RESEARCH

THERAPEUTIC OUTCOME OF PATIENTS AT NUTRITIONAL RISK UPON ADMISSION TO A UNIVERSITY HOSPITAL

DESFECHO TERAPÊUTICO DE PACIENTES EM RISCO NUTRICIONAL ADMITIDOS EM UM HOSPITAL UNIVERSITÁRIO

DESENLACE TERAPÉUTICO DE PACIENTES EN RIESGO DE DESNUTRICIÓN INGRESADOS EN UN HOSPITAL UNIVERSITARIO

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ABSTRACT

Objective: To investigate the influence of nutritional risk, detected upon being admitted to a hospital, on therapeutic outcomes in patients. **Methods:** This prospective cohort study was conducted with 495 patients admitted to the emergency clinic of a public hospital, where they were screened for nutritional risk based on the Nutritional Risk Screening 2002. At the end of hospitalization, the outcome, complications, and the presence of nutritional therapy were evaluated based on the medical records. **Results:** Of the total patients, 53.9% were female, 71.3% were less than 60 years of age, and 11.7% had the therapeutic outcome of palliative care / death. According to Body Mass Index (BMI), 15.5% of the patients were classified as malnourished. Nutritional risk was found in 54.5%, which correlated strongly with the therapeutic outcome of palliative care/death (HR: 5.92, 95% CI: 2.68 to 13.08) as well as their components of increased nutritional requirements (HR: 3.33, 95% CI: 1.61 to 6.86) and impaired nutritional status (HR = moderate: 3.24, 95% CI: 1.31 to 8.00, severe = HR: 6.45, 95% CI: 2.36 to 17.63) after adjustment for potential confounding factors. **Conclusion:** The prevalence of nutritional risk detected in the sample was high, and its presence was related to a poor therapeutic outcome.

Keywords: Nutritional Assessment; Outcome; Inpatients; Risk; Screening.

RESUMO

Objetivo: *investigar a influência do risco nutricional, detectado ao início da internação, no desfecho terapêutico de pacientes.* ***Métodos:*** *estudo de coorte prospectiva com 495 pacientes admitidos no pronto-atendimento de um hospital universitário, submetidos à triagem de risco nutricional com base no* ***Nutritional Risk Screening,*** *2002. Ao final da internação, buscaram-se os prontuários para avaliação do desfecho, complicações e presença da terapia nutricional.* ***Resultados:*** *do total de pacientes, 53,9% eram do sexo feminino, 71,3% tinham idade inferior a 60 anos e 11,7% evoluíram com cuidados paliativos/óbito. Segundo o índice de massa corporal, 15,5% dos pacientes foram classificados como desnutridos. O risco nutricional foi encontrado em 54,5% e associou-se fortemente ao desfecho terapêutico cuidados paliativos/óbito (HR: 5,92; IC 95%: 2,68-13,08), assim como seus componentes, estresse metabólico da doença (HR: 3,33; IC 95%: 1,61-6,86) e estado nutricional prejudicado (moderado = HR: 3,24; IC 95%: 1,31-8,00; grave = HR: 6,45; IC 95%: 2,36-17,63), após o ajuste por potenciais fatores de confusão.* ***Conclusão:*** *a prevalência de risco nutricional detectada foi alta e sua presença estava relacionada a pior desfecho terapêutico.*

Palavras-chave: *Avaliação Nutricional; Desfecho; Pacientes Internados; Risco; Triagem.*

RESUMEN

El objetivo del presente estudio fue investigar la influencia del riesgo de nutrición detectado al inicio de la hospitalización en el desenlace terapéutico de pacientes. Se trata de un estudio de cohorte prospectivo llevado a cabo con 495 pacientes ingresados en el Servicio de Urgencias de un hospital universitario. Los pacientes fueran evaluados sobre el riesgo de desnutrición en base al Nutritional Risk Screening 2002. Al final de la hospitalización se buscaron los registros médicos para evaluar el desenlace, las complicaciones y la terapia nutricional. El 53,9% de los pacientes era del sexo femenino, el 71,3% menor de 60 años, un 11,7% evolucionó con cuidados paliativos o falleció. De acuerdo con el índice de masa corporal, el 15,5% de los pacientes fue clasificado como desnutrido. Se detectó riesgo nutricional en un 54,5%, bastante asociado al

desenlace terapéutico, derivado en cuidados paliativos u óbito (HR: 5,92, IC del 95%: 2,68 a 13,08), así como sus componentes, estrés metabólico de la enfermedad (HR: 3,33, IC del 95%: 1,61 a 6,86) y estado nutricional alterado (moderado = HR: 3,24, IC del 95%: 1,31 a 8,00; HR = grave: 6,45, IC del 95%: 2,36 a 17,63), después del ajuste por posibles factores de confusión. La prevalencia de riesgo de nutrición detectada fue alta y su presencia asociada al peor desenlace terapéutico.

***Palabras clave**: Evaluación Nutricional; Evaluación de Resultado (Atención de Salud); Pacientes Internos; Riesgo; Triaje.*

INTRODUCTION

The prevalence of malnutrition associated with diseases is rather high, varying from 37% to 64%, according to a multicentric study conducted with 9,348 hospitalized patients in 13 Latin American countries.[1] In Brazil, according to the Brazilian National Survey (IBRANUTRI) carried out with 4,000 patients in 25 public hospitals from a wide range of regions throughout Brazil, malnutrition was present in 48.1% of the hospitalized patients, with 12.5% of these presenting a severe form of malnutrition, while 31.8% were found to be malnourished in the first 48 hours of hospitalization.[2]

During hospitalization, the nutritional status worsened in 20% of the patients who had been previously diagnosed as moderately malnourished, in 33% of those who had been previously diagnosed as malnourished, and in 38% of the well-nourished patients.[3] Nevertheless, the recognition and intervention in these cases are not always considered a priority in hospital clinical practice.[1-5]

The main etiological factors responsible for this high prevalence of hospital malnutrition include low socioeconomic income level, old age, impact of the baseline disease and co-morbidities, insufficient food intake, collateral effects from medications, lack of physical activity, and little attention given to nutritional care provided by healthcare professionals.[4,6]

Given the high prevalence of hospital malnutrition and the association of this with clinical worsening and unfavorable outcomes,[1-3,7] instruments were developed to be applied during hospitalization, aimed at detecting the individual who is at nutritional risk and proposing an immediate nutritional intervention. These instruments must also be capable of identifying those patients who still preserve their nutritional status but, due to the severity of the disease and its impact on one's food intake and on one's need for energy, present a risk of nutritional deterioration.[8-10]

In this light, in 2005, the Brazilian Health Ministry, through Ordinance 343 (ratified on March 7th), in the realm of the Unified Health System (SUS), set forth the obligation of mandatory triage protocols in hospitals that assess nutritional risk, seeking mechanisms for the organization and implementation of healthcare services of High Complexity in Nutritional Therapy.[11]

Although many instruments of nutritional risk assessment do exist, the most appropriate to assess adults and the elderly is the *Nutritional Risk Screening* (NRS) 2002,[12] a triage protocol recommended by the European Society of Parenteral and Enteral Nutrition (ESPEN)[8] and by the guideline "Triage and assessment of nutritional status" from the Brazilian Society of Parenteral and Enteral Nutrition (SBNPE).[13]

Many studies suggest the link between nutritional risk, assessed by the NRS 2002 and the increase in complications, hospital stay, and hospitalization costs.[12,14-18] Nevertheless, few studies have assessed the association between nutritional status and therapeutic outcome,[12,14,17] and of these, few have been developed in Brazilian hospitals.[12]

In accordance with the recent recommendations set forth by the Brazilian Health Ministry, the present study aimed to assess nutritional risk and investigate its influence, detected in the beginning of hospitalization, on the therapeutic outcome of hospitalized patients.

METHODS

This research used a prospective cohort study developed with patients admitted to the Brazilian Unified Health System (SUS) in an Emergency Clinic (EC) from a university hospital in Belo Horizonte, Minas Gerais, Brazil, from May to December 2009. This hospital is considered to be of middle and high complexity, with 500 hospital beds. Nutritional triage was implemented in the EC as a routine nutritional healthcare service in early 2009. It was implemented in partnership with the Nutrition and Diet Service from the aforementioned hospital and from the Nutrition Department of UFMG and counted on the participation of trained students.

The sample was calculated considering the number of hospitalizations in the EC during the period of study, with a 44% prevalence of nutritional risk in patients attended to at the EC of a public hospital, with a 95% confidence interval (CI) and a loss of 40%. The number of hospitalizations in this period was of 2,850 patients, and the result of the sample calculation was of 495. Thus, patients were randomly selected from the hospital's Medical Records and Statistics Services. The minimum age for inclusion in the study was 17, and pregnant or lactating women were excluded from the study.

Data on nutritional triage, main diagnosis, and co-morbidities were collected from the medical records (diseases classified according to the main chapter of the International Classification of Diseases – ICD 10),[19] development of hospital infec-

tions, therapeutic outcomes (hospital discharge, transference to another unit, transference to the palliative care team, or death), time of hospitalization (in days), and nutritional follow-up while hospitalized.

The co-morbidities were positive when the patient presented diseases other than the main diagnosis. Hospital infection was identified when the patient became infected while hospitalized. It is important to note that the minimum age of 17 was adopted due to the nutritional triage protocol, which was standardized in the hospital to be applied to individuals beginning at or above this age.

The nutritional triage in the aforementioned hospital is performed using the NRS 2002. This protocol detects the risk of developing malnutrition during the hospital stay, providing an early warning for patients that need nutritional follow-up and that can benefit from an appropriate nutritional therapy. This considers two components: the increased nutritional requirements and the impaired nutritional status, both categories determined according to the scores of absent, mild, moderate, and severe (scores from 0 to 3). The scores obtained in the assessment of these two components are added together, and one point is added to this result when the individual is 70 years of age or older. Results of equal to or higher than three points indicate a nutritional risk.[8-10]

The increased nutritional requirements indicate the increase in the nutritional needs to respond to the disease, while the nutritional status is assessed by the body mass index (BMI) or by measuring the circumference of the arm for patients restricted to the hospital bed, assessment of the patient's recent weight loss, and the patient's food intake during the week prior to hospital admission.[8,9]

One data bank was constructed using the Excel program and was analyzed using the Epi-Info for Windows statistical software (version 5.3.1) and the Statistical Package for the Social Science (SPSS) for Windows (version 15.0). The sample was characterized by means of the distribution of relative absolute frequencies and the respective 95% CI of the variables of interest according to the final result of the nutritional triage upon hospital admission (without nutritional risk, with nutritional risk). The therapeutic outcome was divided into two categories: favorable (hospital discharge/transference) and unfavorable (palliative care/death), aimed at increasing the statistical power. Finally, Cox regression models were formulated to analyze the relationship between the patients' nutritional risk upon hospital admission, together with their components (increased nutritional requirements and impaired nutritional status), and the therapeutic outcome (hospital discharge/transference, palliative care/death). In this stage, the increased nutritional requirements were reclassified as absent/mild and moderate/severe, due to the low proportion of individuals in the extreme categories (absent, severe), a fact that hindered the conversion of the Cox regression equation. *Hazard Ratios* (HR) and their respective 95% CI's were calculated to measure the strength of the association, using the categories of without nutritional risk upon hospital admission, impaired nutritional status (absent), and increased nutritional requirements (absent/mild). Potential confounding variables included in the multivariate model were: gender, age (continuous), co-morbidities upon hospital admission, and incidence of hospital infection. In the models referent to the components of nutritional risk, each of these was alternately included as a confounding variable.

For all analyses, the statistical significance level was set at 5% (two-tailed p-value < 0.05).

The study was approved by the Research Ethics Committee, accredited by the National Board of Health, under protocol number ETIC 338/09, as well as by the hospital's Board of Education, Research, and Extension.

RESULTS

Within the sample, 53.9% were female, with an average age of 49.6±176 (17 to 94 years of age), with 71.3% presenting an age of less than 60; 8.1% developed a hospital infection while hospitalized. The most prevalent diagnoses that led to hospitalization in the EC included neoplasias (24.8%), circulatory system diseases (19.4%), and infectious or parasite diseases (11.5%). The median of time between the nutritional risk assessment and the patient's therapeutic outcome was of six days, with the interquartile range varying from 3 to 12 days.

The prevalence of nutritional risk found upon hospital admission was of 54.5%. Of these, only 13.8% were treated by the nutrition team through the formulation of an individual care plan. Upon stratifying by age group, it could be observed that 46.2% of the adults and 54.2% of the elderly were detected with some form of nutritional risk. Upon calculating the BMI, 15.5% of the patients were classified as malnourished and 25.2% as overweight.

Concerning the outcome, 87.9% of the patients were discharged from the hospital, 8.7% died, 3.0% were transferred to the palliative care team, and 0.4% were transferred to a different unit. To analyze the data, the outcome was assessed according to its severity, grouping the hospital discharge with the transference to another unit and death with the transference to a palliative care team.

The average hospital stay was of 10 days (standard deviation = 16.4 days) for patients without nutritional risk and of 12 days (standard deviation = 13.7 days) for those with a nutritional risk (p = 0.125).

Triage for nutritional risk must be carried out within up to 72 hours after the patient's admission to the hospital.[16,17] Nev-

ertheless, 20.8% of the study sample was assessed over a longer period than this. Since this group of patients showed a prevalence of nutritional risk that was similar to those evaluated during the recommended period, it was not necessary to exclude this group from the study (p > 0.05, Pearson's chi-squared test).

The demographic and pathological characteristics and the therapeutic outcome according to the nutritional risk can be observed in Table 1. The proportion of people at nutritional risk upon being admitted to the hospital increased in direct proportion to the patient's advancement in age. In addition, the nutritional risk was positively associated with the therapeutic outcome of being sent to the palliative care team or death (p<0.001).

The relationship between the nutritional risk and its components (increased nutritional requirements and impaired nutritional status) with the therapeutic outcome of palliative care/death are presented in Table 2. Both components of nutritional risk, when viewed in an isolated manner, remained strongly associated with the therapeutic outcome of palliative care/death after adjustments made regarding potential confounding factors: increased nutritional requirements = HR: 3.33; 95% CI: 1.61-6.86 and impaired nutritional status – moderate = HR: 3.24; 95% CI: 1.31-8.00; impaired nutritional status – severe = HR: 6.45; 95% CI = 2.36-17.63.

The nutritional risk also remained strongly related to palliative care/death, after adjustment for potential confounding factors (HR: 5.92; 95% CI: 2.68-13.08).

Table 2 - Association between increased nutritional requirements, impaired nutritional status, and nutritional risk with the clinical outcome of palliative care/death – Belo Horizonte, 2009

	HR	95% CI	p-value
Impaired nutritional status[1]			
Absent	1,00	-	-
Mild	1,52	0,58-3,95	0,394
Moderate	3,24	1,31-8,00	0,011
Severe	6,45	2,36-17,63	< 0,001
Increased nutritional requirements[2]			
Absent / Mild	1,00	-	-
Moderate / severe	3,33	1,61-6,86	< 0,001
Nutritional risk[3]			
Absent	1,00	-	-
Present	5,92	2,68-13,08	< 0,001

Source: Authors' databank. HR - Hazard Ratio; 95% CI – 95% Confidence Interval. **Score**: [1]: Model adjusted by gender, age, baseline co-morbidities, incidence of hospital infection, increased nutritional requirements. [2]: Model adjusted by gender, age, baseline co-morbidities, incidence of hospital infection, impaired nutritional status. [3]: Model adjusted by gender, age, baseline co-morbidities, incidence of hospital infection.

Table 1 - Demographic and pathological characteristics and clinical outcome of the assessed sample, stratified by nutritional risk – Belo Horizonte, 2009

Variables	Without nutritional risk (n=255)			With nutritional risk (n=240)			p-value
	n	%	IC 95%	n	%	IC 95%	
Gender							
Female	134	50,2	44,0-56,3	133	49,8	43,7-56,0	0,522
Male	121	53,1	46,4-59,7	107	46,9	40,3-53,6	
Age group							
17-29	49	65,3	53,5-76,0	26	34,7	24,0-46,5	0,002
30-39	48	63,2	51,3-73,9	28	36,8	26,1-48,7	
40-49	47	52,8	41,9-63,5	42	47,2	36,5-58,1	
50-59	46	40,7	31,6-50,4	67	59,3	46,9-68,4	
≥ 60	65	45,8	37,4-54,3	77	54,2	45,7-62,6	
Co-morbidity							
Absent	69	56,1	46,9-65,0	54	43,9	35,0-53,1	0,241
Present	186	50,0	44,8-55,2	186	50,0	44,8-55,2	
Hospital infection							
Absent	237	52,1	47,4-56,8	218	47,9	43,2-52,6	0,390
Present	18	45,0	29,3-61,5	22	55,0	38,5-70,7	
Outcome							
Discharge/ Transference	248	56,8	52,0-61,4	189	43,2	38,6-48,0	<0,001
Palliative care/Death	7	12,1	5,0-23,3	51	87,9	76,7-95,0	

Source: Authors' databank.

DISCUSSION

The prevalence of nutritional risk detected in the sample from the present study was of 54.5%, a value of higher than the majority of similar studies, considering 42% in patients admitted to two public hospitals in the city of Porto, Portugal,[18] of 27.9% observed in the Central Institute of the University of São Paulo's School of Medicine (FMUSP)[12], and 18.2% of the patients admitted to seven Swiss hospitals.[14] Finding differences in the prevalence of nutritional risk between one Brazilian public hospital and European hospitals would appear to be an expected result, given that the socioeconomic conditions of the population are related to the nutritional risk upon hospitalization.[4] However, the prevalence of the nutritional risk found in the present study is higher than that from a public hospital in the city of São Paulo, which provides equal services to the population who use the public healthcare system.[12] This fact suggests that the main etiological factors of the nutritional risk are related to the action of both the baseline disease and the comorbidities, as well as to the insufficient intake of food, leading to involuntary weight loss,[4,6] factors that, when present, will be aggravated by the socioeconomic condition.

Upon comparing the sample from the present study with the study conducted in São Paulo, a similarity could be observed in the age distribution and the main diagnosis. However, the study carried out by Raslan *et al.*[12] excluded neurological and psychiatric patients, as well as those attended to in the emergency room or who were incapable of being interviewed, which was not the case in the present study, as the person accompanying the patient was interviewed when the patients showed no capability of being interviewed. Clearly, this fact led to this study's inclusion of more severe and more debilitated patients during hospitalization, which can justify the identification of a greater prevalence of nutritional risk.

Cancer patients and those attended to in the emergency room, the profile of the great majority of the present study's sample, mostly present a more severe clinical diagnosis, which worsens the nutritional condition upon hospitalization.[2,7]

In the present work, the prevalence of malnutrition classified by BMI was of 15.5% and, although high, the BMI was in fact lower than the rate of nutritional risk. However, during hospitalization, what must be diagnosed is the malnutrition syndrome and not only the current condition of nutritional status.[17] In this syndrome, in which malnutrition is secondary to the disease, the functional changes precede the changes in body composition.[6,17] Thus, upon assessing the nutritional status of an individual, by BMI for example, one must assess the changes in the body composition, not analyzing the prior moment, in which the functional changes compromise the immunological capacity, the cellular integrity, and the capacity of mucosal repair, among others.[6] In this sense, beginning the nutritional care plan for hospitalized patients with a nutritional risk assessment allows for the early detection of patients at an increased risk of co-morbidities and/or associated complications.[8,9,15,17]

Hence, other indicators that are capable of reflecting on the past and future of the nutritional status of the hospitalized individual must be associated with the current nutritional status. In this manner, during hospitalization, it is important to highlight the importance of assessing the nutritional risk, as it is more sensitive in predicting the probability of a better or worse outcome.[8,10,17]

The percentage of elderly patients detected with a nutritional risk was higher than the 42% reported by Raslan *et al.*[12] when applying the NRS 2002. In another study carried out on hospitalized elderly patients in hospitals in Piracicaba, Brazil, which used the Mini Nutritional Assessment (MNA) as a triage protocol, 37.1% of the patients were diagnosed with a nutritional risk.[20] The differences found can be related to the age considered for the classification of the elderly, given that the study from Raslan *et al.*[12] considered elderly patients to be those individuals of 65 years of age or older. Another probable factor that can explain this difference in the prevalence of the nutritional risk is related to baseline diseases of patients reported by Oliveira *et al.*,[20] which, in most cases, showed a low nutritional impact.

The increase in age is a well-known added factor for the deterioration of the nutritional status,[1,2,7,12,14,17] which can be observed in the present work with its association with risk (p=0.002). The elderly present a higher nutritional fragility due to the physiological changes that compromise their strength and mobility. Moreover, in the disease, the use of medication and the physiological response to the injury also worsen the situation.[6,17,20]

Despite the high prevalence of the nutritional risk, a low percentage of patients (13.8%) received follow-up treatment by the hospital's nutrition team, which may well have happened due to the reduced number of nutritionists at the EC itself, making it nearly impossible to provide proper nutritional medical services to all of the hospitalized patients. This fact is also in accordance with findings from prior literature in which malnutrition and the risk of its development are highly ignored and under-treated in hospital environments.[4,21,22] Findings from IBRANUTRI[2] confirm that nutritional awareness is an exception and not a rule in Brazilian hospitals, since only 18.8% of patient medical records contained any reference to nutritional status. In a recent study, carried out in eight Brazilian public hospitals, only 7% of the medical records contained any form of information about the nutritional status upon admission of the patients to the hospital.[5]

By contrast, other investigations present statistics of nutritional follow-up that is much more compatible with patients' needs. In a study conducted for three years with 32,837

patients hospitalized in seven Swiss hospitals, it could be observed that, on average, 70% of those who presented a nutritional risk were treated appropriately.[14]

When the nutritional therapy is not introduced appropriately, a worsening in the patient's prognosis may occur, with an increase in both mortality and in expenses associated with the illness.[4,5,18,23] Nutritional therapy, the implementation of strategies to improve the service of the distribution of meals, and the education of the hospital staff focused on the importance of eating can improve the patients' food intake and their quality of life, as well as reduce the prevalence of hospital malnutrition.[14,21,24] Saka *et al.*[17], in a study on 56 patients at nutritional risk, who had undergone nutritional therapy for seven days, obtained a reduction of 58.9% in the nutritional risk of these patients.

Studies suggest that the worst clinical outcomes, with an increase in the length of hospital stay,[1-3,7,12,17,18] infection,[1-3,7,12,15] non-infectious hospital co-morbidities,[3,7,15,17] and higher mortality rates,[7,12,14,18] are more common in patients with some form of compromised nutritional status. In the present study, 87.9% of the patients who died or who were transferred to the Palliative Care Unit, presented a nutritional risk. These results are similar to those from two studies that also diagnosed nutritional risk using the NRS 2002. In the first study, 62% of the patients who died presented a nutritional risk.[14] The second, a study in Brazil, revealed that 75% of the total number of deaths occurred in patients who presented a nutritional risk.[12]

The increase in the risk of a worse clinical outcome was reported by Tsai *et al.*[16] in a longitudinal population study with patients of over 65 years of age, in which the relative risk of mortality was approximately two to five times higher for patients classified as at nutritional risk when compared to those without risk. In a study conducted at a Brazilian public hospital, Raslan *et al.* found, in patients at nutritional risk, according to the NRS 2002, a relative risk of mortality of 3.9 (1.2 to 13.1).[25] These findings are similar to those found in the present work, in which patients at nutritional risk presented a risk of 5.92 (2.68-13.08) for either their transference to palliative care or death.

In the present study, all of the components of nutritional risk are directly associated with an unfavorable therapeutic outcome. Controlling the possible confounding variables, the impaired nutritional status remained strongly associated with palliative care/death (moderate = HR: 3.24; 95% CI: 1.31–8.00; severe = HR: 6.45; 95% CI: 2.36-17.63), showing that this prognostic element presented the worst therapeutic outcome.

A similar situation can be observed when analyzing the increased nutritional requirements, which is the result of the increase in nutritional needs resulting from the disease.[6] The disease that has the highest nutritional demands, thus causing the debilitation of the patients, is considered to be a severe disease.[6,8] In the present study, it could be observed that patients with the increased nutritional requirements classified as moderate/severe had a 3.33 fold risk of palliative care/death as compared to those without this change or with it manifested in a mild form.

Schiesser *et al.*[15] also referred to the association between the nutritional risk and complications during hospitalization. Upon testing this independent correlation between the nutritional/severity status of the baseline disease and its complications, these authors showed that both of the exhibitions were significantly linked to the outcome ($p<0.001$), thus corroborating with the results found in the present study in which the rise in the increased nutritional requirements and the impaired nutritional status led to complications and a worse therapeutic outcome.

CONCLUSION

Upon hospital admission, the prevalence of nutritional risk proved to be high. These results should be considered relevant in the hospital environment, given that the presence of nutritional risk is associated with a worse prognosis for the patient. For this reason, what becomes necessary is the mobilization of multidisciplinary healthcare teams in an attempt to implement this nutritional triage during hospitalization and nutritional follow-up of all patients diagnosed as at-risk by establishing an appropriate nutritional therapy to improve patient prognoses.

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