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ORIGINAL ARTICLE

Do recommendations for institutional food service result in better food service? A study of compliance in Danish hospitals and nursing homes from 1995 to 2002–2003

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Background: Since 1995, significant efforts by authorities and researchers have been directed towards addressing the nutritional problems in Danish hospitals and nursing homes.

Aim: The purpose of this study was to investigate whether the increased focus on nutritional problems in patients and nursing home residents has resulted in measurable progress.

Design: A questionnaire-based study was carried out among foodservice managers in Danish hospitals ($n=96$) and nursing homes ($n=898$) in 1995 and 2002/3 ($n=90$) and ($n=682$), respectively. The study used compliance with selected issues in the official Danish recommendations for institutional food service as an indicator for progress. The issues included: using nutrient calculated recipes/menus, offering menu choice options, using feedback routines on acceptability of menus, maintaining nutritional steering committees, employing food and nutrition contact persons, employing official recommendations and offering choice between three different menu energy levels.

Results: Hospitals had a higher compliance compared to nursing homes. In 1995, this was the case for all questions asked and differences were statistically significant. Also in 2002/3, hospitals had a higher compliance, except in the case of established feedback routines. Differences were statistically significant. The results indicate that nutritional care is higher on the agenda in hospital, than in nursing homes. However, very little progress can be seen in compliance when results are analysed over the 8-year period. The only progress for nursing homes was that more homes had implemented feedback routines on acceptability of food service in 2002/3 than in 1995. The difference was statistically significant. For hospitals, however, no progress was found between 1995 and 2002/3.

Conclusion: The attempts to improve the nutritional status of hospital patients and nursing home residents seem to have failed. Still, the initiatives taken to improve the situation seem relevant. Especially the nursing homes might benefit from advantage of these experiences.

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Keywords: undernutrition; patients; nursing home residents; questionnaire

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Contributors: BEM and AL co-developed the first questionnaire. AL and AMB developed the second questionnaire based on the first questionnaire and computed the data. AMB wrote the first draft and all authors co-refined it into a manuscript and BEM did the final editing.

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Introduction

Undernutrition is a serious problem among patients at hospitals and among residents at nursing homes. Studies across Europe have pointed to the same conclusion, namely that poor appetite, low food intake and undernutrition is widespread among hospital patients and nursing home residents. These phenomena lead to increased morbidity and mortality (Green *et al.*, 1999; Bates *et al.*, 2002; Council of Europe, 2002; Beck *et al.*, 2003). The Council of Europe has pointed to five barriers, which are common all over Europe:

(1) lack of clearly defined responsibilities, (2) lack of sufficient education, (3) lack of influence and knowledge of the patients, (4) lack of co-operation between different staff groups and (5) lack of involvement from the hospital management (Council of Europe, 2002; Beck *et al.*, 2003).

Substantial efforts have therefore been invested in attempts to improve the situation, and a number of different development projects and initiatives targeted nutrition at hospital and nursing homes have been initiated in different countries. In Denmark, a number of interventions have been carried out primarily in hospitals (Kondrup *et al.*, 1998; Kondrup, 2001; Beck *et al.*, 2002; Almdal *et al.*, 2003; Beck and Ovesen, 2004; Johansen *et al.*, 2004; Lassen *et al.*, 2004, 2006). These interventions have been supported by an action plan for Better Hospital Meals from The Ministry of Food, Fisheries and Agriculture and The Ministry of Health as well as with funds from the Ministry of Health and the Danish Health Technology Assessment at the National Board of Health. In nursing homes, only a few interventions have been carried out (Beck *et al.*, 2002; Beck and Ovesen, 2004). However, other initiatives have been carried out in nursing homes within the framework of Better Meals for the Elderly action plan launched jointly by The Ministry of Social Affairs and the Ministry of Food, Fisheries and Agriculture.

Both of the mentioned action plans involved the development and issuing of inspirational material for municipalities, nursing home residents and hospital patients, as well as educational materials and guidelines for nutrition in hospitals and nursing homes. Finally, the action plans included financial support (around 3 million Euros) from government to nutritional research projects.

As a substantial amount of research, development projects and initiatives have been carried out targeting nutrition at the hospitals and the nursing homes, it is important to examine whether these efforts have resulted in any measurable progress and it is relevant to use compliance with recommendations as an indicator.

The recommendations on Danish institutional menus were first issued in 1995 by the Veterinary and Food Administration (Pedersen and Ovesen, 2000). These recommendations comprised recommendations and suggestions on how to improve the nutritional status of the patients and the nursing home residents. The recommendations dealt with the establishment and maintenance of cooperation between professionals in the different staff groups involved in institutional food and nutrition services and how to secure a sufficient exchange of information between ward and kitchen. In addition, recommendations dealt with how to get feedback from nursing home residents and patients regarding their acceptance of and satisfaction with the food and meal service.

The recommendations also comprised advice as to how to use recipes and menus with calculated nutrient content, and specifications on the quantity and type of meals and menu choice options were proposed (Pedersen and Ovesen, 2000). Because most patients/nursing home residents have poor

appetite and low food intake, the hospital menu 40E% from fat and the energy and protein dense menu with 50E% from fat should be the two most commonly served menus according to recommendations (Pedersen and Ovesen, 2000). The energy- and protein- dense menu should be used for patients/nursing home residents with a very poor appetite, chewing and swallowing difficulties and a very low food intake (Pedersen and Ovesen, 2000). In addition to these menus, a normal menu with 30E% from fat for patients/nursing home residents without nutritional problems and medically indicated diets should be made available according to the recommendations.

Purpose

Based on an analysis of quantitative data on compliance with recommendations collected in 1995 as well as in 2002/3, the purpose of this study was to investigate whether the increased focus on nutritional problems among nursing home residents and hospital patients has resulted in measurable progress.

Materials and methods

Two questionnaires-based surveys on food service in hospitals and nursing homes were carried out in 1995 and in 2002/2003. In 1995, the questionnaire study was a part of a larger project investigating the public food service sector. The questionnaires were mailed to the counties, which are the local authorities responsible for hospital food service, as well as to the municipalities, which are the local authorities responsible for food service for the elderly. The authorities were asked to distribute the questionnaires to the daily manager of the relevant kitchens – either hospital food service ($n_{\text{tot}}=96$) or food service for the elderly ($n_{\text{tot}}=898$). The latter is responsible for on-site feeding of residents as well as distribution of meals to home-living individuals.

In the 2002–2003 round of data production, the authors were forced to a slight change of methodology. This round was carried out without the same local authority support as in the first round and therefore it was necessary to collect data directly from the kitchens of the hospitals ($n_{\text{tot}}=90$) and nursing homes ($n_{\text{tot}}=682$). These questionnaires comprised the same questions as in 1995 and had some additional questions regarding the recommendations for Danish institutional menus (see Appendix 1). Questionnaires were specifically designed by the authors for either hospital or nursing home and were developed in a dialogue with practitioners from both hospitals and nursing homes. The person in charge of the food service, for example, the administrative dietitian or food service manager was asked to complete and return the questionnaire. The responders could be anonymous. No reminder was sent out.

Data are presented as percentages. Microsoft Excel 2000 was used as statistical software. The prevalence of positive answers to the questionnaire were compared by means of χ^2 tests with Yate's correction. Two-sided *P*-values <0.05 were considered significant.

Results

In the first data production round in 1995, a total of 74 (77%) hospitals and 853 (95%) nursing homes reported back. In 2002/2003, 46 (51%) hospitals and 314 (46%) nursing homes responded as shown in Table 1. Answers to the questionnaires are presented in Table 2.

Table 1 Numbers of kitchens participating in the survey in 1995 and 2002–2003

	Kitchens in 1995 (%)	Kitchens in 2002–2003 (%)
<i>Hospitals</i>	74 (77)	46 (51)
Somatic	60 (81)	37 (80)
Psychiatric	10 (14)	9 (20)
Missing	4 (5)	—
<i>Nursing homes</i>	853 (95)	314 (46) ^a
Somatic	817 (96)	
Psychiatric	30 (4)	
Missing	6 (<1)	

Percentages are shown in brackets.

^aSince 1995, the nursing homes have been reorganized so that there is no longer a division between somatic and psychiatric nursing homes.

Table 2 Prevalence of positive answers to the questions in the questionnaire

Question	Hospitals 1995 <i>H</i> ¹ (%)	Hospitals 2002–2003 <i>H</i> ² (%)	<i>H</i> ¹ vs <i>H</i> ²	Nursing homes 1995 <i>NH</i> ¹ (%)	Nursing homes 2002–2003 <i>NH</i> ² (%)	<i>NH</i> ¹ vs <i>NH</i> ²	<i>H</i> ¹ vs <i>NH</i> ¹	<i>H</i> ² vs <i>NH</i> ²
Using recipes with calculated nutrient content (always)	45	58	NS	7	5	NS	***	***
Using menus with calculated nutrient content (always)	42	49	NS	14	15	NS	***	***
Offering choice of menus at hot meal (always)	51	57	NS	33	31	NS	**	**
Feedback routines on food service implemented	52	47	NS	33	52	***	**	NS
Nutritional steering committees implemented	71	84	NS	23	26	NS	***	***
Employing contact persons in (every/some) wards	53	66	NS	38	43	NS	*	*
Employing official recommendations (always)	NA	79	—	NA	29	—	—	***
Offering normal menu (prevalence)	NA	33	—	NA	41	—	—	***
Offering hospital menu (prevalence)	NA	34	—	NA	29	—	—	***
Offering energy and protein dense menu (prevalence)	NA	4	—	NA	7	—	—	***
Offering texture modified menus (total prevalence)	NA	5	—	NA	12	—	—	***
Offering home-made sip feedings (prevalence)	NA	12	—	NA	4	—	—	***

H = hospital, *NH* = nursing home, NA = question not asked. **P* < 0.05. ***P* < 0.01. ****P* < 0.001.

In 1995, hospitals showed significant higher compliance for all questions asked compared to nursing homes. In 2002/2003, additionally four questions were asked compared to the first questionnaire. The majority of questions showed significant higher compliance. One exception was in the case of established feedback routines.

Very little progress can be seen in compliance when results are analysed over the 8-year period (Table 2). The only progress found was that more nursing homes had established feedback routines on acceptability of food service in 2002/3 than in 1995 (*P* < 0.001). For hospitals, however, no progress was found.

Discussion

The results in the present study show that the increased focus that have been shown by government over the past decade has not resulted in an overall better compliance with the recommendations for Danish institutional menus (Anonymous, 2001, 2003). The indicators chosen do not directly reflect the nutritional status of the study population. Still, other Danish studies have found an equal lack of improvement when it comes to quantitative measurements of nutritional intake of patients (Hessov, 1977; Stellfeld and Gyldendorf, 1988; Kondrup *et al.*, 2002; Almdal *et al.*, 2003; Lassen *et al.*, 2004). Also, other recent studies have concluded that the general knowledge of the importance of proper nutrition is rather limited among Danish health-care personnel (Kondrup *et al.*, 2002; Almdal *et al.*, 2003; Lassen

et al., 2004; Rasmussen *et al.*, 2004). Finally, the results from a recent paper indicate that the prevalence of undernutrition in hospitals can be reduced if a variety of nutrition care strategies is implemented, which target identification of undernutrition and its treatment (O'Flynn *et al.*, 2005).

Our results show that there is a marked difference in the compliance with the recommendations between hospitals and nursing homes, with the former showing the highest compliance. The lack of focus on food service in the primary health-care sector is surprising as the elderly people often are dependent on health-care service for many years. An explanation to this lack of focus could be that the high prevalence of low food intake and underweight among residents and clients in Denmark has not been documented until recently (Beck and Ovesen, 2002). Besides, the barriers identified by the Council of Europe for proper hospital nutrition (Council of Europe, 2002) are probably also present in nursing homes.

There are some limitations to the design of the present study. The response rate in 2002–2003 was much lower than in 1995. The reason for this is probably that the first survey was part of a bigger survey of the public food service in Denmark, which involved several ministries and political organizations, and hence received much focus and support in the media. In contrast, the survey in 2002–2003 was carried out as a part of a research project and hence with less attention and prestige involved. Unfortunately, it is not possible to give a description of those who did not respond, as anonymous response was possible. One could speculate that those institutions less interested in nutrition or with poorer compliance with the recommendations were less likely to respond. Therefore, it is possible that the results presented are actually overoptimistic.

Another limitation is that most of the questions deal with the production of menus, but not with the other important factors related to food service, that is, how the nutritional steering committees are working and by whom information to patients are given. Still, our results point to the fact that implementation of nutritional innovations in food service systems can be a lengthy and difficult process involving a number of different stakeholders as discussed by Mikkelsen *et al.* (2003), Mikkelsen (2004) and Kristensen *et al.* (2005). The individual actors, the hospital owners, the hospital managements, the head of departments and the care staffs, act very differently in terms of their priorities and work with nutritional care (Lassen *et al.*, 2006). For improvements to take effect, stakeholders involved in foodservice should work together towards a common goal. However, in addition, this issue should be able to compete against a whole range of other change agendas in hospital and nursing home food service. To solve the problems highlighted, a combined timely and concerted effort is required from national authorities and hospital staff, including management, to ensure appropriate nutritional care and support (Council of Europe, 2002). Focus should be not only on the immediate effects of

intervention but also on the longer-term viability/sustainability of intervention as discussed by O'Loughlin *et al.* (1998).

Recently, the Danish Centre for Evaluation and Health Technology Assessment published a health technology assessment on nutritional care of medical patients. The health technology assessment describes the problems in current national care with the official Danish recommendations on institutional menus, and identifies prospects for improvements. Among these are hospital managers' active involvement, necessary time resources to perform nutritional care, the availability of energy-dense meals 24 h a day, a facilitator contact between care and kitchen staff and involvement of the patient (Lassen *et al.*, 2006).

There might be several reasons for the limited progress. In the case of hospital food, provision is associated with very little status in comparison with other issues at hospital. This is the case both when these issue are subject to prioritization within the hospital or institution and when decision makers at national level address food and nutrition issues. Another reason for the limited progress within this field might be that administrative dietitians have driven the push for progress for a large part. Although this has helped putting the issue on the agenda, the ability of the administrative dietitians to drive policy is limited owing to the limited status given to this important staff group. A third reason might be that the responsibility at the institutional level falls between two chairs, in this case between the food service department and the ward. In addition, the responsibility for nutritional care at the wards falls between many staff members. At the national level, an explanation might be that several ministries have been involved in the policy process. In many cases, involvement of more authorities at the same level leads to a risk of reduced decision-making speed, which might have been the case here. In the case of hospitals, both the ministry responsible for health as well as the one responsible for food were involved and similarly in the case of nursing homes, both the ministry responsible for food and the ministry responsible for social affairs were involved. Another explanation is that although attention from ministries have resulted in recommendations, guidelines and inspirational material, it is the Counties that are responsible for nutrition issues in hospitals and it is their own choice, how the recommendations should be implemented.

In conclusion, our study shows that despite 8 years of considerable attention from government, authorities and citizens aiming at improving the nutritional status of Danish patients and the nursing home residents, very little progress can be seen. This is the case when compliance with the official Danish institutional nutrition recommendation is used as a measure. The study also show that especially in nursing homes there is great need for initiatives and that the nursing home sector might benefit from taken advantage of the experiences done in the hospital nutrition area.

References

- Anonymous (2001). *Better food for the elderly*, Ministry of Food, Agriculture and Fisheries/Ministry of Social Affairs (in Danish), available at [http://www.social.dk/netpublikationer/p4bm\(ae\)270401/bedre_mad.pdf](http://www.social.dk/netpublikationer/p4bm(ae)270401/bedre_mad.pdf).
- Anonymous (2003). *Better food for the sick – Why and how*. National Board of Health/National Food Agency (in Danish), available at www.bedremadtilsyge.sst.dk.
- Almdal T, Viggers L, Beck AM, Jensen K (2003). Food production and wastage in relation to nutritional intake in a general district hospital – wastage is not reduced by training of staff members. *Clin Nutr* 22, 47–51.
- Bates CJ, Benton D, Biesalski HK, Staehelin HB, Van Staveren W, Stehle P et al. (2002). Nutrition and aging: a consensus statement. *J Nutr Health Aging* 6, 103–116.
- Beck AM, Balknäs UN, Camilo ME, Fürst P, Gentile MG, Hasunen K et al. (2003). The European view of hospital undernutrition. *Nutr Clin Pract* 18, 247–249.
- Beck AM, Ovesen L, Schroll M (2002). Home-made oral supplement as nutritional support of old nursing home residents, who are undernourished or at risk of undernutrition based on the MNA. A pilot trial. *Aging Clin Exp Res* 14, 212–215.
- Beck AM, Ovesen L (2002). Body mass index, weight loss and energy intake of old Danish nursing home residents and home-care clients. *Scand J Caring Sci* 16, 86–90.
- Beck AM, Ovesen L (2004). The effect of diet modification on dietary intake, and body weight of elderly nursing home residents formerly receiving chopped or blended diets. A pilot trial. *J Food Serv Res Int* 14, 211–221.
- Council of Europe (2002). *Food and Nutritional Care in Hospitals: How to Prevent Undernutrition*. Council of Europe Publishing: Strasbourg.
- Green CJ (1999). Existence, causes and consequences of disease-related undernutrition in the hospital and the community, and clinical and financial benefits of nutritional intervention. *Clin Nutr* 18 (Suppl 2), 3–28.
- Hessov I (1977). Energy and protein intake in elderly patients in an orthopaedic surgical ward. *Acta Chir Scand* 143, 145–149.
- Johansen NN, Kondrup J, Plum LM, Bak L, Norregaard P, Bunch E et al. (2004). Effect of nutritional support on clinical outcome in patients at nutritional risk. *Clin Nutr* 23, 539–550.
- Kondrup J (2001). Can food intake in hospitals be improved. *Clin Nutr* 20 (Suppl 1), 153–160.
- Kondrup J, Bak L, Hansen BS, Ipsen B, Ronneby H (1998). Outcome from nutritional support using hospital food. *Nutrition* 14, 319–321.
- Kondrup J, Johansen N, Plum LM, Bak L, Højlund Larsen I, Martinsen A et al. (2002). Incidence of nutritional risk and causes of inadequate nutritional care in hospitals. *Clin Nutr* 21, 461–468.
- Kristensen NH, Thorsen AV, Engelund E, Dahl A, Mikkelsen BE (2005). Innovation, management and sustainability – change processes in the food service sector. In: Edwards JSA(ed). *Global and National Perspectives, Conference Proceedings of Fifth International Conference on Culinary Arts and Sciences*, Bournemouth University: Bournemouth. pp 12–16.
- Lassen KO, Kruse F, Bjerrum M, Jensen L, Hermansen K (2004). Nutritional care of Danish medical inpatients: effect on dietary intake and the occupational groups' perspectives of intervention. *Nutr J* 3, 1–13.
- Lassen KO, Olsen J, Grinderslev E, Kruse F, Bjerrum M (2006). Nutritional care of medical inpatients: a health technology assessment. *BMC Health Services Res*, 6, 7.
- Mikkelsen BE (2004). Are traditional food service organisations ready for organisational change? – a case study of implementation of environmental management in a work place canteen facility. *J Food Serv Res Int* 15, 89–106.
- Mikkelsen BE, Beck AM, Balknäs UB, Camilo ME, Fürst P, Gentile MG et al. (2003). What can food service operators do to remedy undernutrition in hospitals? – a European perspective from an *ad hoc* group on Nutrition Programmes in Hospitals, Council of Europe. *J Food Serv Res Int* 13, 269–278.
- O'Flynn J, Peake H, Hickson M, Foster D, Frost G (2005). The prevalence of malnutrition in hospitals can be reduced: results from three consecutive cross-sectional studies. *Clin Nutr* 24, 1078–1088.
- O'Loughlin J, Renaud L, Richard L, Sanchez Gomez L, Paradis G (1998). Correlates of the sustainability of community-based heart health promotion interventions. *Prev Med* 27, 702–712.
- Pedersen A, Ovesen L (Eds.) (2000). *Recommendations Regarding the Food Served in Danish Institutions*, Danish Veterinary and Food Administration (in Danish) Søborg, Denmark.
- Rasmussen HH, Kondrup J, Staun M, Ladefoged K, Kristensen H, Wengler A (2004). Prevalence of patients at nutritional risk in Danish hospitals. *Clin Nutr* 23, 1009–1015.
- Stellfeld M, Gyldendorf B (1988). Dietary investigation in a general medical ward. The energy, protein and zinc intakes of fifty-six patients during a period of hospitalisation. *J Dan Med Assoc* 150, 1537–1540.

Appendix 1

The appendix shows the identical parts of the hospital and nursing homes questionnaires in the 1995 and the 2002/2003 study.

Use of recipes with calculated nutrient content

(Tick only once)

	Yes, always	Yes, normally	Yes, sometimes	Never
1 Uses always recipes with calculated nutrient content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Use of menus with calculated nutrient content

(Tick only once)

	Yes, always	Yes, normally	Yes, sometimes	Never
2 Uses menu plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Uses menus with calculated nutrient content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Choice of menus at hot meal

4 Are the patients/nursing home residents offered a choice between two or more main courses? (Tick only once)

Yes, always	<input type="checkbox"/>	Yes, in some cases	<input type="checkbox"/>	No	<input type="checkbox"/>
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Appendix *Continued*

Receiving feedback on the food service

5 Has a user satisfaction survey been carried out within the last three years (*tick only once*) Yes No

Existence of Nutritional Steering Committees

6 Does the institution have a Nutritional Steering Committees Yes No

Contact persons in departments with regard to food service

7 Have a contact person with regard to food service been appointed in wards (*tick only once*) Yes, in every wards Yes, in some wards No

Self-assessed compliance with the recommendations for Danish institutional menus (always/partly) (*Tick only once*)

8 Are menus planned and prepared according to official Recommendations for the Danish institutional menus? Yes, always Yes, normally Yes, sometimes No

The number of patients/nursing home residents who receive the different menu types

(Enter average number per day in each category)

9a. Normal menu (approx. 30 energy percent from fat)

9b. Hospital menu (approx. 40 energy percent from fat)

9c. Energy and protein dense menu (approx. 50 energy percent from fat)

9d. Chopped menu

9e. Pureed menu

9f. Blended menu

9g. Menu on a gelatin basis

9h. Liquid menu

9i. Vegetarian menu

9j. Ethnic menu

9k. 'Delicious menu'

9l. 'Do not like'

9m. Home-made sip feedings

9n. Industrial ready made sip feedings

9o. Enteral nutrition

9p. Others