Tools to identify nutritional risk for older people in the home

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Short title: Older home-dwelling people at nutritional risk

Number of words: 2929

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Abstract

Community nurses are in an ideal position to identify older home-dwelling people at nutritional risk and thereby to prevent undernutrition. The aim of this paper was to present nutritional screening instruments for older home-dwelling people and to discuss nutritional issues of importance for community nurses in order to assess nutritional risk and prevent undernutrition. The screening instruments Nutritional Form For the Elderly (NUFFE) and Mini Nutritional Assessment (MNA®) are especially developed for screening older people. The Malnutrition Universal Screening Tool (MUST) is recommended for screening community-living people. Identifying nutritional at-risk persons by means of a screening instrument and being aware of risk factors and protective factors for undernutrition can guide nurses in their nutritional assessment and help them to find tailored interventions in order to prevent undernutrition.

Key words: aging, nutritional assessment, nursing, nutritional screening, nutritional risk factors

Introduction

Older people are a risk group for undernutrition (Elia et al, 2005) and especially those who are suffering from disease(s) (Asai, 2004). However, the presence of nutritional risk or undernutrition among older people living at home is lower than among older people in institutions as hospitals and care homes (Elia et al, 2005). Nevertheless, the prevalence of undernutrition among community-living older people is extensive and it originates in the community before admission to the hospitals or care homes (Russell & Elia, 2010; BAPEN, 2012).

In recent studies the prevalence of nutritional risk among older home-dwelling people has varied between 13.5 and 22.3% (Cawood et al, 2012; Söderhamn et al, 2012a; Söderhamn et al, 2012b: Tomstad et al, 2012). However, a higher prevalence of 28% has been found among older people visiting an outpatient clinic (Ülger et al, 2010). A large nutritional screening survey, performed in UK and the Republic of Ireland, showed that 25% of 7541 adult patients admitted to hospitals were at risk of undernutrition. Of these were 73% admitted from their homes and the risk of undernutrition was more common in older people compared to other age groups (BAPEN, 2012). This highlights that older home-dwelling people with health problems are especially a risk group for undernutrition.

Studies among older home-dwelling people have revealed that those who have a functional decline (Lee and Tsai, 2012) or are in need of help to manage daily life (Söderhamn et al, 2012a; Söderhamn et al, 2012b: Tomstad et al, 2012) have an increased risk for being undernourished. Community nurses who are meeting older people in need of home nursing should be in an ideal position to identify individuals at nutritional risk and thereby to prevent undernutrition. However, nurses need tools. To use a screening instrument can be a help to

identify at-risk persons (Callen, 2011) and also to find those who are not obviously undernourished (Chen et al, 2001).

The aim of this paper was to present nutritional screening instruments for older home-dwelling people and to discuss nutritional issues of importance for community nurses in order to assess nutritional risk and prevent undernutrition.

Nutritional screening instruments

The Nutritional Form For the Elderly (NUFFE)

The NUFFE is a nutritional screening instrument, with 15 three-point items, developed for screening older people (65+ years) and is especially suitable to use among older home-dwelling people. The intention with the development of NUFFE was that it should be easy to use and therefore be used as a self-report instrument by the older persons themselves. The items consist of risk factors as weight loss, changes in dietary intake, decreased appetite, decreased food and fluid intake, eating difficulties, limited possibility of obtaining food products, loss of company at meals, reduced activity and number of medications (Söderhamn, 2006). The most favorable option on each item produces a score of 0 and the most unfavorable option a score of 2. Thus, the total score can range between 0 and 30. Higher screening scores indicate higher risk of undernutrition (Söderhamn and Söderhamn, 2001; Söderhamn and Söderhamn, 2002; Söderhamn, 2006). NUFFE was developed and tested in Sweden and the testing studies showed sufficient evidence of reliability and validity (Söderhamn and Söderhamn, 2001; Söderhamn and Söderhamn, 2002). Patients have found that the items were easy to understand and the number of 15 items was not perceived too comprehensive (Söderhamn and Söderhamn, 2001). The instrument has been translated into

several languages as English, Germany, Italian, Hungarian and Norwegian. Today, beside the Swedish version, is the Hungarian (Gombos et al, 2008) and the Norwegian (Söderhamn et al, 2009; Söderhamn et al, 2012c) versions tested and have shown sufficient psychometric properties for screening older people. The original full form of the screening instrument Mini Nutritional Assessment (MNA®) was used as a standard for the Swedish (Söderhamn et al, 2007) and Norwegian (Söderhamn et al, 2009) versions of NUFFE in order to find suitable cut-off points for identifying older people at nutritional risk. According to Söderhamn et al (2009), the cut-off point <6, was indicating low risk of undernutrition, ≥6 medium risk and ≥11 high risk of undernutrition.

The Mini Nutritional Assessment (MNA®)

The MNA® is developed for screening older people (65+ years). Today MNA® refers to the short form of MNA® (revised short form of MNA®), which is composed of six items, and is the current recommended version of the instrument. The original version of MNA® refers to the full form of MNA® that is composed of 18 items. The MNA® consists of six of the 18 items in the full form of MNA®, i.e. questions about food intake, weight loss, mobility, psychological stress or acute disease, neuropsychological diseases and Body Mass Index (BMI). If it is difficult to measure height or weight in order to estimate BMI, the measurement of the calf circumference is an alternative (Nestlé Nutrition Institute, 2012). MNA® is well validated and is available in many languages (Guigoz, 2006; Kaiser et al, 2009). Newly a self-administrated form of MNA®, self MNA®, is developed and introduced in USA. The self MNA® is suitable for older home-dwelling people but also for caregivers (Nestlé Nutrition Institute, 2012). Maximum score of MNA® is 14. Scores of 12-14 indicate satisfactory nutritional status, scores of 8-11 indicate risk of undernutrition and scores of 0-7 indicate undernutrition (Kaiser et al, 2009; Nestlé Nutrition Institute, 2012).

The Malnutrition Universal Screening Tool (MUST)

The MUST is a nutritional instrument developed in UK for screening adults in all care settings as community settings, hospitals and care homes (Elia et al, 2012). That the instrument can be used across health care settings is highlighted as an advantage (Isenring et al, 2012). The MUST consists of three items as BMI, weight loss in the previous 3-6 months and acute disease effect. Each of these items produces a score between 0 and 2. Considering the risk of undernutrition, scores from the three components will be added. A score of 0 indicates low risk of undernutrition, a score of 1 medium risk and a score of 2 or more indicates high risk of undernutrition (treat) (Kondrup et al, 2003). The final risk category is linked to a care plan (Elia et al, 2012). The practicability of MUST has been well documented as well as reliability and validity (Kondrup et al, 2003). Recently has MUST been tested as a self-screening tool and the results showed that the patients self-screening results have good agreement with the results screened by health professionals (Cawood et al, 2012).

Nutritional issues

Nutritional screening and assessment of older home-dwelling people

It is important for nurses to have knowledge about nutritional issues of concern for older people and being able to use this knowledge in practice. However, in a study performed in Scandinavia, it was found that there was a discrepancy between nutritional attitudes and practice among nurses and physicians in a hospital setting (Mowé et al, 2006). It is also known that lack of defined responsibilities in planning and managing nutritional care, lack of sufficient education, lack of influence of the patients, lack of co-operation between staff

groups or lack of involvement from the management are barriers for proper nutritional care (Beck et al, 2001). However, it is some years ago since the study by Beck et al (2001) was published, nevertheless it is important issues to be aware of. The presented barriers by Beck et al (2001) show the importance of that the nurse management takes the responsibility to prioritise the nutritional care of the patients, to ensure proper nutritional education of the staff and to implement nutritional guidelines. As an example of nutritional guidelines, the European Society for Clinical Nutrition and Metabolism (ESPEN) has recommended the MNA® to be a screening instrument for older people and the MUST for community-living people (Kondrup et al, 2003).

A screening instrument is not designed to assess the nutritional status but should be able to indicate if nutritional problems are actual or potential (Weekes et al, 2004). The purpose of the screening is to find those who can be at risk of undernutrition and need further attention and investigation. Therefore, when the nutritional screening is indicating nutritional problems, the screening process must be followed by an assessment process (Kondrup et al, 2003). This process (as a part of the assessment of older persons) can be starting by a dialogue between the nurse and the patient about nutritional problems that have been highlighted in the screening results.

It is an advantage if the screening instrument is simple and rapid (Kondrup et al, 2003; Green and Watson, 2005) and thereby easy to use for nurses and tolerable for the patients. It is, of course, time-saving to use a simple and rapid screening instrument. To be a rapid instrument, the instrument has to contain few items. However, it is assumed that an instrument with few items is not able to give the same picture over the nutritional problems as an instrument with several items can do. In other words, to use a nutritional screening instrument that is

composed of several items that contain risk factors for older people, can give the nurses more information about the patients' actual or potential problems than a short instrument is able to do. In that way a more comprehensive screening result can help the nurses to find the nutritional problems and thereby be of help to structure the following dialogues with the patients (Söderhamn, 2006).

If the patients can screen themselves it is time-saving, for example using NUFFE (Söderhamn, 2006). However, the full MNA®, which is a combined screening and assessment instrument (Kondrup et al, 2003) has to be administered by health professionals. The MNA®, as the short form of the full MNA®, is found to be a rapid instrument and, therefore, known to be used for quick screening (Guigoz et al, 2002). Moreover, to use the new self-administered version, self MNA®, is time-saving. The MUST is easy to use (Neno & Neno, 2006; Cawood et al, 2012) and can also be used as self-screening tool (Cawood et al, 2012). However, nurses have to be aware of the patients' cognitive function when using nutritional screening instruments as self-report instruments.

BMI is included in both MNA® and MUST, but different cut-off values are used to identify persons at risk of undernutrition. For example, cut-off used in MNA is <23 kg/m^2 and in MUST <20 kg/m^2. According to Elia & Stratton (2012), the MUST was developed to identify undernutrition. This can be an explanation why a rather low cut-off is used. Another explanation can be that that the instrument is developed for screening adults and not specific older people. It is well known that older people should have a higher BMI than younger adults. A recommended BMI reference interval for older people, according to Beck and Ovesen (1998), is 24-29 kg/m^2. Mowé and Bøhmer (2008) found in a seven-year follow-up

study among older people with co-morbidities that a low BMI was a risk factor for greater mortality and those who had a BMI value between 24.0 and 26 kg/m^2 had the lowest seven-year mortality.

Risk factors for undernutrition in older home-dwelling people

In the nutritional assessment process it is of importance for nurses to have knowledge about risk factors for undernutrition among older home-dwelling people. In the following such risk factors found in research studies among older people will be discussed.

To perceive ill health in old age is found to be associated with being at nutritional risk (Söderhamn et al, 2011; Söderhamn et al, 2012a). Since the incidence of diseases increases with advanced age (Asai, 2004), older people are vulnerable for developing undernutrition. This can be explained by the fact that diseases, and many medications that can give side effects, can affect the eating negatively. Chronic disorders are known to affect nutritional status negatively (Ahmed and Haboubi, 2010). This is also supported by Söderhamn et al (2012b) who showed that to have chronic diseases/handicap can predict risk of undernutrition. For instance, depression is such a risk factor (Söderhamn et al, 2012b), that can predict nutritional decline among older community-living people (Callen & Wells, 2005). Therefore, presence of disease/handicap or perceived ill health in older people can be signs of decreased nutritional status. If nurses in the nutritional assessment obtain information about diagnoses and the older people's perception of their personal health, it can be of help to identify people at nutritional risk.

Another found risk factor for undernutrition in older home-living people is to receive help for managing daily life (Söderhamn et al, 2012a; Söderhamn et al, 2012b, Tomstad et al, 2012). This help can be in the form of home nursing, home help or family help (Söderhamn et al, 2012b; Tomstad et al. 2012). To perceive helplessness has also been found to predict risk of undernutrition (Söderhamn et al, 2012b; Tomstad et al, 2012). To be old and in need of help to manage daily life can, therefore, indicate lowered self-care ability. An association between lower self-care ability and being at nutritional risk has been found both among older hospital patients (Söderhamn et al, 2008) and older home-dwelling people (Dale et al, 2012; Tomstad et al, 2012). Furthermore, inactivity is strongly related to be at risk of undernutrition (Söderhamn et al, 2012b; Tomstad et al, 2012). This is also supported by Borowiak and Kostka (2012), who found that poor nutritional status and low physical activity among older home-dwelling people could predict nursing care. Nurses have to be aware of the association between physical activity and nutritional status and get information about older people's activity level and their ability to manage activities in daily life.

Being female has been found to be associated to being at risk of undernutrition (Söderhamn et al, 2012a) and, moreover, to predict risk of undernutrition (Söderhamn et al, 2012b). Older women are more often living alone than older men (Borowiak & Kostka, 2012). To live alone (Söderhamn et al, 2012a; Söderhamn et al, 2012b; Tomstad et al, 2012) and to feel lonely (Söderhamn et al, 2012b) in old age are risk factors for undernutrition. These studies highlight older women living alone as a risk group for undernutrition, which is important for nurses to be aware about. However, according to Borowiak and Kostka (2012), older people living with their families have a lower nutritional status and a lower functional level as well as decreased cognitive function compared to persons living alone or together with partners. An explanation for these results can be according to Borowiak and Kostka (2012) that those older people who

lived together with their families had reached an advanced age. It has also in other studies been found a strong relationship between risk for undernutrition and decreased ability to manage daily life in older people (Söderhamn et al, 2012a; Söderhamn et al, 2012b; Tomstad et al, 2012).

Protective factors for undernutrition in older home-dwelling people

In order to be able to perform interventions with the purpose to prevent undernutrition, the knowledge about protective factors are very valuable. In the following, protective factors found in nutritional research studies among older people will be discussed.

Factors found to be protective for being at risk of undernutrition in older home-dwelling people are to have a sufficient food intake and having social contacts, for examples with neighbours or family (Söderhamn et al, 2012b). It is obvious that a sufficient food intake prevents undernutrition. However, it can be a challenge for those older people with many risk factors – as, for examples, diseases, in need of help to manage daily life, living alone and not physically active – to maintain a sufficient food intake. Nurses have to be especially perceptive of older people's appetite, food intake and the need of enriched food and/or protein and energy supplementation in order to meet their nutritional requirements.

Another protective factor is to have social contacts (Söderhamn et al, 2012b). This implies that nurses have to be attentive about older single living people and talk to them about their social network. Those people who feel lonely and do not have social contacts must be given special attention about possibilities to increase their social activity.

Furthermore, to be active protects for being at nutritional risk (Söderhamn et al, 2012b; Tomstad et al, 2012). A decreased activity level can lead to reduced energy requirement and thereby a decreased appetite. An increased activity level may have a positive effect on the appetite, but also for the feeling of well-being. In a study about older home-dwelling people's self-care activities for maintaining good health and well-being it was found that being physically and socially active were experienced as very important (Söderhamn et al, 2011b). Nurses have an important task to encourage and support older people to be active and participate in social activities according to their abilities in order to prevent undernutrition.

Conclusions

Older people are a risk group for undernutrition. It is a challenge to detect individuals at nutritional risk. By means of a nutritional screening instrument older home-dwelling people at risk can be highlighted. To have knowledge about risk factors as well as protective factors for undernutrition is of importance. To use this knowledge can be a help for nurses in the nutritional assessment and to find tailored interventions in order to prevent undernutrition.

Key points

- Older people are a risk group for undernutrition.
- To perform a nutritional screening is recommended in order to identify people at risk for undernutrition.

- Nutritional screening instruments as the Nutritional Form For the Elderly (NUFFE) and the Mini Nutritional Assessment (MNA®) are especially developed for screening older people and are easy to use and can be used as self-report instruments.
- The nutritional screening instrument Malnutrition Universal Screening Tool (MUST) is easy to use and is recommended for use in the community.
- A nutritional assessment and a plan for interventions have to be performed in older people at nutritional risk in order to prevent undernutrition.

References

Ahmed T, Haboubi N (2010) assessment and management of nutrition in older people and its importance to health. *Clinical Interventions in Aging* 5, 207-216.

Asai JL (2004) Nutrition and the geriatric rehabilitation patient: challenges and solutions. *Topics in Geriatric Rehabilitation* 20, 34-45

BAPEN (2012) *BAPEN´s Nutrition Screening Week – 2011*. Available from: http://www.bapen.org.uk/screening-for-malnutrition/nutrition-screening-week/nsw-reports/nsw11?showall=&start=1 Accessed October 5, 2012

Beck AM, Balknäs UN, Fürst P, Hasunen K, Jones L, Keller U, Melchior JC, Mikkelsen BE, Schauder P, Sivonen L, Zinck O, Øien H, Ovesen L (2001) Food and nutritional care in hospitals: how to prevent undernutrition – report and guidelines from the Council of Europe. *Clinical Nutrition* 20, 455-460

Borowiak E, Kostka T (2012) Comparative characteristics of the home care nursing services used by community-dwelling older people from urban and rural environments. Published online in *Journal of Advanced Nursing*, doi: 10.1111/j.1365-2648.2012.06113.x

Callen BL (2011) Nutritional screening in community dwelling older adults. *International Journal of Older People Nursing* 6, 272-281

Callen BL, Wells TJ (2005) Screening for nutritional risk in community-dwelling old-old. *Public Health Nursing* 22, 138-146

Cawood AL, Elia M, Sharp SK, Stratton RJ (2012) Malnutrition self-screening by using "MUST" in hospital outpatients: validity, reliability, and ease to use. Published online in *The American Journal of Clinical Nutrition*, doi:10.3945/ajcn.112.037853

Chen CC-H, Schilling LS, Lyder CH (2001) A concept analysis of malnutrition in the elderly. *Journal of Advanced Nursing* 36, 131-142

Dale B, Söderhamn U, Söderhamn O (2012) Self-care ability among home-dwelling older people in rural areas in southern Norway. *Scandinavian Journal of Caring Sciences* 26, 113-122

Elia M, Stratton RJ (2012) An analytic appraisal of nutrition screening tools supported by original data with particular reference to age. *Nutrition* 28, 477-494

Elia M, Zellipour L, Stratton RJ (2005) To screen or not to screen for adult malnutrition? *Clinical Nutrition* 24, 867-884

Gombos T, Kertész K, Csíkos Á, Söderhamn U, Söderhamn O, Prohászka Z (2008) Nutritional form for the elderly is a reliable and valid instrument for the determination of undernutrition risk, and it is associated with health-related quality of life. *Nutrition Research* 28, 59-65

Green SM, Watson R (2005) Nutritional screening and assessment tools for use by nurses: literature review. *Journal of Advanced Nursing* 50, 69-83

Guigoz Y (2006) The Mini Nutritional Assessment (MNA®) review of the literature – what does it tell us? *Journal of Nutrition, Health & Aging* 10, 466-485

Guigoz Y, Vellas B, Garry PJ (2002) Assessing the nutritional status of the elderly: the mini nutritional assessment. *Clinics in Geriatric Medicine* 18, 737-757

Isenring EA, Banks M, Ferguson M, Bauer JD (2012) Beyond malnutrition screening: Appropriate methods to guide nutrition care for aged care residents. *Journal of the Academy of Nutrition and Dietetics* 112, 376-381

Kaiser MJ, Bauer JM, Ramsch C, Uter W, Guigoz Y, Cederholm T, Thomas DR, Anthony P, Charlton KE, Maggio M, Tsai AC, Grathwohl D, Vellas B, Sieber CC for the MNA-international group (2009) Validation of the Mini Nutritional Assessment Short-Form (MNA-SF®): A practical tool for identification of nutritional status. *Journal of Nutrition, Health & Aging* 13, 782-788

Kondrup J, Allison SP, Elia M, Vellas B, Plauth M (2003) ESPEN guidelines for nutrition screening 2002. *Clinical Nutrition* 22, 415-421

Lee L-C, Tsai AC (2012) Mini-Nutritional-Assessment (MNA) without Body Mass Index (BMI) predicts functional disability in elderly Taiwanese. *Archives of Gerontology and Geriatrics* 54, e405-e410

Mowé M, Diep L, Bøhmer T (2008) Greater seven-year survival in very aged patients with body mass index between 24 and 26 kg/m^2. *Journal of the American Geriatrics Society* 56, 359-360

Mowé M, Bosaeus I, Højgaard Rasmussen H, Kondrup J, Unosson M, Irtun Ø (2006) Nutritional routines and attitudes among doctors and nurses in Scandinavia: A questionnaire based survey. *Clinical Nutrition* 25, 524-532

Nestlé Nutrition Institute (2012) *MNA® Mini Nutritional Assessment*. http://www.mna-elderly.com/mna_forms.html . (Accessed 28 July 2012)

Beck AM, Ovesen L (1998) At which body mass index and degree of weight loss should hospitalized elderly patients be considered at nutritional risk? *Clinical Nutrition* 17, 195-198

Russell CA, Elia, M (2010) Malnutrition in the UK: where does it begin? *Proceedings of the Nutrition Society* 69, 465-469

Söderhamn U (2006) *Nutritional screening of older patients. Developing, testing and using the Nutritional Form For the Elderly (NUFFE).* Medical dissertation. Department of medicine and care, Division of Nursing Science, Faculty of Health Sciences, Linköping University, Sweden

Söderhamn U, Bachrach-Lindström B, Ek A-C (2007) Nutritional screening and perceived health in a group of geriatric rehabilitation patients. *Journal of Clinical Nursing* 16, 1997-2006

Söderhamn U, Bachrach-Lindström M, Ek A-C (2008) Self-care ability and sense of coherence in older nutritional at-risk patients. *European Journal Clinical Nutrition* 62, 96-103

Söderhamn U, Christensson L, Idvall E, Johansson A-K, Bachrach-Lindström M (2012a) Factors associated with nutritional risk in 75-year-old community living people. *International Journal of Older People Nursing* 7, 3-10

Söderhamn U, Dale B, Söderhamn O (2011b) Narrated lived experiences of self-care and health among rural-living older persons with a strong sense of coherence. *Psychological Research and Behaviour Management* 4, 151-158

Söderhamn U, Dale B, Sundsli K, Söderhamn O (2012b) Nutritional screening of older home-dwelling Norwegians – A comparison between two instruments. *Clinical Interventions in Aging* 7, 383-391

Söderhamn U, Dale B, Sundsli K, Tomstad ST, Söderhamn O (2012c) Psychometric testing of the Norwegian version of the Nutritional Form for the Elderly among older home-dwelling people. *Journal of Multidisciplinary Healthcare* 5, 121-128

Söderhamn U, Flateland S, Jessen L, Söderhamn O (2009) Norwegian version of the Nutritional Form For the Elderly: sufficient psychometric properties for performing institutional screening of elderly patients. *Nutrition Research* 29, 761-767

Söderhamn U, Flateland S, Jessen L, Söderhamn O (2011a) Perceived health and risk of undernutrition: a comparison of different nutritional screening results in older patients. *Journal of Clinical Nursing* 20, 2162-2171

Söderhamn U, Söderhamn O (2001) Developing and testing the Nutritional Form For the Elderly. *International Journal of Nursing Practice* 7, 336-341

Söderhamn U, Söderhamn O (2002) Reliability and validity of the Nutritional Form For the Elderly (NUFFE). *Journal of Advanced Nursing* 37, 28-34

Tomstad TS, Söderhamn U, Espnes GA, Söderhamn O (2012) Living alone, receiving help, helplessness and inactivity are strongly related to risk of undernutrition among older home-dwelling people. *International Journal of General Medicine* 5, 231-240

Weekes CE, Elia M, Emery PW (2004) The development, validation and reliability of a nutrition screening tool based on the recommendations of the British Association for Parental and Enteral Nutrition (BAPEN). *Clinical Nutrition* 23, 1104-1112

Ülger Z, Halil M, Kalan I, Yavuz BB, Cankurtaran M, Güngör E, Arıoğul S (2010) Comprehensive assessment of malnutrition risk and related factors in a large group of community-dwelling older adults. *Clinical Nutrition* 29, 507-511