NUTRITION STATUS ASSESSMENT BASE ON BMI AND SGA OF HOSPITALIZED PATIENTS AT NATIONAL HOSPITAL FOR TROPICAL DISEASES IN 2020

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Summary

Background: Malnutrition is a common problem in hospitalized patients. Many factors such as fatigue, loss of appetite, chronic diseases and misconceptions in nutrition can caused malnutrition. In hospitalized patients, malnutrition is associated with morbidity and mortality in the hospital.

Objectives: Description of nutritional status of inpatients at the National Hospital for Tropical Diseases (NHTD) in 2020.

Subjects and methods: Across sectional descriptive study with 165 patients aged 18 years or older, hospitalized within 48 hours, treated at the NHTD. All the patients were assessed nutrition status based on BMI, SGA scores and 24 - hour diet recall.

Results: 18,2% of patients with chronic lack of energy (BMI < 18.5). There are 47.27% patients at risk of malnutrition and 8.49% of patients at risk of severe malnutrition (according to SGA). Only 35.15% of patients consumed more than 70% of the nutritional requirements. There were 28.48% of patients whose diets met less than 30% of the recommended levels of intake.

Conclusions: BMI and SGA scores could be used to assess nutrition status for the inpatients. Patient's nutrition status should be evaluated on admission as well as during hospital stay. Through that, we can plan for nutritional care and treatment effectively.

Key words: *Nutrition assessment; inpatients; BMI, SGA.*

BACKGROUND

Malnutrition is very common in hospitalized patients. In patients who suferred from infectious diseases, protein - energy malnutrition is a common issue but has received little attention. Malnutrition reduces the cell - mediated immune response, so that malnourished patients are at a much higher risk of infection than non-malnourished patients. In contrast, infection reduces liver protein levels by inhibiting synthesis, increasing vascular protein loss, and increasing fluid dilution. Malnutrition can cause patient's infection worser and played a role in morbidity and mortality of patients. Assessing and controlling the risk of patient's malnutrition from the time of admission is important key to improve patient's treatment. Therefore, we conducted this study with the objectives: Describe the nutritional status of inpatients at the National Hospital for Tropical Diseases in 2020.

MATERIALS AND METHODS

Study Design: A cross-sectional descriptive study

Setting and participants: 165 patients aged 18 years or older, hospitalized within 48 hours, treated at National Hospital for Tropical Diseases from June 15, 2020, to September 15, 2020.

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Exclusion criteria:

Patients who could not assess nutritional status based on BMI and SGA scores

Patients admitted to the hospital due to non-bacterial causes or without a definite diagnosis until discharge;

Pregnant:

2nd times hospitalized patient during the study period (only the first data was collected).

Method: *Sampling*: used a convenient sample size. All patients who met the study's criteria during the study period were included in the study.

The nutritional status was assessed at the time of admission (within 48 hours) by BMI, SGA scores, and by 24 hours diet recall.

Body mass index (BMI) score is calculated by the formula:

Body Mass Index = Weight/(height)^2.

Weight was measured by electronic scales. Using vertical height by a 3 - piece wooden ruler with an accurate division to millimeters. Results were classified according to WHO's classification nutritional status (2000). Subjective global assessment (SGA) is the gold standard for diagnosing malnutrition. SGA is a simple bedside method used to diagnose malnutrition and identify who would benefit from nutrition care. The assessment included taking a history of recent intake, weight change, gastrointestinal symptoms and a clinical evaluation. The results were divided into three groups: No risk of malnutrition group; Risk of mild malnutrition group; Risk of severe malnutrition group. 24 - hours diet recall made by asking for portions. From cooked food data, convert to clean raw food based on the album of common dishes of the Vietnam Institute of Nutrition. The nutritional value is calculated based on the Vietnamese food composition table - Institute of Nutrition 2007[1] and compared with the recommended intake levels for Vietnamese in 2016.

Statistical analysis*:* All data were entered and analyzed on STATA 11.0. The difference is considered statistically significant when $p < 0.05$.

RESULTS AND DISCUSSION

165 patients with a mean age of 44.1 ± 15.9 years old were included in the study. The most common age group in the study was the age group from 20 to 29 years old, accounting for 22.42%. The proportion of patients in rural areas was the highest with 53.94%, followed by the group living in cities (28.48%), towns and townships (17.58%). 23.04% of patients are workers/officers; Retirement/housewife accounted for 14.55%, self - employed 27.27%, the others accounted for 5.45%. About education level, below high school level's patient group was the highest proportion group, accounting for 41.21%, then follow by high school graduated level's group (27.27%), university students and postgraduate degrees group (26.07%) and intermediate degree group (5.45%).

Factors such as place of residence, occupation, education, nutritional knowledge can affect eating habits. The duration of illness is also a factor affecting the patient's nutritional status, especially the nutritional status assessed at the first 48 hours after admission. Based on the confirmed diagnosis at discharge of each patient, we found that 55.76% of patients had acute diseases, 44.24% of patients had chronic diseases in our study.

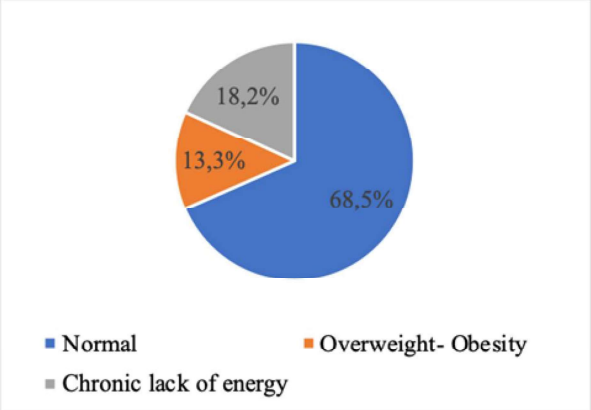

Figure 1. Nutrition status assessment base on BMI scores

Table 1. The relation between nutrition status base on BMI scoreand disease.

Diseases BMI	Acute	Chronic	p (χ^2 test)
	n (%)		
< 18.5	16 (17.39)	14 (19.18)	> 0.05
18.5 - < 25	60 (65.22)	53 (72.60)	
≥ 25	16 (17.39)	6 (8.22)	
Chung	92 (100)	73 (100)	

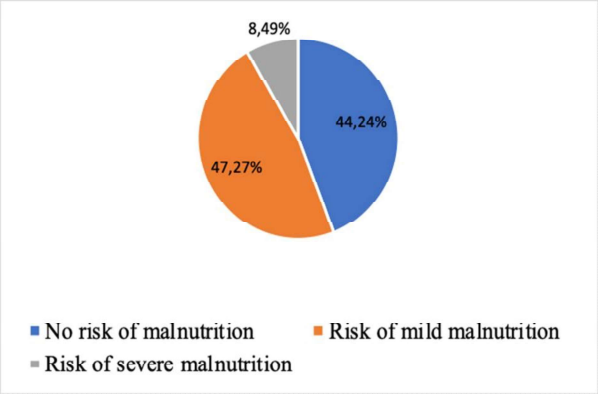

Figure 2. Nutrition status assessment base on SGA scores

Table 2. The relation between nutrition status base on BMI and SGA scores

BMI / SGA	< 18.5	18.5 - < 25	≥ 25
	n (%)		
No risk of malnutrition	4 (13.33)	52 (50.49)	17 (77.27)
Risk of malnutrition	26 (86.67)	61 (49.51)	5 (22.73)
Total	30 (100)	103 (100)	22 (100)

Table 3. The number of patients reach to recommended levels of intake

Energy requirements compared with recommended levels of intake	n	%
< 30%	47	28.48
30 - 70%	60	36.36
> 70%	58	35.15

Nutrition status assessment base on BMI

In infectious diseases, nutritional status plays important role to increase the risk of acquired diseases, severe condition as well as recovery time. In our study, the proportion of patients with chronic lack of energy (BMI < 18.5) was 18.2% (Figure 1). In the study of Caccialanza R et al on 1274 patients in Italy, the chronic lack of energy rate was 9.3%, lower than in our study[2]. However, our results are similar to the research results of author Nguyen Do Huy at Dienbien General Hospital (18.6%)[3]. Chronic lack of energy will increase the risk to acquire infectious diseases. In contrast, chronic infection patients may lead to chronic lack of energy condition. 13.3% of the patients in our study was overweight - obesity. This rate at Bacgiang General hospital was 7% and in Dienbien General hospital was 17%[3;4]. Thus, if evaluation of nutritional status according to BMI score has shown that both malnutrition and overweight - obesity can be occurred in hospitalized patients. So it is necessary requirements to develop a nutritional care plan suitable for each patient during their hospital stay.

The relation between nutrition status base on BMI score and disease

In infectious diseases, nutritional status has a significant effect on the risk of contracting diseases, severe conditions, as well as recovery time. Malnutrition reduces cell mediated immune response, so that malnourished patients may be at a much higher risk of infection than non - malnourished patients. In contrast, infection reduced protein by inhibiting synthesis, increasing vascular protein loss, and increasing fluid dilution. About the relation between nutrition status base on BMI score and disease, we found no statistically significant difference. The rate of chronic lack of energy in acute diseases group was 17.39% and in chronic diseases group was 19.18%. However, the overweight - obesity rate in the acute diseases group was higher than this rate in the chronic diseases group (17.39% and 8.22%) (Table 1).

Nutrition status assessment base on SGA score

Subjective Global Assessment (SGA) is a simple bedside method used to diagnose malnutrition and identify those who would benefit from nutrition care. This method is currently used by many studies to assess the nutritional status of inpatients. We assessed nutrition status base on SGA score at NHTD, only 44.24% of patients were not at risk of malnutrition. Meanwhile, the rate of patients at risk of malnutrition was 47.27% and the rate of patients at risk of severe malnutrition is 8.49% (Figure 2).

In the study of Penelope on 230 chronic viral hepatitis patients in Brazil, the percentage of patients at malnutrition risk based on SGA assessment was 13.3%[5]. This rate at Dien Bien General Hospital in 2012 was 33.3% and this rate at Bac Giang General Hospital was 47%[3,4]. The proportion of malnutrition risk's patients in our study was higher than in other studies, possibly because all the participants in our study suffered from infectious diseases. Anorexia is a common symptom of patients with viral hepatitis or symptoms such as edema and ascites are common manifestations in viral hepatitis patients. These symptoms are also used in the assessment of

nutrition status according to SGA. Therefore, the rate of patients at malnutrition risk in our study may be higher than in other diseases group such as internal diseases or surgical diseases.

Nutrition status assessment base on SGA

Nutritional status assessment by BMI score and SGA are common in many countries. BMI score and SGA are also two methods of assessing nutritional status for hospitalized patients recommended by the Nutrition Society in Vietnam. In NHTD, we currently apply both BMI score and SGA score to assess the nutritional status of inpatients. According to BMI score, the rate of inpatients with chronic energy deficiency on admission was 18.18%, the rate at risk of malnutrition according to SGA assessment was 55.76% (Table 2). In the study of Nguyen Thuy Dung, the proportion of patients with malnutrition was 2.5% according to BMI score and 18.3% according to the SGA method[6]. These results were similar to our study. In this study, the patients with normal nutritional status according to BMI score and SGA assessment is 97.5%, and 81.7% respectively[6].

Nutritional value base on 24 - hours diet recall

Diet plays a very important role in not only prevention diseases but also in treatment results. A balanced portion will improve the patient's nutritional status, reduce the risk of malnutrition. Understanding the patient's diet may help the physicians identify the cause of the nutritional deficiency and from there they can make a nutritional intervention plan for the patient.

Investigating the dietary intake of 165 patients hospitalized for treatment at the NHTD, we found that the patient's average energy intake was 950.97 ± 579.85 kcal/day. This result was lower than energy recommendations for adults. The average energy requirement is 30 - 35 kcal/kg/day. In this study, we chose a minimum energy level of 30 kcal/kg/day to calculate the recommended energy requirement for inpatients. The proportion of patients whose diets achieved > 70% of the energy requirement in our study was 35.15%, 60 patients (36.36%) achieved 30 - 70% of the recommended energy requirement and 28.48% of patients achieved < 30% of recommended energy requirements (Table 3). There are many causes of lacking in both quantity and quality of dietary intake. One of the reasons we found in this study was that the symptoms of the diseases themselves make the anorexia, inability to eat, worry about the disease, the effects of chronic diseases, misconceptions about eating (abstinence…).

CONCLUSIONS

Through the results of the study on nutritional status based on BMI score and SGA classification in inpatients at the National Hospital for Tropical Diseases, it is advisable to use combination methods, prioritizing SGA combined with anthropometric methods (BMI) to screen and evaluate nutrition for all patients on admission as well as during time hospitalization to have an effective nutritional care plan and treatment plan. In addition, it is necessary to personalize the diet plan to be suitable for each patient.

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