

Einrichtung

Station Fachbereich

0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9	<input type="radio"/>
0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9	<input type="radio"/>
0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9	<input type="radio"/>

Personengebundene Angaben

Gewicht (kg)	Größe (cm)	Geburtsjahr
0 <input type="radio"/>	0 <input type="radio"/>	0 <input type="radio"/>
1 <input type="radio"/>	1 <input type="radio"/>	1 <input type="radio"/>
2 <input type="radio"/>	2 <input type="radio"/>	2 <input type="radio"/>
3 <input type="radio"/>	3 <input type="radio"/>	3 <input type="radio"/>
4 <input type="radio"/>	4 <input type="radio"/>	4 <input type="radio"/>
5 <input type="radio"/>	5 <input type="radio"/>	5 <input type="radio"/>
6 <input type="radio"/>	6 <input type="radio"/>	6 <input type="radio"/>
7 <input type="radio"/>	7 <input type="radio"/>	7 <input type="radio"/>
8 <input type="radio"/>	8 <input type="radio"/>	8 <input type="radio"/>
9 <input type="radio"/>	9 <input type="radio"/>	9 <input type="radio"/>

Art der Einrichtung Pflegeheim

Krankenhaus
 sonstige

Geschlecht männlich weiblich

Med. Hauptdiagnose nach ICD-10

Sturz

Ist der Patient / Bewohner innerhalb der letzten 2 Wochen gestürzt?

nein ja unbekannt

Ist der Patient / Bewohner mehrfach gestürzt?

nein ja unbekannt

Sturzfolgen

keine unbekannt
 minimale Verletzungen nicht in unserer Einrichtung
 mittlere Verletzungen in unserer Einrichtung, nämlich
 schwere Verletzungen diese Station / dieser Wohnbereich
 außerhalb dieser Station / dieses Wohnbereichs

bei schwerer Verletzung bitte angeben

OSH-Fraktur Gelenk-/Bänderverletzung andere Fraktur
 Kopfverletzung Fraktur obere Extremität Sonstige

Pflegeabhängigkeit

Essen und Trinken	völlig abhängig <input type="radio"/>	überwiegend abhängig <input type="radio"/>	teilweise abhängig <input type="radio"/>	überwiegend unabhängig <input type="radio"/>	völlig unabhängig <input type="radio"/>
Kontinenz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Körperhaltung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobilität	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tag- und Nachtrhythmus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An- und Auskleiden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Körpertemperatur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Körperpflege	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vermeiden von Gefahren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kommunikation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kontakte mit anderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sinn für Regeln und Werte	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alltagsaktivitäten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aktivitäten zur sinnvollen Beschäftigung	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lernfähigkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hat sich die Pflegeabhängigkeit in den letzten 14 Tagen erheblich verändert? nein ja

Allgemeine Beeinträchtigungen

Depression
 eingeschränkte Mobilität Sehbeeinträchtigung körperliche Behinderung
 allgemeine Schwäche Desorientiertheit geistige Behinderung
 Schwindel Verwirrtheit Entwicklung

Inkontinenz

Stuhlinkontinenz
 nein ja, vorübergehend ja, dauerhaft
 nein ja, vorübergehend ja, dauerhaft

Urininkontinenz

nein ja, vorübergehend ja, dauerhaft

Hilfsmittel

Inkontinenzvorlage / -einlage Stuhltraining
 Blasenkatheeter Blasentraining
 sonstige sonstige

Maßnahme

Toiletentraining

Prävention zu Dekubitus

Matratzen / Auflagen

- Luftmatratze mit Wechseldruck
- Luftmatratze ohne Wechseldruck
- Schaumstoffmatratze zur Weichlagerung
- sonstige _____

Sonstige Hilfsmittel

- Ellenbogenschutz Felle/Synthetik/Echthaar
- Fersenschutz sonstige _____

Maßnahmen

- Wechsellagerung nach Schema
- Lagerung 135 Grad Lagerung 30 Grad
- Lagerung 90 Grad Lagerung nicht möglich
- Mobilisation
- Einreibung Massage
- regelmäßige Hautinspektion / Palpation
- Beratung/Anleitung des Patienten/Bewohners

Lagerungskissen im Bett

- Gekissen Schaumstoffkissen
- Luftkissen Wasserkissen
- Ringkissen Normale Kopfkissen
- Rollenkissen sonstige _____

Braden-Skala zur Dekubitusrisikoerkennung

Sensorisches Empfindungsvermögen

- fehlt stark eingeschränkt leicht eingeschränkt vorhanden

Feuchtigkeit

- ständig feucht oft feucht manchmal feucht selten feucht

Aktivität

- bettlägerig sitzt auf geht wenig geht regelmäßig

Mobilität

- komplett immobil stark eingeschränkt leicht eingeschränkt mobil

Ernährung

- sehr schlecht mäßig adäquat gut

Reibung und Scherkräfte

- Problem potenzielles Problem kein Problem zur Zeit

Dekubitus

Stadium

	Kreuz- bein	Ferse	Knöchel	Hüfte	Gesäß	Ellen- bogen	Ohr	Knie	Schulter- blatt	Wirbel- überige
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

übrige Dekubituslokalisation: _____

Dekubitus seit wann:

	Kreuz- bein	Ferse	Knöchel	Hüfte	Gesäß	Ellen- bogen	Ohr	Knie	Schulter- blatt	Wirbel- überige
unbekannt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
≤ 2 Wochen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> 2 Wochen < 3 Mon.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> 3 Monate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Entstehungsort:

	Kreuz- bein	Ferse	Knöchel	Hüfte	Gesäß	Ellen- bogen	Ohr	Knie	Schulter- blatt	Wirbel- überige
unbekannt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
diese Station/Bereich	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
andere Station/Bereich	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
andere Einrichtung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Wundauflagen:

	Kreuz- bein	Ferse	Knöchel	Hüfte	Gesäß	Ellen- bogen	Ohr	Knie	Schulter- blatt	Wirbel- überige
keine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
trockener Verband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fetthaltiger Verband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
antibakteriell	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alginat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrogele	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrocolloide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schaumdressings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VAC-Systeme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
sonstige	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

sonstige Wundauflage: _____

Anmerkungen

Commentary on Lahmann N, Halfens R and Dassen T (2005) Prevalence of pressure ulcers in Germany. *Journal of Clinical Nursing* 14, 165–172

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This paper addresses an important issue. The authors highlight that, although numerous prevalence studies have been conducted in some countries, there are no comparable data from Germany, and that the small studies that have been carried out in Germany suggest a lower than expected prevalence rate. However, a comparison of prevalence rates is fraught with difficulties, due to the large number of variables in the methodology employed and terminology used. This paper underlines the danger of quoting an overall pressure ulcer prevalence rate without a careful consideration of these issues and uses a validated prevalence tool to try to increase comparability.

Crude prevalence rates are limited because they make no allowance for variables such as population, age or health status. The Braden Scale (Bergstrom *et al.* 1987) is used in this study to standardize the samples in different types of institution and speciality. This scale is one of only a few validated risk assessment tools although the authors acknowledge the limitations of all risk assessment scales currently available. In an attempt to standardize, some studies have used other scoring systems that take two factors into account, such as a risk assessment scale and length of hospital stay (Williams *et al.* 1997). This appears to increase reliability and allow comparability but is less useful for long stay nursing home clients.

The authors state an overall prevalence rate for the whole sample of 11.7%, which includes both hospital and Nursing Home patients. There does not appear to be any rationale for inclusion/exclusion in the sample. The authors acknowledge that, although the sample is large, it does not represent the population from which it was drawn. This detracts from the value of overall prevalence figures. Inconsistencies between the two hospital samples highlight the vulnerability of

prevalence rates to variations within samples. They conclude that more than one prevalence rate is needed, to reflect the wide variety of samples, and a break down for different client groups in different settings is given. These data are more useful and can be used for comparison with other studies. They use the EPUAP/NPUAP definitions of pressure ulcer development, which again aids comparison with other European and US studies. They acknowledge the difficulties associated with accurately identifying a Grade 1 pressure ulcer and present prevalence rates that both include and exclude Grade 1 ulcers. Most studies include Grade 1 ulcers in their prevalence figures.

Prevention

There are few robust studies on the benefits of specialist support surfaces. A recent Cochrane Review (Cullum *et al.* 2004) supports the use of specialist beds in the management of pressure ulcers but found that the evidence in support of the use of alternating pressure mattresses or constant low-pressure devices was insufficient.

In this study, there is a low level of use of special surface devices (not defined) in those patients identified to be at risk (Braden < 20) and even for those with an identified pressure ulcer, the use of such devices is still only 43/44% in hospital patients and 56% in nursing homes. What is interesting is the high percentage of patients, identified at risk, who do not have a pressure ulcer (76.9%) even though not on a specialist support surface, which suggests that either other methods of pressure ulcer prevention are very successful or that the Braden Scale is not specific enough. This latter point is raised. The lack of definition of what the authors mean by a special surface device again hampers comparison: Cullum *et al.* (2004) suggest that all at-risk patients should be nursed on high-specification foam alternatives rather than standard hospital foam mattresses and these would not be included in the category of special surface device.

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A recent European Pressure Ulcer Advisory Panel Prevalence Working Group (2002) used the Braden Scale to assess risk status of a sample, similar to that used in this study, using a cut-off of <18. The survey also investigated support surfaces. The findings of Lahmann compare unfavourably with the EPUAP findings: the percentage of patients identified to be at risk of pressure ulcer development who were not on any sort of specialist support surface was 71.4% in this study compared with only 28.4% in the EPUAP study.

The findings suggest that patients in Nursing Homes have a lower prevalence of pressure ulcers even though they are at higher risk, according to the Braden Scale. This begs the question: what level of care do patients in Nursing Homes receive compared with hospital care? as these findings are the reverse of those found in the UK and US (Bergstrom *et al.* 1998). The authors identify a higher use of special surface devices (41% compared with 26%) but this does not fully explain these findings.

It is surprising that pressure ulcer prevalence was lower in the at-risk sample in the Nursing Homes where the mean age is higher, as age is a well-known risk factor (Bergstrom *et al.* 1998). Bergstrom found a prevalence rate of 23.9% in the Nursing Homes and long-term care, compared with a prevalence, in the at-risk group in this study, of 17.3%. The differences identified may be due to variation in what constitutes Nursing Home care. The term Nursing Home may mean something different in Germany to what it does in the UK or US: Maylor (2004) points out that, in Holland, Nursing Homes are more akin to NHS Intermediate Care facilities.

Despite the flaws and limitations identified, the magnitude of this study should not be underestimated – the majority of prevalence studies have a much smaller sample, both in terms of overall numbers and the number of institutions involved. The key question is ‘have we had any demonstrable effect on the number of people affected each year with pressure ulcers (Clark 2004)?’ This paper, by carefully recording prevalence data, will help us begin to answer this fundamental question.

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RESPONSE

For several years now, the existence of pressure ulcers in hospitalized patients has been a much-discussed topic in the Federal Republic of Germany. In 2000, National Guidelines on the prevention of pressure ulcers – the Nationale Expertenstandard Dekubitus – were adopted. All German institutional care facilities must follow these guidelines. As outlined by Jackson, the key question is whether the guidelines have had the effect of reducing the number of people affected by pressure ulcers. After all, there is still a need for a standardized benchmarking protocol for pressure ulcer prevalence for these forms of intervention to be evaluated. Halfens (2000) developed a method for measuring prevalence of pressure ulcers which has proved to be reliable and valid (Bours *et al.* 1999). Since 1998, Halfens *et al.* have been measuring the prevalence annually in Dutch health care organizations, while Dassen *et al.*, using the same method, have measured prevalence annually since 2001. For this study, comparisons between organizations have been undertaken, based on the risk populations. The EPUAP adopted this method for their European Prevalence Study. By using such a standardized methods annually, longitudinal trends of prevalence rates can be displayed. Other methods to standardize populations have been developed (Bours *et al.* 2003).

The prevalence rate in nursing homes is lower in our study than it is in others. One explanation could be that 'nursing home residents' as populations are not comparable in different countries. While our research group has data from both the Netherlands and Germany, one researcher is focusing on the explanation of these differences in prevalence between both countries (Tannen *et al.* 2004). This also the case regarding the use of special surface devices. There are hundreds of different brands and models of specialized beds and mattresses worldwide. We summarized all kinds of non-standard hospital foam mattresses such as different alternating pressure or constant low pressure mattress and bed devices. This was primarily used for comparison between hospitals and nursing homes within the study in Germany. The use of these figures for comparisons with other studies might be more limited. Maybe the most important statement is that published calculated prevalence rates depend to a high degree on the epidemiological prevalence definition that is used as well as on the exact definition of a pressure ulcer. Prevalence rates can be stated including/excluding grade one pressure ulcers, point or period prevalence, all existing or only nosocomially developed pressure ulcers, and considering all institutionalized population or just a defined risk group. Risk

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group prevalence rates enable better comparison of standardized groups. But if risk group prevalence is used, it is important to use the same risk assessment tool with the same cut-off point. Otherwise, there is an almost unlimited number of possible risk group prevalence rates available. We used the Braden scale with a cut-off point of 20, based on earlier research (Halfens 2000). Most cut-off points are chosen on the basis of the criterion of whether pressure ulcers were developed. However, a risk of pressure ulcers does not mean that all patients develop them. Teenagers belong to the risk population for insurance companies with regard to car accidents. This does not mean that all teenagers have an accident. If they drive carefully, their risk will be much lower. The same holds for the risk population of pressure ulcers. If patients receive adequate preventive measures, their risk will reduce, which means that although they belong to the risk population (they still have a high risk), they do not develop pressure ulcers. This explains why not all patients with a high risk developed pressure ulcers. In calculating the cut-off point for the Braden scale, the use of preventive measures was included. Therefore the cut-off point is higher than other studies shown.

It should be borne in mind that pressure ulcer prevalence surveys, because they are clinical studies, never deal with a 100% participation and therefore have a non-response bias. This means that the more precise prevalence data are available within a study, the more possible is it to provide a database for comparison with findings from other pressure ulcer prevalence studies.

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Commentary on Lahmann N, Halfens R and Dassen T (2005) Prevalence of pressure ulcers in Germany. *Journal of Clinical Nursing* 14, 165–172

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Pressure ulcers are universally significant problems due to their high costs and because they are viewed as indicators of poor quality nursing care and can trigger investigations, citations, fines, and accusations of neglect and abuse (Meehan & Hill 2002, Brown 2003). Prevalence and incidence data are essential for benchmarking, which enables providers to identify best practices to achieve desirable outcomes (Meehan & Hill 2002, Meraviglia *et al.* 2002, Robinson *et al.* 2003).

A recent study demonstrated that after prevalence and incidence studies were implemented, staff improved in performing risk assessment and documenting preventive efforts (Bates-Jensen *et al.* 2003). In another study, Robinson *et al.* (2003) reported a 10–20% reduction in the incidence of pressure ulcers in their hospital after they started reporting prevalence and incidence results and the impact of prevention strategies. Therefore, prevalence and incidence data provide essential information to justify the time and costs of prevention programs as well as serve to reinforce and motivate successful behaviours.

Because of the enormous health and quality of life costs associated with pressure ulcers, there is increasing interest in obtaining prevalence statistics. However, standardization is lacking which causes difficulties in interpreting data from prevalence and incidence surveys due to several methodological limitations including: (a) difficulty comparing varied populations, (b) differences in whether data were derived from direct observation or retrospective chart review, (c) varying definitions of prevalence, (d) confusion between prevalence and incidence, and (e) exclusion of Stage (Grade) I [Agency for Health Care Policy and Research, U.S. Department of Health and Human Services 1992, Gunningberg & Ehrenberg 2004].

According to the AHCPR (1992), acquiring statistics from large databases is less accurate than direct observation and specific assessment guides should be used to prevent errors in staging. Also, AHCPR recommended that incidence and prevalence data should be determined by ulcer stage, type facility, risk factors, and diagnosis.

The study by Lahmann, Halfens, and Dassen is timely and relevant and makes an important contribution to the knowledge about the extent of pressure ulcers in Germany as well as to the methodology for conducting prevalence surveys. Strengths of the study include: (a) a large sample was recruited, (b) hospitals as well as nursing homes were included, (b) data were reported according to different specialties in the facilities such as ICU and geriatric settings, (c) prevalence data were reported for both the overall sample and according to risk categories based on the Braden scale, (d) data were obtained by direct examination by trained observers, (c) data were reported with Stage I included and excluded, and (d) ulcers were staged according to a defined criteria.

Experience and skill are required to properly stage ulcers and if prevalence rates are based on retrospective chart reviews, the accuracy of prevalence data is questionable. Gunningberg and Ehrenberg (2004) recently found that documentation in patient records ($n = 413$) was highly inaccurate compared with direct examination: the prevalence by record audit was 14.3% compared with 33.3% by direct examination. Consequently, a particular strength of the study by Lahmann *et al.* was that that data were obtained by direct observation of the patients or residents by trained nurses on one day in all the participating agencies.

Lahmann *et al.* effectively demonstrated that determining prevalence according to risk category, using a validated risk assessment scale, was beneficial to facilitate comparisons among different populations, settings and specialties. Additionally, the data highlighted the importance of including Stage I to capture the true picture of prevalence because the

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rates were significantly different when Stage I was excluded. Findings that prevalence and risks were higher than average in ICUs, medical and geriatric settings are comparable with other studies. However, an intriguing finding was that although the percentage of residents at risk in nursing homes was 50% higher than in hospitals, the pressure ulcer prevalence rate for hospitals was 7.8% higher than nursing homes in 2002. The authors attributed the difference as possibly due to the more frequent use of specialty support surfaces in nursing homes than hospitals. The authors also pointed out that, although the prevalence rates were less than average in settings typically viewed as low risk such as pediatrics, obstetrics and urology settings, pressure ulcers do occur in those areas.

Overall, this was a thorough and well-presented study that demonstrated the benefits of standardizing protocols for prevalence surveys. To promote consistency in future studies, it is important for investigators to be specific about the validity and reliability of all instruments and provide full descriptions of the specific training and data collection protocol. Lahmann *et al.* reported that nurses collected data using a questionnaire that was adapted from another source and a sample of the items or the instrument as well as validity and reliability data would have been informative for future research designs.

The authors indicated that nurses were trained to gather data and were provided with pictures and definitions of stages. To facilitate replication of survey techniques, a detailed description of the training that nurses received is warranted that includes their prior experience, the amount of time spent in training, type of didactic or simulations provided, and validation of knowledge.

Reporting prevalence according to different categories of risk was an integral part of this study. The authors reported that the Braden scale was used to determine risk level. It was unclear if the Braden score was determined on the same day as the prevalence survey by the same nurse staging the ulcers or if the risk score was obtained from the chart or by another nurse. Additionally, the authors did not fully explain their rationale for using a Braden score of 20 as the cut-off for risk, which was higher than 18, which is typically used (Ayello & Braden 2002). Use of the higher cut-off value increased the size of the group at risk and therefore, to enable comparisons with other studies, Lahmann *et al.* calculated and reported risk group size for Braden scores of 18 and 20. The authors reported that when Stage I was included, the average Braden score was significantly different and when Stage I was excluded, no statistically significant difference was observed in the group at risk.

Based on their findings, Lahmann *et al.* voiced concerns about limitations of risk assessment scales because 188

patients with pressure ulcers were deemed not at risk on the day of the survey and suggested that further study is needed to explain or reconcile such discrepant findings. Lahmann *et al.* concluded that comparison of prevalence rates in different settings is possible if risk groups are defined based on Braden scores of up to 20 and that, irrespective of which score is used (18 or 20), comparison between risk groups is more valuable than overall prevalence rates, which do not account for the numbers at risk.

As identified by Lahmann *et al.*, there are inherent problems in performing prevalence studies due to difficulties in staging and whether Stage I ulcers are included. Because some investigations have excluded Stage I in prevalence estimates, Lahmann *et al.* reported data with and without Stage I to facilitate comparison with other studies. However, it would seem that it is counter-productive to exclude Stage I, which is the heralding sign of pressure injury and it is unclear how their exclusion is beneficial.

Varied definitions of Stage I exist and differentiation of Stage II from Stage III can be difficult. There is some ambiguity about how Stage I ulcers were defined in this study. In the initial discussion of the instrument, it was stated that the degree of pressure ulcers was based on the grading system of the National Pressure Ulcer Advisory Panel (NPUAP) and in the discussion of data analyses, the authors described a Grade I [according to the European Pressure Ulcer Advisory Panel (EPUAP) and NPUAP] as the discolouration of intact skin where light finger pressure applied to the site does not alter the discolouration (non-blanchable erythema). In 1998, the NPUAP revised the definition of Stage I to include changes in temperature, tissue consistency and sensation in addition to colour changes to account for individuals with dark skin tones (National Pressure Ulcer Advisory Panel 2000a). The definition of Stage I is important because the prevalence rates were higher including Stage I and might have been even higher if the revised definition was used and the population included persons with dark skin tones.

With adequate experience, education and training, it should be no more difficult to recognize and correctly identify a Stage I than any of the other ulcer stages. In reality, many clinicians find that differentiating Stage II from Stage III can be the most challenging. Additionally, study protocols should specifically address how ulcers are staged if slough or eschar is present, if there is evidence of healed ulcers, and how pressure ulcers are differentiated from other wounds such as skin tears, perineal dermatitis, or lower extremity ulcers due to venous, arterial, or neuropathic disease (National Pressure Ulcer Advisory Panel 2000b).

Determining incidence was not an objective of these investigators but it merits consideration when examining

the magnitude of pressure ulcer occurrence. According to Robinson *et al.* (2003), prevalence data reflect patients admitted with pressure ulcers as well as nosocomial ulcers and, therefore, do not provide a sensitive measure of nursing care within a particular facility. According to Robinson *et al.*, the best quality care indicator for an agency and gauge of the effectiveness of prevention strategies to reduce nosocomial ulcers is incidence data. Therefore, it is important for future investigators to address collection of incidence in addition to prevalence data to provide a complete picture of occurrence rates.

Lahmann *et al.* are to be commended for their ambitious study, which highlights many significant issues and provides an important contribution to the knowledge about pressure ulcer prevalence and survey methodology. Perhaps the most salient conclusion reached by the authors is that determining prevalence according to risk category provides the most meaningful data.

Continued research is needed to develop and validate a consistent approach for conducting prevalence studies so that benchmarked data can be used to identify best practices to prevent and diminish the negative sequela of pressure ulcers. Consequently, for future pressure ulcer prevalence studies, consensus is needed in several areas: (a) definitions of prevalence and when data are collected (on 1 day or over a period of time), (b) consistent definitions of Stage I, (c) justification for inclusion or exclusion of Stage I, (c) rationale for cut-off values for the Braden risk score to determine onset of risk, (d) validity and reliability data for all instruments, (e) justification for use of existing data vs. direct examination of the patient or resident, and (f) rationale for inclusion or exclusion of incidence data.

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RESPONSE

We would like to thank Phyllis Bonham for the detailed commentary of our article.

Bonham noted that the NPUAP definition was altered in 1998 to enable a better detection of grade 1 ulcers especially in people with dark skin tones. We agree that this is an important issue. Bonham emphasized the importance of gaining data through direct observation/examination rather than through chart review. To achieve this, standardized training was given to fully qualified nursing staff (those who performed the examination) by local coordinators. These local coordinators were obliged to use exclusively our standardized training material consisting of computer presentations, pictures of different pressure ulcer grades, a detailed description of the Braden scale (for assessment on the same day as the examination during the survey) and additional information. Further, all information was summarized in a small guidebook and given to every staff nurse who performed the examination.

Bonham pointed out the advantage of comparisons of standardized risk groups in different populations like in nursing homes and hospitals and asked why we used a cut-off Braden score of ≤ 20 points rather than a cut-off of ≤ 18 points (which seems to be much more common). The use of the Braden scale with a cut-off of 20 was based on earlier research (Halfens 2000). We would like to refer here also to our commentary reply to Jackson. It is clear that comparison of standardized risk groups is much better value than, say, comparison of non-standardized populations, although the impact of wrong positives (persons with pressure ulcers in a group defined as not at risk) in calculated prevalence rates has to be taken into account. In our study, the use of a very sensitive cut-off Braden score of 20 points and less meant that

a considerable number of persons (188) with at least one pressure ulcer dropped out of the risk group prevalence rate simply because they are considered to be not at risk. If a less sensitive cut-off point of 18 had been used, even more persons with a pressure ulcer would have not been displayed in the risk group pressure ulcer prevalence rate.

We agree with Bonham that despite the high popularity of conducting epidemiological research by doing prevalence or incidence studies there are still a lot of methodological problems. These limit the possibility of interpreting results by comparing them with the findings of other studies. In 2003 and 2004, surveys comparable with the published one were carried out and currently the 2005 survey is under preparation. With a continuously growing database and the possibility of also analysing longitudinal effects, more research in this area is possible.

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