

ANALYSIS OF HEALTH CONDITION OF ELDERLY PATIENTS HOSPITALIZED IN A SURGICAL WARD

ANALIZA STANU ODŻYWIENIA OSÓB W PODESZŁYM WIEKU HOSPITALIZOWANYCH NA ODDZIALE CHIRURGICZNYM

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ABSTRACT

Introduction. Ageing of the population is a serious problem of the modern world. This process is often associated with abnormal nutritional status which affects the health of elderly people. Therefore, it is very important to assess the nutritional status of the elderly.

Aim. The objective of the research was to assess the nutritional status of the elderly patients hospitalized at the surgical ward.

Material and Methods. The study involved 55 patients (27 women and 28 men) at the Department of General, Oncological and Colorectal Surgery of the J. Strus Multidisciplinary Municipal Hospital. Respondents were hospitalized for diagnostic reasons or were expecting surgery. The MNA (Mini Nutritional Assessment) form was used to conduct the research.

Results. Analysis of the results indicated that 47% of the respondents (N = 26) were at risk of malnutrition and 53% (N = 29) had proper nutritional status. Abnormal nutritional status concerned mainly women. All subjects at the age of 85 years and over belonged to the group with malnutrition. Co-morbidities, such as cancer and depression, also had a negative impact on nutritional status.

Conclusions. 1) There is a justified need of monitoring the nutritional status of the elderly as plenty of them are at risk of malnutrition. 2) Nutritional status of the elderly is influenced by many, both external and internal factors. 3) The risk of malnutrition increases with patients' age.

KEYWORDS: nutritional status, malnutrition, the elderly.

STRESZCZENIE

Wstęp. Starzenie się społeczeństwa to poważny problem współczesnego świata. Z procesem tym często wiąże się nieprawidłowy stan odżywienia, a to z kolei ma negatywny wpływ na stan zdrowia osób w podeszłym wieku. W związku z tym bardzo ważna jest ocena stanu odżywienia osób starszych.

Cel badań. Celem badań była ocena stanu odżywienia osób starszych hospitalizowanych na oddziale chirurgicznym.

Materiał i metody. Badaniem objęto 55 chorych (27 kobiet i 28 mężczyzn), przyjętych na Oddział Chirurgii Ogólnej, Onkologicznej i Kolorektalnej Wielospecjalistycznego Szpitala Miejskiego im. Józefa Strusia w Poznaniu. Badane osoby były hospitalizowane w celach diagnostycznych lub oczekiwały na zabieg operacyjny. Do przeprowadzenia badania zastosowano kwestionariusz MNA.

Wyniki. Analiza uzyskanych wyników wyłoniła 47% (26 osób) z ryzykiem niedożywienia i 53% (29 osób) z prawidłowym stanem odżywienia. Nieprawidłowy stan odżywienia dotyczył głównie kobiet. Wszystkie osoby w wieku 85 lat i więcej znalazły się w grupie ryzyka niedożywienia. Negatywny wpływ na stan odżywienia miały również choroby współistniejące, takie jak choroba nowotworowa i depresja.

Wnioski. 1) Istnieje uzasadniona potrzeba monitorowania stanu odżywienia osób starszych, ponieważ u wielu z nich występuje ryzyko niedożywienia. 2) Na stan odżywienia osób w podeszłym wieku wpływa wiele czynników zarówno zewnętrznych, jak i wewnętrznych. 3) Ryzyko niedożywienia wzrasta wraz z wiekiem pacjentów.

SŁOWA KLUCZOWE: stan odżywienia, niedożywienie, osoby starsze.

Introduction

The problem with ageing population is present all over the world, especially in Western Europe. From one year to another the percentage of elderly people increases causing a great challenge for the health care system. The nutritional status disorders are a significant problem of the elderly as the deficiency or excess of energy, protein and/or the other nutrients have a negative im-

act on the construction and functions of the organism, as well as the results of planned treatment [1, 2, 3]. Nutritional disorders at the late age involve mainly protein malnutrition, protein and energetic malnutrition, obesity, as well as vitamin and mineral deficiencies. According to results of different studies, obesity and malnutrition in the elderly people induces deterioration of health condition and increases mortality [4].

Malnutrition predestines to many negative effects in the organism. Primary consequences of this state include: reduced body weight, weakened muscle strength, reduced activity, impaired immunity, loss of muscle mass of the heart, reduced mass of pancreas, disorders in circulatory and respiratory systems, weakened renal flow and glomerular filtration, anemia and osteoporosis. Secondary consequences include: increased susceptibility to infections, wound healing disorders, prolonged hospitalizations, risk of complications, death after surgical intervention and increased costs of treatment [5, 6]. What is more, malnutrition is often associated with cognitive disorders and reduction of functional status [7]. Additionally, obesity significantly reduces the quality of life at the late age. Obese patients experience pain and discomfort. Their mobility decreases which often results in reduced muscle mass and strength as well as arthritis. Furthermore, abnormal nutritional status affects the psychosocial well-being, which is often manifested with anxiety and depression [8].

Assessment of nutritional status is extremely important in patients of all ages, but especially in the elderly.

For the needs of the nutritional status evaluation different research methods can be used, e.g.:

1. Medical interview and examination,
2. Anthropometric measurements (BMI-Body Mass Index, measurement of arm circumference, WHR-Waist to Hip Ratio),
3. Biochemical measurements (measurement of albumin, pre-albumin and transferase levels),
4. Survey methods in the form of validated nutritional status questionnaires (MNA- Mini Nutritional Assessment, NRS 2002- Nutritional Risk Screening, SGA- Subjective Global Assessment, MUST- Malnutrition Universal Screening Tool, MST- Malnutrition Screening Tool, SNAQ- Simplified Nutrition Assessment Questionnaire) [9, 10, 11, 12].

Material and Methods

The survey was conducted between January and April 2015 and involved 55 patients, including 27 women (49% of respondents) and 28 men (51% of respondents) between 60 and 89 years of age. Patients were hospitalized at the Department of General, Oncological and Colorectal Surgery of the J. Strus Multidisciplinary Municipal Hospital in Poznan. The majority of the respondents were hospitalized for surgical reasons in the area of a digestive system (80%) and the others were undergoing the diagnostics of this area.

All respondents consented on participation in the survey and the investigating procedure obtained bioethics committee approval.

Nutritional status assessment was performed with the use of the MNA questionnaire (Mini Nutritional Assessment questionnaire), which consists of 18 questions where the maximum score is 30. Results between 24 to 30 points describe proper nutritional status, 17 to 23.5 show the risk of malnutrition and the score lower than 17 points is typical for malnutrition.

MNA consists of two parts. The first, screening, includes 6 questions which refer to: a reduced number of meals and body mass reduction during the last 3 months, the ability to move, psychological stress, or presence of acute somatic disease in the last 3 months, neuropsychological deficit and BMI. The maximum score is 14; the result of 11 or less shows malnutrition and in such a case the second part of the questionnaire should be done.

The second part, assessment, consists of 12 questions referring to: taken drugs and meals during the day, the frequency of consumption of specific foods and liquids, the occurrence of bedsores or skin ulcers as well as the subjective perception of their own health and nutritional status. The maximum score is 16 [13, 9].

The self-study screening (part 1) was performed in all respondents. Assessment (part 2) was performed in 26 patients.

The calculations were performed with Statistica 10 produced by StatSoft and StatXact8 produced by Cytel. The level of significance was agreed for $\alpha = 0.05$. The result was statistically significant when $p < \alpha$.

The Mann-Whitney test or Kruskal-Wallis test were used to compare the variables measured on the ordinal scale. Relationships between variables were calculated with the RS Spearman's rank correlation coefficient. χ^2 , modified χ^2 with Yates correction and Fisher-Freeman-Halton tests were used to examine the relationship between categorical variables.

Results

The study involved 55 patients (49% women and 51% men) divided in 3 age groups: early senility (60–74 years of age) – 69%, late senility (75–85 years of age) – 24% and longevity (> 85 years of age) – 8%. 34 respondents (61%) were married, 14 (25%) were widows /widowers and 7 (12%) were single. Most of respondents lived in the city – 89%. 49% of the respondents lived with their spouses, 25.5% with their families and 25.5% alone.

The most frequent co- morbidities included hypertension (56.4%) and cancer (31%).

A. Analysis of the MNA screening questionnaire

A Analyzing the relationship between the sex and the number of points obtained, statistically significant differences were observed ($p = 0.007118$). It was observed that more women than men received a smaller number of points (**Figure 1**).

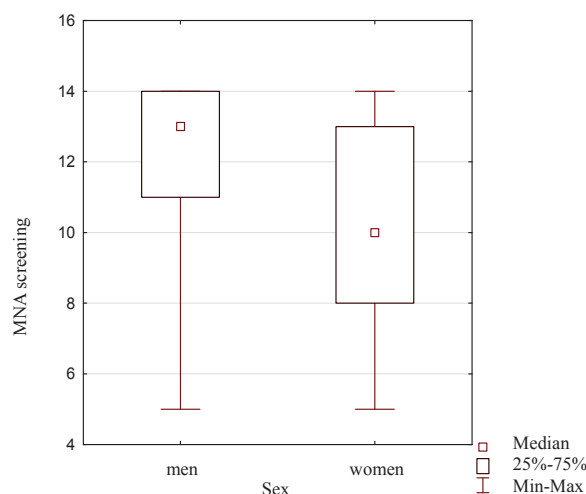


Figure 1. Relationship between the scores obtained and the sex of the respondents

Source: author's own research

The impact of the place of residence (village or city), the number of people in the household and the level of education on the number of points obtained showed no statistical significance ($p = 0.923839$ vs. $p = 0.1142620$ vs. $p = 0.0552$).

The analysis of the effects of co-morbidities on the result showed that there was no correlation ($p > 0.05$) between hypertension, diabetes mellitus and hypothyroidism. However, statistical significance was observed when analyzing the impact of depression on the number of points obtained ($p = 0.003099$). People with depression received a significantly smaller number of points than those who were not diagnosed (Figure 2).

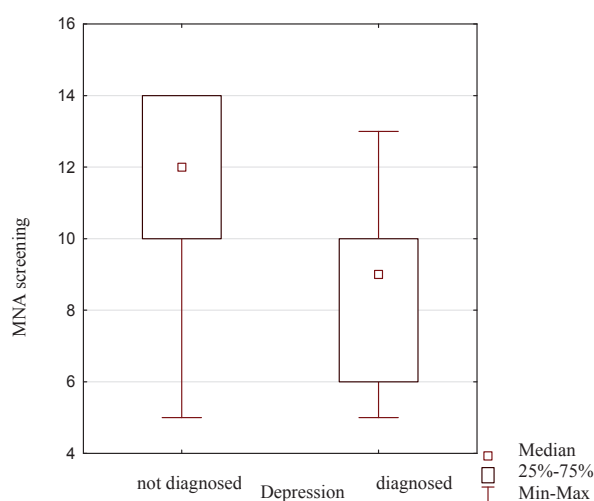


Figure 2. Relationship between obtained points and depression

Source: author's own research

The statistical relationship was also found with respect to the influence of cancer on the number of points obtained ($p = 0.030379$). Patients who were diagnosed with cancer received a smaller number of points than those without cancer (Figure 3).

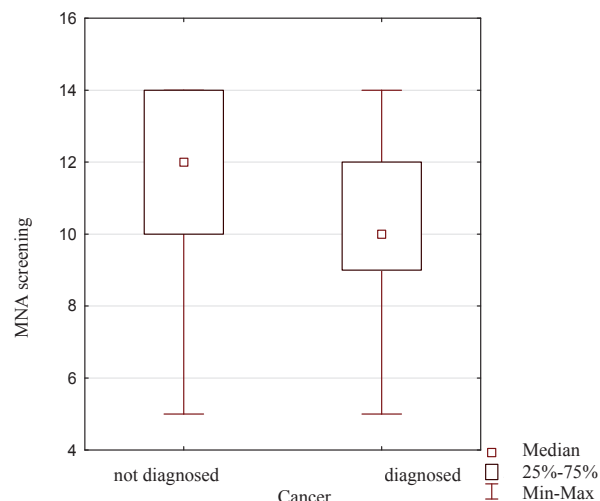


Figure 3. Relationship between obtained scores and diagnosed cancer

Source: author's own research

In case of the relationship between nutritional status and the number of coexisting diseases, the significance level was $p = 0.03896$, suggesting a statistically significant difference. It was observed that in each person with abnormal nutritional status or at risk of malnutrition, there was at least one co-morbid disease. Similarly, no co-morbidities were found in the study group with normal nutritional status (Figure 4).

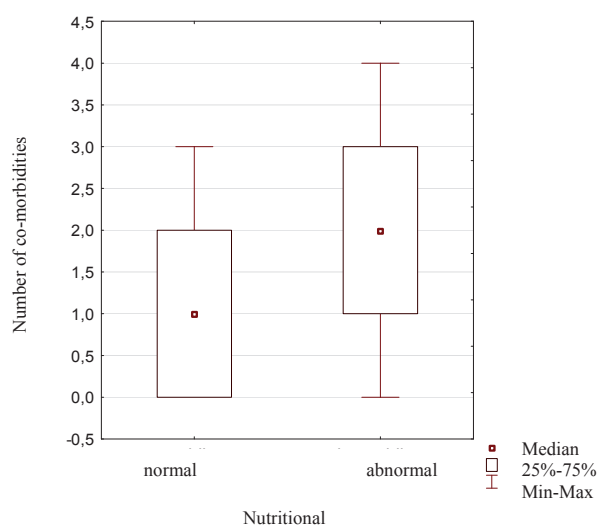


Figure 4. Relationship between obtained scores and the number of diagnosed co-morbidities

Source: author's own research

B. Analysis of questions from the second part of the MNA questionnaire – Patients' Assessment

26 respondents who obtained 11 points or less from the screening test were qualified to the risk group of malnutrition and the second part of the MNA questionnaire was performed with them.

The result of the analysis of the question „I” concerning the occurrence of bedsores or skin ulcers indicates statistical differences $p = 0.046838$. Respondents with changes mentioned above received fewer points than people without these changes (Figure 5).

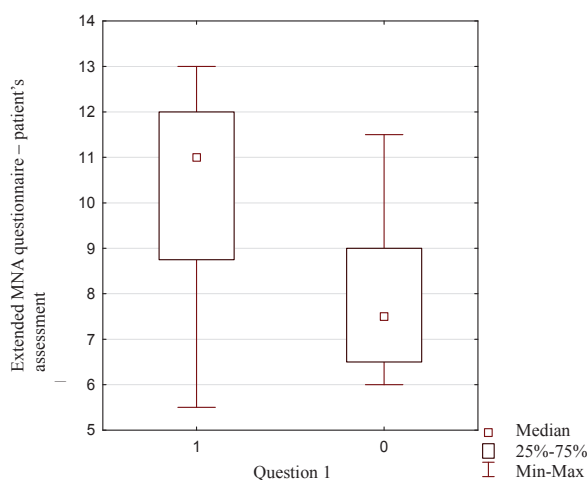


Figure 5. Relationship between obtained scores and the answers to the question „I” concerning the occurrence of bedsores and skin ulcers

Source: author's own research

Analysis of the question „J” concerning the number of full meals consumed daily revealed a statistically significant relationship ($p = 0.000066$). Patients who daily ate three full meals were better nourished than respondents having two meals a day (Figure 6).

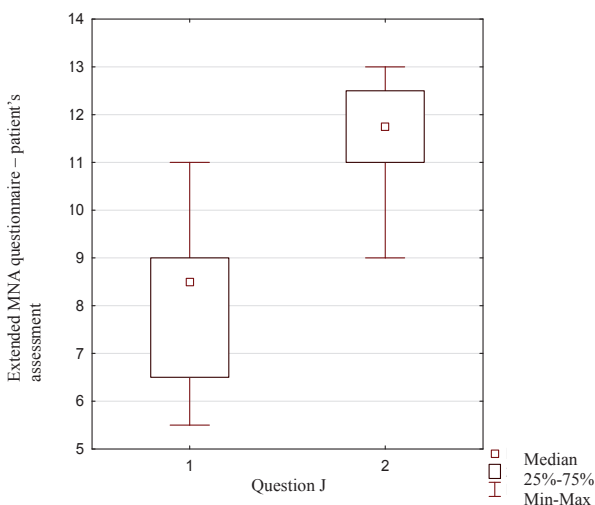


Figure 6. Relationship between obtained scores and the answer to the question „J” concerning the number of full meals consumed daily

Source: author's own research

Furthermore, statistically significant differences ($p = 0.001797$) were found in relations to the question „M”, which concerned the amount of cups/glasses of fluid drunk a day.

The respondents drinking more than 5 glasses a day obtained far better scores than patients who drank from 3 to 5 glasses a day (Figure 7).

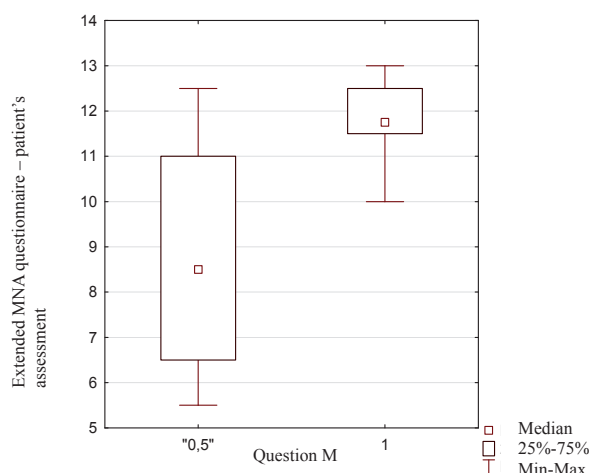


Figure 7. Relationship between obtained scores and the answer to the question „M” concerning the amount of cups/glasses of fluid drunk a day

Source: author's own research

In the question „N”, the respondents were indicating the way of nutrition. The analysis of answers revealed statistically significant differences – $p = 0.045521$. Those who independently but with some difficulty consumed meals (4 persons) received fewer points than 22 persons who were fully independent of this activity (Figure 8).

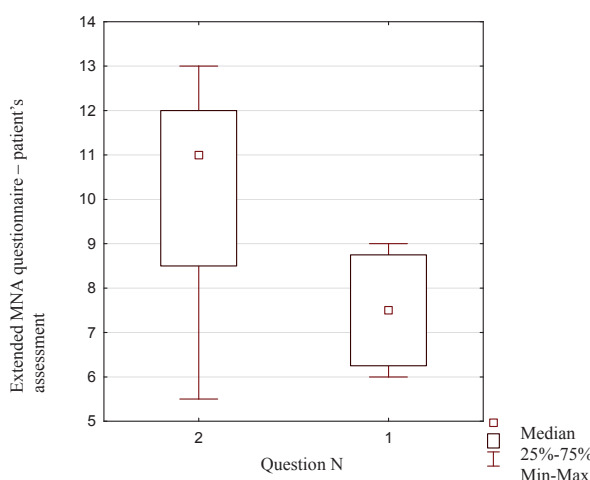


Figure 8. Relationship between obtained scores and the answer to the question „N” concerning the way of nutrition

Source: author's own research

The question „P” involved individual assessment of health condition in comparison with peers. The respondents had to choose from four answers with following scores: 0 – not as good, 0.5 – does not know, 1 – as good and 2 – better.

None of the respondents had stated that his/her health condition was better than their peers. The answer “not as good” was chosen by 9 subjects, 11 of the respondents were not able to assess their own health condition, and 6 subjects pointed the answer „as good”.

Analysis revealed statistically significant differences – $p = 0.0312$. Then it was checked by the Kruskal-Wallis ANOVA test, in which groups differed from each other. It turned out that the difference was between the group of respondents claiming that their health was not as good as their peers’ and the patients who said their condition was just as good. This last group obtained statistically more points (Figure 9).

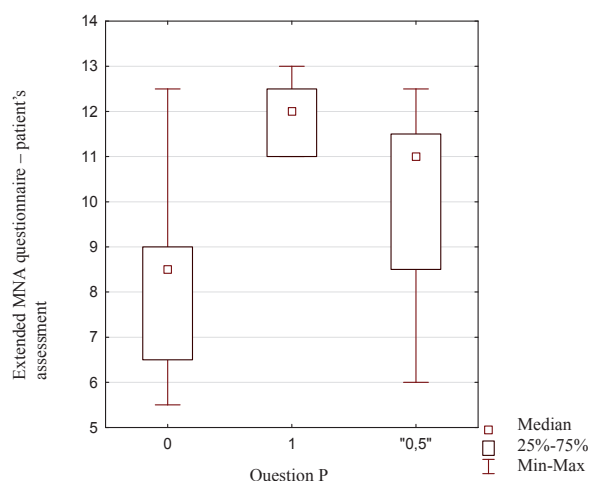


Figure 9. Relationship between obtained scores and answers to the question „P” concerning assessment of individual health condition when compared with the peers

Source: author's own research

Discussion

Improper nutritional status is a major problem among the elderly worldwide. In this respect, it is its accurate evaluation, which should accompany each senior health assessment. Assessment of nutritional status is important at each patient's admission to hospital, as it affects the course of treatment [14].

There are several questionnaires purposely created for the elderly patients. Their aim is to select patients with improper nutritional status or with the risk of malnutrition. These include, among others, the MNA questionnaire which was used for own research.

Thanks to analysis of results based on the MNA questionnaire it was possible to perform the assessment of nutritional status in the elderly patients admitted to the surgical ward.

The first part of the questionnaire (screening) allowed to select 53% (29 respondents) with proper nutritional status and 47% (26 respondents) with the risk of malnutrition. In the study of Kaminska M. and Brodowski J. in 120 patients of the healthcare center providing outpatient health services, 70% were well-nourished and 29.2% were at risk of malnutrition [15].

Considering the influence of sex on the nutritional status, a statistically significant relationship was observed in the own study. The nutritional status of the examined women was worse than men and therefore, they received fewer points. These results confirm the findings of Mirczak A. in a group of 203 people aged 65 years and over [42]. The studies showed that women are more likely than men to be in the middle and high risk of malnutrition (42.2% vs. 32.2%).

Moreover, nutritional status is influenced by patient's age. The older the man, the higher the risk of abnormal nutritional status. Malnutrition in old age is one of the great geriatric syndromes [17]. In this study, there was no statistically significant relationship between age and nutritional status. However, it can be observed that in the oldest age group (> 85 years) consisting of 4 subjects – all of them had recognized risk of malnutrition.

Another factor affecting the nutritional status are co-morbidities. In the analysis of numerous coexisting diseases influence on the nutritional status; a statistical relationship was found. The respondent with more co-morbidities; received fewer points than the one with fewer diseases.

The individual co-morbidities were analyzed. The investigation of a depression impact on nutritional status among the elderly showed a statistically significant relationship ($p = 0.003099$). Patients diagnosed with depression received fewer points than those who did not experience depression. According to reports from literature, abnormal nutritional status in the elderly is influenced by many factors, including reduction of functional status and cognitive dysfunction [18].

Additionally, cancer has a significant impact on nutritional status. Rapid weight loss, especially in patients with diagnosed malignancies, is often noticeable. In 30-80% of such patients, the body weight is characteristically reduced [19]. In their own study, patients who had been diagnosed with cancer had fewer points than non-cancer patients.

The examination of the effects of other co-morbidities (including hypertension, diabetes, hyperthyroidism and hypothyroidism) revealed no statistically significant relationship. As Dudkowiak R. and Poniewierska E. re-

port, cases of diabetes or hypertension are often accompanied by overweight. In contrast, a body weight loss is a symptom of hyperthyroidism [20].

The place of residence and the number of people in the household are further factors affecting the nutritional status of the elderly. The patients who live with the family are better nourished than those who live alone or are residents of social care homes. This is confirmed by research conducted by Humanska M. and Kędziora-Kornatowska K. in a 100-person group, in which 54% were residents of social care homes (DPS). As many as 60% of the respondents were classified as at risk of malnutrition and 4% were malnourished [1]. With the use of the MNA scale, Guigoz Y.[18] found malnutrition in 2% of males living alone and 24% were at risk of malnutrition. In the own studies, the risk of malnutrition was diagnosed both in the group of people living independently and in the group of patients living with "someone". However, in people living alone, their nutritional status was often abnormal.

The place of residence is also associated with the number of meals served. It has been noted that people living in social care homes have more difficulty with the access to additional meals, compared to those living with families [1]. Söderström L. [21] observed that the risk of malnutrition was also related to certain eating habits, including consuming fewer meals during the day. In our own study it was found that patients who consumed 3 full meals a day were better nourished than those who ate 2 meals a day.

Conclusions

1. There is a reasonable need to monitor the nutritional status of the elderly as many of them are at risk of malnutrition.
2. The nutritional status of the elderly is influenced by many external and internal factors.
3. The risk of malnutrition increases with age of patients.
4. The MNA questionnaire is a good tool for quick and accurate assessment of nutritional status in older people.

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