

e How Other Assessment Tools Measure Up to the Mini Nutritional Assessment

Two recent literature reviews identified nutritional screening and assessment tools available for use by nurses with all populations¹ and with older adults.² Of the 71 such tools found, 21 were developed specifically for use with older adults. Of these, the Mini Nutritional Assessment has been the most extensively investigated with regard to reliability and validity, and it has been validated with older adults in a variety of settings. The following summarizes the advantages and disadvantages of other geriatric nutrition assessment tools developed in the United States.—*Rose Ann DiMaria-Ghalili, PhD, RN, CNSN, and Peggy A. Guenter, PhD, RN, CNSN*

Tool	Advantages	Disadvantages	Additional comments
Nutritional Risk Index ³ (16 items)	<ul style="list-style-type: none"> • Can be administered by anyone • Brief, simple to administer, can be used in telephone surveys 	<ul style="list-style-type: none"> • Although there is evidence that the tool has adequate reliability, its clinical validity has not been established • It's unclear whether low scores correlate to poor nutrition, poor general health, or greater use of health services 	<ul style="list-style-type: none"> • Based on the first National Health and Nutrition Examination Survey (NHANES I)
DETERMINE Your Nutritional Health Checklist (10 items) ⁴	<ul style="list-style-type: none"> • Can be administered by the older adult, her or his spouse or partner, or a health care professional • Anthropometric measures aren't needed • The Nutrition Screening Initiative (NSI) has published numerous books and articles aimed at guiding different health care professionals in how to use checklist results 	<ul style="list-style-type: none"> • There is limited evidence on its validity, and little or no evidence on its reliability, sensitivity, and specificity 	<ul style="list-style-type: none"> • Developed by the NSI as a self-administered tool to increase awareness of the warning signs of poor nutritional health • Additional nutrition assessment tools developed by the NSI include the Level I and Level II Screens, which permit basic and in-depth evaluation and were designed for use by health and certain other professionals. Level I and II questions aren't scored, so there are no scoring norms

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Psychometric Properties of the Mini Nutritional Assessment (MNA)

Reliability	<ul style="list-style-type: none"> • Internal consistency: Cronbach's α 0.65 in population of elderly subjects with early dementia¹ • Equivalence (interobserver reliability): <ul style="list-style-type: none"> ○ κ values of 0.51 in hospitalized elderly² ○ κ values of 0.78 in institutionalized elderly³ ○ Intraclass correlation coefficient of 0.89 in institutionalized elderly³
Validity*	<p>Construct validity: principal component analysis and discriminant analysis were used to document discriminant validity of the MNA. The gold standard in the first three studies—referred to simply as "Toulouse 91," "Toulouse 93," and "Albuquerque 93," after the city and year in which they occurred⁴—was physician assessment.</p> <ul style="list-style-type: none"> • In the Toulouse 91 sample, 3 of 125 subjects (2%) were misclassified when nutritional evaluation involved both the MNA and biochemical markers; 11 of 139 (8%) were misclassified when evaluation involved the MNA alone. • In the Toulouse 93 sample, 7 of 59 subjects (12%) were misclassified when nutritional evaluation involved both the MNA and biochemical markers; 13 of 115 subjects (11%) were misclassified when evaluation involved the MNA alone. • Cross-validation studies of the Toulouse 91 and Toulouse 93 samples, with evaluation by the MNA without biochemical markers, found that about 75% of each sample were classified correctly. • MNA threshold values (for "well-nourished," "at risk for malnutrition," and "malnourished") were developed on the basis of the New Mexico sample.
Sensitivity†	<p>Ability of the MNA to identify an older adult with malnutrition correctly ("true positives"); ability to screen for malnutrition</p> <ul style="list-style-type: none"> • 9 studies report sensitivity of the MNA to be 70% or higher, compared with other nutritional parameters.⁵⁻¹³ <ul style="list-style-type: none"> ○ ROC curve values¹⁴ <ul style="list-style-type: none"> 0.912 (95% CI 0.850–0.974) for total cholesterol levels lower than 150 mg/dL ($P < 0.0001$) 0.916 (95% CI 0.846–0.985) for albumin levels lower than 3.5 g/dL ($P < 0.0001$) 0.855 (95% CI 0.801–0.908) for a BMI lower than 18.5 ($P < 0.0001$) ○ Sensitivity of the MNA-SF (short form) ranged from 86% to 100%, compared with the full MNA or other nutritional parameters.^{12, 15, 16}
Specificity	<p>Ability of the MNA to identify older adults without malnutrition correctly ("true negatives"); ability to confirm malnutrition</p> <ul style="list-style-type: none"> • 3 studies report that the specificity of the MNA is higher than 70% when compared with other nutritional parameters.^{6, 10, 12} • Specificity of the MNA-SF ranged from 36% to 100% when compared with other nutritional parameters.^{9, 11, 17}

* Initial version of the MNA included biochemical measures of nutritional status. After first three developmental studies, the biochemical measures were deleted from the tool.

† Although in theory a tool can have both high sensitivity (ability to correctly identify positive cases) and specificity (ability to correctly exclude negative cases), in reality there is usually a tradeoff, with sensitivity increasing as specificity decreases and vice versa. Cutoff points are needed to distinguish positive cases from negative ones, with adequate sensitivity and specificity. In statistical analysis, these cutoff points are referred to as receiver operating characteristic (ROC curve) values. CI = confidence interval; BMI = body mass index.—Rose Ann DiMaria-Ghalili, PhD, RN, CNSN, and Peggy A. Guenter, PhD, RN, CNSN



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How Useful Is the MNA in Clinical Practice?

Results from a recent survey.

Although the Mini Nutritional Assessment (MNA) has been used extensively in research—a 2006 review found that it had been used to screen about 35,000 study participants in various settings in several countries¹—little is known about its use in clinical practice in the United States. In 2007 a survey on the use of the MNA for nutrition assessment was sent electronically to 5,850 members of the American Society for Parenteral and Enteral Nutrition (ASPEN) and posted online for Nurses Improving Care for Healthsystem Elders members. Of the 706 respondents, 95% were ASPEN members and 75% were dietitians. Forty-one respondents (6%) reported using the MNA in their clinical practice, for an average of 4.3 years.

The 41 respondents who used the MNA were also asked to identify its advantages and disadvantages. The advantages most often cited were that the MNA is “fast/quick” (29%), “simple/easy to use” (27%), “accurate/objective” (15%), and “validated” (12%). Other reported advantages were that the tool is non-invasive, prioritizes patients at highest risk, completes the nutritional picture when used with a comprehensive geriatric assessment, and is easy to use with people older than age 70.

Asked about disadvantages, 44% who used the MNA reported no difficulties. The disadvantages most often cited were that the tool was too long or cumbersome (17%), some questions weren’t always applicable (9%), and it’s often difficult to measure height in the elderly (9%). Others were that its measures are subjective, “not everyone uses it,” micronutrient data aren’t included, its use in patients who have trouble with memory recall is problematic, and anthropometric measures may not be reliable.

Of 308 who gave responses on the other standardized nutrition assessment tools they used, 41% percent reported using none, 24% reported using the Subjective Global Assessment, and 8% reported using tools their institutions developed.

One limitation of this survey is that although it was sent primarily to ASPEN members who are physicians, nurses, dietitians, pharmacists, and researchers interested in specialized nutrition support, not all ASPEN members provide care to older adults.

What’s next? These findings suggest that the MNA isn’t widely used by nutrition support professionals caring for older adults. Yet many such professionals report using no standardized nutrition assessment tool *at all*. Bringing evidence to bear on practice is typically a long, time-consuming process. Titler has discussed the use of implementation models that break this process down into stages.² One such model, developed by the Agency for Healthcare Research and Quality, describes three stages of implementation: “knowledge creation and distillation,” “diffusion and dissemination,” and “adoption, implementation, and institutionalization.” If we consider the MNA, the terms of the first two stages have been met: the tool has been the subject of numerous studies, and the research has been widely published. It’s time for nurses, and other clinicians, to continue to the third stage, incorporating the MNA into their practices and encouraging its use at their institutions.—*Rose Ann DiMaria-Ghalili, PhD, RN, CNSN, and Peggy A. Guenter, PhD, RN, CNSN*

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