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Content validity across methods of malnutrition assessment in patients with cancer is limited

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Abstract

Objective: To identify malnutrition assessment methods in cancer patients and assess their content validity based on internationally accepted definitions for malnutrition.

Study Design and Setting: Systematic review of studies in cancer patients that operationalized malnutrition as a variable, published since 1998. Eleven key concepts, within the three domains reflected by the malnutrition definitions acknowledged by European Society for Clinical Nutrition and Metabolism (ESPEN) and the American Society for Parenteral and Enteral Nutrition (ASPEN): A: nutrient balance; B: changes in body shape, body area and body composition; and C: function, were used to classify content validity of methods to assess malnutrition. Content validity indices (M-CVI$_{A-C}$) were calculated per assessment method. Acceptable content validity was defined as M-CVI$_{A-C} \geq 0.80$.

Results: Thirty-seven assessment methods were identified in the 160 included articles. Mini Nutritional Assessment (M-CVI$_{A-C}$ = 0.72), Scored Patient-Generated Subjective Global Assessment (M-CVI$_{A-C}$ = 0.61), and Subjective Global Assessment (M-CVI$_{A-C}$ = 0.53) scored highest M-CVI$_{A-C}$.

Conclusion: A large number of malnutrition assessment methods are used in cancer research. Content validity of these methods varies widely. None of these assessment methods has acceptable content validity, when compared against a construct based on ESPEN and ASPEN definitions of malnutrition.

Keywords: Content validity; Malnutrition; Undernutrition; Cancer; Nutritional assessment; Malnutrition assessment

1. Introduction

Early recognition and adequate diagnosis of malnutrition is considered an important element in the nutrition care process of cancer patients. Malnutrition in cancer patients is associated with poorer quality of life, poorer clinical outcome, and decreased survival [1–4]. Malnutrition can occur in all phases of cancer, from diagnosis to palliative care or survivorship, because of symptoms caused by both illness and treatment [1,5].

To adequately diagnose malnutrition, the construct of malnutrition needs to be clearly defined. Although a conceptual definition of malnutrition has been discussed for several decades [6], the first consensus-based definition of malnutrition was published no earlier than 2006. The European Society for Clinical Nutrition and Metabolism (ESPEN) used the following definition for malnutrition in their Guidelines on Enteral Nutrition: "A state of nutrition in which a deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size and

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What is new?

Key findings

- Content validity of methods that assess malnutrition in cancer patients varies widely. None of the methods used to assess malnutrition in cancer patients showed acceptable content validity when measured against our set of key concepts derived from definitions for malnutrition.

What this adds to what was known?

- The concept of malnutrition has been operationalized into key concepts within domains based on well-accepted definitions of malnutrition.

What is the implication and what should change now?

- Accuracy of malnutrition assessment in cancer patients may be affected by the variance in level of content validity. Accurate assessment of malnutrition potentially prevents undertreatment and overtreatment of malnutrition. Therefore, use of malnutrition assessment methods that incorporate adequate coverage of the construct of malnutrition may improve efficacy of interventions to treat malnutrition. Higher malnutrition treatment efficacy, in its turn, could improve nutritional status of cancer patients and thus improve clinical outcome.
- The level of content validity can be increased by using malnutrition assessment methods that include items addressing at least the domains nutrient balance, body shape, size, and composition and function.

composition) and function, and clinical outcome'' [7,8]. We will further refer to this definition as ''the ESPEN definition of malnutrition.'' Another influential organization, the American Society for Parenteral and Enteral Nutrition (ASPEN), proposed the following definition of disease-related malnutrition in 2012: ''An acute, subacute or chronic state of nutrition, in which a combination of varying degrees of overnutrition or undernutrition with or without inflammatory activity has led to a change in body composition and diminished function'' [9]. We will further refer to this definition as ''the ASPEN definition of malnutrition.'' Although important steps have been taken toward describing diagnostic criteria for malnutrition [10−12], international consensus on the operationalization, that is, a strict process of defining abstract concepts into measurable factors [13], of ESPEN and ASPEN definitions for malnutrition assessment has not been reached [14].

Because a gold standard for the operationalization of malnutrition is currently lacking, it is difficult to establish diagnostic performance of assessment methods. However, because malnutrition is a problem that impacts several domains, assessment should include nutritional (im)balance, as well as the effects on body composition and function [7,15]. Adequate operationalization of malnutrition assessment may improve the accuracy of malnutrition diagnosis in research and in clinical practice. Content validity has been described as ''the degree to which a sample of items, taken together, constitute an adequate operational definition of a construct'' [16]. Several instruments and methods are available to diagnose malnutrition, many of which are used in patients with cancer, but the extent to which these methods adequately cover all dimensions of malnutrition as defined by the ESPEN and ASPEN definitions has not been systematically reviewed. With this systematic review, we aim to provide an overview of the methods used for assessing malnutrition in adult cancer patients in the recent literature and to determine their content validity based on the consensus-based definitions of malnutrition.

2. Materials and methods

Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines were used in this systematic review of methods to the best possible extent (Online Supplement I at www.jclinepi.com) [17].

2.1. Search strategy and criteria

From May 4, 2013 until July 29, 2013, CINAHL, EMBASE, PUBMED, and Cochrane CENTRAL were searched for studies and study protocols of trials in the English, Dutch, or German language. A sensitive and broad search strategy was developed, which was tailored to each database. Details on the search strategy can be found in the Online Supplement II at www.jclinepi.com. For feasibility reasons, we restricted the time frame of publications, starting in January 1998 and ending in June 2013, providing a 15-year time frame to include studies.

Because we focused on assessment methods used, rather than on the outcome of the studies, we considered randomized controlled trials as well as observational studies and quasi-experimental studies for inclusion. Both the ESPEN and the ASPEN definition suggest that malnutrition can indicate undernutrition as well as overnutrition [7,9]. In this systematic review, we focus on undernutrition as subtype of malnutrition. All studies that specifically operationalized malnutrition, undernutrition, protein-energy malnutrition, or protein-calorie malnutrition either as a covariable or an outcome variable were considered eligible. All types of assessment methods, for example, clinical observations, anthropometric measurements, functional tests, biochemical tests, or questionnaires were included. Instruments