

Nutritional Risk and Malnutrition in Elderly Patients' recently Hospitalized

Selma Freire Carvalho Cunha^{*1}, Mariana Pirotobom Pupin², Daiane Leite da Roza³, Mariana Palma Guimarães², Larissa Angélica Possebom Dela Marta², Rafaela Monte Alegre², Eduardo Ferrioli⁴, and Julio Sergio Marchini¹

¹Division of Clinical Nutrition, Department of Internal Medicine, School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil

²Dietitian from Clinical Hospital, School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil

³Department of Social Medicine, School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil

⁴Division of Geriatrics, Department of Internal Medicine, School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil

***Corresponding author:** Selma Freire Carvalho Cunha, Division of Clinical Nutrition, Department of Internal Medicine, School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil, E-mail: sfreire@fmrp.usp.br

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Abstract

Introduction: High prevalence of malnutrition in the growing population of older adults makes nutritional screening mandatory for hospitalized elderly patients.

Objective: Identify nutrition risk and the odds ratio of nutritional screening data of elderly (≥ 65 years old) to adult (21 to 64 years old) patients recently admitted to a tertiary hospital.

Casuistic and Methods: We applied the Subjective Global Assessment (SGA) protocol in 2478 patients within 48 hours after admission to a public hospital. Subjects were divided into Elderly Group ($n = 733$) and Non-elderly Group ($n = 1745$). The data were submitted to Chi-Square test. The quantification of this association was measured using logistic regression models.

Results: Elderly patients showed a high percentage of nutritional risk or mild/moderately malnourished (41 vs. 32%). The prevalence of severe malnourished was similar between the study groups (10 vs. 9%).

Results of logistic regression showed the odds ratio (OR) of elderly patients were greater for weight loss (OR=1.30), in quantity (OR=1.29) and consistency of food (OR=1.85) changes in the pattern of food intake, anorexia (OR=1.69) and dysphagia (OR=1.56), when compared to the adults. Besides that, elderly patients presented greater risk of diseases with increased metabolic demand and clinical signs of nutritional deficiencies.

Conclusions: Prevalence of nutritional risk and malnutrition was high in the patients evaluated, and elderly subjects showed higher nutritional risk when compared to other hospitalized patients. These results can be attributed to changes in the pattern of food intake due to anorexia and dysphagia, associated with higher prevalence of diseases with increased metabolic demand.

Keywords: Nutritional screening; Malnutrition; Subjective global assessment; Hospital setting; Elderly

Introduction

Seniors are the fastest growing population worldwide and they use more hospital services than other age groups. Their treatment has a longer duration and a slower recovery, which causes higher costs [1]. Besides, elderly

patients present debilitated nutritional status that result in poor quality of life, increased adverse reactions to medications, inadequate response to treatment and worse prognosis [2].

Therefore, high prevalence of malnutrition in older adult population makes nutritional screening necessary for hospitalized elderly patients. Nutritional risk has been documented in about 50% hospitalized geriatric patients or more [3-6]. Subjective Global Assessment (SGA) [7] has been used as a nutritional screening tool in hospitalized patients [8] because it is simple, non-invasive and inexpensive. A study using the SGA conducted with 4000 hospitalized patients in Brazil showed nutritional risk was higher in the elderly (53%) when compared to the non-elderly (45%) [9].

The hypothesis of this study was the high prevalence of nutritional risk and malnutrition in the elderly compared to the non-elderly. In this context, the objective was to compare the nutritional risk of elderly to non-elderly patients recently hospitalized, and identify the risk factors that influence the nutritional classification by SGA.

Casuistic and Methods

This retrospective study was conducted in a tertiary university hospital, after approval by the Institutional Ethics Committee (Protocol #13530). The initial casuistic included data from nutritional screening of 3450 recently hospitalized patients (<48 hours after admittance), excluding those in the Pediatric, Psychiatry, Obstetrics/Gynecology wards and Intensive Care Unit. The final casuistic comprised 2478 patients from different wards after excluding misleading cases or with incomplete information (n = 442) and patients younger than 21 years old (n=530). We classified the subjects to age; patients over 65 years old were allocated to the Elderly Group (n = 733, 73±6 years, 57% male) and those under 64 years old integrated the Non-elderly Group (n = 1745, 46±12 years, 50% male).

Previous body weight (six months prior hospitalization) and current body weight were documented and the change during this period was calculated. Unintentional reduction in food intake was determined, besides consumption of liquid and semi-liquid food with lower energy density. We documented the occurrence of gastrointestinal symptoms longer than two weeks and alterations in functional physical capacity in relation to habitual. The clinical diagnoses were obtained from patients' health records, and the degree of metabolic stress was determined. According to SGA protocol, a simplified physical exam was performed to identify clinical manifestations of malnutrition (edema, loss of subcutaneous fat, skin desquamation and

angular cheilosis. The dorsum and lateral margins of the outer surface of the tongue were inspected, in order to identify atrophic alterations in the tongue papillary. Papillary atrophy was diagnosed when observed a flattening mucosa in the tip and lateral borders of the tongue, giving this organ a smooth, slick aspect.

All data were collected by trained dieticians and individual information was revised by one independent dietician and one physician specialized in clinical nutrition. According to SGA criteria, the subjects were classified as well nourished, moderately (or suspected of being) malnourished or severely malnourished.

To verify the association between the qualitative variables, the data were submitted to Chi-Square test. In addition, the quantification of this association was measured by logistic regression models [10], where the gross Odds Ratio (OR) was calculated with its respective 95% confidence intervals (95%CI). All statistical analyzes were performed using statistical software SAS (SAS Institute Inc., *SAS/STAT® User's Guide, Version 9*, Cary, NC: SAS Institute Inc., 2002). Values of p less than 0.05 were considered significant.

Results

According to the nutritional classification of GSA protocol [7], elderly patients recently hospitalized presented a higher prevalence of moderately or suspected of being malnourished when compared to those non-elderly (Figure 1).

Elderly patients (Table 1) had increased odds of weight loss [OR=1.30 (1.08; 1.56)], anorexia [OR=1.69 (1.35; 2.13)], dysphagia [OR=1.56 (1.16; 2.09)], reduction of food intake [OR=1.29 (1.07;1.54)] and ingestion of liquid and semi-liquid food [OR=1.85 (1.41; 2.43)]. Compared with non-elderly subjects, the elderly group presented greater odds of carrying diseases that cause inflammatory stress [OR=1.35 (1.12; 1.63)], and they had an increased odds of reduction in functional capacity. Elderly patients had higher odds of presenting clinical manifestations of nutritional deficiencies such as edema [OR=1.40 (1.14; 1.72)], loss of subcutaneous fat [OR=2.28 (1.83; 1.85)], flaking skin [OR=1.49 (1.11; 2.00)] and papillary atrophy of the tongue (OR=1.57 (1.30; 1.90)).

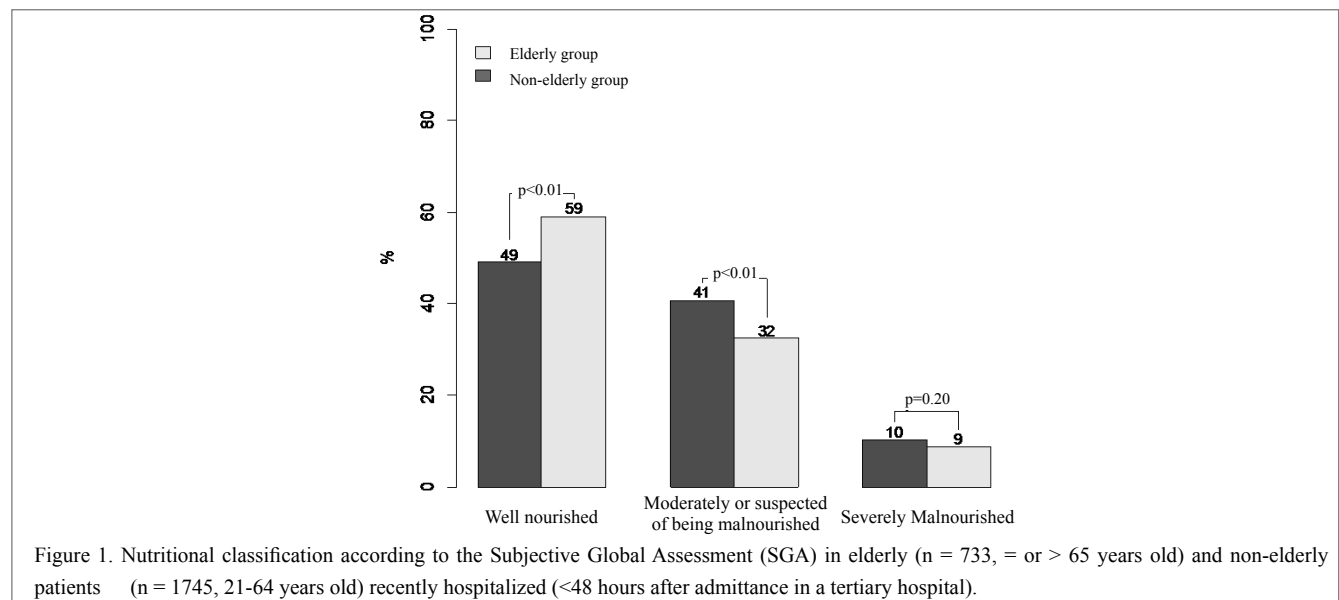


Table 1. Data of the various items of Subjective Global Assessment in 733 elderly (= or >65 years old) and 1745 non-elderly patients (21-64 years old) recently hospitalized (<48 hours after admittance in a tertiary hospital).

	Elderly group	Non-elderly group	p-value*	OR	(95%CI)
	%	%			
Patients who lost weight					
Yes	57.9	51.3	0.01	1.30	(1.08; 1.56)
No	42.1	48.7		1.00	Reference
Intensity of weight loss					
<5% of habitual weight	30.7	34.8	0.26	1.00	Reference
5-10% of habitual weight	27.8	28.0		1.12	(0.83; 1.54)
>10% of habitual weight	41.5	37.2		1.26	(0.95; 1.69)
Reduction of food intake					
Yes	13.9	8.0	<0.01	1.85	(1.41; 2.43)
No	86.1	92.0		1.00	Reference
Anorexia					
Yes	20.5	13.2	<0.01	1.69	(1.35; 2.13)
No	79.5	86.8		1.00	Reference
Abdominal distension					
Yes	10.2	10.2	1.00	1.00	(0.75; 1.33)
No	89.8	89.8		1.00	Reference
Abdominal pain					
Yes	7.7	7.0	0.55	1.10	(0.79; 1.53)
No	92.3	93.0		1.00	Reference
Nausea					
Yes	16.1	14.8	0.42	1.10	(0.87; 1.40)
No	83.9	85.2		1.00	Reference
Vomiting					
Yes	6.4	6.9	0.72	1.00	Reference
No	93.6	93.1		1.07	(0.75; 1.52)
Dysphagia					
Yes	10.9	7.3	0.01	1.56	(1.16; 2.09)
No	89.1	92.7		1.00	Reference
Diarrhea					
Yes	6.8	6.0	0.46	1.14	(0.80; 1.62)
No	93.2	94.0		1.00	Reference
Functional capacity					
No dysfunction	58.4	70.0	<0.01	1.00	Reference
Working suboptimally	31.8	22.5		1.69	(1.38; 2.05)
Just walk	6.0	4.5		1.58	(1.08; 2.33)
Bedridden	3.8	3.0		1.53	(0.95; 2.46)
Inflammatory stress					
Yes	32.6	26.4	0.01	1.35	(1.12; 1.63)
No	67.4	73.4		1.00	Reference
Edema					
Yes	26.1	20.1	0.01	1.40	(1.14; 1.72)
No	73.9	79.9		1.00	Reference
Loss of subcutaneous fat					
Yes	24.8	12.6	<0.01	2.28	(1.83; 1.85)
No	75.2	87.4		1.00	Reference

Flaking skin					
Yes	10.9	7.6	0.01	1.49	(1.11; 2.00)
No	89.1	92.4		1.00	Reference
Papillary atrophy of the tongue					
Yes	34.1	24.7	<0.01	1.57	(1.30; 1.90)
No	65.9	75.3		1.00	Reference

* p-value for the Chi-Square test.

Discussion

This work showed that newly admitted elderly patients in a tertiary hospital presented a higher prevalence of moderately or suspected of being malnourished when compared to non-elderly patients. The prevalence of severe malnutrition was similar between the study groups, given the severity of clinical conditions and regardless the patients' age.

Compared with the non-elderly, the elderly patients showed an increased chance of loss of weight and subcutaneous tissue, indicating that the adipose reserve is lower in old adults [11]. However, evidence suggests weight loss in the elderly occurs mainly due to depletion of lean body mass, which limits activities of daily living [12]. In our study, anorexia was common in hospitalized elderly patients, similar to the prevalence observed in institutionalized elderly [13]. This condition can be related to the co-morbidity that led to hospitalization or the effects of aging [14]. Anorexia represents a predictive factor for mortality in hospitalized and institutionalized subjects [15]. Reduction in food intake and intake of liquid and the semi-liquid food were more common in the elderly than non-elderly patients. In Spain, 81% of 2834 institutionalized elderly subjects changed the consistency of food, and 43% had dysphagia [16]. The elderly presented the higher risk of dysphagia [17], which may contribute to poor nutritional status and lead to malnutrition if not identified [18]. Among dependent older adults, 59% subjects had swallowing disorders and 21% subjects were malnourished [19] due to dementia [20] and sarcopenic dysphagia [21].

In this study, elderly patients showed higher flaking skin and atrophy of tongue papillae. Nutritional deficiencies manifest in cells with high turnover rates, such as keratinocytes [22] and may result in skin dryness aspect [23]. Skin desquamation is more common in older patients, ranging from 29% to 58% [24]. Atrophy of tongue papillae is not specific for nutritional deficiencies and it is commonly observed in various clinical conditions [25], including alcoholism [26] and malnutrition [27]. More than one-third of 416 hospitalized elderly presented atrophic glossitis, and it was associated with multiple nutritional deficiencies [28], such as low levels of haemoglobin, ascorbic acid, serum iron and cobalamin [29].

We identified elderly individuals presented higher odds of diseases causing inflammatory stress, reflecting greater severity of the clinical condition and therefore more significant potential in protein metabolism changes. Neuroendocrine and cytokines changes increase the metabolic rate and protein catabolism in response to inflammatory stress to meet the demand for tissue repair and gluconeogenesis [30].

This study has some limitations. It was conducted in a tertiary hospital, and many patients were referred from secondary hospitals; thus, it is possible that these patients were previously hospitalized. Because it is a retrospective

study, we do not have information about lacking data. It is possible that moderate and severe malnutrition may have been underestimated because patients unable to report were not included in the study. In our study, patients with different diagnosis and treatment were included. Undernutrition correlates with cognitive status and concomitant co-morbidities [4], such as the presence of cancer and infection [9]. The results do not represent the elderly population, but only hospitalized older people with severe and debilitating diseases. Besides that, SGA protocol is not specific for elderly patients, and most data are given as binary (yes or no), with no information about the severity. Several studies applied Mini Nutritional Assessment (MNA) in hospitalized elderly, showing a prevalence of nutritional risk around 70% [4-5], higher than other instruments. On the other hand, the large sample size is the strength of our study.

Malnutrition and nutritional risk are common conditions among newly admitted patients in a tertiary hospital, and they are more prevalent in elderly patients. In addition, elderly patients had higher chance of clinical signs of nutritional disorders, anorexia, dysphagia and ingestion of lower energy density foods. These symptoms suggest the oral feeding may be impaired during hospitalization and may aggravate the pre-existing condition. This study suggests a specific approach planning in the integrated geriatric assistance in order to offer early nutritional intervention strategies during hospitalization.

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