



REVIEW ARTICLE

Barriers and facilitators to undertaking nutritional screening of patients: a systematic review

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Keywords

barriers, facilitators, nursing practice, nutritional screening, review, screening tool.

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Abstract

Background: Recent reports have suggested that registered nurses may not screen patients admitted to their care for malnutrition. The objective of this integrative review was to locate and review published research investigating barriers and facilitators to nutritional screening by nurses.

Methods: A systematic search for relevant English language publications was conducted through CINAHL®, Web of Science, MEDLINE® and EMBASE and an Internet search engine (completed November 2011). Reference lists of relevant publications were also searched. Search terms included nursing, dietetics, nutrition disorders and screening, as well as associated MeSH® terms and Subject Headings. Six hundred and sixteen publications were identified and 605 were excluded. Publications reporting research concerning barriers and facilitators to nutritional screening by nurses were selected using exclusion and inclusion criteria. These were reviewed and the key findings described, categorised, combined, reviewed and refined to create themes.

Results: Eleven publications were reviewed. Publications primarily reported hospital-based studies undertaken in three continents and considered barriers rather than facilitators. Five themes emerged: organisational culture, competing priorities, the value of clinical judgement, training and education, and discrepancy between attitudes and practice.

Conclusions: Studies primarily involved acute care and indicated that routine screening for malnutrition will not take place unless it is considered an integral part of nursing assessment that is required by policy and resourced appropriately. Qualitative studies investigating barriers and facilitators to screening for malnutrition in community settings are needed and research is required to test interventions designed to modify or remove barriers and facilitate screening.

Introduction

Malnutrition has long been an issue of concern in many developed countries (Barker *et al.*, 2011). In the context of the present study, malnutrition is defined as a reduction in body mass as a result of protein and energy deficiency and includes chronic disease-related malnutrition and acute-disease or injury-related malnutrition (Jensen *et al.*, 2010). Recent surveys have suggested that 14–37% of people admitted to hospital and care homes in countries such as Australia, the Netherlands and the UK are at

risk of malnutrition (Meijers *et al.*, 2009; BAPEN, 2011; Bauer *et al.*, 2011). Malnutrition has clinical and financial implications. It is considered as a risk factor for complications, increased mortality and length of hospital stay (Isabel *et al.*, 2003). In the community setting, the healthcare cost of people with malnutrition has been shown to be considerably higher than that of non-malnourished people (Guest *et al.*, 2011; Meijers *et al.*, 2012). In Europe, it has been estimated that those diagnosed with nutritional problems in the community use an additional €1128 in healthcare resources over 6 months compared

to those without malnutrition (ENHA, 2007). Yet, malnutrition is often reported to be unrecognised and untreated (BAPEN, 2008; Brotherton *et al.*, 2010; Barker *et al.*, 2011).

To address this situation, the implementation of routine nutritional screening has been recommended in many regions (BAPEN, 2008; Anon, 2011; Barker *et al.*, 2011; Mueller *et al.*, 2011). Nutritional screening can lead to the earlier identification of those at risk of malnutrition and thus subsequent assessment, planning and implementation of appropriate nutritional care. Despite guidelines indicating that nutritional screening should be undertaken, its importance can be overlooked (Elia & Russell, 2009). Registered nurses are in a position to screen patients on admission to care because they assess each patient admitted to their care and are likely to have close contact with them subsequently. However, recent reports have suggested they may not screen patients for malnutrition routinely (Age Concern, 2010).

Knowledge of barriers and facilitators to nutritional screening by nurses can help organisations to develop potentially effective strategies by modifying or removing barriers and using existing facilitators. One of the key recommendations for action to address malnutrition includes the removal of barriers to prevent screening (BAPEN, 2008). The objective of the present review was to locate and review published research investigating barriers and facilitators to nutritional screening by nurses in order to:

- explore the extent of previous research on the topic, integrate the key findings of relevant publications, consider how barriers identified may be addressed and facilitators used to enhance future screening practice and
- identify future research topics.

Materials and methods

An integrative review method was used to provide a broad summary of past research by incorporating findings from a range of varied research designs not amenable to meta-analysis. This method allows for the inclusion of diverse data sources to enable a fuller understanding of a particular issue and potentially inform evidence-based practice development (Whittemore & Knafl, 2005). An integrative approach has become increasingly relevant to research within the healthcare setting because it can enhance our understanding of influencing factors and help develop recommendations for practice and future research (Evans, 2008). To provide methodological rigour and diminish bias and threats to validity within the review process, a systematic plan guided by the PRISMA statement (Moher *et al.*, 2009), was established before

commencement. This included a well-defined literature search strategy and a thorough and unbiased interpretation of primary sources.

A systematic search of the electronic databases CINAHL®, MEDLINE®, EMBASE and Web of Science, was undertaken via EBSCO Host and Ovid and completed in November 2011. The search terms used, dates searched and host are provided in the Supporting information (Data S1). MeSH® terms and Subject Headings (<http://www.nlm.nih.gov/mesh/>) were used where possible and terms were truncated as appropriate. The search was constructed by a librarian experienced in undertaking database searches. An Internet search was conducted using the search engine Google (terms: nutrition* screening and nurs*) as well as a hand search of the reference list of relevant publications obtained in the electronic literature search. This identified four more publications included in the review (Lennard-Jones *et al.*, 1995; Savage & Scott, 2005; NPSA, 2009; Villalon *et al.*, 2011).

Titles and abstracts identified as a result of the search were judged for relevance by both authors using inclusion and exclusion criteria. Inclusion criteria included English language publications in which: the focus of inquiry was relevant to the objective of the review [i.e. perceived barriers and facilitators (views, opinions, attitudes and beliefs of participants) to nutritional screening]; participants were reported to be nurses; original findings as a result of undertaking a research process were reported. Exclusion criteria included publications that: did not report the views of nurses; reported acceptability of a screening tool as part of the testing of the tool; reported implementation of one screening tool; reviewed literature without presenting new research findings; reported perceived barriers and facilitators (views, opinions, attitudes and beliefs of participants) to nutritional assessment; were not written in English language. Full publications were obtained if further information was required or the criteria were met. Those that met the inclusion and exclusion criteria were considered eligible for review and appraised independently by both authors. Data were extracted by recording relevant items (including author, country of origin, research question, population, study type, methods and findings). One publication (Bell, 2007) was excluded at this stage because the brief reporting of the results made it impossible to draw conclusions from the findings. All other publications were included in the review, despite variability in the quality as a result of the brevity of reporting various aspects, because the findings were used to inform the development of themes rather than a quantitative assessment of efficacy. Quality criteria were not applied because the study designs were mixed and the value of the application of quality criteria to qualitative research is debatable (Atkins *et al.*, 2008). The themes

arising from the findings of each publication were combined with themes identified from other publications. This process involved extracting and tabulating reported barriers and facilitators and categorising related concepts into themes. These were then compared, reviewed and refined. Employing qualitative research approaches in the process of analysis and synthesis of evidence in an integrative review has been suggested to have the potential to decrease bias and error (Whittemore & Knafl, 2005).

Results

Figure 1 summarises the search process. Six hundred and sixteen publications were identified and duplicates were removed. The titles and abstracts of the remaining 470 publications were reviewed and 439 were discarded because they did not meet the criteria. The full texts of the remaining 31 publications were examined. Eleven met the criteria and were included in the review (Lennard-Jones *et al.*, 1995; Kondrup *et al.*, 2002; Savage & Scott, 2005; Lindorff-Larsen *et al.*, 2007; Hodge, 2008; Persenius *et al.*, 2008; Raja *et al.*, 2008; Holst *et al.*, 2009; NPSA, 2009; Porter *et al.*, 2009; Villalon *et al.*, 2011). Table 1 summarises the methods and findings of the 11 publications. Details of the excluded publications and the reasons for exclusion are included in the Supporting information (Data S2).

Characteristics of included papers

The publications originated from Scandinavia, the UK, Australia and Canada. Most referred to the use of screening tools to undertake nutritional screening; however, some considered screening using weight parameters and food intake (Lennard-Jones *et al.*, 1995; Kondrup *et al.*, 2002; Lindorff-Larsen *et al.*, 2007; Holst *et al.*, 2009). Each publication considered nutritional screening in the hospital setting, with two also investigating screening of patients in nursing homes or other homecare settings

(Persenius *et al.*, 2008; Villalon *et al.*, 2011). The recent date of most of the publications corresponds with the advent of the widespread development and use of nutritional screening tools by nurses. One publication (Raja *et al.*, 2008) reported a balance of both facilitators and barriers to the nutritional screening, whereas the remaining studies focused predominantly on perceived barriers.

The results presented in several publications were brief, either because the publication was an abstract (Hodge, 2008) or because the investigation of screening practice formed only part of the study design (Lennard-Jones *et al.*, 1995; Kondrup *et al.*, 2002; Savage & Scott, 2005; Lindorff-Larsen *et al.*, 2007; Holst *et al.*, 2009).

A spectrum of methodological approaches was reflected in the publications (Table 1) Lennard-Jones *et al.* (1995), Lindorff-Larsen *et al.* (2007), Holst *et al.* (2009) and Villalon *et al.* (2011) used questionnaires that included closed questions on nutritional screening. This resulted in large sample sizes but with data that were limited to the directed response to the questions. Kondrup *et al.* (2002) interviewed participants who did not follow nutritional care guidelines. This method had the potential to yield rich data; however, the interview was guided by questions with apparently predetermined responses. The publication by the NPSA (2009) presented a summary of participant's responses during a workshop, although details of the analysis undertaken were not described. A qualitative approach in the form of focus groups was reported in two publications (Raja *et al.*, 2008; Porter *et al.*, 2009), which provided a deeper understanding of perceived barriers and facilitators than the publications reporting responses to questionnaires or in workshops. Savage & Scott (2005) also used a qualitative approach in the form of an ethnographic study. This approach has the potential to enable a contextualised understanding of issues, although nutritional screening represented only a very small part of the investigation. A number of publications described mixed methods of data collection. Hodge (2008) reported a case study approach using mixed

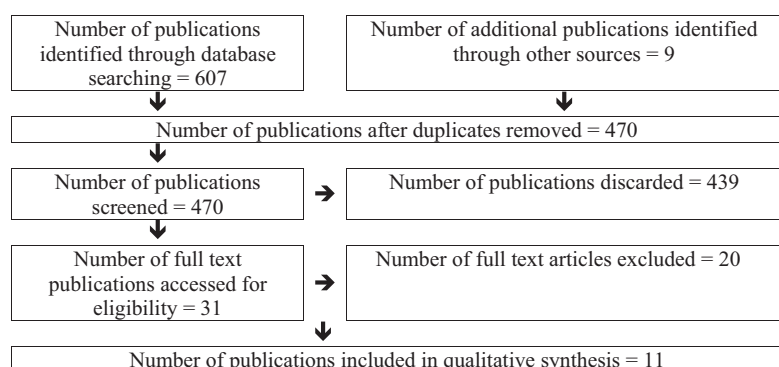


Figure 1 Flow diagram, adapted from Moher *et al.* (2009), showing the search process.

Table 1 Summary of study characteristics

Study	Setting and country	Study method	Methods of screening	Findings concerning barriers and facilitators to screening
1	Hodge (2008) Cancer care, England	Two focus groups with 18 nurses, field observations and survey of 27 patient's documentation	Weight history, food intake	Lack of time and increasing pressures of medicalised tasks identified barriers
2	Holst <i>et al.</i> (2009) Hospitals, Denmark, Norway and Sweden	Questionnaire regarding nutrition care process completed by 2605 hospital nurses	Weight	Reported discrepancy between attitudes and practice in screening. Lack of techniques for identifying malnourished patients identified by some nurses
3	Kondrup <i>et al.</i> (2002) Hospitals, Denmark	Interview with 268 hospital nurses who did not follow guidelines for nutritional care	Weight	Identified main reason for not screening was lack of instruction to screen
4	Lennard-Jones <i>et al.</i> (1995) Hospitals, England	Questionnaire regarding practice completed by 454 hospital nurses	Weight, height, weight loss, change in food intake	Many respondents did not consider questions concerning weight and intake important. Lack of time and equipment also identified
5	Lindorff-Larsen <i>et al.</i> (2007) Hospitals, Denmark	Questionnaire regarding attitudes and practice completed by 960 hospital nurses	Not outlined	Lack of methods to identify undernourished patients. Reported discrepancy between attitudes and practice in screening
6	NPSA (2009) UK Hospitals, England	Workshop attendance by 38 nurses and dieticians from 10 hospitals	Nutritional Risk Tool, Malnutrition Universal Screening Tool, weight and other measures	Main barriers to compliance within 24 h of admission: lack of equipment, lack of leadership, lack of clarity relating to screening and assessment, dependency of patients, credibility and usability of available screening tools, lack of education and training, not mandatory
7	Persenius <i>et al.</i> (2008) Sweden Municipal and county council care, Sweden	Semi-structured telephone interview with 42 nurses and questionnaire completed by 131 nurses from municipal and county council care settings	Subjective Global Assessment, Mini Nutritional Assessment, nutritional chart, documentation of food intake, body mass index	Use of a nursing documentation model which includes nutritional screening can provide 'guidance' but can 'obstruct information 'exchange'. Discussion 'considers barriers to use of 'tools could be: tools not 'well known, clinical 'judgement used, lack of 'knowledge to identify 'nutritional problems, time 'constraints, multi-tasking 'issues
8	Porter <i>et al.</i> (2009) Australia Hospitals, Australia	Three focus groups with 18 nurses from two wards in one hospital	Malnutrition Universal Screening Tool	Five themes: screening role, 'task priorities, recognition 'of evidence-based practice, 'uncertainty of protocols, degree of competence. Factors enabling screening: skills and knowledge, positive perceptions of value, process and competence
9	Raja <i>et al.</i> (2008) Australia Hospitals, Australia	Five focus groups with 54 nurses from acute wards in one hospital	Malnutrition Screening Tool, Malnutrition Universal Screening Tool	Additional barriers to screening: ease of use of forms, communication with patient, need for training, other barriers (workloads, etc.)

Table 1 (Continued)

	Study	Setting and country	Study method	Methods of screening	Findings concerning barriers and facilitators to screening
10	Savage & Scott (2005) UK	Hospital, UK	Ten periods of observation (<4 h), semi-structured interviews with seven nurses and documentation review in one acute care hospital ward	Nutrition Screening Tool	Nutritional screening tool problems: time, uncertainty in use of tool, response, other issues
11	Villalon <i>et al.</i> (2011) Canada	Hospitals and nursing homes, Canada	Questionnaire completed by 230 nurses from nursing homes and hospitals	Nutrition Screening Tool, weight monitoring and other measures	Main barriers: lack of time, not enough assistance, lack of professional resources

methods (focus groups, a survey of patient documentation and observation); however, because the publication was an abstract, the results presented are limited. A Swedish study (Persenius *et al.*, 2008) conducted semi-structured telephone interviews and distributed a questionnaire to elicit perceptions giving more depth to the findings.

Participants were self-selecting in all the studies except Kondrup *et al.* (2002), leading to potential bias in that those who participated may have an interest in nutritional care. Some publications brought clarity and direction to the current literature base, such as the recommendations by Raja *et al.* (2008) and Porter *et al.* (2009), and some contained limited description (Hodge, 2008). As Atkins *et al.* (2008) suggest, the contribution of each publication to the overall synthesis was affected by their quality in that those providing a comprehensive analysis influenced the development of the themes to a greater extent.

Themes

The key findings that emerged from the publications were grouped into five themes: organisational culture, competing priorities, the value of clinical judgement, training and education, and discrepancy between attitudes and practice, which are described below.

Organisational culture

Many publications highlighted elements within the 'organisational culture' of the healthcare setting as contributory factors regarding whether or not nutritional screening takes place (Lennard-Jones *et al.*, 1995; Kondrup *et al.*, 2002; Hodge, 2008; Raja *et al.*, 2008;

NPSA, 2009; Porter *et al.*, 2009; Villalon *et al.*, 2011). Although it is an individual who decides to undertake screening, the environment in which they work is likely to influence their ability and application to the task. Hodge (2008) explored nutritional screening by cancer nurses in the UK, and concluded that the impact of organisational culture on individual behaviour may be a central factor in inconsistency in screening practice. However, because the study is published as an abstract, little detail is given to support this conclusion (Hodge, 2008). Porter *et al.* (2009) identified similar findings in a study exploring screening tool use in two Australian hospitals.

If the premise is that organisational culture is a key factor in whether or not screening is undertaken, can changing the culture of the organisation reduce barriers to nutritional screening or facilitate nurses to undertake the process? Porter *et al.* (2009) suggested that embedding nutritional screening into routine nursing practice is key to enhancing screening. Possibly, if the organisation has a clear expectation that screening is undertaken (e.g. in policy and patient assessment documentation), it may be more likely to be undertaken. An older Scandinavian study (Kondrup *et al.*, 2002) indicated that patients were not screened for malnutrition because nurses had not been instructed to screen patients, which could suggest that, if instruction was given, the patients may have been screened. The NPSA (2009) highlights that, if screening is not mandatory, this may act as a barrier to completion. Implemented and supported policy to enforce screening has been proposed as a solution to low screening rates (Raja *et al.*, 2008).

However, it does not necessarily follow that a mandatory requirement to demonstrate the screening of patients will facilitate screening practice. The agency that assesses

the quality of care of health organisations in the UK includes screening as an expected component of care (CQC, 2010); however, recent reports have suggested some clinical areas in the UK may not identify patients at risk (CQC, 2011). Other factors concerning the organisational culture are clearly also important.

The leadership of the unit where nurses work appears to influence whether screening is undertaken. Porter *et al.* (2009) described a higher screening rate and a positive perception of screening by nurses when support of the screening process by ward managers was reported. Lack of leadership by the ward manager was also highlighted by the NPSA (2009) as a barrier to compliance.

Another factor identified as a potential barrier to nutritional screening was a lack of resources provided by the organisation. This includes a lack of scales and height measures (Lennard-Jones *et al.*, 1995; NPSA, 2009) or a lack of appropriate scales for those unable to stand (Porter *et al.*, 2009). Villalon *et al.* (2011, p. 166) reported barriers to screening as 'not enough assistance (material/human)'; however, the meaning of the phrase is not clear.

Other organisational factors reported refer to the process of nutritional care, in terms of a screening either informing referral to a dietitian or informing a care plan. Porter *et al.* (2009) identified that nurses report that they may refer to a dietitian on the basis of a clinical assessment before completion of a screening tool, thus making the need to complete the tool obsolete. If nutritional screening feeds directly into a clearly defined assessment and care pathway or plan, then nurses may be more likely to screen patients. Villalon *et al.* (2011, p. 167) appear to support this because the questionnaire used in their study prompted some nurses to indicate a 'lack of professional resources to evaluate and treat clients at risk' as a barrier to screening. However, little explanation of the meaning of the term 'professional resources' is given.

Competing priorities

The theme 'competing priorities' was used to describe one of the most commonly perceived barriers to nutritional screening, namely that of lack of time with other activities taking precedence (Lennard-Jones *et al.*, 1995; Savage & Scott, 2005; Hodge, 2008; Persenius *et al.*, 2008; Raja *et al.*, 2008; NPSA, 2009; Porter *et al.*, 2009; Villalon *et al.*, 2011). Findings included phrases such as 'genuine lack of time in some clinical areas' (NPSA, 2009, p. 7). Task priorities was one of the five main themes that emerged from the focus group analysis reported by Porter *et al.* (2009). Some of the nurses in this study considered the completion of other charts, such as observation charts, a higher priority than nutritional screening. Raja

et al. (2008, p. 30) shared similar findings, where 'workplace pressures operated to make nutrition screening a lower priority'. The rationale for the higher priority of some tasks was that they helped to determine immediate nursing and medical care (Porter *et al.*, 2009). In an ethnographic study of nurse's roles and patient's experience in relation to nutritional care, it was reported that nurses consider nutrition to be important, yet, as a result of workload pressures, they omit or postpone screening if no obvious risk is identified for a patient (Savage & Scott, 2005). The NPSA (2009) indicated that patient's dependency could act as a barrier to nutritional screening. This study investigated barriers to nutritional screening within 24 h of admission, when it is suggested that patients are more likely to require interventions.

The value of clinical judgement

Several studies reported that nurses identified the 'the value of clinical judgement' when identifying those malnourished (Hodge, 2008; Persenius *et al.*, 2008; Raja *et al.*, 2008; Porter *et al.*, 2009). One of the reasons suggested by Persenius *et al.* (2008) for the limited use of screening tools in Sweden was that the nurses 'simply trust their clinical judgement and therefore abandon the tools'. In a similar vein, Porter *et al.* (2009) found that, rather than screening universally in Australian hospitals, nurses exercise judgement, maintaining that they can assess nutritional risk visually and decide who should be referred to a dietician. The results of another Australian study (Raja *et al.*, 2008) support the notion that nurses sometimes applied individual judgement rather than a tool to assess the risk of malnutrition. Nurses may perceive professional judgement to be as useful or more accurate than a screening tool for identifying those at risk of malnutrition (Savage & Scott, 2005; Raja *et al.*, 2008). These studies share a similar methodological approach in that they collect data directly from nurses via a combination of methods. To what extent this decision may be linked to time pressures and prioritising the workload is, however, less clear. Hodge (2008, p. 338) reported a lack of time as a justification for risk assessment being 'observational and ad hoc'.

Training and education

Most of the publications reviewed share a key theme in their findings and/or discussion: the importance of initial and ongoing 'training and education' concerning nutritional screening (Lennard-Jones *et al.*, 1995; Lindorff-Larsen *et al.*, 2007; Persenius *et al.*, 2008; Raja *et al.*, 2008; Holst *et al.*, 2009; NPSA, 2009; Porter *et al.*, 2009). An early study by Lennard-Jones *et al.* (1995) highlighted

that nurses may consider questions relating to nutritional status during admission as unimportant, although recent publications contradict this finding. The development of national and local guidelines since 1995 may have served to emphasise the importance of nutritional care to nurses.

The NPSA (2009) considered that one of the main barriers to compliance with nutritional screening within the first 24 h of admission was a lack of education and training. In terms of initial training and education, Lindorff-Larsen *et al.* (2007) and Holst *et al.* (2009) identified that one of the barriers to the use of screening was awareness of the technique or tool to use. These authors, using items within a questionnaire, identified approximately one-third of nurses who responded and agreed that they either lacked techniques or found it difficult to identify those malnourished. Similarly, Savage & Scott (2005) reported that some nurses were uncertain as to how to use a particular screening tool. The use of an induction programme for new staff regarding screening practice has been suggested to facilitate screening practice (Raja *et al.*, 2008). In addition, the importance of ongoing training and education has been highlighted (Raja *et al.*, 2008). This is supported by Porter *et al.* (2009) who identified that nurses appeared more receptive of screening when ongoing training and support was available.

Facilitators to screening that nurses identified in one study included positive perceptions of the screening tool in use (Porter *et al.*, 2009). Conversely, if a tool is considered to be complicated or difficult to use, it will not be completed despite appropriate support and training. This is illustrated by statements such as a particular tool was 'not so easy to use' (Persenius *et al.*, 2008, p. 2132) and 'those with little experience of the tool found it difficult to complete' (Porter *et al.*, 2009, p. 206). Whether nurses who receive training and education then report tools as being easier to use in practice is difficult to determine in the publications reviewed. Holst *et al.* (2009) highlight teaching nutrition may not necessarily improve nutritional care. A facilitator to the use of screening tools is likely to be the development of proficiency through continued use in practice. Porter *et al.* (2009) identified that nurses considered they needed to gain competence to use a screening tool through experience as well as training. Nurses have reported finding a screening tool difficult to use before gaining competence through both training and experience (Raja *et al.*, 2008).

Two other identified barriers to nutritional screening have been related to this theme because they can potentially be overcome by appropriate training and education. These barriers were difficulty in communication with patients regarding weight change limiting the completion

of screening (Raja *et al.*, 2008) and nutritional screening being considered as the role of a dietitian by some nurses (Porter *et al.*, 2009).

Discrepancy between attitudes and practice

The theme 'discrepancy between attitudes and practice' was identified in several publications (Lindorff-Larsen *et al.*, 2007; Hodge, 2008; Holst *et al.*, 2009). Hodge (2008) revealed that, although nurses felt they played a critical role in nutritional screening, the majority of patients lacked complete documentation of nutritional risk. Hodge (2008) suggests a complex relationship between a nurse's attitude, knowledge and practice. This same complexity is highlighted in two Scandinavian studies (Lindorff-Larsen *et al.*, 2007; Holst *et al.*, 2009), which found considerable discrepancy between attitudes and practice in nutritional screening, in that participants agreed on the importance of nutritional practice, yet screening and monitoring for nutritional problems was reported to be limited. The reasons for this discrepancy are not clearly made clear in the publications. Lindorff-Larsen *et al.* (2007) and Hodge (2008) did not discuss the discrepancy in relation to screening. Holst *et al.* (2009) discuss this finding in relation to the findings concerning the reported difficulties in identifying those who are malnourished.

Discussion

The key findings of the review have been summarised within a number of themes. It is not possible to identify which are essential for enhancing nutritional screening practice by nurses. Furthermore, addressing the barriers to the use of screening tools is not a simple solution. As highlighted by Porter *et al.* (2009), identifying barriers to screening with the staff who are responsible for undertaking the screening and considering this when developing local policy is important. This is necessary because identified barriers may have different meanings in different organisations such that, to develop solutions, the local context needs to be taken into account (Checkland *et al.*, 2009).

The publications reviewed report nursing practice from countries in three different continents. Although there are differences in healthcare organisation and nursing practice in each of the countries, there are similarities in terms of the nursing responsibilities concerning nutritional care, the prevalence of malnutrition and recommendations concerning nutritional screening. The findings of this review can usefully be considered within the local context.

The results suggest that the culture of an organisation can impede or facilitate nutritional screening. This is summarised by Kearton (2008, p. 13) who concluded 'the complexities of the culture that exists within the health sector has a real impact on the extent screening tools are currently used'. A clearly stated requirement by the organisation that screening is an expected part of nursing care and a commitment to this by immediate managers may address some of the reported barriers to nutritional screening. This may also ensure the inclusion of screening practice within an audit process, which may act to increase compliance (Raja *et al.*, 2008). It is clear from the results that any tool selected for use by the organisation needs to be considered as credible and usable by nurses (NPSA, 2009). The inclusion of screening in nursing documentation rather than seeing it as an isolated task may also be useful. The results show that the organisation must also supply appropriate and easily accessible measuring equipment to nurses. Finally, appropriate referral criteria and pathways of care once malnutrition is suspected are likely to facilitate the screening process (Kearton, 2008). Where these are not available, nurses are likely to question the value of undertaking screening.

One of the key barriers to nutritional screening was reported to be a lack of initial and ongoing training concerning screening and a lack of education concerning the nutritional care process. Appropriate training and education both on induction to an organisation and ongoing professional development may therefore facilitate nutritional screening. Several innovative schemes to enhance the effectiveness of approaches used in ongoing training and education based on the notion of a person or a team developing specialist skills and expertise were highlighted in the publications reviewed. Raja *et al.* (2008) recommended the use of a team focussed on nutritional screening to lead and audit screening. Mowe *et al.* (2006) reported that resource persons and increased education could increase the quality of nutritional practice. Similarly, Porter *et al.* (2009) suggested that a member of staff could act as a principal in both the introductory phase and ongoing practice of screening.

Time to complete the screening process emerged as a significant barrier to nutritional screening. Nurses will prioritise care provision and tasks that influence immediate care will be undertaken in priority over tasks that can be postponed. The results suggest that incorporating screening into nursing documentation (particularly those relating to admission) and enabling nurses to quickly weigh and measure the height of patients may facilitate screening. In acute care, undertaking the screening when staffing levels are higher (e.g. during shift overlap) may be a useful strategy. In the UK, the National Institute for

Clinical Excellence (2006) suggest that units may decide not to routinely screen particular groups of patients with a low risk of malnutrition. Clear guidance from the organisation outlining which groups do not require routine screening could potentially provide more time for nurses to screen groups at risk. Porter *et al.* (2009) report the completion of nutritional screening by other members of the multidisciplinary team (e.g. nutritional assistants), which would clearly address the issue of time pressure but has cost implications.

The use of clinical judgement to identify those at risk of malnutrition was presented as a barrier to nutritional screening in some circumstances. Clinical judgement may be a less reliable form of identifying those at risk compared to the use of a valid and reliable screening tool (Abayomi & Hackett, 2004; Volkert *et al.*, 2010) and the number of patients identified as at risk of malnutrition within clinical areas may increase with the implementation of a screening tool (McWilliams, 2008). In addition, as Persenius *et al.* (2008) highlight, nutritional documentation is aided by the use of screening tools. National guidelines generally suggest the use of a screening tool to screen for malnutrition [Kondrup *et al.*, 2003; National Institute for Clinical Excellence, 2006; Mueller *et al.*, 2011, although some only specify the need to screen (Council of Europe, 2003)]. The evidence available that demonstrates improved nutritional care as a result of undertaking nutritional screening using an objective measure rather than clinical judgement has been questioned (Kralik, 2010). Ensuring that nurses are informed about the potential benefits of nutritional screening using a tool within the context of evidence-based practice may enhance screening practice. There is some evidence that the use of a nutritional screening tool and associated care intervention does improve patient outcome (Weekes *et al.*, 2009), although the need for more robust evidence has been highlighted (Vincent *et al.*, 2010).

The reported discrepancy between attitudes and practice that emerged as a theme may be attributable to a wide range of potentially interrelated factors, which would include the other themes identified. Holst *et al.* (2009) suggested that nurses working in departments with a well-defined structure for nutritional care report less discrepancy between attitudes and practice. Thus, a departmental structure that enables referral and provides resources for nutritional care after screening could potentially enhance screening practice.

Limitations

The search process aimed to identify all publications reporting research considering barriers and facilitators to nutritional screening by nurses. Although the search

strategy was comprehensive and constructed by a librarian who was experienced in undertaking systematic searches, it is possible that relevant publications were not identified. The hand search of the reference list of relevant publications obtained in the electronic literature search rather than relevant journal may also have limited the search. The search terms used the terms 'screening' and 'tool' and the term 'assessment' was not used in isolation. It should be highlighted that the terms screening and assessment are sometimes used interchangeably in the literature (Kralik, 2010) and publications were excluded if it was stated that assessment rather than screening was considered, which may have resulted in the exclusion of relevant articles. Some publications demonstrated limitations in methodological quality and/or were poorly reported. The inclusion of this type of publications in the review increased the risk of bias and error because data extraction, interpretation, analysis and syntheses was challenging (Whittemore & Knafl, 2005). However, the inclusion of diverse data sources and the development of themes is likely to have increased the robustness of the findings. Generally non-random sampling was reported in all the publications, which leads to the risk of bias in that those participants interested in the topic are more likely to respond.

Conclusions

This review has summarised issues influencing screening practice identified by nurses in a variety of publications into themes. The findings suggest that screening for malnutrition will not take place unless it is considered an integral part of nursing assessment that is required by policy and resourced appropriately. Although the evidence base is limited, the themes that emerged can be considered within the local context and used to inform practice development programmes and policy. Most of the publications reviewed focussed solely on screening in hospital settings and there is a need to investigate barriers and facilitators in community settings. Further research should also evaluate interventions designed to modify or remove barriers, and build on facilitators to nutritional screening. Finally, consideration should be given to the most effective system of screening for malnutrition in the healthcare setting to ensure that all at risk groups are screened.

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SG was responsible for the conception and design of the study, analysis and interpretation of the data, drafting of the paper, critical review of content and approval of the final version of the paper. EJ was responsible for analysis and interpretation of the data, drafting of the paper, critical review of content and approval of the final version of the paper.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Data S1. Details of the electronic database search undertaken.

Data S2. Number of full text articles excluded with reasons.