

## Prevalence of pressure ulcers in Germany

Nils A Lahmann RN, BA

PhD Student, Department of Nursing Science, Humboldt-Universität zu Berlin, Berlin, Germany

Ruud JG Halfens PhD

Associate Professor, Health Care Studies/Section Nursing Science, Faculty of Health Sciences, Universiteit Maastricht, Maastricht, The Netherlands

Theo Dassen PhD, RN, FEANS

Director of the Department for Nursing Science, Humboldt-Universität zu Berlin, Berlin, Germany

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*Correspondence:*

Nils A Lahmann

Institut für Medizin-/Pflegepädagogik und  
Pflgewissenschaft

Humboldt-Universität zu Berlin

Schumannstr

20/21, D-10098 Berlin

Germany

Telephone: +49 30 450 529 066

E-mail: nils.lahmann@charite.de,

nilslahmann@gmx.de

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**Aims and objectives.** This article establishes the prevalence of pressure ulcers in hospitals and nursing homes for national and international comparison.

**Background.** Although many European countries evaluate the prevalence of pressure ulcers, it has not recently been examined in German healthcare facilities.

**Design.** Descriptive study design, point prevalence survey in 2001 and 2002. A total of 11 584 patients and residents in 66 institutions throughout Germany took part in the study.

**Methods.** Prevalence rates were calculated for the different types of institutions, different years, different risk groups and different disciplines. All calculations were made by including as well as excluding pressure ulcer grade 1. The Braden scale (cut-off  $\leq 20$ ) was applied to define at risk and not at risk patients/residents.

**Results.** The prevalence including (excluding) grade 1 pressure ulcers was 11.7% (5.2%) for the whole sample, while in the group at risk it was 24.5% (11.5%). The size of the group at risk in the nursing homes was 63.9% and less than 40% in the hospitals. Comparisons between disciplines showed a great range of prevalence rates. The use of special surface devices for persons at risk was more common in nursing homes than in hospitals.

**Conclusion.** The prevalence of pressure ulcers bears resemblance to results produced by other studies, but it is uncertain if these similarities are more than coincidental. Due to the influence of sampling the use of a standardized samples method is essential. For comparisons of groups with differences regarding their risk assessment it would be more appropriate to use the prevalence of patients and residents at risk.

**Relevance to clinical practice.** The study provides accurate data about the extent of the problem of pressure ulcers in German healthcare facilities.

**Key words:** Germany, hospitals, nursing homes, pressure ulcers, prevalence, risk groups

## Introduction

Pressure ulcers are a common and serious healthcare problem where immobile, old and care-dependent patients are concerned. The costs for prevention and treatment are extremely high (Kuhn & Coulter 1992, Severens *et al.* 2002). The existence of pressure ulcers is considered as a possible outcome indicator for the quality of care (Allcock *et al.* 1994, Dealey 1997). Prevalence data provide a database to identify the extent of the problem in different groups or societies (Young 1997). Numerous studies have been carried out in different countries including North America, Europe and Australia involving annual surveys conducted on a nationwide basis (Barczak *et al.* 1997, Scott & Newens 1999, Thoroddsen 1999, Pearson *et al.* 2000, Lepisto *et al.* 2001). In Germany, there are no such data available. The published results from healthcare facilities in other countries range widely (Maklebust 1999) from under 5% (Lyder *et al.* 2001) to over 40% (Thomson & Brooks 1999). Different types of healthcare facilities such as nursing homes or acute care hospitals were examined. Additionally, variations across clinical specialities within institutions reveal that they could be significant risk factors (Young *et al.* 2002). Other studies within acute care facilities show high prevalence in specialities like surgery (Gawron 1994), geriatric wards (Bentur *et al.* 1997) and ICUs (Bours *et al.* 2001).

In the Federal Republic of Germany few published studies are available. These are usually limited to single institutions (Gruen *et al.* 1997, Schumacher & Eveslage 1999) or confined to one state/district (Leffmann *et al.* 1998). The majority of these studies was carried out in acute care facilities. Feldhoff *et al.* (2001) calculated the prevalence rates for different medical disciplines, but figures of less than 5% for medical and surgery wards appeared to be very low compared with results published in international studies. There was hardly any information available regarding prevalence in nursing homes. A recently published study produced by Steingass *et al.* (2002) dealing with ulcer prevalence in nursing homes in a region in southern Germany displayed prevalence rates of not more than 2%. These figures appeared to be exceptionally low because recently published large-scale studies in other countries suggested that prevalence rates in these institutions were quite high, ranging from 8.5% (Coleman *et al.* 2002) to 35.7% (Casimiro *et al.* 2002). As there are no such large-scale German studies on living persons available, Heinemann *et al.* (2000) analysed an overall prevalence rate of 11.2% in a study based on the examination of more than 10 000 bodies (Heinemann *et al.* 2000). Deceased persons in nursing homes formed the main basis of this study. The results led to the conclusion that

nursing home residents appeared to be at a higher risk of developing pressure ulcers than hospital patients.

Comparing results of different studies can be very difficult, or even impossible, owing to the different methodology and terminology used (Fletcher 2001). Standardized procedures have been suggested (Lake 1999, EPUAP 2002), but no generally accepted method has been devised or adopted. When comparing prevalence data it is necessary to standardize populations (Halfens 2000) to ensure that any differences in observed prevalence rates are not due to factors such as differences in the case-mix (Davis & Casey 2001) or random variation (Berlowitz *et al.* 1998).

The objective of this study was to investigate the prevalence of pressure ulcers in German nursing homes and hospitals. The following research questions were formulated:

- 1 What is the prevalence rate in hospitals and nursing homes in Germany?
- 2 Are nursing home residents at a higher risk of developing pressure ulcer than hospital patients?
- 3 What is the point prevalence rate for developing pressure ulcers in a group of patients and residents assessed to be at risk?
- 4 How much do prevalence rates differ in medical specialities?

## Methods

In April 2001 and April 2002, a point prevalence study was conducted. Data collection methods and questionnaire formats were based on those developed and tested by the Dutch National Registration Project of Pressure Ulcers (Bours *et al.* 1999).

### Instrument

The instrument used for patients and residents was translated into German and modified following group discussions between researchers and practitioners. The final instrument version was tested in three hospitals in Berlin where it demonstrated good handling and clarity characteristics. It contained questions regarding patient demography, occurrence and characteristics of pressure ulcers and prevention and therapy methods. The Braden scale was used to measure the risk of developing pressure ulcers, while the degree of pressure ulcers was determined by the grading system of the National Pressure Ulcer Advisory Panel (NPUAP 2004).

### Sample

Hospitals in the Berlin area (2001) and hospitals and nursing homes (2002) throughout Germany were invited to

participate anonymously in the study. In 2001, 11 hospitals participated in the study; in 2002, 15 nursing homes and 40 hospitals took part. Seven hospitals participated in both years. The chance of the same patient being examined and involved twice in the study was considered very low. The total number of patients in all participating institutions was 14 211 from 634 units/wards. No discipline was excluded. A total of 11 584 respondents of all 14 211 patients and residents that were asked to form the sample were able to give informed consent (participation 81.5%). In 2001 and 2002, the samples comprised of 3012 and 7225 hospital patients. Residents in nursing homes provided an additional 1347 persons. The average age of all 11 584 respondents was 66.2 years. The average age in hospitals in 2001 was 64.0 and 63.6 years in 2002, whereas the average age of residents in nursing homes was higher (average 83.6 years). Of all respondents in the sample 59.5% were female. In both years, female hospital patients were slightly over-represented (56%) in comparison with female nursing home residents, where a dominant over-representation (81.3%) was established. Normal duration of stay from admission until data collection for patients in hospitals in 2001 (2002) was nine days (eight days) and almost two years for nursing home residents in 2002.

### Data collection

Researchers trained the coordinators of all participating hospitals and nursing homes. Each coordinator then trained the ward nurses to gather the data used in the survey. Only those ward nurses were trained who were fully qualified staff nurses. Standard pictures and definitions of each ulcer grade were given to each trained nurse. In the second week of April 2001 and 2002, the prevalence study was carried out on one specific day in each of the participating institutions. Specially trained ward nurses examined all patients or residents in the selected wards of the institution. Each participant, either personally or represented by a relative, had to give their informed consent. Following the completion of these procedures the questionnaires were sent to the university, where they were checked for remarks and completeness and prepared for data analyses. Ethical permission to conduct the study was obtained by the ethical medical committee of Berlin.

### Data analyses

In this study, two types of prevalence measures were used: the overall prevalence and the prevalence in different risk groups.

The NPUAP definition was applied to calculate the prevalence rate: prevalence measures all cases of a condition (e.g. pressure ulcers) among those at risk of developing the condition. When the overall prevalence was calculated, the whole sample was assumed to be at risk. Although the Braden scale with a cut-off of 18 points is used in many studies to distinguish between persons at risk and those not at risk of developing pressure ulcers, a cut-off of 20 points was used according to the study design developed by Bours and Halfens (Bours *et al.* 1999) from the Netherlands. The prevalence rate was calculated separately for each group. The Pearsons' chi-square and a one-way ANOVA were used to examine statistical relationships between kind and year of institution and the different disciplines regarding prevalence, risk group size and Braden score. Where appropriate, the ANOVA was completed by the Duncan test as a *post-hoc* test for homogenous groups. In addition, the risk group size was also calculated with a cut-off of 18 points to enable a comparison with risk group sizes of other studies.

According to the EPUAP and the NPUAP a grade 1 pressure ulcer is defined as the discoloration of intact skin – light finger pressure applied to the site does not alter the discoloration. However, the identification of grade 1 pressure ulcers is difficult. Therefore, it was recommended that all measures excluding grade 1 pressure ulcers are also reported.

The percentage of the use of special beds and mattresses (special surface device) will be displayed with a Braden Score of  $\leq 20$  points for all patients and residents suffering or not suffering from pressure ulcers.

## Results

### Prevalence rates in different types of institutions

Table 1 shows the overall prevalence and the average Braden score for each group. Of all patients and residents 11.7% had at least one pressure ulcer. The prevalence was 5.2% excluding grade 1 pressure ulcers. In the 2001 hospitals the overall prevalence was statistically much higher than in any of the 2002 institutions. Excluding pressure ulcer grade 1 the 2001 hospitals and 2002 nursing homes showed the same overall prevalence (6.1%) whilst in the 2002 hospitals it was significantly lower according to statistics. The last column of Table 1 shows the average Braden score of each group and all participants. The average Braden score of all participants was 19.7. While the Braden score showed comparable average values in hospitals during the 2 years (20.1 in 2001 and 19.9 in 2002), the average Braden score in nursing homes (17.5) statistically was significantly lower ( $F = 206.2$ ,  $P < 0.001$ )

**Table 1** Overall prevalence

Overall prevalence	Total	PU grade1–4, <i>n</i> (%)	PU grade2–4, <i>n</i> (%)	Braden score mean
Hospitals 2001	3012	396 (13.1)	183 (6.1)	20.1
Hospitals 2002	7225	801 (11.1)	337 (4.7)	19.9
Nursing Homes 2002	1347	159 (11.8)	82 (6.1)	17.5
Total	11584	1356 (11.7)	602 (5.2)	19.7
$\chi^2 = P < 0.05$		+	+	F-test; +

than the scores of the hospitals in both years. The later Duncan Test revealed no statistical differences between the 2001 and the 2002 hospitals.

**Risk assessment**

In Table 2 patients and residents are divided according to their Braden scores and cut-off points: 20 and less for being at risk, more than 20 for being not at risk and the group for which no Braden score was available (risk unknown). The risk assessment for each group showed remarkable discrepancies in percentage between nursing homes and hospitals. In nursing homes the percentage of persons at risk each year (63.9%) had a significantly higher statistical value than in hospitals (38.4%; 36.0%). Using the Braden score with a cut-off of 18 points and less the size of the group at risk became smaller with 47.5% of all nursing home residents and 27.7% (2001) and 26.1% of all hospital patients.

**Prevalence in the different risk groups**

According to Table 3 the prevalence rate for patients and residents at risk was 24.5%. The difference between hospitals and nursing homes in this risk group is quite large with hospitals in 2001 having more than 10% prevalence compared with nursing homes in 2002. Although there is no statistically significant difference regarding the average Braden score (Table 1), prevalence rate in the group at risk was 3.2% higher in the 2001 hospitals than in the 2002 hospitals. Even when grade 1 pressure ulcers were excluded, hospitals showed higher rates of prevalence (14.3%) in 2001 and (11.2%) in 2002 than nursing homes (8.9%). All differences were statistically significant. There were 188 patients and residents in the group not at risk where at least one pressure ulcer was found, so the prevalence rate was 2.9% there with statistically significant differences between each type of institution. However, they only varied by about 1%. Without

**Table 2** Risk assessment

Risk assessment	Braden score ≤18, <i>n</i> (%)	Braden score ≤20, <i>n</i> (%)	Braden score > 20, <i>n</i> (%)	Braden score unknown, <i>n</i> (%)
Hospitals 2001	803 (27.7)	1156 (38.4)	1745 (57.9)	111 (3.7)
Hospitals 2002	1813 (26.1)	2598 (36.0)	4353 (60.2)	274 (3.8)
Nursing Homes 2002	630 (47.5)	861 (63.9)	466 (34.6)	20 (1.5)
Total	3246 (29.0)	4615 (39.8)	6564 (56.7)	405 (3.5)
$\chi^2 = P < 0.05$	+	+	+	+

**Table 3** Prevalence in the different risk groups

Prevalence in group	PU grade 1–4			PU grade 2–4		
	Bs ≤ 20 pts, <i>n</i> (%)	Bs > 20 pts, <i>n</i> (%)	Bs unknown, <i>n</i> (%)	Bs ≤ 20 pts, <i>n</i> (%)	Bs > 20 pts, <i>n</i> (%)	Bs unknown, <i>n</i> (%)
Hospitals 2001	327 (28.3)	64 (3.7)	5 (4.5)	165 (14.3)	16 (0.9)	2 (1.8)
Hospitals 2002	653 (25.1)	116 (2.7)	32 (11.7)	291 (11.2)	34 (0.8)	12 (4.4)
Nursing Homes 2002	149 (17.3)	8 (1.7)	2 (10.0)	77 (8.9)	5 (1.1)	0 (0)
Total	1129 (24.5)	188 (2.9)	39 (9.6)	533 (11.5)	55 (0.8)	14 (3.5)
$\chi^2 = P < 0.05$	+	+	+	+	+	+

including pressure ulcer grade 1 prevalence rate was 0.8%; 39 patients and residents with at least one pressure ulcer grade 1 were found without a Braden score. The equivalent prevalence rate of 9.8% is comparable with the overall prevalence.

Finally, the ANOVA and Duncan test were used to compare patients and residents with a pressure ulcer regarding their average Braden score. Including pressure ulcer grade 1 the average Braden score was statistically significant, yet not extremely significant ( $F = 3.7$ ,  $P = 0.024$ ). The Duncan test, although, showed homogenous groups within the 2002 hospitals and nursing homes and between the hospitals in each year. When excluding grade 1 pressure ulcers, no statistically significant differences in the group at risk were observed ( $F = 1.4$ ,  $P < 0.246$ ). This means that comparisons of prevalence rates in very different settings like nursing homes and hospitals are possible in risk groups defined by a Braden score of up to 20.

**Prevention**

Table 4 shows the percentage of the use of special surface devices for avoiding pressure ulcers, 71.4% of all patients and residents at risk did not receive any kind of special surface beds, 45.8% of all patients and residents with a pressure ulcer (including grade 1) are supplied with a special device. The use of such devices is much more common in nursing homes (41.0%) than in hospitals (27.2% in 2001 and 25.1% 2002).

**Table 4** Special surface for patients at risk (Braden score  $\leq 20$  pts)

	Normal hospital bed/no special surface, n (%)	Special hospital bed/- special surface, n (%)	Total (100%), n
<b>Hospitals 2001</b>			
PU (-)	656 (79.1)	173 (20.9)	829
PU (+)	185 (56.6)	142 (43.4)	327
	841 (72.8)	315 (27.2)	1156
<b>Hospitals 2002</b>			
PU (-)	1583 (81.4)	362 (18.6)	1945
PU (+)	362 (55.4)	291 (44.6)	653
	1945 (74.9)	653 (25.1)	2598
<b>Nursing Homes 2002</b>			
PU (-)	443 (62.2)	269 (37.8)	712
PU (+)	65 (43.6)	84 (56.4)	149
	508 (59.0)	353 (41.0)	861
<b>Total</b>			
PU (-)	2682 (76.9)	804 (23.1)	3486
PU (+)	612 (54.2)	517 (45.8)	1129
	3294 (71.4)	1321 (28.6)	4615

**Prevalence rates in clinical specialities in hospitals in 2001 and 2002**

Although hospitals in total showed a very similar Braden score in 2001 and 2002, differences were observed in various medical disciplines each year. Table 5 shows the quantity and prevalence of all participating patients as well as those at risk in each discipline of all hospitals for each year, including and excluding pressure ulcer grade 1. The total prevalence in all hospitals of both years including pressure ulcers was 11.7% (5.1% excluding grade 1). In total, the prevalence in ICUs and geriatric wards was higher than average regardless if grade 1 pressure ulcers were considered or not. These two specialities showed a remarkably higher overall prevalence rate in 2002 than in 2001, but only where grade 1 pressure ulcers were considered. Medical and surgical wards had almost average prevalence rates whilst all the other disciplines had very low prevalence rates. In medicine and surgery all 2002 prevalence rates were a lot lower than in 2001, regardless if pressure ulcer grade 1 was considered or not. Risk groups sizes of persons at risk of developing a pressure ulcer ranged from 17.9% in urology and obstetrics to 62.8% in geriatrics and 76.8% in ICUs. Prevalence rates of those at risk were higher than average in ICUs, medical and geriatric disciplines. When including grade 1 ulcers the figures in hospitals ranged from 3.1% in paediatric wards to 31.2% in ICUs and finally to 39.5% in geriatric wards. The prevalence rate in surgery (24.6%) was about average. Prevalence rates in other disciplines such as neurology, urology and obstetrics, psychiatric and paediatric were less than average.

**Conclusion**

The results of the study helped to answer the research questions: this study established that the prevalence rate in hospitals and nursing homes in Germany was 11.7% (5.2% excluding grade 1). In the 2001 hospitals the prevalence rate was somewhat higher than in the 2002 hospitals and nursing homes. In nursing homes the percentage of persons at risk was almost twice as high as that found in hospitals. Focusing on the group at risk, it was remarkable that the 2001 hospitals had a prevalence rate of more than 10% and that the prevalence rate of the 2002 hospitals was about 8% higher than in the 2002 nursing homes. Comparison of different medical specialities like some intensive care units and geriatric wards revealed that they had remarkably high pressure ulcer prevalence rates, whilst others such as psychiatric and urology and obstetrics had low rates.

Throughout Germany, the sample of 11 584 patients and residents in 66 institutions provided a good starting point for

**Table 5** Overall prevalence and prevalence in the at risk group in medical specialties in hospitals 2001 and 2002

Year	Disciplines in Hospitals 2001 and 2002	All patients			Patients at risk (Bs ≤20 pts)			
		<i>n</i>	PU grade1-4 (%)	PU grade 2-4 (%)	<i>n</i>	% of all patients	PU grade 1-4 (%)	PU grade 2-4 (%)
2001	Medical	881	13.8	7.2	360	40.9	28.6	15.3
	Surgery	761	15.1	5.9	293	38.5	29.7	13.7
	ICU	117	19.7	12.0	83	70.9	27.7	16.9
	Paediatric	109	0.9	0.0	44	40.4	2.3	0.0
	Neuro	181	7.2	2.2	65	35.9	18.5	6.2
	Urology and obstetrics	327	8.6	2.1	55	16.8	32.7	10.9
	Psychiatric	120	1.7	1.7	21	17.5	9.5	9.5
	Geriatric	335	24.8	13.4	196	58.5	37.2	20.9
	Others	181	5.0	1.7	39	21.5	20.5	7.7
	Total	3012	13.1	6.1	1156	38.4	28.3	14.3
	$\chi^2 = P < 0.05$		+	+		+	+	+
2002	Medical	2774	10.6	4.4	928	33.5	26.8	12.1
	Surgery	2027	11.1	4.3	715	35.3	22.5	9.7
	ICU	309	27.8	14.9	244	79.0	32.4	16.8
	Paediatric	166	1.8	.6	84	50.6	3.6	1.2
	Neuro	314	7.0	3.5	136	43.3	15.4	8.1
	Urology and obstetrics	665	3.5	1.2	123	18.5	13.8	5.7
	Psychiatric	150	1.3	1.3	12	8.0	0.0	0.0
	Geriatric	423	31.4	12.1	280	66.2	41.1	16.4
	Others	397	3.3	2.0	76	19.1	10.5	5.3
	Total	7225	11.1	4.7	2598	36.0	25.1	11.2
	$\chi^2 = P < 0.05$		+	+		+	+	+
Total	Medical	3655	11.4	5.1	1288	35.2	27.3	13.0
	Surgery	2788	12.2	4.8	1008	36.2	24.6	10.8
	ICU	426	25.6	14.1	327	76.8	31.2	16.8
	Paediatric	275	1.5	0.4	128	46.5	3.1	0.8
	Neuro	495	7.1	3.0	201	40.6	16.4	7.5
	Urology and obstetrics	992	5.1	1.5	178	17.9	19.7	7.3
	Psychiatric	270	1.5	1.5	33	12.2	6.1	6.1
	Geriatric	758	28.5	12.7	476	62.8	39.5	18.3
	Others	578	3.8	1.9	115	19.9	13.9	6.1
	Total	10237	11.7	5.1	3754	39.8	26.1	12.1
	$\chi^2 = P < 0.05$		+	+		+	+	+

PU 1-4 = patients/residents with a pressure ulcer (any grade).

PU 2-4 = patients/residents with a pressure ulcer (any grade) excluding pressure ulcer grade 1.

Bs, Braden score; pts, points.

$\chi^2 = P < 0.05 = +$ , chi-square testing positive.

further investigation. However, the sample was not representative for German hospitals and nursing homes because participation was voluntary and no random or quota procedure had been used. Differences between hospitals in 2001 and 2002 could also have been caused by different ways of sampling. The participation of 81.5% within the wards is high, yet the response bias due to missing values should be considered when interpreting the results. Nevertheless, the number of participants was high. A detailed analysis of possible effects of the lack of response on prevalence rates is being conducted and scheduled for publication in the near future. In this sample nursing home residents, on average, were about

20 years older than hospital patients and the participation rate of female respondents was approximately 20% higher. The length of stay until data collection showed remarkable differences between the two types of participating institutions with an average of about 2 years in nursing homes compared with less than 10 days in hospitals. The overall prevalence rate turned out to be 11.7% including grade 1 pressure ulcers. These figures were almost identical to the findings of Heinemann *et al.* (2000) on bodies, but owing to the different samples this could only be considered as coincidental. Published results of studies with very large samples performed in other countries showed comparable overall prevalence rates

(Meehan 1994, Aronovitch 1999), but it is impossible to compare those results with this study because of the differences in methodology and terminology in each study.

Comparing the results of 2002 only it was noted that the overall prevalence rate in nursing homes was higher than in hospitals, either including or excluding pressure ulcer grade 1. However, differences between hospital patients and nursing home residents did not only emerge because of demographic characteristics but also due to varying risk assessment values. In nursing homes the average Braden score was considerably lower than in hospitals and according to the results 63.9% of the persons were at risk of developing pressure ulcers, while the figures for hospital patients in both years were less than 40% where a cut-off of 20 was used. This cut-off point is based on an earlier research of (Halfens 2000). In clinical practice a cut-off point of 18 is common. If this one is used, the risk group size decreases by 10.8% from 39.8 to 29.0%. However, regardless which of these cut-off-points is used, the risk group size in nursing homes remains almost twice as high as in hospitals. If the Braden scale is used to standardize the populations in all types of institutions, it has a strong impact on the measured prevalence rate. When comparing the persons at risk only the prevalence rate in 2002 turns out to be about 7.8% higher in hospitals than in nursing homes. A possible explanation for this finding is that special surface devices for persons at risk are more frequently used in nursing homes than in hospitals. Nevertheless, this should not lead to drawing a final conclusion as other possible preventive measurements, which were not considered in this article, could have had an influence, too.

The impact of the risk group size on measured prevalence rates is even stronger when comparisons within the participating hospitals or nursing homes are drawn. In this study, the share of patients at risk varied from 21.5 to 82.7% in hospitals and from 34.9 to 74.5% in nursing homes. If samples are so different regarding their risk assessment, it is necessary to just compare the persons at risk. The risk group prevalence rates of the participating institutions varied largely from less than 5% up to almost 60%. Overall prevalence rates do not take into account the number of patients and residents at risk. This means that comparisons between risk-groups are of much greater value in that their results are much more meaningful. This can also be observed in prevalence rates excluding grade 1 pressure ulcers. However, one important problem remains: not all patients with pressure ulcers are at risk, according to the assessment of Braden. In Table 1 there are 1356 patients/residents with pressure ulcers while in Table 3 in the column ( $\leq 20$  pts) there are only 1129. For 39 of the 227 missing pressure ulcer patients/residents the Braden score was

unknown and 188 had a score of 21 points and higher. One reason for this phenomenon is that, in general, the effectiveness of all available risk assessment scales is limited (Schoonhoven *et al.* 2002). Another possible explanation could be that surgical patients might have developed a pressure ulcer during an operation a week before. Although at the time of survey the patient is active and mobile again and there is absolutely no risk according to Braden scoring, the patient is still suffering from a developed pressure ulcer. Further investigations have to be carried out to explain this phenomenon.

A comparison of different medical wards could lead to some important conclusions. Although prevalence rates in disciplines such as paediatrics or urology/obstetrics are much lower than the average, there is still a measurable prevalence of pressure ulcers occurring within these disciplines. Geriatric wards and ICUs have the highest percentage of patients at risk and consequently higher rates of prevalence. Compared with these findings the results of medical disciplines in Germany published so far seem exceptionally low, but not when they are compared with findings of studies in other countries (Keller *et al.* 2002). A direct comparison cannot be drawn, however, because of methodological differences. Owing to this fact, the annual pressure ulcer survey in the Netherlands (Bours *et al.* 2002) was adopted for this study design to enable us to compare its results. It is rather tempting to show the plain prevalence rates here and discuss possible differences in findings. Interpretation of the findings would still have to be done very carefully, because it is uncertain whether even the slightest difference has an impact (i.e. differences in hospital/nursing home population, method of data-gathering). A detailed analysed comparison of the results of this and the Dutch study is planned. These results will be based on a well tested and well performed study design, so that the findings can serve as a basis to describe the extent of the problem of pressure ulcers in Germany. Comparisons with other international studies are restricted to those using similar methodical framework and analysis. Due to the differences in prevalence and the prevalence in the risk group it can be concluded that more than one prevalence rate is required for producing a wide-ranging and accurate study about an examined population, especially when very different samples, such as nursing home residents and acute care hospital patients are participating.

## Contributions

Study design: NAL, RJGH, TD; data collection: NAL, RJGH, TD; data analysis: NAL, RJGH, TD; manuscript preparation: NAL, RJGH, TD.

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