



Review

Subjective global assessment of nutritional status – A systematic review of the literature

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ARTICLE INFO

Article history:

Received 2 August 2014

Accepted 18 December 2014

Keywords:

Nutrition assessment

Malnutrition

Inpatients

Adult

SUMMARY

Background & aims: Subjective Global Assessment (SGA) is a nutritional assessment tool widely used in hospital clinical practice, even though it is not exempted of limitations in relation to its use. This systematic review intended to update knowledge on the performance of SGA as a method for the assessment of the nutritional status of hospitalized adults.

Methods: PubMed data base was consulted, using the search term “subjective global assessment”. Studies published in English, Portuguese or Spanish, between 2002 and 2012 were selected, excluding those not found in full, letters to the editor, pilot studies, narrative reviews, studies with $n < 30$, studies with population younger than 18 years of age, research with non-hospitalized populations or those which used a modified version of the SGA.

Results: Of 454 eligible studies, 110 presented eligibility criteria. After applying the exclusion criteria, 21 studies were selected, 6 with surgical patients, 7 with clinical patients, and 8 with both. Most studies demonstrated SGA performance similar or better than the usual assessment methods for nutritional status, such as anthropometry and laboratory data, but the same result was not found when comparing SGA and nutritional screening methods.

Conclusions: Recently published literature demonstrates SGA as a valid tool for the nutritional diagnosis of hospitalized clinical and surgical patients, and point to a potential superiority of nutritional screening methods in the early detection of malnutrition.

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1. Introduction

Malnutrition is a prevalent clinical condition in hospitalized patients. It is estimated that 50% of adult patients admitted in hospitals have malnutrition, what renders it one of the most prevalent comorbidities in this population [1–4]. Malnutrition derives from clinical, social, and cultural factors [5,6], and its association to higher morbidity and mortality rates, longer length of stay, and higher hospital costs has been widely demonstrated in the literature [7–12]. Within this scenario, the assessment of patients' nutritional status is currently found in the routine care of hospitalized patients, what demands time as well as other resources from the institutions. Many methods are available for nutritional assessment, most of them described many decades ago [13–20]

and with methodological or practical limitations, especially in regard to their use in hospital environment.

The absence of a method for nutritional assessment that could be considered as gold standard compelled Baker et al., in 1982 [13,14], to validate an instrument capable of subjectively identifying the risk for worse clinical outcomes, associated to worse nutritional status in surgical patients. It was a questionnaire encompassing clinical history and physical exam, based in which the patients were classified as well-nourished, moderately malnourished or severely malnourished. The categories of the instrument in relation to moderately or severely malnourished demonstrated good sensitivity (0.82) and specificity (0.72) for the prediction of hospital infection [21]. In 1987, Detsky et al. [22] standardized this method calling it Subjective Global Assessment (SGA). In its final version, the SGA is composed by: (1) history of weight loss, dietary intake change, gastrointestinal symptoms, functional capacity, and metabolic demand related to the underlying disease; and (2) physical exam focused in the detection of muscle wasting, loss of subcutaneous fat and the presence of edema. Based on this information, according to the subjective evaluation of the observer, the

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nutritional diagnosis is defined and the patients are classified as: (A) well-nourished, (B) moderately (or suspected of being) malnourished, or (C) severely malnourished.

Throughout the years, SGA has been incorporated to the procedures of nutritional assessment for non-surgical patients as well [1,3]. Proposals of turning the method into a score, attributing numerical indices to the items of the questionnaire have been presented, in an attempt to transform SGA into a quantitative tool [23,24]. Nonetheless, no initiative of attributing points to SGA adopted a methodology which truly allowed assigning values to the components of the questionnaire. The authors of SGA do not attribute numeric scores to the tool, and also do not recommend its combination with objective tests, since the inclusion of them to the method does not seem to increase the subjective assessment capacity of predicting the occurrence of complications associated to malnutrition [21,22,25].

SGA is widely used because it is simple, non-invasive, inexpensive, demanding few minutes for its completion, able to be done at the bedside by any trained health professional, and is capable of identifying patients at higher nutritional risk [26]. Even so, due to the subjectivity of the method, its accuracy depends on the experience of the observer in being able to detect nutritional changes [26], what may limit the use of SGA in routines of care, especially in teaching hospitals.

The present systematic review had the objective of reviewing the scientific literature in the performance of SGA as an assessment method of nutritional status in hospitalized adults.

2. Method

The current scientific literature was reviewed consulting the PubMed data base. Using the research term “subjective global assessment”, all the studies published between 2002 and 2012 in English, Portuguese or Spanish which presented objectives, results and conclusions concerning the performance of SGA as an assessment method for nutritional status were selected and considered eligible.

Eligible studies were excluded if they met any of the exclusion criteria: (1) article not found in full, (2) letter to the editor, (3) pilot study, (4) narrative review, (5) small sample ($n < 30$), (6) study with children and/or adolescents (population < 18 years of age), (7) research with non-hospitalized population or (8) SGA in a version modified from the original.

Eligibility criteria were applied by two independent investigators, and the discordances solved by a third reviewer. Authors were contacted by e-mail in an attempt to obtain complete versions of studies electronically available only as abstracts.

After finishing the step of applying the eligibility criteria and selecting the studies, one of the researchers extracted the data in a standardized, previously established manner. Information collection targeted the following data: first author, year of publication, study place, study design, sample (size and patients type), tools of nutritional assessment compared to SGA, results, and main conclusions. The studies included are presented summarized in tables, grouped according to the type of population studied (surgical or clinical patients, or both). Such classification aimed at facilitating comparing the results, with the intention of guiding the rationale for discussion and conclusions.

3. Results

The search strategy utilized found 454 eligible studies, of which 110 met the eligibility criteria. After applying the exclusion criteria, 21 studies were selected and included in the systematic review, according to the flowchart (Fig. 1).

The information extracted from the studies was first summarized in a single table and subsequently divided in tables dedicated to the type of populations studied. Among the 21 studies included, 6 had a sample of only surgical patients, 7 of clinical patients, and 8 studies included both types, surgical and clinical patients (Tables 1–3).

Among the studies with surgical patients, many evaluated the capacity of SGA in predicting postoperative complications: mortality, infection, digestive hemorrhage, pulmonary embolism, abscess, fistula, anastomotic dehiscence, intestinal obstruction, ileus, pressure ulcer, cardiovascular or cerebrovascular event, need for blood transfusion, transference to Intensive Care Unit (ICU), recurrent surgery, long length of stay, hospital readmission, and others.

Most studies collected data at the time of admission (48–72 h after hospital admission), as well as they excluded pregnant or severely ill patients. Those studies which performed anthropometric or functional assessment besides SGA, tended to exclude bedridden or unconscious patients. Most studies had a prospective design, following the patients until hospital discharge, and the methods for the assessment of nutritional status or risk were applied by one single investigator, in order to avoid measuring biases.

3.1. Studies with surgical patients

Table 1 describes the studies found on the performance of SGA as nutritional assessment method in exclusively surgical patients, most of them submitted to abdominal [28–31], orthopedic [27] or general [32] surgery. Six studies were found, 4 prospective [27,28,30,31], and 2 cross sectional [29,32]. The sample sizes ranged from 100 [31,32] to 438 patients [30]. In the different studies found the capacity of SGA in detecting malnutrition was compared to methods for nutritional screening [27,28,31,32], nutritional assessment, and functional capacity [29,31,32]. One study evaluated only the correlation between the SGA questions (items) and their final nutritional diagnosis [30].

Most studies with surgical populations presented a positive performance of SGA in correctly detecting the nutritional status of the patients [29,32], or in predicting risk for the development of

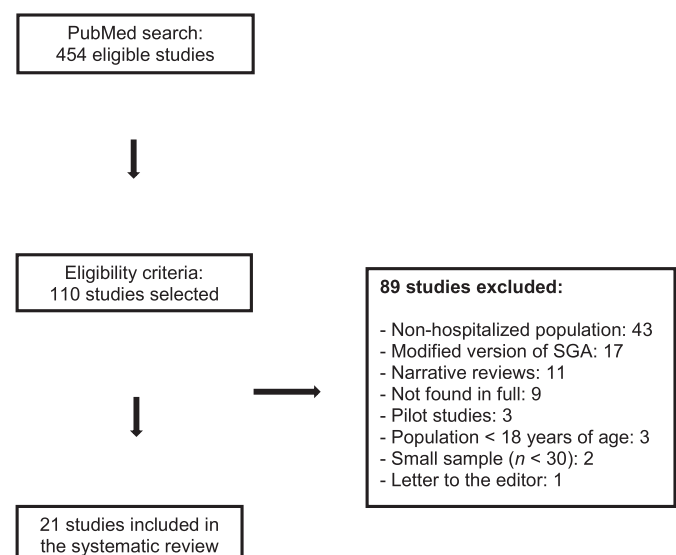


Fig. 1. Flowchart of study selection for inclusion in the systematic review.

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