Prevalence of risk factors for malnutrition in Latin American hospitalized patients, a nutritionDay analysis 2016-2020

Prevalencia de factores de riesgo de desnutrición en pacientes latinoamericanos hospitalizados, un análisis de nutritionDay 2016-2020

Prevalência de factores de risco de desnutrição em pacientes hospitalizados na América Latina, uma análise nutricionalDay 2016-2020

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https://doi.org/10.35454/rncm.v5n2.389

Hospital malnutrition is a complex international health issue described to be associated with worse patient outcomes and increased healthcare costs[(1)]. A large proportion of patients is already found malnourished at the time of hospital admission, others develop malnutrition while in hospital, often as a complication associated with the disease. Malnutrition screening is crucial for identifying vulnerable patients who are nutritionally at risk already on admission, presenting well-known risk factors such as poor appetite, low food intake, history of unintentional weight loss or low body mass index (BMI). During hospitalization, monitoring of food intake and related physical difficulties for eating or drinking sets the basis for deciding on the more appropriate nutrition therapy for patients at risk of malnutrition as part of a dedicated nutritional care plan.

Since 2006, the European Society for Clinical Nutrition and Metabolism (ESPEN) nutritionDay audit helps hospital staff in charge of monitoring nutritional care provided in the unit by means of holistic standardized multi-language questionnaires and comprehensive graphical unit reports, including international data comparisons with units in the same specialty[(2)]. The large volume of nutritionDay data collected since 2009 by Latin American countries has highlighted a high risk of hospital malnutrition and its negative impact on patient outcomes in the Latin American Region[(3)] and in Colombia[(4,5)], a major contributor to the nutritionDay Latin American dataset. Data on major malnutrition risk factors are systematically collected on nutritionDay and summarized in the nutritionDay unit report which allows individual unit data interpretation and comparison at a regional and worldwide level. Single risk factors for malnutrition are known to be differently associated with poor outcomes in patients, and the risk of dying in hospital is compounded by the concomitant presence of multiple malnutrition risk factors.

In the 2016-2020 hospital nutritionDay database we investigated the prevalence of five major risk factors associated with malnutrition (BMI <18.5; eating less than all food served on nutritionDay and in the week before admission to the hospital; history of weight loss in the three months before nutritionDay, reduced mobility) in the hospitalized Latin American population on nutritionDay. We analyzed data of 8987 hospitalized patients from nine Latin American countries, with Colombian data contributing almost 70% of the dataset (Colombia n = 6253), followed by Brazil (n = 1189) and the "Others" group (n = 1545) consisting of aggregate data from Argentina, Costa Rica, Ecuador, Guatemala, Mexico, Paraguay and Uruguay. A total of 104 centers with 195

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units contributed to the dataset. We excluded from the analysis those units that did not fulfill the nutritionDay data quality criteria (recruitment of minimum eight patients, a minimum of 60% of all patients in the unit included in nutritionDay, minimum of 80% outcome reported 30 days after nutritionDay). These criteria are also mandatory for awarding a nutritionDay certificate.

On average, 45% of Latin American hospitalized patients did not eat their full meal on nutritionDay, the highest prevalence for this risk factor being found in patients from Brazil (53%). One-third of the patients (33%) reported a history of reduced food intake already before hospitalization. Low food intake is a crucial contributing factor for malnutrition[6] and has been identified as a risk factor for 30-day in-hospital mortality[7]. Low food intake during the week before nutritionDay, which reflects an already existing precondition, was reported to be associated with reduced intake on nutritionDay[8]. Almost half (49%) of the studied population reported a history of weight loss prior to hospitalization, reaching 55% in Brazilian patients. Weight loss is a process occurring over several weeks or months, and thus associated with a prolonged condition of low food intake or increased catabolism triggered by an inflammatory state. Around 8% of Latin American patients were found underweight (BMI <18.5). Low BMI and a history of weight loss are crucial phenotypic criteria of malnutrition[6] and they are associated with increased mortality[9,10].

In this Latin American nutritionDay dataset, 43% of the patients were partially immobile, needed assistance to walk or were bedridden. Reduced mobility is often a proxy for disease severity[11] and it has been included as a robust risk indicator in the PANDORA risk scoring system[12] together with actual eating, whereas a history of weight loss and of decreased eating before admission were not included. Only 13% of the Latin American inpatients on nutritionDay had reported not having any of these five major risk factors for malnutrition. Although more than a quarter of the patients had one or two risk factors (28%), one-fifth had three risk factors (20%), while 10% had four risk factors. Only 1% of the patients reported all five of the described risk factors. A high prevalence of nutrition-related risk factors is not, per se, a sign of poor healthcare quality, provided the unit staff provides specific individualized care. An increasing prevalence would also be observed when access to hospital care is limited to the most severe cases. Reported differences in prevalence among the various countries might also be the result of a selection bias originating in nutritionDay participation of units particularly interested in nutrition care (**Table 1**).

Unit staff is crucial when it comes to identifying malnourished patients or patients at risk of malnutrition, and their observation is supported by the nutritionDay unit report. Participation in international programs designed to raise awareness of disease-related malnutrition, as is the case of nutritionDay, empowers units to develop targeted quality improvement interventions. The growing participation in nutritionDay seen over the past five years reflects the dedicated work of National Nutrition PEN Societies members of ESPEN. Societies like ACNC, BRASPEN, ASENPE, ANDEGUAT and FELANPE and many others work together in promoting policies and programs to develop an institutional culture that values nutritional care with the intent to reach out to government entities.

Figure 1. nutritionDay team. From left to right: Prof. Michael Hiesmayr, Isabella Sulz, Christian Schuh and Silvia Tarantino.

Table 1. Prevalence of risk factors in the Latin American inpatient population on nutritionDay (2016-2020)

nutritionDay WORLDWIDE	Risk factors associated to malnutrition before hospitalization*			Factors associated to in-hospital malnutrition	
	BMI < 18.5 kg/m²	Weight loss in the 3 months before nutritionDay	Reduced food intake before nutritionDay**	Reduced food intake on nutritionDay**	Reduced mobility or debridden
Latin America	682 (8 %)	4319 (49 %)	2866 (33 %)	3777 (45 %)	3625 (43 %)
Brazil	94 (8 %)	637 (55 %)	446 (39 %)	589 (53 %)	483 (42 %)
Colombia	484 (8 %)	3038 (50 %)	1962 (32 %)	2508 (43 %)	2501 (43 %)
Others***	104 (7 %)	644 (43 %)	458 (30 %)	680 (47 %)	641 (44 %)

*Percentages reported are not accounting for missing values in each risk factors categories.
**Eating less than all food served during the meal.
***Others: Argentina, Costa Rica, Ecuador, Guatemala, Mexico, Uruguay and Paraguay.

The synergistic partnership between participating centers, nutritionDay national coordinators and Latin American PEN Societies generates an annual update of the nutrition risk and care situation of hospitalized patients in Latin America. The context-sensitive interpretation of the data will support evidence-based implementation and refinement of specific nutritional interventions and process adaptations adjusted from guidelines to local needs and resources based on the interpretation of nutritionDay regional data.

Conflict of interest

ST, IS, and CS have no conflict of interest to declare. MH is a member of the EURO-PN advisory board from Fresenius, has received speaker fees from Fresenius, Abbott, Baxter, Cosmed, and SSPC, and has been awarded research grants for the Medical University of Vienna from Abbott, Baxter, and Fresenius.

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