Review article

Nurses needed: Identifying malnutrition in hospitalized older adults

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A R T I C L E   I N F O

A B S T R A C T

The American population is aging with one in every seven Americans over the age of 65. Throughout the healthcare continuum, this segment of the population is faced with the burden of malnutrition brought on by many factors including aging, inadequate food intake, and acute and chronic medical conditions. The loss of lean body mass, strength, and functionality compound malnutrition leading to weakness, hospitalizations, and overall decreased ability to perform activities of daily living. Up to 60% of hospitalized older adults are malnourished but many patients go unrecognized and undertreated. Nurses are in a pivotal position to change this trajectory. Nurses are often the first to identify patients in need of nutrition intervention and are integral to encouraging nutritional intake from admission through discharge. Effective nutrition screening can be conducted by nurses in minimal time as part of the admission process through the use of a screening tool that is simple, fast, reliable, and valid. As part of the collaborative health care team, nurses can effectively communicate nutrition screening results through the use of the electronic health record and when prescribed, ensure that nutrition interventions occur within the targeted timeframe. Nurses can develop procedures to provide patients with meal assistance, reliable access to food and snacks across all shifts, and help bridge nutritional gaps through oral nutritional supplements all in an effort to address malnutrition.

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Contents

1. Introduction

The American population is aging. According to recent

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estimates, in 2013 the older adult population (age 65+) numbered 44.7 million, accounting for 14.1% of the U.S. population, or over one in seven Americans (Administration for Community Living, n. d.). Older adults often suffer from more acute and chronic health conditions and utilize more health care resources than their younger-aged counterparts. In addition, older adults are at higher risk for nutritional deficits and malnutrition. Malnutrition impacts older adults across the health care continuum, from independent living older adults to those in the hospital, affecting up to 60% of hospitalized older adults (Agarwal, Miller, Yaxley, & Isenring,

2013). The cause of malnutrition is often multifactorial, including aging, inadequate food intake, and acute and chronic medical conditions (Agarwal et al., 2013; Morley, 1997). Often, older adults do not suffer from malnutrition alone, many also struggle with sarcopenia or the loss of lean body mass (LBM) and strength or functionality. Moreover, older adults are more likely to be hospitalized for illness, injuries and surgeries, further increasing the risk for malnutrition and accelerating the loss of LBM, and resulting in weakness, decreased mobility and functionality (Cangelosi, Rodday, Saunders, & Cohen, 2014; Covinsky et al., 2003; Hirsch, Sommers, Olsen, Mullen, & Winograd, 1990; Sager et al., 1996). Nurses regularly provide care to these malnourished patients. Unfortunately, malnutrition is frequently unrecognized and undertreated thus contributing to additional decline in ability to perform activities of daily living (ADLs). Yet, nurses are in a pivotal position to alter this trajectory.

Nurses play an important role in identifying patients at nutritional risk. In fact, upon admission, nurses often perform the first analysis to pinpoint patients in need of nutrition assessment and intervention. The nutrition screening performed by nurses within the first few hours of hospitalization sets the stage for quality care. In most instances, validated nutrition screening tools are used and the nurse is able to accurately identify and refer patients to the registered dietitian nutritionist (RDN) (Quatrara, 2015; Skipper, Ferguson, Thompson, Castellanos, & Porcari, 2012). Yet, as a result of inadequate screening processes and complex and often competing care demands, some patients are overlooked and underprioritized. For patients who do not trigger a nutrition need on admission and who develop increased nutritional needs during hospitalization, the processes of identification and intervention are not clear. (Elia, Zellipour, & Stratton, 2005; Patel et al., 2014; Quatrara, 2015). These patients may linger without adequate nutrition assessment and management during their hospital stay. Furthermore, the missed opportunity to promptly capture and direct care to the malnourished patient, results in delays in healing and recovery.

Nurses are essential partners in changing the tide and helping to instill processes which detect all patients with heightened nutrition needs. By identifying patients with or at risk for malnutrition, nurses can proactively initiate effective nutrition intervention strategies at any time point of the hospitalization to improve patient outcomes. The role of the nurse is important in directing the trajectory towards nutritional health and ensuring that interventions are effectively implemented. The purpose of this paper is to provide an overview of malnutrition prevalence and consequences and outline the nurse's role in caring for the nutritional needs of hospitalized older adult patients.

2. Malnutrition in older adults

Multiple physiological, social and economic factors increase the risk for malnutrition among older adults. This population often experiences physiological factors including decreased appetite and food intake, poor dentition, and an increase in the presence and severity of acute and chronic medical conditions (Agarwal et al., 2013; Morley, 1997). In addition, older adults may also experience social and economic factors which can further negatively impact their dietary intake and nutritional status, such as changes in living environment and limited finances (Morley, 1997).

On average, people become less hungry and eat less as they get older (Wurtman, Lieberman, Tsay, Nader, & Chew, 1988). Older adults experience less hunger and more fullness before meals, consume smaller meals more slowly, eat fewer snacks between meals, and become satiated more rapidly after eating a normal meal than younger adults (Clarkston et al., 1997; Morley, 1997).

Aging may be associated with consumption of a less varied, more monotonous diet. Average daily energy intake decreases by up to 30% between 20 and 80 years of age. (Chernoff, 2003). This physiologic, age-related reduction in appetite and energy intake has been termed the "anorexia of aging" (Morley, 1997).

Older adults are at high risk for malnutrition across the healthcare continuum, particularly in the hospital setting. While the prevalence rates vary based on the numerous nutrition screening and assessment tools used in the studies, the research consistently shows that older adults are at high risk of malnutrition and that 25% to over 50% of hospitalized adults have malnutrition (Agarwal et al., 2013). Unfortunately, actual malnutrition diagnosis rates in the hospital using ICD-9 codes are not fully captured and are inconsistent with prevalence rates. A study of malnutrition diagnosis in hospitalized patients in the US in 2010 showed that only 3.2% of all US hospital discharges had a documented malnutrition diagnosis, and that patients with a malnutrition diagnosis were more likely to be older (Corkins et al., 2014).

An individual's body weight or body mass index (BMI) is not an appropriate indicator of malnutrition. Patients who are underweight, overweight or obese can experience malnutrition. A 2013 study of hospitalized patients newly admitted to internal medical and surgical departments found that of 431 subjects, 32% (n=138) were overweight and 24% (n=105) were obese; and among overweight and obese patients, 23.2% and 24.8%, respectively, were at increased risk for malnutrition (Leibovitz et al., 2013). Further, this study showed that increased risk for malnutrition prolonged hospitalization and increased risk for in-hospital mortality for both overweight and obese subjects (Leibovitz et al., 2013).

3. Identifying malnourished patients

In 2012, the Academy of Nutrition and Dietetics (AND) and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) published a consensus statement on key characteristics for the diagnosis of adult malnutrition (White, Guenter, Jensen, Malone, & Schofield, 2012a, 2012b).

The consensus suggests that malnutrition is present if two or more of the following six criteria are met: insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation, and diminished functional status. This consensus statement does not include serum albumin and prealbumin levels as nutritional status indicators, which previously were considered standard for the identification of malnutrition. Historically, clinicians correlated poor nutritional status and protein energy malnutrition with low serum albumin and prealbumin levels. Recent studies however have shown that serum albumin levels are markers of inflammation and not malnutrition, and that low serum albumin and prealbumin levels are not always indicative of malnutrition and conversely that patients with malnutrition do not always have low levels of these proteins (Jensen, Hsiao, & Wheeler, 2012; White et al., 2012b).

4. Malnutrition is associated with poor clinical outcomes

Malnutrition results in significant negative outcomes for the patient, caregiver and the health care system including increased morbidity, mortality, hospital length of stay, and hospital readmissions (Felder et al., 2015; Norman, Pichard, Lochs, & Pirlich, 2008). Hospital readmissions are a growing problem for the U.S. healthcare system, as almost one fifth (19.6%) of Medicare beneficiaries discharged from a hospital are readmitted within 30 days

(Jencks, Williams, & Coleman, 2009). For older adults, three conditions account for most hospital readmissions – heart failure, acute myocardial infarction (AMI), and pneumonia (Kocher & Adashi, 2011). In addition to certain diagnoses, severe disability for self-feeding, weight loss and being underweight have all been shown to be significant predictors of readmission (Allaudeen, Vidyarthi, Maselli, & Auerbach, 2011; Laniece et al., 2008; Mudge et al., 2011).

Research shows that patients who are malnourished or have lost weight are at an increased risk for hospitalization (Felder et al., 2015). A recent study by Bolmsjo and colleagues reported a significantly higher rate of hospital admissions among nursing home residents with deteriorating nutritional status compared to those with stable nutritional status (Borgstrom Bolmsjo, Jakobsson, Molstad, Ostgren, & Midlov, 2015). Malnourished patients are also more likely to return to the hospital after discharge. Lim and colleagues showed that malnourished patients were more likely to be readmitted within 15 days of being discharged from the hospital than well-nourished patients (adjusted relative risk=1.9, 95% CI 1.1–3.2, $p=0.025$) (Lim et al., 2012).

Individuals who are malnourished also experience reduced functionality, including decreased mobility and a reduced capacity to carry out activities of daily living, which affects independence and diminishes quality of life (Correia & Waitzberg, 2003; Neumann, Miller, Daniels, & Crotty, 2005). Older patients who are malnourished are less likely to return home following hospital discharge and more often must live in residential long-term care settings than those who are well-nourished (Gill, Allore, Holford, & Guo, 2004; Lumbers, Driver, Howland, Older, & Williams, 1996; Muhlethaler, Stuck, Minder, & Frey, 1995; Potter, Klipstein, Reilly, & Roberts, 1995; Suesada, Martins, & Carvalho, 2007). In addition, studies have shown that loss of muscle mass and strength, often seen in conjunction with malnutrition, predict functional decline in older adults (Evans, 1995; Janssen, Heymsfield, & Ross, 2002; Reid, Naumova, Carabello, Phillips, & Fielding, 2008; Visser et al., 2005).

In addition to functional decline, falls represent a health risk to aging adults and are associated with hospitalizations, loss of independence and physical function, and poor quality of life.

Between 35% and 45% of community-dwelling adults over the age of 65% and 50% of adults over 85 years of age experience at least one fall annually (Soriano, DeCherrie, & Thomas, 2007). The incidence of falls is even greater among older adults living in long-term care settings, with up to two falls per bed each year (Neyens et al., 2013). Muscle weakness, loss of muscle mass and physical inactivity are risk factors for falls, sedentary lifestyle are identified as risk factors for falls, yet poor nutritional status is not commonly viewed as a risk factor to consider when evaluating patients. Research has evaluated the relationship between nutritional status and falls in geriatric nursing home residents and found that malnourished residents were more likely to have fallen (OR 1.78, $p < 0.01$) than non-malnourished residents, and that nutritional intervention decreased fall incidence (OR 0.738 $p=0.056$) (Neyens et al., 2013).

Cognitive deficit is cited as a frequent and common finding seen in hospitalized patients who are malnourished, and the association between nutritional status and cognitive function in older adults is well documented and appears strong (Koren-Hakim et al., 2012; Orsitto et al., 2009; Orsitto, 2012). Two studies showed that inpatients 65 years of age and older admitted to the hospital showed that just over 80% of the inpatient samples were at risk for malnutrition or malnourished. Compared to patients 65 years of age and older who did not have cognitive impairment, older patients with mild cognitive impairment (odds ratio, OR=4.7, $p < 0.0001$) and dementia (OR=3.2, $p < 0.0001$) had a significantly higher frequency of malnutrition (Orsitto et al., 2009; Orsitto,

2012). Another study found that 55.8% of patients admitted for hip fracture surgery were either malnourished or at risk of malnutrition and 42% were cognitively impaired. In addition, there were significantly more well-nourished patients with normal cognitive status group than patients with impaired cognitive status (84.2% vs. 15.8%, respectively, $p < 0.001$) (Koren-Hakim et al., 2012).

5. Identifying malnutrition and nutritional risk in older adults

Until this year, nutrition screening has been mandated by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) for all hospital patients within 24 h of admission (Joint Commission International, 2011) However, recently JCAHO published a list of requirements that have been deleted from its hospital program, including nutrition screening upon admission, effective July 1, 2016. The requirement is being deleted because they determined nutrition screening to be part of the clinical care process and identification of components of the assessment should be defined by the organization (The Joint Commission, 2016).

Many patients continue to be unrecognized and untreated for many reasons including use of non- validated screening tools, lack of healthcare professional communication of at-risk patients and the lack of recognition of malnutrition risk in overweight and obese patients. While nutrition screening was previously mandated by JCAHO, there was little direction given on what constitutes effective nutrition screening. Instead, screening has been left up to each individual hospital to determine the screening questions or tool used within their facility. Common criteria included in nutrition screening are changes in weight, sufficiency of oral intake, and nutrition focused assessment (Charney, 2008). Regardless of which screening methods are being used, nurses should be taking an active role in the screening process and are integral to the identification of malnutrition within their facilities.

A recent survey of current nutrition practice in US hospitals identified that nurses are the primary health care professional conducting the nutrition screen (82.7% of the time) (Patel et al., 2014). Johns Hopkins Hospital evaluated the malnutrition screening and assessment process in their institution and found that, despite following JCAHO guidelines, their existing nutrition assessment form was not effectively detecting malnutrition, and only 20% of identified malnourished patients were referred for nutrition consultation with a RDN (Somanchi, Tao, & Mullin, 2011).

Additionally, they found that in their current process the time from admission to nutrition consultation was 5 days, which is similar to the average hospital length of stay (Somanchi et al., 2011). The researchers developed a new nutrition assessment tool that was completed by the nurse upon admission that resulted in a 44% increase in malnourished patients receiving a nutrition consultation, and a decrease in the time to nutrition consultation (2.63 vs. 4.90 days) (Somanchi et al., 2011).

There are many validated nutrition screening tools available, but not all of them are simple, quick, and reliable. Examples of validated nutrition screening tools for hospitalized patients include the Malnutrition Screening Tool (MST), the Malnutrition Universal Screening Tool (MUST), the Mini Nutritional Assessment-Short Form (MNA-SF) and the Nutritional Risk Screening 2002 (NRS 2002). In 2012 an evidence analysis project evaluated available screening tools and found that only the MST was both valid and reliable for identifying undernourished patients within the acute care and hospital ambulatory care settings, with a sensitivity $> 90\%$ and a specificity $> 90\%$ (Skipper, Ferguson, Thompson, Castellanos, & Porcari, 2012). The MST is comprised of two questions focusing on weight change and appetite and takes less than 5 min to complete. The MST was developed specifically

for use by busy clinicians without specialized nutrition knowledge. The tool was validated in hospitalized adults and has proven to be one of the most accurate tools available for quickly identifying hospitalized patients with malnutrition, as well as those at risk for developing malnutrition (Ferguson, Capra, Bauer, & Banks, 1999).

6. The nurse's role in nutrition care

To further these efforts, the Alliance to Advance Patient Nutrition was established by key nutrition experts with representation from the Academy of Nutrition and Dietetics, the Academy of Medical-Surgical Nurses, the Society of Hospital Medicine, and Abbott Nutrition (Tappenden et al., 2013a, 2013b, 2013c). The Alliance established six key principles for advancing patient nutrition: create an institutional culture where all stakeholders value nutrition, redefine clinicians' role to include nutrition care, recognize and diagnose all malnourished patients and those at risk, rapidly implement comprehensive nutrition intervention and continued monitoring, communicate nutrition care plans, and develop a comprehensive discharge nutrition care and education plan (Tappenden et al., 2013a, 2013b, 2013c). For the nurse, this includes screening every hospitalized patient for malnutrition upon admission, communicating nutrition screening results to the healthcare team through use of the electronic health record (EHR), developing processes to ensure that nutrition screening and dietitian-prescribed intervention occurs within the targeted timeframe, and developing procedures to provide patients with meals, meal assistance, snacks and oral nutritional supplements (Tappenden et al., 2013a, 2013b, 2013c).

The nurse has a significant role in introducing practice changes that can positively impact nutritional care for patients. For example, nurses who are fluent with current guidelines are able to influence efforts to reduce NPO times and maximize nutritional intake. Understanding that the long held pre-operative practice of "NPO after midnight" is no longer supported by the evidence, empowers the nurse to work collaboratively with the health care team to advocate for the least restrictive NPO time frame (American Society of Anesthesiologists, 2011). Reducing NPO times enhances patient outcomes by optimizing nutritional intake while simultaneously impacting patient satisfaction.

Additionally, nurses can use existing literature to develop practices and standards of care that emphasize the importance of nutrition. Standards such as those tailored to the elderly are particularly beneficial in addressing nuances such as providing good oral hygiene, thus allowing for improved taste and alleviating a dry mouth. Moreover, nurses are able to create processes that ensure patients have assistance with meal time feeding. Ensuring that the meal tray is within reach, bottles are opened, and the table is clean are activities that nurses can own and implement to facilitate a supportive meal environment. Nurses can also influence processes that help malnourished patients to eat by fostering reliable access to food and snacks across all shifts, while encouraging needed nutrition with options such as oral nutrition supplementation with medication administration. Nurses can also ensure that percent of meal intake is documented so that patient intake is clearly understood and communicated. The nurse's role in advocating for and instilling good nutrition practices for patients is paramount to patient recovery.

The nurse's role in nutrition care planning is not solely focused on the admission, but extends through discharge. Many nurses are using team huddles and discharge planning sessions to share key elements of the patient's nutritional status and update the team on the success of the nutrition plan (Quatrara, 2015). These collaborative team meetings provide great opportunities to quickly share information about patient progression and make

recommendations for nutrition plan adjustments as the discharge blueprint is under development. Once the discharge plan is underway, nurses can ensure that the nutritional bridge is built into the transition from hospital to home by working with the team to embed the nutrition plan into the discharge instructions (Quatrara, 2015). Discharge teaching that includes specific nutrition instructions that can readily be incorporated into the home setting facilitates a smooth transition and may reduce the risk of readmission.

7. Conclusion

Malnutrition is prevalent among hospitalized older adults, and is associated with increased morbidity and mortality, reduced quality of life, and impairment in mobility and functional capacity. Moreover, malnutrition is associated with increased health care costs, longer hospital lengths of stay and hospital readmission rates, all of which are significant issues facing our healthcare system in the U.S. today.

Nurses working with older adult patients play a critical role in the early identification of malnutrition and malnutrition risk. The nurse is often the first healthcare professional to assess the patient upon admission to the hospital, which affords him/her the opportunity for early identification of at risk patients. By the virtue of the close nurse-patient relationship, nurses also play an important role in the implementation of nutrition interventions along with the dietitian. The entire healthcare team has the ability to collaborate to identify at risk patients early and implement nutrition intervention to improve outcomes for both the patient and healthcare system.

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