

Validation of the Academy/A.S.P.E.N. Malnutrition Clinical Characteristics

Background

To achieve a consistent and accurate definition of malnutrition, the Academy of Nutrition and Dietetics (AND), along with the American Society of Parenteral and Enteral Nutrition (A.S.P.E.N.), has developed six malnutrition clinical characteristics (MCCs): weight loss over time, inadequate energy intake compared with estimated needs, muscle loss, fat loss, fluid accumulation, and diminished grip strength. While some studies have shown a relationship between the MCCs and other outcomes, there is still no standard use of the MCCs. Therefore, a pilot study was conducted to test the validity of the six MCCs.

This pilot study was intended to establish the feasibility of data collection and analysis methods that could be applied in a future, adequately powered study to test the validity of the MCCs. Since there is no accepted, well-validated standard for diagnosing malnutrition, the study was designed to validate the MCCs in relation to the theoretical framework upon which they are based (construct validity). Thus, adult malnutrition, defined as an imbalance with “insufficient calories, protein, or other nutrients needed for tissue maintenance repair”, was compared to the well-established outcomes of morbidity and mortality, decreased function and quality of life, increased frequency and length of hospital stay, as well as higher healthcare costs. An association between presence of the MCCs and poorer outcomes is a measure of the positive predictive validity of the MCCs to correctly identify malnutrition.

Methods

The pilot study included two large tertiary care medical centers and a community hospital. Pairs of RDNs were selected and trained, and RDN study activities were integrated into existing practice wherever possible. RDNs were trained by study investigators in the hands-on nutrition-focused physical exam, random patient selection, and the informed consent process. RDNs were instructed on procedures for collecting each variable and entering study data into Academy Health Informatics Infrastructure (ANDHII).

Patient eligibility requirements were: at least 18 years of age, ability to speak English well enough to answer questions and give informed consent, referral to RDN according to facility policy, and expected to remain in hospital for ≥ 24 hours. Patients were ineligible in the cases where RDNs had seen them during the same admission, where they participated in the study during a previous admission, or where they were admitted to hospice, palliative care, psychiatric, maternity, pediatric, trauma, burn, or day surgery units.

Using the Malnutrition Screening Tool for eligible patients, two RDNs independently assessed each patient within a 24-hour period for the presence or absence of malnutrition, its severity, and

context. Outcomes data were extracted by clinical nutrition managers and aggregated with data entered into ANDHII.

The malnutrition diagnosis using the MCCs was included as an independent variable using three categories: diagnosed by both RDNs with moderate or severe malnutrition (malnourished), diagnosed by only one RDN with severe or moderate malnutrition (inconclusive), or diagnosed by neither RDN as moderate or severe malnutrition (not malnourished). The outcomes selected were: cost of care, length of stay, hospital falls, pressure ulcers, readmissions, emergency room additions, and death.

Results

The RDNs screened 332 patients, of which 115 (35%) were eligible to participate, and 28 patients (24.3% of those eligible) agreed to participate. The mean age of patients was 52 years, ranging from 28 to 92 years. Sixty percent were men, 82% were white, and 18% were African American.

The RDNs assessed all 6 MCCs for 57.8% of the cases and were able to diagnose or rule out malnutrition in 100% of these cases. Muscle mass was the most frequently assessed, and grip strength was the least (despite the availability of dynamometers). In 66.7% of cases, the RDNs reached the same determination regarding the presence/severity of malnutrition.

Malnourished patients experienced higher charges, longer lengths of stay, and more frequent undesirable outcomes. The independent effect of malnutrition diagnosed via the MCCs on outcomes was 1.17 standard deviations higher for billed charges and 75% longer lengths of stay after adjustment for severity of disease and use of healthcare services. Due to the small sample size, these findings were not statistically significant.

Practice Implications

Assessing the feasibility of using 5 of the 6 MCCs appears high. Functional status, as assessed by hand grip strength, was not appropriate for the critically ill due to the postural and mental status of these patients. Additionally, this pilot study is likely not representative of hospitalized patients due to the small sample size and high percentage of patients that refused to participate.

This pilot study was carefully designed to overcome the theoretical and practical challenges in validation of a construct where there is no reference standard. Improving patient care through nutrition intervention is a high priority, though a necessary first step is to agree on a diagnosis of malnutrition that is both validated and standardized. A larger validation study of this type will identify whether modifications to the MCCs are warranted and will set the direction for future research.