

Clinical nursing leaders' perceptions of nutrition quality indicators in Swedish stroke wards: a national survey

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Aim To describe nursing leaders' perceptions of nutrition quality in Swedish stroke wards.

Background A high risk of undernutrition places great demand on nutritional care in stroke wards. Evidence-based guidelines exist, but healthcare professionals have reported low interest in nutritional care. The Donabedian framework of structure, process and outcome is recommended to monitor and improve nutrition quality.

Method Using a descriptive cross-sectional design, a web-based questionnaire regarding nutritional care quality was delivered to eligible participants.

Result Most clinical nursing leaders reported structure indicators, e.g. access to dietitians. Among process indicators, regular assessment of patients' swallowing was most frequently reported in comprehensive stroke wards compared with other stroke wards. Use of outcomes to monitor nutrition quality was not routine. Wards using standard care plans showed significantly better results.

Conclusion Using the structure, process and outcome framework to examine nutrition quality, quality-improvement needs became visible. To provide high-quality nutrition, all three structure, process and outcome components must be addressed.

Implications for nursing management The use of care pathways, standard care plans, the Senior Alert registry, as well as systematic use of outcome measures could improve nutrition quality. To assist clinical nursing leaders in managing all aspects of quality, structure, process and outcome can be a valuable framework.

Keywords: cross sectional study, management, nutritional organisation, quality indicators, Senior Alert registry, stroke patients

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Background

After an acute stroke, the prevalence of undernutrition at hospital admission is high, between 19 and 32%.

Nutritional status has been reported to deteriorate during a hospital stay, with elderly patients especially at risk (Martineau *et al.* 2005, Cray *et al.* 2013), thus emphasising the need for systematic nutritional care.

Effective care of the treatment of stroke patients in specialised stroke units is supported by ample scientific evidence (Stroke Unit Trialists' Collaboration 2007). National guidelines for multidisciplinary stroke care have been established in many Western countries, prescribing evidence-based management of stroke, as well as actions for the prevention of complications such as undernutrition (National Institute for Health and Clinical Excellence 2008, National Board of Health and Welfare 2009, National Stroke Foundation, Australia 2010).

The characteristics of a stroke unit include that it is multidisciplinary in organisation and has staff with specific stroke care competence, and that the ward cares exclusively for stroke patients. Stroke units can be divided into acute stroke units, rehabilitation stroke units and comprehensive stroke units (i.e. combined acute and rehabilitation units) (Stroke Unit Trialists' Collaboration 2007), and of these, the comprehensive stroke unit is the recommended model for safe and effective stroke care (Canadian Stroke Network 2010).

Generally, there are accepted recommendations and guidelines for clinical nutrition within health care settings, for example, guidelines for the screening and assessment of patients' nutritional status as provided by the European Society for Clinical Nutrition and Metabolism (formerly called the European Society for Parenteral and Enteral Nutrition) and the European Nutrition for Health Alliance (EHNA 2006). Such clinical guidelines provide the foundation for evidence-based practice on which safe and high-quality care is guaranteed.

Early screening for patients' nutritional risk is mandated in several national guidelines for stroke care such as the United Kingdom (National Institute for Health and Clinical Excellence 2006) and the United States (Mueller *et al.* 2011). In the Swedish guidelines there is, however, no such recommendation. The only nutrition-related assessment and intervention mandated in the Swedish guidelines is the examination of swallowing function at admission, and, if dysphagia remains after 72 hours, enteral nutrition (EN) should be introduced (National Board of Health and Welfare 2009). The Swedish Stroke Society provides stroke wards with a syllabus for multiprofessional education in stroke care, currently used by most stroke wards in Sweden. The syllabus, however, holds no specific content for education in nutrition (STROKE-Riksförbundet 2010).

To support quality improvement and research, a unique Swedish national quality registry, Riks-Stroke, was started in 1995. All Swedish stroke units report

data to the registry and use aggregated data to inform quality improvement. Data from the registry are also used for national follow-up and benchmarking of stroke care quality. Out of approximately 30 quality indicators in use, only one is related to nutrition; the prevalence of swallowing assessment at admission. Another national quality registry aggregating important nursing data, Senior Alert, is being introduced in Swedish hospitals, as well as in health care in the municipalities. The purpose of that registry is to support the prevention of pressure ulcers, falls and undernutrition in older patients. Finally, the Swedish Society of Nursing has published quality indicators for 12 important aspects of nursing based on Donabedian's structure, process and outcome (SPO) framework for the evaluation of healthcare quality (1966). Nutritional care is one of these indicators (Svensk sjuksköterskeförening 2009). The structure dimension of the framework refers to the physical and organisational characteristics of the work setting that provides support to patient care. While the process dimension refers to what actually happens with the patients, for example, nursing interventions; the outcome dimension concerns the result of care, for example, the proportion of patients who preserve their body weight during their hospital stay. The structure of a clinical setting is the external condition for the process, which in turn affects the outcome (Donabedian 1966). It has recently been shown that nursing homes fulfil such structural and process indicators for nutrition quality more often than hospitals do (Schönherr *et al.* 2012). Systematic collection, analysis and use of patient-related outcomes provide an important foundation for organisational learning (Lipshitz & Popper 2000).

It is well known that undernutrition and eating difficulties can cause patients severe and ultimately life-threatening consequences. Guidelines for high-quality nutritional care exist, and data for follow-up are easily available in the quality registries. However, both physicians and registered nurses (RNs) have been reported to not follow such guidelines and to express low interest and a lack of knowledge in clinical nutrition (Mowe *et al.* 2006, 2008).

According to Swedish law, the overall responsibility for any hospital departments' financial budget, human resources, quality and goal attainment, ultimately rests with the head of that department, usually a physician. Responsibilities and mandates differ between health care organisations, but in reality, in most wards, the clinical nursing leaders (CNLs) are responsible for the ward's resources, staffing and care quality, as well as for knowledge translation and for leading staff

towards the present goals of the ward (Larsson 2008). The CNL role is usually held by a RN but is sometimes held by another health care professional. In recent years, the role of leadership in the knowledge translation process from evidence-based guidelines to everyday practice has been emphasised in health care settings (Kitson *et al.* 2011). However, it has been suggested that leadership in hospital wards is dependent on the individual nursing leader's negotiation between nursing and leadership, with different leader types putting a varying degree of effort on the development of nursing quality (Sørensen *et al.* 2011). The title of ward leaders at the first-line level varies between organisations and researchers. In this paper we use the term CNL.

Thus, guidelines and quality indicators for nutritional care are available, but there is a lack of knowledge on how these supportive documents are implemented in Swedish stroke care, as well as on the overall quality of nutritional care in stroke wards. No study has been found which elucidates the organisational prerequisites for high-quality nutritional care for stroke patients from the perspective of CNLs. The aim of the study was to describe nursing leaders' perceptions of nutrition quality in Swedish stroke wards.

Methods

Design

Using a descriptive cross-sectional design based on the SPO framework, a web-based questionnaire regarding nutritional care quality was delivered to the eligible participants (Polit & Tatano Beck 2012).

Setting and sample

All wards participating in the Swedish national quality registry Riks-Stroke ($n = 104$) were identified and their heads of department were contacted via email to seek their permission to conduct the study. Eighty heads of department, representing 77% of the wards caring for stroke patients in Sweden, agreed to participate in the study. Data were collected from 56 (70%) CNLs, representing 56 stroke wards, within those 80 departments during March and April 2011.

Questionnaire

As there was no valid and reliable tool available, the authors devised a questionnaire specifically for this study, based on research and professional experience.

The questions were structured according to the SPO framework (Donabedian 1966). Structure quality indicators (eight items) related to the presence of nutritional guidelines and standard care plans, the use of the Senior Alert registry and access to a dietician. Process quality indicators (11 items) related to regular assessment of patients' swallowing function, monitoring of body weight, use of instruments to assess eating ability and starting EN in dysphagic patients within 72 hours. Outcome quality indicators (four items) related to the proportion of patients at risk for undernutrition who had reached their energy goals and preserved their body weight.

Structure indicator items could be answered as yes/no/do not know. Process and outcome indicator items could be answered on a four-point scale ranging from 1 (no never) to 4 (yes always). In addition, there were five items regarding respondents' demographic and professional data. In total, the questionnaire comprised 28 items.

To test internal consistency, Cronbach's alpha coefficients were calculated, resulting in coefficients of 0.60 (nutritional routines) and 0.81 (outcome). Cronbach's alpha was not run on process indicators as these were on a nominal data level. To test face validity and content validity of the questionnaire, four RNs experienced in nutritional stroke care were asked to judge whether the questions appeared to be reasonable, and if they covered relevant and important data with clarity (Polit & Tatano Beck 2012). This review resulted in minor linguistic changes and layout changes.

Procedure

After permission was granted to conduct the study, the CNLs were contacted via e-mail and informed about the study. Clinical nursing leaders who accepted participation in the study were invited to answer the web-based questionnaire that was linked to the e-mail. Completed questionnaires were considered as informed consent. After 2 weeks, one reminder was sent by the supplier of the web-based questionnaires to those who had not answered the questionnaire. The connection between questionnaires and e-mail addresses was deleted after data collection was complete.

Data analysis

For statistical analyses, the Statistical Package for Social Sciences (SPSS), version 15.0 (SPSS Inc., Chicago, IL, USA), was used. Pearson's chi-square test was used to analyse differences in proportions between compre-

hensive units and other stroke wards, whereas differences between two independent groups were analysed using the Mann–Whitney *U*-test (care pathway, standard care plan, Senior Alert, type of ward and leaders' academic degree) (Polit & Tatano Beck 2012). Statistical significance was set at $P < 0.05$ for all tests. Estimates of internal consistency were established using Cronbach's alpha (Cronbach 1951).

Ethical considerations and approval

The study was conducted in accordance with the Helsinki declaration (World Medical Association 2008) and the Ethical guidelines for nursing research in the Nordic countries (Northern Nurses Federation 2003) and was approved by a Swedish committee for ethical research (C2010/686). The CNLs' participation in the study was voluntary, they responded anonymously and all data were treated with confidentiality. In the information letters to the heads of departments and to the CNLs we emphasised that the aim of the study was not to audit individual leaders or staff, but to describe their perception of nutrition quality in the stroke wards.

Results

Thirty-three out of 56 respondents (58.9%) worked in a comprehensive stroke unit. Other ward types were: acute stroke unit (10.7%), neurology ward (3.6%), rehabilitation ward (19.6%) and other wards, for example, internal medicine (7.1%).

Demographic and professional characteristics of respondents

Three of the 56 (5.4%) CNLs were male. Forty-nine (88%) were RNs, two were physicians and one had a

profession which was neither of these, while four leaders' professional backgrounds were not stated. As we had invited CNLs to participate, regardless of profession, the term CNL will be used irrespective of profession. Respondents' years of experience in their profession ranged from 4 to 41 years [mean 23.6, standard deviation (SD) 9.7], whereas length of time as a CNL ranged from 1 to 26 years (mean 7.1, SD 5.6). Thirty respondents had no academic education, whereas 20 (36.4%) had a Bachelor's degree, three (5.5%) had a Master's degree and two (3.6%) respondents had a Doctoral degree.

Structure indicators

Nutritional quality indicators related to structure are of organisational type. All CNLs reported that their ward had access to a dietician and 94.2% stated that guidelines for assessment of patients' nutritional status were available in their wards. Having an RN responsible for nutritional issues in the ward was reported by 87.5% of respondents, whereas 30.6% reported that their ward had standard care plans and 24.4% had a nutrition team available. No CNL reported that all of the structure quality indicators were present in their ward. No significant differences were found between comprehensive units and other stroke wards regarding organisation (Table 1).

Process indicators

Quality indicators related to process are denoted by the performance of nutritional routines; here divided into nutritional screening and assessment, use of nutritional assessment tools, nutritional care, for example, the use of nutrition care plans and the calculation of patient's energy needs, and information transfer at

Table 1
Prevalence of structure quality indicators for nutritional care reported by clinical nursing leaders in stroke wards

Structure indicators	Total <i>n</i> = 56	Missing	Comprehensive stroke units	Other stroke wards*
	<i>n</i> (%)		(<i>n</i> = 33) <i>n</i> (%)	(<i>n</i> = 23) <i>n</i> (%)
Guidelines for screening	43 (82.7)	4	27 (84.4)	16 (80)
Guidelines for assessment of nutritional status	49 (94.2)	4	31 (96.9)	18 (90)
Care pathway	15 (34.1)	12	11 (39.3)	4 (25)
Standard care plans	15 (30.6)	7	7 (24.1)	8 (40)
Senior Alert registry	23 (48.9)	9	14 (48.3)	9 (50)
A nurse responsible for nutritional issues	49 (87.5)	–	28 (84.8)	21 (91.3)
A dietician available	54 (100)	2	31 (100)	23 (100)
A nutritional team available	11 (24.4)	11	7 (25)	4 (23.5)

*Acute stroke unit, patients move to the rehab ward (10.7%); neurology ward, patients move to the rehab ward (3.6%); rehab ward (19.6%) other wards, e.g. internal medicine or geriatric (7.1%).

discharge. The most frequently reported process quality indicator was the regular assessment of the patient's ability to swallow, whereas the least frequently reported was the regular use of instruments for the assessment of the patient's eating ability.

Nutritional screening and assessment

In two-thirds of the wards (66.1%), nutritional risk screening was performed for all patients, as reported by CNLs. For patients found to be at risk, further nutritional assessment was always performed in more than half of the wards (57.1%). Such assessments were significantly more often performed in wards using the Senior Alert registry compared with wards that did not use the registry, and in wards where the CNL did not have an academic degree (Table 2).

During the care episode, CNLs reported that the patient's body weight was regularly monitored in more than half of wards (60%) and in the majority of the wards, assessment of patients' swallowing function was always performed (83.6%). Patients' swallowing function was considerably more often assessed in comprehensive stroke wards compared with other stroke wards (Table 2).

Nutritional assessment tools

Assessment of the patient's ability to swallow was performed with an established instrument (42.3%), with a local instrument (15.4%), with a method described in local guidelines (21.2%) or based on nurses' individual experience (7.7%). Different combinations of the above-mentioned methods were also used (13.3%). The patient's ability to eat was regularly assessed with an established instrument in one-third of the wards (31.5%) according to CNLs. The instruments were used significantly more in wards using standard care plans (Table 2).

Nutritional care

A nutrition care plan was always incorporated in the general care plan in almost half of the wards (47.7%) whereas nutrition care plans were not used at all in 8.9% of the wards. Nutrition care plans were significantly more often used in wards using standard care plans (Table 2). In 39.3% of the wards, the CNLs reported that patients' energy needs were always calculated for those at risk, or those having established malnutrition, significantly more often in wards using standard care plans. Total compliance with the national guidelines for stroke care, prescribing EN within 72 hours to patients with dysphagia, was reported in 30.6% of the wards.

Information transfer at discharge

At discharge, the patient's nutritional care was always reported verbally to the next care provider according to 60.7% of the respondents, whereas 67.9% reported that such information was included in the written information transfer. While verbal information was significantly more often present at discharge from wards that did not use care pathways, written information was significantly more often present at discharge from wards using the Senior Alert registry compared with those wards that did not use the registry.

Outcome indicators

Systematic use of nutrition outcomes for benchmarking and quality improvement appeared to be rare. The CNLs reported that results from nutritional care, for example, the proportion of patients who kept their bodyweight or gained weight during the hospital stay, were seldom used in a systematic way. Few CNLs stated that such results were always (8.9%) or often (8.9%) reported to the staff or to other CNLs in the department or in the hospital. Almost 20% of CNLs stated that results were reported occasionally (19.6%), and in 58.9% of cases, no such reports were made. Similarly, data on the proportion of patients at risk of undernutrition or with undernutrition established, who had reached their energy goals, were: always (1.8%), often (7.1%), occasionally (8.9%), or not at all (76.8%) reported, according to CNLs.

Those CNLs who systematically reported nutrition outcome measures usually presented the results to the staff and not to other CNLs and managers (Table 3). Such follow-up was found in wards using the Senior Alert registry (34.4%), as well as in wards that did not use the registry (39.1%). In wards using standard care plans, the proportion of patients who kept their bodyweight or gained weight during a hospital stay, was significantly more often reported to the staff ($P = 0.005$) and to the other CNLs in the department ($P = 0.027$) compared with those wards who did not use standard care plans.

Similarly, when reporting the patients at risk of undernutrition or with undernutrition established who had reached their energy goals it was mainly to the staff (Table 3). As for follow-up of body weight, such evaluation of the proportion of patients who had reached their energy goals was found both in wards using the Senior Alert registry (21.7%) as well as in other wards (30.4%).

Table 2
Reported use of selected process quality indicators in relation to care pathways, standard care plans, the Senior Alert registry and clinical nursing leaders' academic degree

Process indicators	Care pathway				Standard care plan				Senior Alert registry				Type of ward				Clinical nursing leader's academic degree						
	Yes		No		Yes		No		Yes		No		Comprehensive stroke unit		Other stroke wards		Yes		No				
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	P-value*	P-value*	
Nutritional assessment																							
Assessment of ability to swallow	3.80 (0.44)	3.73 (0.46)	3.86 (0.36)	3.86 (0.36)	0.326	3.73 (0.59)	3.79 (0.41)	3.79 (0.41)	0.987	3.87 (0.34)	3.74 (0.45)	3.74 (0.45)	0.270	3.90 (0.29)	3.65 (0.57)	3.65 (0.57)	0.039	3.74 (0.54)	3.87 (0.34)	3.87 (0.34)	0.365		
Risk screening of all patients	3.61 (0.59)	3.60 (0.63)	3.64 (0.49)	3.64 (0.49)	1.000	3.67 (0.72)	3.60 (0.50)	3.60 (0.50)	0.345	3.78 (0.42)	3.52 (0.59)	3.52 (0.59)	0.106	3.51 (0.62)	3.74 (0.54)	3.74 (0.54)	0.125	3.52 (0.66)	3.68 (0.54)	3.68 (0.54)	0.391		
Nutritional assessment of patients at risk	3.52 (0.60)	3.40 (0.51)	3.53 (0.58)	3.53 (0.58)	0.359	3.47 (0.64)	3.48 (0.56)	3.48 (0.56)	1.000	3.73 (0.45)	3.30 (0.56)	3.30 (0.56)	0.007	3.45 (0.62)	3.61 (0.58)	3.61 (0.58)	0.321	3.35 (0.65)	3.68 (0.54)	3.68 (0.54)	0.042		
Measuring body weight regularly	3.44 (0.76)	3.60 (0.74)	3.26 (0.81)	3.26 (0.81)	0.149	3.60 (0.74)	3.3 (0.82)	3.3 (0.82)	0.217	3.45 (0.80)	3.39 (0.78)	3.39 (0.78)	0.717	3.44 (0.71)	3.43 (0.84)	3.43 (0.84)	0.785	3.52 (0.73)	3.37 (0.81)	3.37 (0.81)	0.485		
Using instrument for assessment of eating	2.62 (1.26)	2.79 (1.19)	2.19 (1.23)	2.19 (1.23)	0.162	3.07 (1.20)	2.20 (1.21)	2.20 (1.21)	0.033	2.31 (1.33)	2.45 (1.22)	2.45 (1.22)	0.815	2.38 (1.24)	2.95 (1.24)	2.95 (1.24)	0.097	2.75 (1.29)	2.57 (1.26)	2.57 (1.26)	0.614		
Nutritional care																							
Using a nutritional care plan	3.02 (1.03)	3.07 (0.88)	2.89 (1.13)	2.89 (1.13)	0.703	3.43 (0.94)	2.77 (1.07)	2.77 (1.07)	0.046	2.95 (1.12)	3.05 (1.00)	3.05 (1.00)	0.825	3.03 (1.10)	3.00 (0.94)	3.00 (0.94)	0.753	2.75 (1.07)	3.18 (0.98)	3.18 (0.98)	0.148		
Calculating nutritional needs	3.16 (0.83)	2.83 (0.80)	3.25 (0.80)	3.25 (0.80)	0.177	3.53 (0.64)	3.00 (0.83)	3.00 (0.83)	0.028	3.04 (0.93)	3.22 (0.73)	3.22 (0.73)	0.563	3.18 (0.73)	3.13 (0.97)	3.13 (0.97)	0.893	3.26 (0.69)	3.10 (0.94)	3.10 (0.94)	0.680		
Facilitating patient participation	2.93 (0.73)	3.00 (0.75)	2.93 (0.72)	2.93 (0.72)	0.761	3.13 (0.64)	2.85 (0.75)	2.85 (0.75)	0.198	2.87 (0.76)	3.00 (0.74)	3.00 (0.74)	0.547	2.94 (0.70)	2.91 (0.79)	2.91 (0.79)	0.872	2.96 (0.64)	2.90 (0.79)	2.90 (0.79)	0.747		
Starting EN within 72 h if dysphagia	2.87 (0.94)	2.50 (0.94)	3.00 (0.90)	3.00 (0.90)	0.095	2.64 (1.08)	2.91 (0.88)	2.91 (0.88)	0.484	3.04 (0.90)	2.74 (0.96)	2.74 (0.96)	0.236	2.94 (0.93)	2.77 (0.97)	2.77 (0.97)	0.530	3.14 (0.77)	2.65 (1.02)	2.65 (1.02)	0.094		
Information transfer																							
Verbally	3.52 (0.66)	3.07 (0.80)	3.68 (0.55)	3.68 (0.55)	0.008	3.40 (0.74)	3.51 (0.67)	3.51 (0.67)	0.603	3.56 (0.73)	3.43 (0.66)	3.43 (0.66)	0.355	3.54 (0.66)	3.48 (0.66)	3.48 (0.66)	0.644	3.61 (0.58)	3.48 (0.68)	3.48 (0.68)	0.529		
Written	3.55 (0.71)	3.40 (0.74)	3.64 (0.68)	3.64 (0.68)	0.195	3.67 (0.62)	3.51 (0.75)	3.51 (0.75)	0.567	3.78 (0.60)	3.43 (0.73)	3.43 (0.73)	0.037	3.48 (0.75)	3.65 (0.65)	3.65 (0.65)	0.396	3.73 (0.54)	3.45 (0.77)	3.45 (0.77)	0.152		

Scores could range from 1 = no never; 2 = yes occasionally; 3 = yes often; 4 = yes always.

SD, standard deviation; EN, enteral nutrition.

*Mann-Whitney U-test was used to test differences between two independent groups.

Bold indicates significant values ($P < 0.05$).

Table 3

Reported use of outcome quality indicators: reporting the patient's body weight and energy goal

Outcome indicators	Missing n	Always n (%)	Often n (%)	Occasionally n (%)	No n (%)	Don't know n (%)
Reporting the patient's body weight to						
Staff	–	7 (12.5)	5 (8.9)	6 (10.7)	35 (62.5)	3 (5.4)
The head of department	1	3 (5.5)	2 (3.6)	5 (9.1)	41 (74.5)	4 (7.1)
Other clinical nursing leaders in the same Department	2	–	1 (1.9)	1 (1.9)	48 (88.9)	4 (7.4)
Other leaders and managers within the hospital	2	–	–	1 (1.9)	49 (90.7)	4 (7.4)
Reporting the patient's energy goals to						
Staff	–	8 (14.3)	4 (7.1)	7 (12.5)	34 (60.7)	3 (5.4)
The head of department	1	1 (1.8)	1 (1.8)	4 (7.3)	46 (83.6)	3 (5.5)
Other clinical nursing leaders in the same Department	2	–	–	3 (5.6)	49 (90.7)	2 (3.7)
Other leaders and managers within the hospital	3	–	–	3 (5.7)	47 (88.7)	3 (5.7)

Discussion

The aim of the study was to describe CNLs' perception of nutrition care quality in stroke wards based on the SPO framework. One example of structure quality indicators that was frequently reported was the existence of guidelines for risk screening. Also, in the area of process indicators, CNLs reported that the patient's ability to swallow was assessed to a high degree. However, quality indicators related to outcomes indicated that systematic evaluation and benchmarking of nutritional care was not a common routine, neither on the ward nor at the department level.

The structural components of healthcare quality provide the foundation for safe and evidence-based care (Donabedian 1966, Gardner *et al.* 2013). Our study showed signs of lacking in structural quality whereas important quality indicators, such as the use of a care pathway or standard care plans, were only reported by one-third of respondents. Most CNLs reported that guidelines for nutritional care were available in their wards. However, this does not automatically mean that these guidelines were actually implemented. Research has shown that implementation of clinical guidelines is complex and requires a carefully prepared strategy (Francke *et al.* 2008). The national quality registry, Senior Alert, is a unique registry for nursing that aims to prevent undernutrition, pressure ulcers and falls among older people. For patients in our study found to be at risk, further nutritional assessment was significantly more often performed in wards using Senior Alert compared with wards that did not use the registry. This result indicates that using the registry has a positive influence on the performance of nutritional care, which has, to our knowledge, not been shown before. Nurses' views on the implementation of the Senior Alert registry in hospital wards, however, has been reported to emphasise

the need to recognise and to manage the change of culture when introducing Senior Alert; to shift the culture to a preventive approach. The need for such change was based on the recognition of patient advantages, a supporting structure and committed leadership (Rosengren *et al.* 2012).

Surprisingly, only about one-quarter of the stroke wards had access to a nutrition support team. Within intensive care, with all patients being at nutritional risk, 58% of the Swedish wards had a nutrition support team (Wentzel Persenius *et al.* 2006), whereas in Europe overall, a reported 36% of wards were supported by such a team (Fulbrook *et al.* 2007). Because, for example, weaning a stroke patient from tube to oral feeding requires a multiprofessional approach, a nutrition support team should be considered as essential (Corrigan *et al.* 2011). However, an RN specifically responsible for nutritional issues was present in the majority of the stroke wards. The importance of having such a dedicated resource in all clinical settings has been emphasised as a success factor for good nutritional care (Mathey *et al.* 2001). After reviewing 40 articles, Jefferies *et al.* (2011) suggested that other nursing staff could have that role in order to continuously improve the nutritional care for patients. However, in order to achieve evidence-based nutritional care, nutritional competence at least at the level of a general RN is needed. RNs specialising in clinical nutrition can provide high-quality nursing while integrating such competence with knowledge in medicine and specific nursing related to each individual patient. However, to provide good and reliable nutritional care, all professionals must collaborate (Elia 2010).

The presence of clinical guidelines, care pathways, the Senior Alert registry, standard care plans and the availability of dieticians are all structural indicators of nutrition quality. However, in spite of the presence of

general national guidelines for screening and for the assessment of patients' nutritional status at admission to hospital, almost 20% of CNLs reported that such screening was not common routine in their wards. Schönherr *et al.* (2012) reported that nutritional screening was performed in 62% of patients admitted to Australian hospitals and nursing homes, but with the use of screening instruments for 29% of patients only. The researchers concluded that although prevalence of malnutrition was high (23%), a substantial number of malnourished patients received no nutritional interventions at all. Based on our findings, such an assumption can also be made concerning Swedish stroke patients. Among patients at risk of undernutrition, assessment of nutritional status was routine in only half of the wards according to the CNLs. One possible explanation is that staff in stroke wards focus on the specific national guidelines for stroke care, which lack instructions for nutritional screening and assessment. Furthermore, health care professionals in general have reported a lack of knowledge of nutritional care and there is a discrepancy between attitudes and reported nutritional practice (Xia & McCutcheon 2006, Mowe *et al.* 2008). If that is also the situation among stroke ward staff, this has not previously been investigated.

Interestingly, CNLs holding an academic degree seemed to have a negative impact on the performance of nutritional assessments, the basis for nutritional care. This finding seems to diverge from the results of Aiken *et al.* (2003) who found an association between a larger proportion of RNs holding an academic degree and positive outcomes of care, e.g. a decreased likelihood of patients dying within 30 days of admission. However, most of the CNLs only had a Bachelor's degree, maybe indicating a relatively short period of experience as a RN. Larger studies are therefore needed to investigate a possible relation between CNLs' academic education and implementation of structured nutritional care. It cannot be ruled out that other factors are also important for the quality of nutritional care, for example, the different types of leadership, as suggested by Sørensen *et al.* (2011). CNLs in Australia expressed that assessments, observations and diagnostic procedures needed improvement but that RNs under time pressure leave responsibility for fundamental patient care, for example, nutrition, to others, leaving such an essential aspect of care neglected (Kitson *et al.* 2011). This is a worrying finding, as it has been found that only half of the nursing staff working with older patients showed a positive attitude towards factors of impor-

tance for nutritional care with enrolled nurses having a less positive attitude than the RNs (Bachrach Lindström *et al.* 2007).

In spite of national guidelines for stroke care prescribing EN within 72 hours after admission to patients with dysphagia, 70% of CNLs answered that such routines were not common practice in their wards. This might be the result of a poorly implemented structure for nutritional care. It is known from other studies that successfully implemented guidelines regarding EN can lead to an earlier start of EN and increased nutritional intake (Heyland *et al.* 2010) and that the use of evidence-based guidelines for nutritional support can dramatically reduce the incidence of septic complications among stroke patients (Perry & McLaren 2003). Furthermore, the routine use of an established instrument was low; a finding which is in line with other previous studies (Wentzel Persenius *et al.* 2008, Schönherr *et al.* 2012).

More than one-third of the wards did not routinely report nutritional issues to the next caregiver at discharge. Such lack of information transfer from hospital to elderly care at discharge has been shown to make it difficult for staff in elderly care to plan for continuing care (Boockvar & Burack 2007, Carlsson *et al.* 2012). Discharge summaries and electronically transferred discharge information has been studied in a Swedish stroke care context showing poor quality and lack of vital information, such as information on patients' weight loss, the need for assistive devices and for nutritional support (Carlsson *et al.* 2010, 2012).

Few CNLs answered that they monitored, evaluated and compared outcomes, for example, the share of patients who kept their bodyweight or the share of patients (at risk of or being undernourished) who had reached their energy goals. When incidence of this particular outcome was reported it was mainly to the ward staff, not to other CNLs and managers. In order to improve quality of care, high priority must be given to collect, consolidate, analyse, report and compare outcomes of nutritional care. Quality registries such as Senior Alert are needed because they focus on the results of the care given and make those results at a hospital level public. Furthermore, by linking nursing documentation to quality registries, unnecessary double documentation can be avoided and the patient record can be optimised. Not only the use of quality registries, but also use of standard care plans for this patient group can provide a structure that supports high-quality care. Our study showed significantly better results on the use of nutrition care plans, the calculation of energy needs and the reporting of outcomes

to staff and to other CNLs for wards using standard care plans, which, to our knowledge, has not been reported before.

The implementation of evidence-based practice in complex organisations such as healthcare has been described as a substantial challenge because multiple factors can facilitate or impede the implementation process and knowledge on how to manage such implementation is scarce. A strategy using a context-specific and multifaceted approach including staff education, facilitators, leaders' engagement, audit and feedback has been recommended (Greenhalgh *et al.* 2004, Pentland *et al.* 2011). Our study tried to capture some aspects of the knowledge transfer process, not only by asking about the prevalence and use of evidence-based guidelines and standard care plans, but also by asking about how patient outcomes were used. It is known that there are relationships between structural and process indicators for nutritional care, although not every structural indicator is of equal importance (Schönherr *et al.* 2012). A powerful impact of the implementation of evidence-based guidelines for nutritional support has been shown by Perry and McLaren (2003), who conducted a study with the aim to develop, implement and evaluate such guidelines in stroke wards. Although maximal compliance to the guidelines was not achieved, the study resulted in positive changes in documented nutritional care and patient outcomes. The most important outcome was a dramatically reduced incidence of septic complications, such as chest infections, pneumonia and urinary tract infections. Thus, the use of outcome indicators seems to be a non-prioritised area in urgent need of improvement.

Methodological considerations

The result of our study is based on the CNLs' perceptions of nutritional care, not on objective data. The reason that such a high level of heads of department (23%) did not give permission to participate in the study might be because a national survey of stroke care in general was performed by the National Board of Health and Welfare shortly before our study. However, a high response rate from the participants indicates an interest in the topic among the CNLs. Owing to the responses being anonymous, no analysis of non-respondents could be performed.

The internal dropout rate was low for items related to process and outcome (1–4 missing), whereas it was considerably higher for items related to structure, for example, the use of care pathways (12 missing),

Senior Alert (9 missing) and nutrition support team (11 missing). Possible explanations for these missing responses could be ambiguity about the definition of the terms 'care pathway' and 'nutrition support team', or simply that no answer was the same as 'no'. It could also be explored whether some response alternatives could have been more specific, for example, the profession of the person carrying out assessments and interventions. Other factors, such as low interest in nutrition or in participating in research studies, could also have influenced the result. Cronbach's alpha coefficients of 0.60 might be explained by the diversity of the items being measured (Field 2005) regarding nutritional care.

After reviewing the results of an Internet search, many Swedish hospitals seem to have care pathway documents for patients at risk of undernutrition as well as nutrition support teams. However, no studies have been found exploring to what extent those pathways are used, or the use of nutrition support teams in stroke care in particular, and the prevalence of standard care plans in Swedish stroke care is unknown.

Conclusion

The use of the Senior Alert registry, stroke care pathway and standard care plans, as well as the ward being a comprehensive stroke unit, made a significant difference and improved the quality of nutritional care. However, a process indicator such as nutrition assessment was not commonly used in clinical practice and the use of outcome indicators appeared to be a non-prioritised area in urgent need of improvement. The SPO framework appears to be a feasible approach for the CNLs to monitor, benchmark and improve the quality of nutritional care for stroke patients. There is a need for further research regarding leadership, including academic competence, and implementation of guidelines for stroke care as well as the use of standard care plans and the quality registry Senior Alert. Studies are also needed to explore how CNLs comprehend their role in the monitoring and evaluation of the quality of nutritional care.

Relevance to clinical practice

We suggest that the use of evidence-based care pathways, the quality registry Senior Alert and standard care plans, as well as a more systematic use of outcome measures, could improve nutritional care for stroke patients. For CNLs to manage all these aspects

of quality, the SPO framework can be a valuable approach.

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Ethical approval

The study was conducted in accordance with the Helsinki declaration (World Medical Association 2008) and the Ethical guidelines for nursing research in the Nordic countries (Northern Nurses Federation, 2003) and was approved by a Swedish committee for ethical research (C2010/686) at Karlstad University.

Authors' contributions

Study design: M.P., E.C., B.W.L., M.L.H.L.; data collection and analysis: M.P., E.C. Manuscript preparation: M.P., E.C., B.W.L., M.L.H.L. All authors have approved the final version submitted for publication.

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