Netherlands	Germany	Switzerland	<i>p</i> -Value
Wrist belt	2.87 (0.4)	Not available	2.90 (0.4)	2.83 (0.5)	0.059
Ankle belt	2.80 (0.5)	Not available	2.81 (0.5)	2.78 (0.5)	0.566
Belt in bed	2.67 (0.5)	2.54 (0.6)	2.69 (0.5)	2.75 (0.5)	0.001
Bedroom door locked	2.58 (0.7)	2.43 (0.7)	2.64 (0.6)	2.64 (0.7)	0.003
Tightly tucked sheet	2.53 (0.6)	2.44 (0.6)	2.62 (0.6)	2.48 (0.7)	0.012
Belt in chair	2.28 (0.6)	2.36 (0.6)	2.18 (0.6)	2.36 (0.6)	0.001
Ward door locked	2.17 (0.7)	1.99 (0.7)	2.39 (0.7)	2.02 (0.7)	<0.001
Deep chair	2.12 (0.7)	2.04 (0.6)	2.15 (0.7)	2.14 (0.7)	0.222
Chair with table	2.09 (0.6)	2.27 (0.6)	2.00 (0.6)	2.05 (0.7)	<0.001
Bilateral bedrails	1.96 (0.6)	1.87 (0.6)	2.00 (0.6)	1.97 (0.7)	0.078
Sleep suit <sup>b</sup>	1.72 (0.7)	1.69 (0.6)	1.67 (0.7)	1.81 (0.7)	0.110
Infrared system	1.42 (0.6)	1.18 (0.4)	1.58 (0.7)	1.40 (0.6)	<0.001
Unilateral bedrail	1.38 (0.5)	1.21 (0.4)	1.38 (0.5)	1.55 (0.6)	<0.001
Sensor mat	1.35 (0.6)	1.20 (0.5)	1.55 (0.7)	1.21 (0.5)	<0.001
All measures <sup>c</sup>	2.05 (0.3)	1.96 (0.3)	2.10 (0.3)	2.06 (0.3)	<0.001

<sup>a</sup> Items were rated on a 3-point Likert-scale indicating 1 as not restrictive and 3 as very restrictive. Values are means (standard deviations). Bonferroni corrected alpha <0.003.

<sup>b</sup> A sleep suit is a clothing measure to prevent that persons undress themselves unnecessary.

<sup>c</sup> ‘All measures’ is the sum of the single measures excluding wrist and ankle belts.

Table 4  
Opinions of nursing staff regarding discomfort to use physical restraint

Measure <sup>a</sup>	Total	The Netherlands	Germany	Switzerland	p-Value
Wrist belt	2.90 (0.4)	Not available	2.91 (0.3)	2.88 (0.4)	0.492
Ankle belt	2.83 (0.5)	Not available	2.82 (0.5)	2.83 (0.4)	0.827
Belt in bed	2.59 (0.6)	2.26 (0.7)	2.70 (0.6)	2.71 (0.5)	<0.001
Tightly tucked sheet	2.53 (0.6)	2.30 (0.7)	2.66 (0.6)	2.55 (0.6)	<0.001
Bedroom door locked	2.51 (0.7)	2.40 (0.8)	2.55 (0.7)	2.55 (0.7)	0.104
Belt in chair	2.14 (0.7)	2.03 (0.7)	2.10 (0.7)	2.29 (0.7)	0.001
Ward door locked	2.07 (0.8)	1.74 (0.8)	2.38 (0.7)	1.96 (0.8)	<0.001
Deep chair	1.93 (0.7)	1.58 (0.7)	2.06 (0.8)	2.05 (0.7)	<0.0001
Chair with table	1.85 (0.7)	1.80 (0.7)	1.87 (0.6)	1.86 (0.7)	0.517
Bilateral bedrails	1.82 (0.7)	1.61 (0.6)	1.93 (0.7)	1.85 (0.7)	<0.001
Sleep suit <sup>b</sup>	1.73 (0.7)	1.55 (0.6)	1.75 (0.7)	1.86 (0.8)	<0.001
Infrared system	1.41 (0.6)	1.13 (0.4)	1.62 (0.7)	1.36 (0.5)	<0.001
Sensor mat	1.33 (0.6)	1.16 (0.4)	1.55 (0.7)	1.18 (0.4)	<0.001
Unilateral bedrail	1.32 (0.5)	1.13 (0.3)	1.33 (0.5)	1.48 (0.5)	<0.001
All measures <sup>c</sup>	1.98 (0.4)	1.78 (0.4)	2.07 (0.3)	2.01 (0.4)	<0.001

<sup>a</sup> Items were rated on a 3-point Likert-scale indicating 1 as not discomforting and 3 as very discomforting. Values are means (standard deviations). Bonferroni corrected alpha <0.003.

<sup>b</sup> A sleep suit is a clothing measure to prevent that persons undress themselves unnecessary.

<sup>c</sup> 'All measures' is the sum of the single measures excluding wrist and ankle belts.

Tables 3 and 4 indicate that most ratings differ between nursing staff of the three countries but that the sequence of scores regarding the measures is similar; belts in bed were rated as most restrictive, followed by bedroom door locked, etc., and sensor mats were rated as least restrictive. There were only two exceptions: German nursing staff rated the measure 'ward door locked' as more restrictive (and felt more discomfort in using this measure) than Dutch and Swiss nursing staff, and Dutch nursing staff felt most discomfort with 'locking the bedroom door'.

#### 4. Discussion

Our study has shown that attitudes and opinions regarding the use of physical restraints differ between nursing staff from three European countries. However, in general, nursing staff considered the use of physical restraints in clinical practice as appropriate. Bilateral bedrails were viewed as a moderate restrictive measure and nursing staff do not feel much discomfort using them.

These findings might be a major determinant influencing the effectiveness of educational interventions aimed to reduce physical restraints. The study, however, has limitations. Convenience samples were recruited and the study might be underpowered to draw definitive conclusions regarding opinions of nursing staff in Germany, Switzerland and The Netherlands. Differences in staff-mix (e.g., registered nurses in relation to practical nurses) between countries are also likely to limit comparability.

Despite these limitations, the study has shown consistent differences on attitudes and opinions regarding restraint use of nursing staff in The Netherlands, Germany and Switzer-

land. This study results suggest possible reasons for resistance in reducing physical restraints. Although the total differences in attitude scores between the countries are small one should keep in mind the small theoretical range of the scores (1–5 and 1–3, respectively). Therefore, the differences are not only statistically significant but also are clinically relevant.

Dutch nursing staff consistently assessed restraint measures as less restrictive than both German and Swiss nursing staff. Dutch nursing staff also indicated that they felt less discomfort in using restraints. Thus, the difference between countries is of great importance for the development of effective and tailored educational interventions.

The need of tailored interventions is further confirmed by the finding that almost all Dutch, German, and Swiss nursing staff assessed the use of physical restraints in their clinical practice as appropriate. Knowing that recent reported prevalence numbers of physical restraints in nursing homes in these countries are 52% (Huizing et al., 2006), 26% (Meyer and Köpke, 2007), and 40% (Lindenmann, 2006), respectively, it is questionable if the nursing staff's assessments of appropriateness of the use of physical restraints in their clinical practice are adequate. Nevertheless, one can imagine that this opinion strongly hinders attempts to reduce physical restraints.

This also holds true for the finding that bilateral bedrails in this study are judged by nursing staff as a moderate restrictive measure. This finding confirms results from previous studies (Hamers et al., 2004; Koch et al., 2007), indicating that nursing staff do not classify bedrails as restraint measures. Knowing that bedrails account for the majority of physical restraints applied in clinical practice (e.g., Hamers and Huizing, 2005a; Meyer and Köpke, 2007;

Wagner et al., 2007), the need to change opinions of nursing staff is evident.

The results of the present study in combination with the weak (Evans et al., 1997) or negative results (Huizing et al., 2006, 2008) of some intervention studies, indicate that an educational intervention may not be powerful enough to reduce the number of physical restraints in clinical practice. In addition stronger regulations, for example prohibition of the use of physical restraints to prevent falls, may be needed. In the southern part of The Netherlands a pilot study has been started to expel the use of belts by a ban declared by a nursing home in combination with alternative client-tailored interventions (MeanderGroep, 2007). From this and other studies, it becomes evident that the availability of knowledge and restraint alternatives to prevent falls (like infra red systems, hip protectors, lower beds) seem to be a prerequisite for successful restraint reduction. The present study, however, did not collect data on whether nursing staff felt they had these resources available. Finally, also of interest for restraint reduction is the finding that charge nurses and more experienced nursing staff had a more negative attitude regarding restraints than other nursing staff. They might have become more sensitized for the impact of restraint use on older individuals. We presume that experienced nursing staff and charge nurses could be gatekeepers for the introduction of new policies regarding restraint use and attempts to achieve restraint free care.

In conclusion, this study has revealed possible reasons for the reluctance to reduce physical restraints, ranging from the general opinion of nursing staff that the use of restraints in their practice is appropriate, to the opinion that the restraint measure most frequently used (bilateral bedrails) is only moderately restrictive. The nursing staff from the three European countries had different opinions regarding physical restraints. Therefore, the results of this study outline the importance of more tailored, culturally sensitive interventions to reduce physical restraints in nursing homes.

### Funding

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### Ethical approval

In Switzerland approval for the study was obtained from the Ethical committee of the Kanton Luzern (Ref. Nr. EK: 597). Approval of the study from the ethical committee was not necessary in The Netherlands and Germany.

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### Conflict of interest

None declared.

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