



The Assessment, Knowledge and Perceived Quality of Nutrition Care amongst Nurses

Miriam Theilla RN^{1*}, Jonathan Cohen², Pierre Singer³, Chedva Liebman⁴ and Ilya Kagan⁵

¹Nursing Department, Steyer School of Health Professions, Sackler School of Medicine, Tel Aviv University, Tel Aviv and Nutrition Nurse, Department of General Intensive Care and Institute for Nutrition Research, Rabin Medical Center, Beilinson Hospital, Petah Tikva, Israel

²Department of General Intensive Care, Rabin Medical Center, Beilinson Hospital, Petah Tikva and the Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

³Department of General Intensive Care and Institute for Nutrition Research, Rabin Medical Center, Beilinson Hospital, Petah Tikva, N and the Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

⁴Nutrition Nurse, Rabin Medical Center, Sharon Hospital, Petah Tikva, Israel

⁵Nursing Department, Steyer School of Health Professions, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel; and Quality & Patient Safety Coordinator, Nursing Administration, Rabin Medical Center, Clalit Health Services, Israel

*Corresponding author: Miriam Theilla, Department of General Intensive Care and Institute for Nutrition Research, Beilinson Hospital, Petah Tikva, Israel 49100, Tel: +972-3-9376525, Fax: +972-3-9232333, E-mail: Miriamt@clalit.org.il

Abstract

Purpose: This study examined ward nurses' knowledge regarding the importance of nutritional assessment, their knowledge and perceived quality of nutrition care provided in their wards.

Design: The study was a quantitative correlational study performed in a university-affiliated, teaching hospital.

Methods: Data were collected via paper-and-pencil questionnaire from 415 nurses and analyzed by frequencies, means and Pearson correlations. Independent t-tests, one-way ANOVA and stepwise multiple linear regression were performed to determine predictors of nurses' responses.

Findings: Most nurses appreciated the importance of nutritional assessment and recognized common misconceptions of nutrition care. Factors associated with lower scores on these variables included male gender, type of department (internal medicine) and country of origin (trained in the former USSR). Nurses specifically and recently trained in nutrition care scored higher and perceived the care in their department as better than nurses without such training.

Conclusions: These findings highlight the importance of specific training in forging positive attitudes and improving knowledge regarding nutrition. Further studies are required to assess whether this is translated into improved nutritional delivery at the bedside.

Relevance to clinical practice: These findings suggest that additional education is required to encourage nursing staff to move nutrition from theory to the bedside. Factors associated with lower scores should be identified and used to devise focused interventions.

Keywords

Hospital, Malnutrition, Nutrition assessment, Nurses' attitudes

Introduction

Recent evidence suggests that malnutrition is still common among in-patients in European hospitals [1]. Expertise from various healthcare disciplines is essential for optimal nutritional support of hospital in-patients [2,3]. An appropriate therapeutic bundle must include not only complex assessments, such as the measurement of energy expenditure and the administration of parenteral nutrition (PN), but also less sophisticated, but equally essential assessments, such as the ability of patients to feed themselves, chew and swallow, observing whether a patient finishes a meal and offering assistance where needed.

The Rabin Medical Center (RMC), a tertiary care, university-affiliated, 1,300-bed hospital in central Israel, recognized the need for a multi-disciplinary approach and so established a Clinical Nutrition Forum (CNF) comprising physicians, dietitians, pharmacists and nutrition nurses. The Forum worked in collaboration with departmental dietitians and physicians. However, of all the healthcare providers involved in the CNF, the involvement of nurses at the bedside is very limited and focused mainly on delivering nutrition according to physician orders.

Research suggests that nursing staff respond well to education in nutrition [4]. Nevertheless, the attitude of hospital nurses regarding many aspects of nutrition care, including its importance and their contribution and commitment to its improvement, is unclear.

Background

Guidelines, such as those formulated by the European Society for Clinical Nutrition and Metabolism, emphasize the importance

of collaboration between healthcare providers from all relevant disciplines, including physicians, nurses, dietitians, pharmacists and kitchen staff. The guidelines stress that in-patients should receive individualized nutritional assessment [5] management and monitoring only when high-quality performance by the different disciplines is coupled with ongoing communication and collaboration [6,7]. A dedicated multidisciplinary nutrition group is particularly important in the support of complex patients, who are more likely to suffer from malnutrition upon, or as a result of, hospitalization. Historically, the assessment of nutritional intake and support has been an integral component of the nursing profession. Indeed, Florence Nightingale provided one of the earliest scientific descriptions of the metabolic response to injury and of the role of nurses in nutrition care when she wrote that “every careful observer of the sick will agree in this, that thousands of patients are annually starved in the midst of plenty, from want of attention to the ways which alone make it possible for them to take food” [8,9].

However, the integration of nurses into a multidisciplinary nutrition taskforce does not appear to have succeeded [7,10]. A Danish clinical nutrition study reported a robust improvement in nutrition practices of hospital physicians and nurses following a number of initiatives addressing faults found in an earlier survey [11]. The authors attributed much of the success to each department designating a staff member as responsible for overseeing nutritional screening, management and monitoring. In light of this study, an important aspect of the present survey was to detect nurses with a negative attitude to nutrition care and its pertinence to nursing.

Recently, Green and James (2013) [12] undertook a systematic review of the barriers to the performance of nutritional assessment by nurses in acute-care settings. They identified a need for nutritional assessment to be considered part of the nursing care protocol, referred to as such by hospital policy and promoted by a senior departmental manager. Lack of training and education in nutrition was also frequently cited as an explanation for lack of nutritional screening, particularly in the first 24 hours after admission [13,14]. Several studies included in the Green and James review reported a discrepancy between the theoretical recognition by nurses of the importance of nutrition care in nursing care and the actual implementation of nutrition guidelines.

The aims of the present study was to assess ward nurses’ attitudes regarding the importance of nutritional assessment, their knowledge of nutrition care and the perceived quality of nutrition care provided in their wards.

Study Design and Method

Sample

Authorization for the present study was received from the Rabin Medical Center Helsinki Committee. Before beginning data collection, a pilot study was conducted (n = 10 nurses) to evaluate the data collection procedure and respondents’ understanding of the questionnaire. Some items were altered in the light of comments received. The researchers then distributed 600 questionnaires to all nursing staff in all the hospital’s general wards, together with a letter explaining the aim of the study and guaranteeing respondent anonymity and data confidentiality. The return of a completed questionnaire (which took about 20 minutes to complete) was taken to convey consent to participate. In total, 415 questionnaires were returned completed, a response rate of 69%.

Measures and instruments

In the absence of a suitable existing validated Hebrew questionnaire, one was developed by the researchers. To construct the tool and for validation thereof, a multidisciplinary focus group was set up, consisting of three senior nurses, two dietitians and one physician, all experts in nutrition care. The group was asked to define the component domains of the nursing aspects of nutrition care and of nurses’ commitment to and perception of the quality of nutrition

care. All members of the focus group reviewed the questionnaire for face validity, feasibility and comprehensibility and had to be in full agreement for any item to be included. At the end of the process the final version of the tool was piloted among ten senior nurses who comprised the validation set. For each section the alpha Cronbach internal consistency was evaluated.

The questionnaire (Table 1) comprised three sections with all items answered on a Likert scale [15,16]. The three sections were: (a) nurses’ evaluation of the importance of a nutrition assessment, (b) nurses’ knowledge of nutrition care and (c) nurses’ evaluation of the quality of nutrition care in their department. The questions were based on an analysis of the process of feeding patients in the hospital, from the preparation of the food until the stage where the patient imbibes the food. The process was based on the guidelines

Item	M	SD
Section 1: Nurses’ evaluation of the importance of nutritional assessment (1 to 4 scale)		
1. An initial nutritional assessment is important in patient care	3.67	0.60
2. Monitoring a patient’s nutritional status is a basic component of nursing care	3.46	0.67
3. The nurse is responsible for notifying the attending physician if a patient does not eat a served meal	3.63	0.66
4. It is important to weigh patients upon admission	3.51	0.68
5. It is important to repeat the nutritional assessment every week of hospitalization	3.31	0.71
6. Nutritional assessment and monitoring by the nurses improve a patient’s recovery	3.32	0.70
7. Nursing care has a significant impact on patients’ nutritional status	3.08	0.78

• Likert scale: 1. Strongly disagree, 2. Disagree, 3. Agree, 4. Strongly agree
M- mean, SD- standard deviation.

Item	M	SD
Section 2: Nurses’ knowledge about nutrition care (1 to 4 scale)		
1. Nurses should focus on the patient’s primary diagnosis rather than on nutritional aspects	2.28	0.91
2. A patient who refuses to eat should not be forced to do so	1.80	0.85
3. The main reason patients don’t eat hospital food is its appearance and taste	2.23	0.89
4. Nutritional support should commence only once medical treatment has been completed	1.74	0.80
5. Nutritional support is resource-consuming and not a cost-effective investment	1.63	0.79
6. Dietitians, rather than the nursing staff, are responsible for nutritional support	1.76	0.83
7. Parenteral nutrition should be avoided due to its complications	2.99	0.86
8. Obese patients (BMI > 30) are not at risk of malnutrition and should be fed sparingly	3.34	0.77
9. A patient eating a meal should not be disturbed, even for medical treatment	2.56	0.89
10. Overweight patients with cancer will inevitably lose weight and need not be referred to a dietician	3.55	0.71

• Likert scale: 1. Strongly disagree, 2. Disagree, 3. Agree, 4. Strongly agree
M- mean, SD- standard deviation.

Item	M	SD
Section 3: Nurses’ evaluation of the quality of nutritional care in nurses’ ward (1 to 5 scale)		
1. Patients receive complete nutritional care	4.07	0.80
2. Our nursing staff monitors patients’ nutritional status	3.77	0.86
3. The nutritional assessment is performed methodically and professionally	3.74	0.95
4. Patients requiring a dietician’s care receive a consultation with minimal delay	4.26	0.76
5. Physicians address nutritional aspects of patient care	3.62	1.05
6. Patients receive their meals in an appropriate manner as per regulations	3.98	0.91
7. Nurses are aware whether or not a patient has completed his meal	3.78	0.89
8. Information on patients’ nutritional state is effectively transmitted among health care staff	3.84	0.95
9. I am satisfied with the level of nutritional care in my ward	3.81	0.95

• Likert scale: 1. Strongly disagree, 2. Disagree, 3. Agree, 4. Strongly agree
M- mean, SD- standard deviation

for preventing malnutrition in the hospital [17,18]. A fourth section collected demographic data on the respondents.

Section 1 (7 items) was designed to learn whether nurses considered nutritional assessment to be of clinical importance and a fundamental component of nursing care, both upon admission and during the hospital stay. The mean score across all items was taken as overall score for this section, as for the remaining two sections.

Section 2 (10 items) tested nurse's knowledge of nutrition care by asking them to agree or disagree with ten correct and incorrect statements. To maintain consistency in the directionality of scores, the negative items were recorded and scored in reverse fashion. A higher mean score across all 10 items reflected a wider knowledge of nutrition care.

Section 3 (9 items) asked respondents to rate the quality of nutritional care provided in their department. A higher mean score across all 9 items reflected a more positive evaluation of the quality of nutrition care.

Data Analysis

Data were analyzed by SPSS software version 17 (SPSS Inc., Chicago, IL, USA). For categorical and continuous variables frequencies and means were calculated. Pearson correlations were performed to examine the correlation between nutritional assessment and knowledge and perceived quality of care. Inferential statistics (independent t-test and one-way ANOVA) were applied to test whether the distribution of research measurements is not different across different background categories. Stepwise multiple linear regression was performed to identify predictors of the three factors tested for by the questionnaire.

Results

The Cronbach alpha internal reliability score for Section 1 was 0.82 (Table 2), 0.79 for section 2 and 0.90 for section 3.

Demographic data are shown in table 3. The majority (86%) of the 415 nurses who returned a completed questionnaire were female; their mean age was 43 (± 11) and mean seniority 17 years (± 11). Most (34%) worked in surgical wards, while 33% worked in internal medicine wards, 17% in intensive care, 11% in oncology and 5% in obstetrics and gynecology. The majority (73%) were regular line nurses, 14% were nurse managers and 10% clinical instructors. Regarding education, 29% had a nursing diploma, 50% a B.A. or B.Sc in nursing and 15% an M.A. or M.Sc in nursing. More than half (54%) had advanced nurse training while 16% had received specific training in nutrition care in the five years prior to the study.

The mean score for the importance of nutritional assessment was 3.26 (SD ± 0.32), for knowledge of nutrition care 3.1 (SD ± 0.48) and for the perceived quality of nutrition care 3.87 (SD ± 0.68). The three means were weakly but positively correlated by Pearson correlation. The correlation between the importance of nutrition assessment and nutritional knowledge was $R = 0.12$; $P > 0.05$. The correlation between the importance of nutrition and the perceived quality of nutrition care was $R = 0.29$; $P > 0.001$. The correlation between the perceived quality of nutrition care and knowledge of nutrition among the nurses was $R = 0.14$; $P > 0.001$ (Table 4).

The importance of nutritional assessment

Female nurses ($n = 357$) attributed greater importance to a preliminary nutritional assessment than male nurses ($n = 58$) (3.27 ± 0.37 versus 3.13 ± 0.37 , $p < 0.01$, respectively). No other significant

Table 2: Internal consistency of sections of the survey questionnaire pertaining to nutrition.

Section	Item(s) on questionnaire	Cronbach's alpha
Importance of nutritional assessment	Q1-Q7	0.821
Recognition of misconceptions	Q8-Q17	0.788
Quality of nutrition care	Q18-Q26	0.9

Table 3: Demographic data.

Characteristic	N = 415
Gender	
Male (%)	14.1
Female (%)	85.9
Age (years)	42.9 \pm 11.5
Seniority (years)	17.2 \pm 11.2
Country of birth (%)	
Israel	61.8
Former Soviet Union	28.5
Other	9.7
Highest diploma (%)	
Nurse Practitioner	5.8
N.D. RN	29.3
N.D., BA/BSc	50.3
N.D., MA/MSc (%)	14.8
Professional role	
Staff nurse	73.3
Clinical preceptor	10.0
Nurse manager	13.9
Other	2.8
Department (%)	
Surgery	33.8
Internal medicine	32.6
Intensive care	16.8
Obstetrics and gynecology	5.4
Oncology	11.4
Post-basic training (%)	
Yes	54.3
No	45.7
Level of employment (%)	
100%	70.6
75%-90%	22.1
50%-66%	7.0
25%-33%	0.2
Nutrition training in previous 5 yrs (%)	
Yes	15.9
No	84.1

N.D.- nursing diploma, RN- registered nurse, BA.- Bachelor of Arts, BSc- Bachelor of Science, MA- Master of Arts, MSc- Master of Science

Table 4: Correlation between importance of nutritional assessment, knowledge and perceived quality of care.

		Importance of nutritional assessment	Knowledge of nutrition care	Quality of nutrition care
Importance of nutritional assessment	Pearson Correlation	1	0.121*	0.293**
	Sig. (2-tailed)		0.014	0.000
	N	414	412	408
Knowledge of nutrition care	Pearson Correlation	0.121*	1	0.139**
	Sig. (2-tailed)	0.014		0.005
	N	412	412	407
Quality of nutrition care	Pearson Correlation	0.293**	0.139**	1
	Sig. (2-tailed)	0.000	0.005	
	N	408	407	408

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

associations were found between socio-demographic variables and the importance of assessment score. A stepwise multiple linear regression generated a model predicting only 2.3% of variance in the importance of assessment, with gender the only significant predictor ($F_{1,337} = 7.1$; $p = 0.008$).

Knowledge of nutrition care

Knowledge of nutrition care was significantly associated with several socio-demographic variables. Female nurses scored higher than males (3.13 ± 0.48 vs. 2.91 ± 0.47 , respectively; $p < .01$). Nurses who had post-graduate nurse training ($n = 225$) scored higher than nurses with only basic training ($n = 190$) (3.17 ± 0.44 versus $3.04 \pm$

0.52, respectively; $p = 0.008$). A one-way ANOVA demonstrated an association between type of department and ability to recognize misconceptions ($F_{4,410} = 2.98$; $p < 0.05$). A post hoc Scheffé test showed that intensive care nurses scored higher than internal medicine nurses (mean difference of 0.23 ± 0.07 , $p < 0.05$). A stepwise multiple linear regression indicated that three predictors accounted for 5.5% of the variance in knowledge of nutrition care ($R^2 = 0.03$), namely age ($\beta = 0.01$, $p < 0.05$), higher-level of training ($\beta = 0.08$, $p < 0.05$) and country of birth ($\beta = 0.08$, $p < 0.05$).

Perceived quality of nutrition care provided

Nurses trained in nutrition care during the five years prior to the present study ($n = 66$) perceived the care in their department as better than nurses without such training ($n = 349$) (4.15 ± 0.6 versus 3.83 ± 0.69). ANOVA showed type of department also to be associated with perceived quality of care ($F_{4,399} = 2.89$; $p = 0.022$) with intensive care nurses rating the quality of nutritional care in their department higher than did internal medicine nurses in theirs (4.1 versus 3.7). A stepwise multiple linear regression for the predictors of quality of care generated a best-fit model which accounted for 2.4% of variance, with nutrition care training as the only significant predictor ($F_{1,288} = 8.2$; $p < 0.01$).

Discussion

The RMC, having undertaken to integrate nursing staff into its clinical nutrition taskforce, set out towards that goal by surveying attitudes to and knowledge of nutrition care among a large sample of nurses. It was found that the majority of nurses both appreciated the importance of nutritional assessment and was able to recognize common misconceptions of nutritional care despite the fact while only 16% of nurses had been specifically trained in nutrition care in the five years prior to the survey.

In light of the Rasmussen et al. study (1999) [11] which attributed much of the success in integrating nurses into nutritional care to each department designating a staff member as responsible for overseeing nutritional screening, management and monitoring, an important objective of the present survey was to detect nurses with a negative attitude to nutrition care and its pertinence to nursing. We were able to identify several such factors including male gender, nursing in internal medicine departments and country of birth (i.e. having trained in the former USSR). The explanation for these findings, however, is not clear and merits further investigation. On the other hand, exposure to recent professional training in nutrition care was more likely to make nurses more positive about nutritional care as a part of their responsibilities. This knowledge should permit focused interventions to improve nutritional care provision [19,20].

Several studies included in the Green and James review (2013) [12] reported a discrepancy between nurses' theoretical recognition of the importance of nutrition in nursing care and the actual implementation of nutrition guidelines. However, in our study correlations between acknowledging the importance of nutritional assessment, recognizing misconceptions and recognizing good quality nutritional care were all positive and statistically significant. This has important clinical significance since, as opposed to the findings of Green and James, our results show that a greater recognition and knowledge of the importance of nutrition amongst the nursing staff may be translated to a higher perceived and actual quality of nutritional care. The authors of the present study agree, however, with Green and James that nurses' theoretical perceptions do not always translate into actual practice and studies assessing the actual amount of nutrition received by patients should be performed to test for this gap. In the present study, regression analysis revealed that acknowledging the importance of nutritional assessment predicted the quality of care even better than the ability to recognize misconceptions about nutritional care. This may indicate that once nurses identify a nutritional issue with a patient in their care, they are more likely to administer high quality nutrition care.

Limitations of the Present Study

The present study was performed in a single hospital and so might not be representative of other institutions. In addition, we did not gather demographic data regarding the 31% of nurses who did not respond to the questionnaire; however, the high response rate of 69% may be considered as being representative of the total group.

Implications for Practice and Future Research

Nurses play a pivotal role in ensuring that adequate nutritional care is delivered in an optimal way to the patient at the bedside. The results of this study show that most, but not all, nurses in our hospital, even those who had not received specific training in nutritional care, appreciated *in theory* the importance of nutritional assessment and were able to recognize common misconceptions of nutritional care. In this regard, the survey also identified nursing staff who lack knowledge which might influence their practical behavior in the wards. This information has resulted in the appointment and training of a nurse in each hospital ward who is then responsible for ensuring that all aspects of nutritional care are instituted. This includes ongoing theoretical education as well as the practical aspects of nutritional support, including a nutritional assessment performed on all patients and the optimal delivery of nutritional support. Quarterly meetings between the Clinical Nutrition Forum and these nurses are held to discuss new developments and to solve problems encountered.

The findings from the study suggest that future research should assess more fully whether the prescribed nutritional support is actually being delivered at the patient level.

Conclusions

This study showed that ward nurses' attitudes regarding the importance of nutritional assessment was low, their knowledge of nutrition care was associated with a number of demographic factors including department, age, higher level of training and country of birth while the perceived quality of nutrition care provided in their wards depended on their knowledge regarding the importance of feeding.

Findings from the current study contribute to the fact that providing optimal nutritional care is heavily dependent on ensuring its optimal delivery at the bedside, a role which the nursing staff have to accept and be responsible for. It is important that this message is made clear at every level of nursing care and that the subject be raised at an early stage of nursing education, starting during their basic training.

References

1. Schindler K, Pernicka E, Laviano A, Howard P, Schütz T, et al. (2010) How nutritional risk is assessed and managed in European hospitals: a survey of 21,007 patients findings from the 2007-2008 cross-sectional nutritionDay survey. *Clin Nutr* 29: 552-559.
2. Murphy JL, Girot EA (2013) The importance of nutrition, diet and lifestyle advice for cancer survivors - the role of nursing staff and interprofessional workers. *J Clin Nurs* 22: 1539-1549.
3. Holst M, Laursen B, Rasmussen H (2012) Caring for dinner in hospital better organization may improve quality of care around meal serving in a hospital unit. *J Nurs Care* 1: 117.
4. Lindorff-Larsen K, Højgaard-Rasmussen H, Kondrup J, Staun M, Ladefoged K, et al. (2007) Management and perception of hospital undernutrition-a positive change among Danish doctors and nurses. *Clin Nutr* 26: 371-378.
5. Watson K, Farrell M, Arensberg MB, Dwyer J (2014) Nutrition as a Vital Sign: Progress Since the 1990 Multidisciplinary Nutrition Screening Initiative and Opportunities for Nursing. *J Nurs Care* 4: 224.
6. Marshall AP, Cahill NE, Gramlich L, MacDonald G, Alberda C, et al. (2012) Optimizing nutrition in intensive care units: empowering critical care nurses to be effective agents of change. *Am J Crit Care* 21: 186-194.
7. Jefferies D, Johnson M, Ravens J (2011) Nurturing and nourishing: the nurses' role in nutritional care. *J Clin Nurs* 20: 317-330.
8. Nightingale F (1860) Notes on nursing: What it is, and what it is not. New York: D. Appleton and Company.
9. Nightingale F (2010) Florence Nightingale's Notes on Nursing and Notes on

-
- Nursing for the Labouring Classes, Commemorative Edition with Historical Commentary (V. Skretkovicz (ed). New York: Springer Publishing Company.
10. Persenius M, Hall-Lord ML, Wilde-Larsson B, Carlson E (2015) Clinical nursing leaders' perceptions of nutrition quality indicators in Swedish stroke wards: a national survey. *J Nurs Manag* 23: 705-715.
 11. Rasmussen HH, Kondrup J, Ladefoged K, Staun M (1999) Clinical nutrition in Danish hospitals: a questionnaire-based investigation among doctors and nurses. *Clinical Nutrition* 18: 153-158.
 12. Green SM, James EP (2013) Barriers and facilitators to undertaking nutritional screening of patients: a systematic review. *J Hum Nutr Diet* 26: 211-221.
 13. Porter J, Raja R, Cant R, Aroni R (2009) Exploring issues influencing the use of the Malnutrition Universal Screening Tool by nurses in two Australian hospitals. *J Hum Nutr Diet* 22: 203-209.
 14. NPSA (2009) Nutrition factsheets. Nutritional screening structured investigation project.
 15. Hren D, Lukic IK, Marusic A, Vodopivec I, Vujaklija A, et al. (2004) Teaching research methodology in medical schools: students' attitudes towards and knowledge about science. *Med Educ* 38: 81-86.
 16. Rensis Likert (1932) A Technique for the Measurement of Attitudes. *Archives of Psychology* 140: 55.
 17. Mueller C, Compher C, Ellen DM; American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. (2011) A.S.P.E.N. clinical guidelines: Nutrition screening, assessment, and intervention in adults. *JPEN J Parenter Enteral Nutr* 35: 16-24.
 18. Bavelaar JW, Otter CD, van Bodegraven AA, Thijs A, van Bokhorst-de van der Schueren MA (2008) Diagnosis and treatment of (disease-related) in-hospital malnutrition: the performance of medical and nursing staff. *Clin Nutr* 27: 431-438.
 19. Schönherr S, Ruud J, Halfens G, Lohrmann C (2015) Development and psychometric evaluation of the Knowledge of Malnutrition - Geriatric (KoM-G) questionnaire to measure malnutrition knowledge among nursing staff in Austrian nursing homes. *Scand J Caring Sci* 29: 193-202.
 20. Peake H, Stockely M, Frost G (2001) What nutritional support literature do hospital nursing staff require? *J Hum Nutr Diet* 14: 225-230.