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Social risk factors for hospital malnutrition

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Abstract

Objective: Disease severity is considered an important risk factor for malnutrition in hospitalized patients. We investigated the effect of social factors and disease parameters on the development of malnutrition.

Methods: Nutritional state was assessed by the Subjective Global Assessment in 794 consecutively admitted patients in two hospitals in Berlin ($n = 493$, university hospital; $n = 301$, district hospital). The influences of age, sex, social status, life habits, and disease parameters on nutritional state was analyzed with univariate and multivariate logistic regression methods.

Results: Malnutrition was diagnosed in 22% of patients. Its prevalence was significantly higher in patients with malignant than with benign diseases (odds ratio [OR] = 1.568, $P < 0.05$) and in patients with multiple prescriptions (OR = 1.154, $P < 0.001$), but no difference was found between medical or surgical patients. The strongest risk factors for malnutrition in univariate analysis were age older than 60 y (OR = 2.861, $P < 0.001$), living alone (OR = 1.769, $P = 0.002$), and achieving a lower level of education (OR = 1.589, $P < 0.05$). Therefore, multivariate analysis was performed after stratification for age. Demonstrated independent additional risk factors were polypharmacy (OR = 2.367, $P < 0.001$) and malignant disease (OR = 4.114, $P < 0.001$) in young patients and polypharmacy (OR = 1.109, $P < 0.002$) and living alone (OR = 1.830, $P = 0.008$) in patients 60 y and older.

Conclusions: These data show that patients who are older, less educated, and live alone are at high risk of developing malnutrition. Thus special attention should be given to these risk groups when evaluating nutritional status and nutritional support.

Keywords: Hospital malnutrition; Prevalence; Subjective Global Assessment; Social status; Life habits; Nutritional assessment

Introduction

Malnutrition is a common finding in hospitalized patients. It affects about 20% to 50% of all medical and surgical patients admitted to hospital, depending on the investigated population and the different definitions used [1–8]. Malnutrition has strong clinical and economic effects that are reflected by an increased morbidity rate [2,4], with prolonged hospital stay at substantial extra cost of health care [7,9–11], and by increased mortality rate, particularly in elderly patients [3,5,11–13]. The association between malnutrition and poor survival rate has been established for different diseases and especially for malignant disorders [7,13]. The cause of malnutrition is usually multifactorial including metabolic effects of underlying disease and dietary deficiencies. There is evidence that additional factors such as advanced age [7,8] or polypharmacy [4] might increase the general risk in the development of nutritional depletion.

However, the possible influence of social status and life habits in relation to biological or medical factors on the development of malnutrition in hospital patients remains unclear.

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The primary objective of this study was to analyze the effect of social status and life habits on the nutritional status of hospitalized patients to identify subgroups with particular risk for nutritional depletion. The study was performed in two hospitals in different settings (one university hospital and one community hospital) in Berlin, Germany.

Materials and methods

Patients

The nutritional state of 794 consecutively admitted patients was studied in two different hospitals: 493 patients were included in the university hospital Charité, including 291 medical patients (gastroenterology, $n = 91$; cardiology, $n = 100$; rheumatology, $n = 100$) and 202 patients in the surgical service (surgery, $n = 100$; urology, $n = 102$). Three hundred one patients were investigated in the community hospital of Berlin-Zehlendorf, including 201 medical patients (gastroenterology, $n = 101$; cardiology, $n = 100$) and 100 patients in the surgical service (general surgery).

Patients were considered eligible if they were older than 18 y, were willing and able to give written informed consent, and if the hospital stay was longer than 2 d. Patients admitted to daycare units or for observation after endoscopic or other invasive therapy and those admitted to intensive care units were excluded.

The total number of patients found to be eligible for study entry was 911. Sixty-seven patients refused to give written consent, 43 patients were too ill or had psychological disorders or dementia that caused lack of cooperation, and 7 patients were excluded because of poor knowledge of the language.

The distribution of patients' sex, mean age, and body mass index are presented in Table 1. The medical patients in the community hospital were significantly older than medical patients in the university hospital.

For further classification of patients according to different diseases, the main diagnoses determined at time of discharge or referral from the specialty department were used.

The study protocol was approved by the ethics committee of the Universitätsklinikum Charité.

Assessment of nutritional state

Three investigators (N.L., N.M., and M.K., all last-year medical students) were trained during a 4-wk training period by the principal investigator (M.P.) to perform the nutritional assessment. The nutritional state of patients was assessed on day of hospital admission according to the Subjective Global Assessment (SGA).

Subjective Global Assessment

SGA was established by Detsky et al. [14] and relies primarily on physical signs of malnutrition (loss of subcutaneous fat or muscle mass, edema, or ascites), the patient's history regarding weight loss, dietary intake, gastrointestinal symptoms, functional capacity, and the disease and its relation to nutritional requirements. Each patient was classified as well nourished (SGA-A), moderately or suspected of being malnourished (SGA-B), and severely malnourished (SGA-C). SGA requires only a few minutes by a trained clinician. Its validity to indicate malnutrition-associated risks of poor outcome has been proved in many studies [4,5,7,11,13,15]. Because subgroups of patients classified as SGA-C were too small, comparative analyses were performed between malnourished patients classified as SGA-B or SGA-C and well-nourished patients classified as SGA-A. The inter-rater agreement was tested in 80 patients with the κ coefficient test. The agreement rate ranged from 83.0% to 86.7%, which is in the range of recently reported agreement rates using SGA [8].

Assessment of social parameters as possible risk factors for malnutrition

Social status was assessed by a detailed questionnaire that evaluated the level of education (secondary school, high school, no graduation, other) and professional qualification (apprenticeship, technical college, university, semiskilled, other). This interview also included questions about the living situation (living in families; with partner, friends, or others; living in health care institutions; or living alone). Data on life habits such as tobacco use (non-smoker, smoker) and alcohol consumption (none/occasionally, 1–14 drinks/wk, >14 drinks/wk, where one drink was defined as containing 14 g of alcohol) were also documented. Further possible risk factors for malnutrition that were considered in the analyses were the patient's age, disease status (malignant versus benign), sex, and number of different prescriptions per day.

Statistical analysis

For patient characteristics, means and proportions of variables were calculated. Comparison of mean values between two groups was performed by the Mann-Whitney U test, and differences in frequencies were compared by chi-square test. $P < 0.05$ was considered statistically significant. Possible risk factors for malnutrition were tested by univariate logistic regression analysis, with SGA as the dependent variable. To identify independent risk factors for malnutrition, multivariate logistic regression analysis was carried out. A backward stepwise regression model was used, and odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. Variables that remained significant after backward selection at the 0.05 level are presented.