Nurse-friendly nutritional screening for patient benefit

Steve Smith, Senior lecturer *[1)]

Albert Westergren, Professor *[2)]

Julia Saunders, Practice development nurse [3)]

Peter Hagell, Professor [2)]

* Both authors are first authors

[1)] School of Nursing Sciences, Faculty of Medicine and Health, University of East Anglia, Norwich, UK
[2)] The PRO-CARE Group, School of Health and Society, Kristianstad University, SWEDEN
[3)] The Queen Elisabeth Hospital, King´s Lynn NHS Foundation Trust, UK

Address for correspondence:
Albert Westergren
School of Health and Society
Kristianstad University
SE-291 88 Kristianstad
Sweden
E-mail: Albert.Westergren@hkr.se
Phone: +46 44 208550

ABSTRACT

Screening for undernutrition is highly important and may reduce morbidity and mortality. The Minimal Eating Observation and Nutrition Form – Version II (MEONF-II) is a nutritional screening tool specifically developed for use by nurses. Here, we describe the translation, performance and appropriateness of the MEONF-II for the UK**.** Following translation from Swedish to British English, the user-friendliness and appropriateness of the British MEONF-II was tested by 29 registered nurses and final year student nurses on 266 hospital inpatients. The new British MEONF-II was perceived as highly user-friendly and appropriate. They found the MEONF-II to compare favourably to other similar tools in terms of preference, usefulness and helpfulness in providing good nutritional care. Dependency in activities and poorer subjective health were associated with a higher undernutrition risk. These findings support the appropriateness of the British MEONF-II version and suggest it may act as a user-friendly facilitator towards good nutritional nursing care.

Keywords: MEONF-II, nutrition, screening, translation, undernutrition

Key phrases

1. Screening for undernutrition is primarily a nursing responsibility that can improve nutritional status and medical recovery, and reduce morbidity and mortality.

2. The MEONF-II is a nutrition screening tool developed in Sweden for nursing use among adult hospital inpatients.

3. The MEONF-II was adapted for use in the UK, and considered user-friendly and appropriate by British qualified and student nurses.

4. The MEONF -II compared favourably with other tools (e.g., the MUST) regarding usefulness towards providing good nutritional nursing care.

5. Further studies in larger British hospital patient cohorts are needed to more firmly test the usefulness and validity of the British MEONF-II.

INTRODUCTION

According to Stratton et al. (Stratton et al. 2004) malnutrition is a state of deficiency, excess, or imbalance of protein, energy, and other nutrients that causes measurable adverse effects on tissue and/or body form (body shape, size and composition), function, and clinical outcome. Thus, from this perspective, malnutrition does not only include undernutrition, but also overweight/obesity and nutrient deficiencies. The focus for this study is undernutrition (UN). UN is relatively common among hospital inpatients and is associated with poorer health, compromised recovery from medical conditions and increased mortality (Alberda et al. 2006). Prevention and treatment of UN depends on identification of people who are undernourished or at risk for becoming so. Nutritional screening tools currently available include, e.g., the Mini Nutritional Assessment (MNA) and the Malnutrition Universal Screening Tool (MUST) (Guigoz et al. 2002; Stratton et al. 2004). While healthcare support workers are often involved along with nurses in completing nutritional screening tools, it is registered nurses who are ultimately accountable for this (Green and Watson 2005). However, since this is only one of a wide range of nurse responsibilities, effective and useful nutritional screening tools not only need to have sufficient sensitivity and specificity, but also be brief and easy to use, and preferably link screening results to relevant actions and interventions.

To this end, the Minimal Eating Observation and Nutrition Form – Version II (MEONF-II) has been suggested as an UN screening tool for nurses. The MEONF-II is based on recommendations for detecting UN-risk (Kondrup et al. 2003; SWESPEN. 2006), and links screening results to nutritional interventions. The MEONF-II includes assessments of unintentional weight loss, low BMI/short calf circumference, eating difficulties (food intake, chewing/swallowing, energy/appetite), and clinical UN signs. The MEONF-II yields a total score ranging from 0-8, where scores ≤2 suggest no or low UN risk, whereas scores between 3-4 and ≥5 suggest moderate and high UN risk, respectively (Westergren et al. 2011b). The MEONF-II is supplemented by suggestions for actions and interventions based on the screening results, as well as a user manual (see: http://www.hkr.se/meonf).

Experiences from various Scandinavian studies among nurses and student nurses have found favourable usefulness and user-friendliness of the MEONF-II together with equal

or better ability to identify UN risk, also in comparison to other tools such as the Nutritional Risk Screening 2002 (NRS 2002) and MUST (Vallén et al. 2011; Westergren et al. 2013; Westergren et al. 2011a; Westergren et al. 2011b; Westergren et al. 2014). Associations have also been found between MEONF-II scores and dependency in activities of daily living (ADL), insomnia and low-spiritedness (Westergren et al. 2013). Furthermore, the inter- and intrarater agreement and reliability for the MEONF-II among hospital nurses have been found good (≥0.81) (Westergren et al. 2014). While these findings are encouraging, the performance and appropriateness of the MEONF-II outside of Scandinavia is unknown.

The aims of this study were to translate and adapt the Swedish MEONF-II into British English; explore its user-friendliness and appropriateness when used with British hospital inpatients; and to explore associations between British MEONF-II screening results and other clinical variables.

METHODS

Translation and adaptation procedure

The MEONF-II was translated using a methodology based on the dual-panel (DP) approach for translation and cultural adaptation of patient-reported outcome measures (PROMs) (Swaine-Verdier et al. 2004). Within the context of PROMs this method has been shown to outperform the commonly used forward-backward translation procedure (i.e., translation into the target language followed by back-translation into the source language) in terms of acceptability of the resulting translation (Hagell et al. 2010). According to the DP approach, the new language version is produced by means of two panels, a bilingual panel (to provide the initial translation into the source language) and a lay-panel (where the initial translation is assessed for clarity and acceptability of language). In contrast to PROMs, the MEONF-II is an observer-based tool. Therefore, a modified DP approach (Hagell et al. 2015) was used. In brief, a bilingual translation panel (Swedish and English speaking registered nurses) worked together to produce a first draft British English MEONF-II version. A second monolingual (British English) panel of registered nurses and student nurses reviewed and revised the draft version produced by the first panel in order to optimize clinical applicability for UK settings.

Field-test

To test the user-friendliness and appropriateness of the new British English MEONF-II, it was field-tested on hospital wards at a district general hospital that provides a wide range of services to the rural population in and around West Norfolk. The first author attended a senior nurse meeting and senior nurses agreed to make it known on their wards that volunteers were required. Volunteering registered nurses (n=12) and final year student nurses (n=17) then contacted the first author and underwent a 1-hour training session regarding the study protocol, including how to use and score the MEONF-II.

Each assessor (registered nurse/student nurse) was instructed to use the new British English MEONF-II with at least five patients of their choice during a period of three months. In addition to the MEONF-II and demographic patient data, assessments of dependency in ADL and subjective health were recorded to explore if the British MEONF-II replicates results from previous studies. ADL dependence was assessed using a modified Katz ADL-index (Katz and Akpom 1976). It summarizes an individual's overall performance in six activities: hygiene; dressing and undressing; ability to go to the toilet; mobility; ability to control bowels and bladder; and food intake. The ability to perform each activity is graded as independent, partly dependent or dependent (Katz and Akpom 1976). In this study, we merged partly dependent and dependent into one category. Patients were then classified as almost totally dependent (in 5 or 6 activities), partly dependent (in 3 or 4 activities), or almost totally independent (in 2 activities or less) (Westergren et al. 2013). Subjective health was assessed by a single item: "In general, would you say your health is… Excellent; Very Good; Good; Fair; or Poor (Ware and Sherbourne 1992).

Assessors were asked about their demographic and professional details. Following completion of data collection they also completed a questionnaire regarding their evaluation of the MEONF-II, its manual and accompanying proposals for actions.

Ethical considerations

All participants provided informed consent following written and oral information. No names or other information that would allow identification of any individual were collected. The study was approved by the local Research Governance Committee.

Analysis

Data were described by means of frequencies, percentages, mean (SD) and median (q1-q3), as appropriate. Comparisons between UN-risk groups regarding ADL dependence and subjective health were conducted using the Kruskal-Wallis test.

RESULTS

Assessors (n=29) had a mean age of 31.9 years and an average nursing experience of 3 years. A majority had previous experience with nutritional screening, typically the MUST (n=26) (Table 1).

-Insert table 1 about here-

The assessors' evaluations of the MEONF-II are reported in Table 2. Almost all found the MEONF-II items relevant and easy to understand and score, and its proposals for actions easy to understand, relevant and appropriate. Most found the MEONF-II to be useful and helpful in providing good nutritional care, and considered themselves likely to use the MEONF-II instead of other nutritional tools they were familiar with. The MEONF-II was also considered a valuable educational aid for registered nurses and student nurses.

-Insert table 2 about here-

Patient characteristics are reported in Table 3. Mean age was 74 years and most were female. The most common reason for admission was neurological. Most patients rated their health as poor or fair and were on average dependent in five to six ADLs. According to the MEONF-II screening results, 68% of patients were at either moderate or high risk for UN.

-Insert table 3 about here-

ADL dependency and poorer subjective health were associated with a higher degree of UN-risk (Table 4).

-Insert table 4 about here-

DISCUSSION

This study has presented the successful translation and adaptation of the Swedish MEONF-II for use in the UK. The new British MEONF-II was perceived as highly user-friendly and appropriate among UK hospital ward nurses and student nurses. Importantly, they found the MEONF-II to compare favourably to other similar tools such as the MUST in terms of preference, usefulness and helpfulness in providing good nutritional care. These results are in accord with previous experiences with the MEONF-II from Scandinavian contexts (Vallén et al. 2011; Westergren et al. 2013; Westergren et al. 2011a; Westergren et al. 2011b; Westergren et al. 2014), and suggest that the MEONF-II may act as a facilitator towards prevention and amelioration of UN risk among hospital inpatients.

This initial study did not include a "gold standard" comparator to allow for evaluation of criterion-related validity, sensitivity and specificity, which will be needed to more fully test and establish the validity of the British MEONF-II. However, exploration of the relationship between MEONF-II screening outcomes and ADL dependency coincided with previous experiences (Westergren et al. 2013) and provide initial support for its construct validity. We also observed an association between MEONF-II screening outcomes and patient-reported health. This is in contrast to a previous study (Westergren et al. 2013) but may be due to previous use of a different general health item than that used here (i.e., respondents were asked to compare their health to that of peers), and to sampling related reasons. That is, previous studies have targeted all inpatients at certain hospital wards at a specific point in time, whereas the assessors here were instructed to use the MEONF-II with five patients each over a longer period. This means that the patients here are probably less representative of hospital inpatients than otherwise would have been the case. Those included probably also over-represent patients considered in need of nutritional screening by the participating registered nurses/student nurses. This is supported by a high rate of patients with some degree of

UN risk according to the MEONF-II (68%, compared to 34% in another study (Westergren et al. 2009)). However, the objective of this study was not to estimate the prevalence of UN risk but to develop a British version of the MEONF-II and test its user-friendliness and appropriateness when used with hospital inpatients in the UK. In order to more firmly determine the usefulness and validity of the British MEONF-II, as well as the prevalence of UN risk among hospital inpatients, further and larger studies are needed that include additional nutritional assessments and a more representative sampling strategy.

In conclusion, we have translated and adapted the MEONF-II for use in the UK and present results that provide initial support for its user-friendliness, appropriateness and construct validity when used with British hospital inpatients. Furthermore, our observations support the MEONF-II concept of linking screening with proposals for action as a nurse friendly and relevant approach that has potential to facilitate good nutritional nursing care. [1]

[1] The British MEONF-II is available from http://www.hkr.se/meonf.

Previously published English versions of the MEONF-II (Vallen et al. 2011; Westergren et al. 2011a; Westergren et al. 2014) were produced for illustrative purposes only, and should not be used.

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CONFLICT OF INTEREST

None

REFERENCES

Alberda C, Graf A, McCargar L (2006) Malnutrition: etiology, consequences, and assessment of a patient at risk. Best Pract Res Clin Gastroenterol **20**(3): 419-39.

Green SM, Watson R (2005) Nutritional screening and assessment tools for use by nurses: literature review. J Adv Nurs, **50**(1): 69-83.

Guigoz Y, Lauque S, Vellas BJ (2002) Identifying the elderly at risk for malnutrition. The Mini Nutritional Assessment. Clin Geriatr Med **18**(4): 737-57.

Hagell P, Hedin PJ, Meads DM, Nyberg L, McKenna SP (2010) Effects of method of translation of patient-reported health outcome questionnaires: a randomized study of the translation of the Rheumatoid Arthritis Quality of Life (RAQoL) Instrument for Sweden. Value Health, **13**(4): 424-30.

Hagell P, Smith S, Westergren A (2015) Manual for translation and cultural adaptation of the Minimal Eating Observation and Nutrition Form - Version II (MEONF-II). Kristianstad University, Kristianstad.

Katz S, Akpom CA (1976) 12. Index of ADL. Med Care, 14(5 Suppl): 116-8.

Kondrup J, Allison SP, Elia M, Vellas B, Plauth, M (2003) ESPEN guidelines for nutrition screening 2002. Clin Nutr, **22**(4); 415-21.

Stratton RJ, Hackston A, Longmore D et al (2004) Malnutrition in hospital outpatients and inpatients: prevalence, concurrent validity and ease of use of the 'malnutrition universal screening tool' ('MUST') for adults. Br J Nutr, **92**(5); 799-808.

Swaine-Verdier A, Doward LC, Hagell P, Thorsen H, McKenna SP (2004) Adapting quality of life instruments. Value Health, 7 Suppl 1; S27-30.

SWESPEN (2006) Nutritionsbehandling i sjukvård och omsorg [Nutritional treatment in care and service].

Vallén C, Hagell P, Westergren A (2011) Validity and user-friendliness of the The Minimal Eating Observation Form - Version II (MEONF-II) for undernutrition risk screening. Food Nutr Res, **55**:5801.

Ware J, Sherbourne C (1992) The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care, **30**(6); 473-83.

Westergren A, Edfors E, Hedin G, Hagell P (2013) Improving nursing students research knowledge through participation in a study about nutrition, its associated factors and assessment. Journal of Nursing Education and Practice, **3**(8); 50-58.

Westergren A, Norberg E, Hagell P (2011a) Diagnostic performance of the Minimal Eating Observation and Nutrition Form - Version II (MEONF-II) and Nutritional Risk Screening 2002 (NRS 2002) among hospital inpatients - a cross-sectional study. BMC Nurs, **10**, 24.

Westergren A, Norberg E, Vallen C, Hagell P (2011b) Cut-off scores for the Minimal Eating Observation and Nutrition Form - Version II (MEONF-II) among hospital inpatients. Food Nutr Res, **55**.

Westergren A, Torfadottir O, Hagell P (2014) Inter- and intrarater reliability of Minimal Eating Observation and Nutrition Form - version II (MEONF-II) nurse assessments among hospital inpatients. BMC Nurs, **13**, 18.

Westergren A, Wann-Hansson C, Borgdal EB et al (2009) Malnutrition prevalence and precision in nutritional care differed in relation to hospital volume--a cross-sectional survey. Nutr J, 8, 20.

Table 1. Assessor characteristics [a]

	n=29
Gender (female/male)	28/1
Age (years), mean (SD)	31.9 (12.7)
Experience in nursing (years), median (q1-q3; min-max)	3 (2-11; 1-42)
Profession	
Registered nurse	12
Student nurse	17
Experience with nutritional assessments	28
Specific training in nutrition/nutritional assessments	7
Special interest in nutrition/nutritional assessments	10
Special responsibility for nutrition/nutritional assessments	11

[a] Data are n unless otherwise specified.

Table 2. User evaluation of the MEONF-II [a]

	n=29
MEONF-II manual was easy to understand	27
MEONF-II items were:	
Easy to understand	27
Easy to score	26
Relevant	28
MEONF-II proposals for actions were:	
Easy to understand	27
Relevant	27
Appropriate	27
MEONF-II appears useful for routine clinical use	
Very useful	18
Quite useful	10
Not very useful	1
Not at all useful	0
Assuming equal availability, how likely would you be to use the MEONF-II compared to other nutritional tools you are familiar with?	
Would definitely use the MEONF-II	10
Would be quite likely to use the MEONF-II	13
Would not be very likely to use the MEONF-II	1
Would definitely not use the MEONF-II	1
Indifferent	4
How does the MEONF-II compare to other nutritional tools you are familiar with?	
More useful	17
Equally useful	11
Less useful	1
How helpful do you find the information from the MEONF-II towards providing good care compared to other nutritional tools you are familiar with?	
More helpful	15
Equally helpful	12
Less helpful	1
What is your impression of the value using the MEONF-II as an educational aid?	
Very valuable	18
Quite valuable	10
Not very valuable	1
Not at all valuable	0

[a] Data are n.

Table 3. Patient characteristics [a]

	n=266
Age (years), mean (SD)	74 (8.6)
Length of stay (days), median (q1-q3; min-max)	9 (5-16; 1-42)
Gender (male/female)	112/154 (42/58)
Reasons for hospital admission	
Neurological	77 (29)
Gastrointestinal	41 (15)
Respiratory	28 (10)
Cardiovascular	25 (9)
Dermatological	23 (9)
Endocrine	17 (6)
Orthopaedic	15 (6)
Subjective health	
Excellent	0 (0)
Very good	7 (3)
Good	44 (16)
Fair	81 (30)
Poor	134 (50)
Activities of daily living, median (q1-q3; min-max)	5 (0-6; 0-6)
Dependent in ≤2 activities	99 (37)
Dependent in 3-4 activities	23 (9)
Dependent in 5-6 activities	144 (54)
MEONF-II (total score), median (q1-q3; min-max)	4 (2-6; 0-8)
No/low risk	86 (32)
Moderate risk	54 (20)
High risk	126 (48)

[a] Data are n (%) unless otherwise specified.

Table 4. Comparisons between patients with no/low vs. moderate/high undernutrition risk (n=266) [a]

	Undernutrition risk			
	No/low	Moderate	High	P-value [b]
Activities of daily living, median (q1-q3) [c]	0 (0-2)	3 (0-5)	5.5 (5-6)	<0.005
Dependent in ≤2 activities	66 (77)	23 (42)	10 (8)	
Dependent in 3-4 activities	7 (8)	9 (17)	7 (6)	
Dependent in 5-6 activities	13 (15)	22 (41)	109 (86)	
Subjective health, median (q1-q3) [d]	0 (0-2)	3 (0-5)	5.5 (5-6)	<0.005
Excellent/very good/good	42 (49)	8 (15)	1 (1)	
Fair	33 (38)	26 (48)	22 (17)	
Poor	11 (13)	20 (37)	103 (82)	

[a] Data are n (%) unless otherwise specified
[b] Kruskal-Wallis test
[c] Scores: 0=less dependent; 6=more dependent
[d] Scores: 0=poor; 4=excellent