

Nutrition Risk Screening in Pediatrics and Adults

Nutrition screening is the first step in identifying nutrition risk in patients or clients who are at risk for malnutrition, both under-nutrition and over-nutrition. If an individual is identified as being at nutrition risk during screening, s/he enters the Nutrition Care Process and receives a full nutrition assessment, during which time, evidence of malnutrition can be determined more definitively. However, the best method of screening for nutrition risk in the pediatric population is unknown. Similarly, numerous adult nutrition screening tools exist for use in various populations, though many institutions use different screening methods without valid or reliable evidence.

In order to address this gap in the knowledge, the Academy's Evidence Analysis Center research staff is working with two workgroups of experts: one for adults and one pediatrics. These systematic reviews are in-process and are expected to be published on the Evidence Analysis Library (EAL) (www.anddeal.org) in fall 2018.

Preliminary Major Findings

Pediatric Nutrition Screening

For the pediatric nutrition screening workgroup, the goal was to conduct a systematic review to determine the validity and reliability of specific nutrition screening tools to identify risk of malnutrition related to under- or over-nutrition. Additionally, the workgroup examined if there is an association between food insecurity and under- or over-nutrition in order to determine if this factor should be considered during nutrition screening. These systematic reviews are in-process.

Through a systematic search of the literature, validity and/or reliability studies for 14 different nutrition screening tools were identified, and each study was assessed for quality.

Many of the nutrition screening tools were examined in only one study and, therefore, confidence in results was low. However, there were also tools examined in multiple studies, which led to higher confidence when findings were assessed collectively. These tools all used hospitalized children as the population of interest. The most frequently examined tools were: the Screening Tool for the Assessment of Malnutrition in Pediatrics (STAMP), the Screening Tool for Risk on Nutritional Status and Growth (STRONGkids) (13 studies each) and the Paediatric Yorkhill Malnutrition Score (PYMS) (9 studies).

The STAMP nutrition screening tool demonstrated a moderate degree of validity in identifying risk for malnutrition in hospitalized children, but inter-rater reliability was high. Inter-rater reliability between dietitians was moderate-to-high. Quality of evidence and, therefore, confidence in findings were high.

STRONGkids also demonstrated a moderate degree of validity in identifying risk for malnutrition in hospitalized children, and inter- and intra-rater reliability was moderate. **PYMS** demonstrated a moderate degree of validity and a moderate degree of inter-rater reliability in identifying risk of malnutrition in hospitalized children. Inter-rater reliability between dietitians was low. Quality of evidence and confidence in findings for each of these nutrition screening tools was fair.

Nutrition screening tools specific to specific populations, including those with cancer or cystic fibrosis, were also critically examined.

Finally, the workgroup examined if there was evidence of an association between food insecurity status and risk of malnutrition. Twenty-three (23) studies were identified to answer this question. The preponderance of evidence suggested no association between food insecurity status and underweight or overweight/obesity in the pediatric population in the US, though evidence was mixed with some suggestion of increased overweight/obesity with food insecurity compared to food security.

Adult Nutrition Screening

For the adult nutrition screening workgroup, the goal was to conduct a systematic review examining the validity and reliability of adult nutrition screening tools that were quick and easy to use, and could be used for a variety of age groups, settings, diseases, and treatments. Six nutrition screening tools met this criteria and were examined: Malnutrition Screening Tool (MST), Malnutrition Universal Screening Tool (MUST), Mini Nutrition Assessment-Short Form (MNA-SF), Short Nutritional Assessment Questionnaire (SNAQ), Mini Nutrition Assessment-Short Form-Body Mass Index (MNA-SF-BMI), and Nutrition Risk Screen-2002 (NRS -2002). The workgroup also investigated the costs of the malnutrition screening procedure.

Of the 6 nutrition screening tools, the most frequently examined tools were MUST, MNA-SF, and MST. MST received Grade I (Good/Strong) evidence, while the other five nutrition screening tools (MUST, MNA-SF, SNAQ, MNA-SF-BMI, NRS-2002) received Grade II (Fair) evidence. The workgroup ranked the nutrition screening tools from highest to lowest as follows:

Grade I (Good/Strong) evidence

The MST exhibited moderate validity, moderate reliability, and moderate agreement, based on 20 studies. Study populations ranged in age from 45±14 years to 84±9 years and included 10 studies of inpatients, 7 studies of outpatients, and 2 studies of long-term care residents, and one study of patients in more than one setting.

Grade II (Fair) evidence

The MUST exhibited high validity, moderate reliability, and moderate agreement, based on 22 studies. Study populations ranged in age from 44±17 years to 65±18 years, and included 16 studies of inpatients,

3 studies of outpatients and 2 studies of long-term care residents, and one study of patients in more than one setting. A few patients were up to 83±9 years of age.

The MNA-SF exhibited moderate validity, moderate reliability, and low agreement, based on 20 studies. Study populations ranged in age from 48 ±1 years to 83±9 years and included 8 studies of inpatients, 5 studies of community residents, 4 studies of outpatients, 3 studies of long-term care residents, and 3 studies were conducted in more than one setting, but results were not separated.

The SNAQ exhibited moderate validity and moderate reliability, based on 7 studies. No studies reported agreement. Study populations ranged in age from 48±1.4 years to 80±8 years and included 5 studies of inpatient and 2 studies of outpatients.

The MNA-SF-BMI exhibited high validity and moderate agreement, based on 6 studies. None of the studies reported reliability. Study populations ranged in age from 59±13 years to 82±7 years and included 2 studies of long-term care residents, 2 studies of community residents, 1 study of inpatients, 1 study of outpatients, and 1 study in more than one setting.

The NRS-2002 exhibited moderate validity and agreement, based on 17 studies. None of the studies reported reliability. Study populations ranged in age from 44 ±17 years to 85±5 years and included 15 studies of inpatients, 1 study of long-term care residents, and 1 study of outpatients.

Lastly, the workgroup concluded that the costs of the malnutrition screening procedure ranged from €2 (~\$2.27 US) (SNAQ) in 2003 to €3.27 (~\$2.93 US) (MNA-SF) in 2001, per hospital patient in the Netherlands. However, this was based on only 2 studies that meet the inclusion criteria. Thus, this conclusion statement received Grade III (Limited) evidence.

Adults Nutrition Screening

Application

Nutrition screening is a critical step for identifying malnutrition risk and, consequently, for determining if a patient or client should continue on to the Nutrition Care Process with a full nutrition assessment. Nutrition screening tools should be quick and easy as well as valid and reliable compared to acceptable reference standards in order to increase accuracy and precision in nutrition screening.

The findings of both systematic reviews are expected to be published on the EAL in September 2018. Questions should be directed to eal@eatright.org

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