

Applied nutritional investigation

Differences in nutritional care in pressure ulcer patients whether or not using nutritional guidelines

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Abstract

Objective: Malnutrition, characterized by a loss of lean body mass, enhances the risk of pressure ulcers (PUs). Because the intrinsic risk factor nutritional status in PU development can be influenced by practitioners' interventions, the use of clinical guidelines might be a satisfactory management approach. This study investigated the influence of using nutritional guidelines in daily practice on the actual nutritional care that PU (prone) patients receive, and barriers with regard to providing nutritional support were also explored.

Methods: A cross-sectional study was carried out in 1087 hospitals, nursing homes, and home care organizations in the Netherlands, Germany, and the United Kingdom. Because this study focused on comparing nutritional care in daily practice in PU (prone) patients using and not using nutritional guidelines, for the analyses two groups (health care organizations with and without guidelines) were identified. Differences between groups were tested using chi-square test and by analysis of variance.

Results: Respondents from 363 organizations participated in the study, of which 66.1% used nutritional guidelines for PU care in practice. Significant differences between organizations with nutritional guidelines versus organizations without guidelines were mostly on nutritional screening ($P = 0.001$) and the extent of nutritional assessments that included significantly more weight history recalls, weight measurements, and body mass index measurements (all $P < 0.05$). The most important barrier to providing nutritional support for PU (prone) patients in both groups was knowledge and skills.

Conclusion: Using a nutritional guideline in PU care contributes to the amount of nutritional screening conducted in daily practice and to the content and extent of the assessment. © 2008 Elsevier Inc. All rights reserved.

Keywords: Guideline; Nutrition; Pressure ulcer; Current practice

Introduction

Undernutrition and protein–energy malnutrition are seen in alarmingly high rates among institutionalized patients. Malnutrition can be defined as a nutritional condition in

which an insufficiency, an overload, or a disproportion of energy, protein, and other nutrients causes adverse effects on tissue/body form (body shape, size, and composition) and function and clinical outcomes [1]. Comparing data on the prevalence of malnutrition in institutionalized (hospi-

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tals, nursing homes, and home care) patients in different European countries shows that prevalence rates vary from 20% to 60% [2]. A combination of loss of lean body mass and immobility enhances the risk of pressure ulcers (PUs) by 74% [3]. The development of PUs depends on extrinsic and intrinsic risk factors. The largely examined extrinsic risk factors pressure, shear, and friction lead to mechanical loading of the skin and soft tissue [4]. The intrinsic factors have an effect on tissue viability in patients and consequently influence the pathophysiologic response to mechanical loading. Studies exploring these intrinsic risk factors have found significant effects associated with limited activity, age, bowel and bladder incontinence, anemia, infection and nutritional status [5–11].

A PU, also known as decubitus ulcer or pressure sore, is defined as “localized damage to the skin and underlying tissue caused by pressure, shear, friction or a mixture of these” [12]. PUs are widespread, expensive, and painful health care problems, with prevalence rates ranging from 3% to 66% in hospitals, nursing homes, and home care [13,14]. The estimated cost of treating PUs in the United Kingdom is €1.07 billion, in the United States €2.4 billion, and in the Netherlands €0.6 million [15,16]. Improving the quality of PU care could influence the estimated annual costs and quality of life [9,13,14,17].

A causal relation between nutrition and PU has not yet been found because studies performed thus far in this field have been of weak methodologic quality [18]. Nevertheless, a systematic review by Stratton et al. [19] pointed out that, although more robust randomized controlled trials are required, nutritional supplements were associated with a significantly lower incidence (by 25%) of PU development and that several studies in which patients received high-protein nutrition demonstrated a tendency toward enhanced healing of PU.

The intrinsic factor nutritional status, within the development and healing of PUs, can be controlled by patients and practitioners’ interventions. Using clinical guidelines in this area could indicate an optimal PU management approach by professionals and could eventually positively influence health care costs and quality of life. In daily practice, guidelines have been shown to facilitate the implementation of scientific research outcomes, present structured instructions on how to give efficient and effective care, and thereby lead to improved quality of care [20,21].

The nutritional working group of the European Pressure Ulcer Advisory Panel (EPUAP) launched a specific clinical nutritional guideline in PU prevention and treatment in eight languages in 2004 [22]. Although this guideline was developed at an international level, after 1 y the guideline was disseminated widely. In a follow-up study [23], more than half of the respondents were aware of the guideline, and one in four was actually using it in daily practice [23]. Research on guidelines and guideline implementation, however, in-

dicates that the use of guidelines is not always reflected in the actual care that patients receive [24–27]. Estabrooks [28] refers to this dilemma as a gap between what is known and what is done. Therefore, after distributing the nutritional guideline and studying its dissemination [23], the nutritional working group of the EPUAP was interested in how daily practice where nutritional guidelines (e.g., the EPUAP nutritional guidelines) were implemented compared with daily practice where nutritional guidelines were not implemented and whether there was any difference in nutritional care that PU (prone) patients received. Furthermore, differences in the barriers to implementing nutritional support for PU (prone) patients were explored in these two groups.

Materials and methods

A cross-sectional design was used for this study. A sample of hospitals, nursing homes, and home care organizations in the United Kingdom, the Netherlands, and Germany were contacted by mail at the end of 2005 by the national coordinator in each country. The national coordinators were members of the EPUAP nutritional working group.

In total 1087 health care organizations (300 from the Netherlands, 300 in Germany, and 487 in the United Kingdom) were invited to participate. The printed questionnaires were sent to the managers of the health care organizations with the kind request to distribute them to the individual in the organization who was principally responsible for nutritional policy in PU prevention and treatment. Ethical approval was not necessary because the questions focused on organizational aspects and did not gather data at a patient level.

The standardized questionnaire was constructed by the EPUAP nutritional working group. The questions were translated into English, German, and Dutch by the members of the EPUAP nutritional working group and checked for content similarity.

Questions focused on the implementation of nutritional guidelines for PU prevention and treatment in daily practice and on the actual nutritional care given to patients with PU, which included screening of nutritional status (is the patient screened, by whom, how often, content of screening), nutritional assessment (content), nutritional interventions (when, kind, and content), evaluation (outcome measurements of nutritional intervention), and follow-up (policy after evaluation). Two further questions were included on what barriers to implementing nutritional support within PU prevention and treatment were present in daily practice. In addition, demographic characteristics of respondents were collated (profession, workplace, frequency of involvement in PU care, and membership of a PU committee or involvement in PU policy).

Statistical analysis

Statistical analyses were performed using SPSS 13.0 (SPSS Inc., Chicago, IL, USA). Because the successive samples of the separate countries were too small for comparison of the countries and groups (with and without guideline) separately (total $n = 50$ in Germany, 28 used guidelines), the sample was combined and therefore the total sample of organizations was used for analysis. The statistical analysis included descriptive frequency distributions of all variables. Because this study focused on comparing nutritional policy in patients with PU in daily practice with and without the implementation of a nutritional guideline, two groups were identified for the analysis: with (group 1) and without (group 2) a nutritional guideline in PU care in daily practice. Differences between groups were tested with chi-square test and analysis of variance. Statistical significance was set at $P < 0.05$. In some questions multiple answers were possible, therefore the total can be $>100\%$.

Results

The sample

In total, respondents of 363 organizations (146 Dutch, 50 German, and 167 British) participated in the study, with a response rate of 33% (49% for the Netherlands, 17% for Germany, and 34% for the United Kingdom). Of the non-respondents no further information was available about the reason for non-response.

Most respondents were involved daily or weekly in the care of patients with PU and consisted generally of nurses (58.8%) and dietitians (17.8%). Of the respondents 85.5% were members of an internal PU committee or involved in the PU policy of their organization. The largest group of respondents worked in a hospital setting (46.9%), followed by a long-term care setting (nursing home, 25.8%), and home care (21.6%).

In 240 (66.1%) organizations nutritional guidelines for PU prevention and treatment were implemented, which left 123 (33.9%) organizations where no nutritional guidelines were implemented.

Most nutritional guidelines mentioned were developed in line with national guidelines (43.8%) or on a local level (35.1%). Table 1 lists the characteristics for the guideline and non-guideline groups.

Table 1 shows that in the guideline group there were significantly more dietitians compared with the non nutritional guideline group. Nurses reported more frequently that they did not use nutritional guidelines but the difference was not significant. Table 1 also shows that in home care settings significantly fewer ($P = 0.003$) nutritional guidelines were used in PU care compared with long-term institutional care where the trend ($P = 0.003$) was

Table 1
Characteristics of the groups

	Guideline ($n = 240$)	No guideline ($n = 123$)
Profession		
Physician	5.9%	7.0%
Dietitian	21.8%*	10.5%
Nurse	55.2%	64.9%
Other	17.1%	17.6%
Care setting		
Hospital	45.8%	48.2%
Home care	18.1%*	28.9%
Nursing home	30.3%*	17.5%
Other	5.8%	5.4%
Member of PU committee	83.3%	77.9%

PU, pressure ulcer

* Significant ($P < 0.05$) between guideline and no guideline.

the opposite. In both groups the respondents were mostly members of PU committees.

Focusing on the nutritional activities from screening, assessment, and intervention, nutritional screening in PU care was conducted significantly more frequently in organizations where a nutritional guideline was used compared with the group not using a guideline (Table 2). In the group not using a nutritional guideline 18.3% never performed nutritional screening in patients with PU, whereas in the group using a nutritional guideline this was significantly

Table 2
Nutritional care in patients with PU

	Guideline ($n = 240$)	No guideline ($n = 123$)
Nutritional screening for every patient with PU?		
Always	38.8%*	14.4%
Sometimes	56.7%	44.2%
Rarely	5.6%*	23.1%
Never	3.0%*	18.3%
How frequently screened?		
At first contact only	9.8%	5.6%
At regular intervals	43.6%*	21.3%
When condition indicates	31.6%	34.3%
Never	1.3%*	11.1%
Don't know	12.4%	12.4%
Nutritional interventions		
Normal feeding	48.8%	39.5%
Oral supplements	90.4%	80.7%
Tube feeding	37.5%	36.8%
Parenteral feeding	21.7%	26.3%
Outcome measurements to record success or failure of nutritional interventions		
No measurement	17.5%	20.2%
Weight gain	55.0%*	28.9%
Development of PU	44.2%*	27.2%
Improvement in PU healing	56.7%*	33.3%
Biochemical parameters	17.5%	20.2%

PU, pressure ulcer

* Significant ($P < 0.05$) between guideline and no guideline.

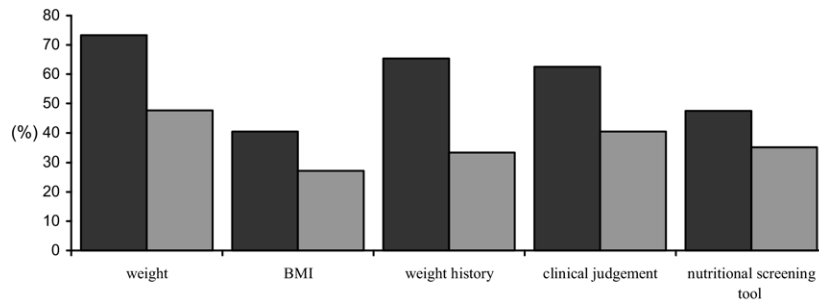


Fig. 1. Content of nutritional assessment with (black bars) versus without (gray bars) guidelines. BMI, body mass index.

less (3.0%, $P = 0.001$). Furthermore, structured nutritional screening at regular intervals was significantly more frequent ($P = 0.01$) in the group using a nutritional guideline. Moreover, in the group using a guideline, the number who “never” screened was significantly ($P = 0.001$) smaller than in the group using no nutritional guideline.

The content of nutritional assessment in the two groups is indicated in Figure 1, which shows that in the group using a guideline, the content of nutritional assessment consisted more frequently of weight measurements, weight history recalls, body mass index calculation, clinical judgment, and use of nutritional screening tools such as Malnutrition Universal Screening Tool (MUST) or Nutritional Risk Screening (NRS 2000) (as part of the assessment) compared with the group not using a nutritional guideline. All differences were statistically significant ($P < 0.05$).

Nutritional interventions (Table 2) such as normal feeding and oral supplements were used more frequently in the nutritional guideline group, whereas tube feeding was used equally in the two groups and parenteral feeding was given less frequently in the group using guidelines. However, no significant differences were found between the two groups concerning the use of nutritional interventions.

Focusing on outcome measurements to record success or failure of a nutritional intervention, Table 2 shows that, in the group using a nutritional guideline, weight gain, development of PU, and improvement in PU healing were used significantly ($P < 0.05$) more frequently as outcome indicators than in the group not using a nutritional guideline.

Figure 2 shows that the most important barrier to giving patients nutritional support in both groups was knowledge and skills ($P = 0.06$). Figure 2 also shows that, in the group using nutritional guidelines, lack of resources ($P = 0.001$) and “other” ($P = 0.001$) were mentioned more frequently compared with the group not using a guideline. Analyzing the open category “other” indicated that other barriers identified most frequently were lack of time, staff not understanding screening, and general practitioners’ reluctance to prescribe supplements and to refer patients to a dietitian.

In the group not using a nutritional guideline, lack of specific guidance ($P = 0.001$) and reimbursement restrictions ($P = 0.001$) were mentioned most frequently after lack of knowledge and skills. In addition, the category “no bar-

riers exist” was mentioned more in organizations using a nutritional guideline than in organizations not using a nutritional guideline ($P = 0.001$).

Discussion

The goal of this study was to investigate differences in daily practice regarding nutritional care in patients with PU and possible barriers in providing patients nutritional support between organizations with and without a nutritional guideline implemented in PU care. The results show that screening is done significantly more in daily practice where a nutritional guideline is in place. So having a nutritional guideline in PU care contributes to the amount and frequency of screening performed in daily practice. However, what we do not know is whether this screening was already part of the care before the actual specific guidelines being implemented because this is a cross-sectional study and therefore this information is not available.

Considering nutritional assessment in daily practice where a nutritional guideline is used, more extensive nutritional diagnostic activities such as weight measurements, weight history records, body mass index calculations, and clinical judgments were recorded. Nutritional interventions such as nor-

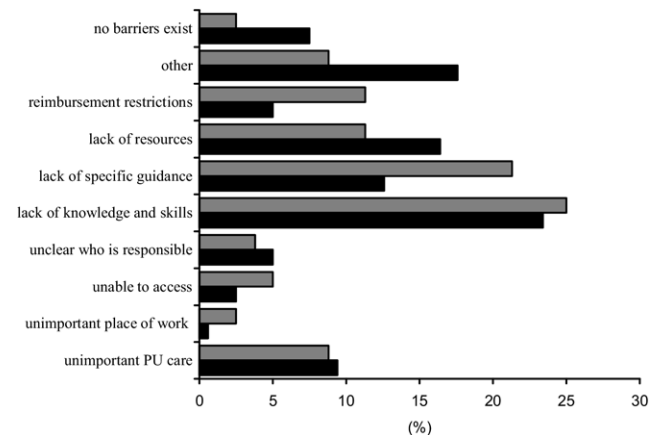


Fig. 2. Barriers in nutritional support for patients with PU with (black bars) versus without (gray bars) guidelines. PU, pressure ulcer.

mal feeding and oral supplements were also used more frequently in the group using a guideline. The rationale for this could be that more diagnostic activities logically may be followed by more therapeutic interventions. However, with regard to this aspect, no significant differences were found between the two groups.

One of the reasons could be that the guideline implementation is still in an early phase in the participating organizations.

The results showed that in home care settings nutritional guidelines in PU care were used significantly less often compared with long-term institutional care setting. This could be because in home care it is perhaps more difficult to implement guidelines as patients live independently, nurses work autonomously and visit the client for only short periods, and therefore may have less influence on the total patient care.

Understanding the barriers to implementing nutritional support is important to be able to develop strategies that can be used to increase the use of an adequate nutritional policy in daily practice [29]. The most important barrier to implementing adequate nutritional support in both groups was lack of knowledge and skills. This barrier has already been identified in previous studies [26,30,31]. In the no guideline group lack of specific guidance was also mentioned paradoxically. The group using a guideline in daily practice appeared to have more barriers to implementing nutritional support than the group not using a guideline. This might be because this group is more focused on nutritional activities in PU care and therefore they are more often confronted with actual barriers. In this study, these barriers were not further explored and therefore no additional information was available about which skills and knowledge and resources were lacking.

Limitations

It is important to notice that due to the rather low response rate, it could be possible that the results present a skewed view of the current state of daily nutritional care. Therefore the results have to be interpreted carefully. Furthermore, this study focused on daily practice where a nutritional guideline was implemented versus a practice where this was not the case. The availability of a nutritional guideline, however, does not necessarily mean that professionals use the guideline in the correct way. The findings of our study were based on reported practice and not on observed practice. Although actual data on daily practice would be preferable for this study, it was assumed that reported practice would not differ strongly from actual practice. Also, the sample was analyzed as a whole, rather than comparing the groups in each country, due to the small sample from each country. Nevertheless, the literature on guideline development in all three countries was examined and no major differences were found, and therefore the

decision was made to analyze the data as one sample [32,33].

In addition, there was no indication of how long the nutritional guidelines had been implemented in practice and what the exact content of these guidelines were, which also might have influenced the results.

Three out of four respondents in both groups were members of a PU committee or involved in PU policy, which could have biased the results because the group that replied to the questionnaire were probably more interested in PU care.

As argued in the INTRODUCTION, individual studies have indicated that adequate nutritional status has a positive effect on PU prevention and healing [18,19]. It is important that this relation is made more explicit. Scientific evidence from robust randomized controlled trials is consequently needed. This will help enlarge our understanding of the relation between PU and nutrition and offer a stronger evidence base on which to implement new guidelines.

Conclusion

The goal of this study was to investigate the influence of having a nutritional guideline in daily practice on actual nutritional care in PU (prone) patients and the relevant barriers to implementing nutritional support. The results show that having a nutritional guideline in PU care contributes to the amount of nutritional screening in daily practice and the content and extent of the nutritional assessments. The most important barrier to implementing nutritional support in both groups was lack of knowledge and skills, followed by lack of resources.

Recommendations

1. The introduction of nutritional guidelines in PU care should be considered to increase the frequency of nutritional screening of patients and, hence, to identify nutritional problems for those at risk of PU development or with PUs, in time to start adequate and individualized nutritional interventions.
2. The use of nutritional guidelines in PU care is a multidisciplinary challenge because nutrition is not the responsibility of any one health care profession.
3. Focusing on relevant barriers to implementing nutritional support in PU care is essential to create an adequate and effective nutritional policy.

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