

Should malnutrition be assessed in general geriatric population or only in high-risk subgroups?

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In the present issue of *Polish Archives of Internal Medicine*, Fatyga et al¹ address a simple question with enormous clinical and social impact: should malnutrition risk be assessed among all geriatric patients or should this assessment be reserved for particular subsets of high-risk patients? Using a multivariable logistic analysis, the authors of this study conclude that patients with elevated N-terminal fragment of the prohormone brain natriuretic peptide (NT-proBNP); greater than 1339 pg/ml, the third tertile) are at higher risk of malnutrition.

Malnutrition refers to an imbalance between anabolic and catabolic metabolism, and it may be associated with multiple chronic conditions.² There are many screening tools for malnutrition, but there is no consensus on which of these to use among specific subsets of patients,³ such as patients with heart failure (HF). The optimal screening test should be easy to apply, time-efficient, and quantifiable. Additionally, the test should be an independent predictor of outcomes in the relevant population and add predictive value to the classic model for this population.

The Mini Nutritional Assessment (MNA) is a short, validated screening tool for use among older people, and it has been recommended for routine geriatric assessment.^{3,4} It has been validated in several countries for the assessment of chronic conditions. Full and short versions of the MNA have been used among geriatric patients with HF.^{3,5,6} It classifies patients into 3 groups by score: ≥ 24 , normal nutrition; 17 to 23.5, at risk of malnutrition; and < 17 , malnutrition. A previous study reported a correlation between MNA score and NT-proBNP levels⁵ among patients with systolic HF: patients with a worse status and worse prognosis (higher NT-proBNP levels) had a greater chance of malnutrition. This association makes it possible to identify a subgroup at higher risk of malnutrition among patients with HF.

Fatyga et al¹ studied a population of 106 geriatric patients (aged > 60 years) who were followed in a geriatric outpatient clinic. Patients had multiple chronic conditions (mean number, 5.6) and were polymedicated (mean number, 7 medications). The mean Instrumental Activities of Daily Living (IADL) score was 23.65, and more than 50% of patients were classified as New York Heart Association class III. Three-quarters of the sample had HF (systolic and diastolic function not mentioned). In terms of nutritional assessment, the authors reported only the number of patients at risk of malnutrition (MNA < 24 , $n = 30$) because of the low number of malnourished patients. However, examining this number would have been very informative. The population could have been analyzed by grouping patients according to the presence of HF. Instead, the authors pursued the objective of identifying higher-risk patients according to NT-proBNP levels. The NT-proBNP level was categorized according to tertiles (cutoff points, 268 pg/ml and 1339 pg/ml). As expected, the higher the tertile, the greater the percentage of patients with chronic HF—this was 100% in the highest NT-proBNP tertile. In addition, the proportions of patients at risk of malnutrition were similar in the first and second tertiles and tripled in the third tertile, so patients in the third tertile (NT-proBNP > 1339 pg/ml) were identified as being at higher risk of malnutrition.

The above hypothesis was further analyzed by the authors. The risk of malnutrition (MNA < 24) was associated with body mass index (odds ratio [OR], 0.86; $P = 0.01$), Mini Mental State Examination score (OR, 0.84; $P = 0.02$), IADL score (OR, 0.9; $P = 0.08$), and NT-proBNP (OR for the third tertile, 4.72; $P = 0.006$). For each 100-pg/ml increase in NT-proBNP levels, the risk of malnutrition increased by 2%. In the multiple logistic regression analysis, the third tertile of NT-proBNP continued to be associated with

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a greater risk of malnutrition, compared with the first tertile (OR, 9.8; $P = 0.005$). However, the model included confounder variables that were not univariate predictors of the risk of malnutrition (see Table 2 in Fatyga et al¹), but were rather identified from the literature. Choosing to include some confounders rather than others adds unnecessary bias to the study. The same multivariable model was applied to the subgroup of patients with HF, and being in the third tertile of NT-proBNP was an independent predictor of the risk of malnutrition.

This study had numerous limitations, mainly associated with a small sample recruited over a very long time, as the authors acknowledged themselves. However, there are additional limitations related to the study methods and the analysis of results. First, the multivariable model is very insufficient. The authors included some variables from the univariate model and other variables identified in the literature. This selection was likely performed at the end of the study or during the statistical analysis, which may contribute to analysis bias. Another critical limitation relates to missing outcome results (hospitalization/death) for the sample; the relationships of these outcomes with nutritional status are very important to know. The rationale behind the study was that malnutrition is associated with prognosis, and this was easy to assess because the last patient was recruited in 2014 (4 years ago), and it was well integrated in the data analysis. Third, the cutoff point for the third tertile of NT-proBNP was significant for the risk of malnutrition among the total patient population and among patients with HF, but this finding has already been demonstrated in the previously published work.⁵ What are the results for the non-HF subgroup? Or, considering that three-quarters of the sample had HF, are the results valid only for patients with HF, among whom malnutrition is very common, irrespective of left ventricular systolic function?^{3,5,7} Finally, the main limitation of this study concerns the contribution of the results to the daily practice of medical practitioners and to increasing knowledge. What is the incremental increase in information from the conclusions drawn from this study?

Despite these multiple limitations, the study raises important and timely questions. Should nutritional assessment be conducted for all geriatric patients or only for those who are at high risk of malnutrition? Is there a simple marker to identify those at higher risk of malnutrition in the general geriatric population? Nutritional assessment for the elderly is very frequently mentioned, but, at the end of the day, nothing is done. Fatyga et al¹ put forward the question and provided some answers. There are many nutritional assessment tools, some of which are easy to use and validated for assessing several conditions and in several countries. The full and short versions of the MNA are suitable for this purpose.³⁻⁵ If time is limited, we should focus our attention on groups

at high risk of malnutrition. Those with HF constitute one such group, and the use of NT-proBNP for cohort selection could also be an alternative. Beginning with the NT-proBNP value for the highest tertile in the study discussed here, a standardized number should be defined and tested among a broader population. The MNA test has proved to be an easy-to-use, time-effective, and feasible assessment tool with prognostic implications for patients with HF.³⁻⁵

Malnutrition may progress to global wasting and cachexia. Screening for malnutrition will enable the early identification of at-risk patients. After the identification of high-risk subgroups of patients, future research should focus on determining whether improving nutritional status will improve these patients' outcomes.

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REFERENCES

- 1 Fatyga P, Pac A, Fedyk-Lukasik M, et al. Should malnutrition risk be assessed in older patients with elevated levels of NT-proBNP? *Pol Arch Intern Med.* 2018; 128: 532-538.
- 2 Foley NC, Salter KL, Robertson J, et al. Which reported estimate of the prevalence of malnutrition after stroke is valid? *Stroke.* 2009; 40: e66-e74.
- 3 Sargento L, Longo S, Lousada N, dos Reis RP. The importance of assessing nutritional status in elderly patients with heart failure. *Curr Heart Fail Rep.* 2014; 11: 220-226.
- 4 Guigoz Y, Lauque S, Vellas BJ. Identifying the elderly at risk for malnutrition: the Mini Nutritional Assessment. *Clin Geriatr Med.* 2002; 18: 737-757. [↗](#)
- 5 Sargento L, Satendra M, Almeida I, et al. Nutritional status of geriatric outpatients with systolic heart failure and its prognostic value regarding death or hospitalization, biomarkers and quality of life. *J Nutr Health Aging.* 2013;17: 300-304. [↗](#)
- 6 Lin H, Zhang H, Lin Z, et al. Review of nutritional screening and assessment tools and clinical outcomes in heart failure. *Heart Fail Rev.* 2016; 21: 549-565. [↗](#)
- 7 Sze S, Pellicori P, Kazmi S, et al. Prevalence and prognostic significance of malnutrition using 3 scoring systems among outpatients with heart failure: a comparison with body mass index. *JACC Heart Fail.* 2018; 6: 476-486. [↗](#)