

Answers to Reviewer 1

1) The authors have excluded cirrhotics because of the obscuring effect of ascitis and or edema. Inflammatory diseases may cause a drop in serum albumin levels that decrease oncotic pressure and favors fluid leakage to the interstitial space, that may reach up to 5 l before edema is clinically evident. This problem should be commented in the discussion, because it leads to an erroneous assessment of BMI.

This problem has been commented on in the Discussion, from line 370 to 375:

Regarding the diseases included in this study, we want to specify that cirrhotic patients were excluded because of the obscuring effect of compartmentalized ascites on body weight [31,36,49]. However, diseases causing reduced albumin levels, which decreases oncotic pressure and allows for diffuse fluid leakage into the interstitial space, were not excluded, as fluid retention has to be considered a direct consequence of malnutrition.

2) It would be useful for the reader if the authors show in tables how the MNA, MUST and NRS scores are obtained.

The malnutrition risk screening tests (MUST, NRS-2002 and MNA) have been described in Table 1. More details are reported in the Materials and Methods, from line 253 to line 272:

Specifically, the calculation of the three methods are described in detail in the following text:

- 1) The Malnutrition Universal Screening Tool (MUST) was used for outpatients. This method was based on the BMI, the unintentional weight loss and the presence of acute disease that was able to significantly reduce nutrient intake in the following five days. The total score ranged from 0-6; a score of 0 indicated null or low risk of malnutrition, a score of 1 suggested a moderate risk of malnutrition, and a score ≥ 2 was indicative of a severe risk of malnutrition [44]. We considered a score ≥ 2 to identify patients at nutritional risk.*
- 2) The Nutritional Risk Screening Score 2002 (NRS-2002) has been recommended by ESPEN to screen inpatients. This test evaluates the nutritional risk (score: 0-3) and the severity of disease (score: 0-3) with an additional point for patients ≥ 70 years old. The final score ranges from 1 to 7. The patient is considered at nutritional risk for scores higher than 3 [45].*
- 3) The Mini Nutritional Assessment (MNA) is a tool for elderly patients (≥ 65 years). This tool has two parts. The first part consists of six items and results in a score between 0 and 14; a score lower than 12 is considered indicative of risk of undernutrition and leads to the patient answering the second part of the tool, which is composed of 12 items with a possible maximal score of 16. A total score < 17 is indicative of malnutrition, a score between 17 and 25 indicates risk of undernutrition, while scores > 25 are indicative of well-nourished patients [46-48].*

3) English should be carefully revised.

The English has been reviewed by the American Journal Experts: <http://www.aje.com>.

Answers to Reviewer 2

1) The authors should write the key words in the abstract

The key words have been reported at the end of abstract (line 144):

"Key words: Obesity, Malnutrition, Risk of Malnutrition, NRS2002, gastrointestinal disease."

2) and justify the sample size according the precision, safety and losses in material and methods section.

The sample size has been justified in the "Inclusion criteria" paragraph (lines 219-221):

"As this was an observational study, the sample size was determined by the number of inpatients and outpatients who visited the various centers during the study week."

3) In the results section, it would be useful to know the prevalence of patients malnourished/at risk of malnutrition according the method used to assess the nutritional state and the age group (≥ 65 / <65 years).

In tables 5 and 6, we report the prevalence of patients at risk of malnutrition according to the method used and age group.

4) Also knowing the prevalence of patients according the pathologies studied in each group of disease (acute, chronics and tumors).

In Table 4, we report the prevalence and number of patients with chronic disease, acute disease and cancer, also according to age group.

5) The English should be reviewed:

The English has been reviewed by the American Journal Experts: <http://www.aje.com>.

Answers to Reviewer 3

1) The consideration of patients a chronic, acute and neoplastic diseased, need to be well classified, as because if the patients are considered neoplastic in addition having any other chronic or acute disease or any other secondary complications which may affect the nutritional status of the patients may give an erroneous data.

We have well defined the three groups of disease (acute, chronic and neoplastic disease), and we have specified that the presence of a neoplastic disease itself was sufficient to determine a further deterioration of patients' nutritional status (lines 233-238), as demonstrated in Figures 1 and 2:

Patients were categorized as having a) chronic disease, if the symptoms, signs and diagnosis had persisted for ≥ 6 months; b) acute disease, if the symptoms, signs and diagnosis had recently appeared, regardless of the presence of chronic disease; or c) cancer, if affected by gastroenterological neoplastic disease, regardless of the presence of acute and/or chronic disease, as it was assumed that the presence of neoplastic disease itself was sufficient to determine further deterioration of a patient's nutritional status.

2) How obese patients are considered to be undernourished and being and being as risk of malnutrition? Explain.

We specify in line 249 that "Obese patients were considered undernourished when they lost more than 10% of their weight while receiving their usual diet." Obese patients were considered at risk of malnutrition when they presented a score on the MUST ≥ 2 , NRS-2002 > 3 or MNA 17-25.

3) The physiological basis of undernutrition, malnutrition and obesity and their consequences need to be clearly explained. How they may be interrelated?

From line 175 to line 178, we specify that "The physiological basis of undernutrition and obesity is the deficit (undernutrition) and the excess (obesity) of calories that results in measurable adverse effects on clinical outcomes [1-5]. The equilibrium between the total energy requirements, nutrient intake and utilization is mediated by hormonal and cytokine stimuli that induce the activation of intracellular metabolic pathways."

4) "Risk of malnutrition increased progressively and significantly in chronic, acute and neoplastic gastrointestinal diseases in inpatients and elderly population." What is new in this statement?

We first reported that the risk of malnutrition in gastrointestinal disease was classified according to clinical status (acute, chronic and neoplastic gastroenterological disease) and according to age in outpatients and inpatients in gastrointestinal departments. We found that the prevalence of patients at risk of malnutrition increased with the severity of disease and with the age of patients as we might expect; however, the most important finding was the existence of this association, which is still often underestimated. We often think that older patients have poor nutritional status; instead, they are more often at risk of malnutrition.

5) What do you actually mean "Undernutrition was defined as unintentional weight loss..."? How to categorize "unintentional"? To me this is not well accountable.

We have specified the meaning of unintentional (i.e., without voluntary dietary restriction) in lines 246-247.

6) What could be the status of a similar patient who is underfed previously, so in a protein energy/calorie malnutrition?

Patients who were underfed before the last 3-6 months were classified as undernourished if they presented a weight loss according to the criteria reported in the Materials and Methods.

7) Why prevalence of undernutrition, malnutrition and risk of malnutrition all are higher in inpatients? Why obesity is higher in outpatients? Need to be well defined.

As specified in line 377, the prevalence of undernutrition in inpatients was higher because of the high frequency of diseases that reduce caloric intake and /or are characterized by a loss of body water as a result of abdominal pain, diarrhea, or vomiting. Probably more patients were dehydrated, but the evaluation of body composition was beyond the aim of the study. In line 404, we report that the NRS2002 was influenced more frequently by a reduction in caloric intake than a modification of weight and/or BMI. The prevalence of obesity and overweight in outpatients was higher than that in inpatients, but this did not reach statistical significance (line 430); however, weight loss in the 3-6 months prior to the study in the obese and overweight population could have resulted in a reduction in the prevalence of overweight and obesity detected at admission. Therefore, the BMI did not represent a valid tool to describe nutritional status.

8) Different nutritional status in relation to several physiological Vs pathological conditions are not discussed properly in the MS

In the Discussion, we explain why undernutrition was more frequent in inpatients (line 377-378), younger patients and patients with gastroenterological cancer (line 400-403). Regarding the risk of malnutrition, we specify that the NRS2002 was more influenced by reductions in caloric intake (line 404-405) and that the effects of chronic disease may have been influenced by the higher prevalence of risk of malnutrition in outpatients (line 415-417). The difference in prevalence of obesity and overweight between outpatients and inpatients did not reach statistical significance.

9) There are several grammatical errors and disordered sentences in the MS

The grammatical errors and disordered sentences have been corrected.

10) The result section has a messiness, results should be under sub headings

The results have been better described and now include subheadings.

11) The MS need major revision to proceed further.

An extensive review of the work has been performed.