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Research Article

**EVALUATION OF MALNUTRITION AMONG ELDERLY
PEOPLE ABOVE 70 YEARS OF AGE****Dr Adnan Asghar, Dr Muhammad Zuhaib Rasheed, Dr Sohaib Raza Danish**
Jinnah Hospital Lahore**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

Objective: Malnutrition, which is a very common condition in the elderly, is known to increase their susceptibility to negative health events. This study aimed to estimate the prevalence of malnutrition in the population of the community over 75 years.

Methods: Practitioners (GPs) used a short version of the Mini Nutrition Assessment (MNA-SF) as a screening tool to study the nutritional status of the elderly (1039 people). The malnutrition was confirmed by biochemical parameters. People at risk of malnutrition or malnutrition ($n = 22$) have recommended a personalized diet.

Results: MNA-SF confirmed that 21% of older people at risk of malnutrition and biochemical tests had a 3.5% incidence of malnutrition. Dietary counseling improved the MNA-SF score and biochemical parameters, but the difference was statistically significant only for the MNA-SF score ($P = 0.00613$).

Conclusion: Malnutrition can be assessed with a simple tool, such as MNA-SF, which is diagnosed at the earliest stage and successfully treated by the attending physician.

Key words: malnutrition, free elderly, MNA, dietary advice

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INTRODUCTION:

Malnutrition means "energy or poor protein intake or absorption, characterized by weight loss and changes in body composition." This is a very common condition in the elderly population that causes serious adverse health events. Poor nutritional status is often manifested by involuntary weight loss¹. When the elderly lose weight, they double the risk of death, even if they are overweight. The risk increases especially for people with obesity-related diseases such as diabetes². Malnutrition also increases the likelihood of a hip fracture or institutionalization, and is an important predictor of weakness syndrome in the elderly. The main causes are physiological, social and economic problems, often referred to as "nine ", i.e. bad teeth, dysgegia, dysphagia, diarrhea, depression, disease, dementia, dysfunction and drugs³. Protein-energy malnutrition (PEM) is induced, and in older people has serious consequences such as poor quality of life and higher risk of falling, increased morbidity, mortality complications and clinical interventions, extended hospital stay, admission to intensive care and an increase in healthcare costs and an increased risk of institutionalization⁴. Although PEM is a common problem, it has not been properly investigated.

The prevalence of PEM in older people varies considerably depending on the population studied, the working environment, and the tools used to measure the degree of violence⁵. The environments with the highest malnutrition rates are nursing homes (up to 85%) and hospitals (up to 62%). The risk of malnutrition affects about half of the elderly who receive home care, and with the increase in the degree of independence gradually decreases in healthy older people living in the community, up to almost loss⁶. Surveys among non-institutionalized older people yielded very variable results, not only depending on the criteria used to define malnutrition, but also depending on the geographical areas studied, but prevalence rates reached significant values of up to 30%⁷.

Management of severe PEM is becoming difficult, and early preventive intervention in people considered under or under threat to verify the nutritional status of older people is a key tool for ensuring good aging⁸. The nutritional status can be examined by clinical methods, biochemical parameters, anthropometric measurements or multidimensional assessments; however, none of them simply has ideal requirements. Among the multidimensional methods, due to high sensitivity, specificity and reliability, Mini Nutrition Assessment (MNA) is used for assessing the population of the elderly and people with normal nutritional status and malnutrition or malnutrition⁹. The shorter form (MNA-SF) provides results that

are well linked to the results of the full version, so that it can be successfully used for detection, with the advantage of being simpler and faster. Determining certain biochemical parameters (albumin, pre-albumin and C-reactive protein) in patients with low results allows later confirmation of malnutrition and assessment of severity. Plasma pre-albumin concentration allows the assessment of acute PEM, while albumin is an indicator of long-term protein changes and is significantly reduced only after prolonged malnutrition. Because inflammation is affected by albumin and pre-albumin levels, they should be evaluated for C-reactive protein (CRP) levels.

MATERIALS AND METHODS:**Participants**

People who were not institutionalized at the age of 75 or older came to the clinic for therapeutic treatment or were contacted in accordance with the proactive medicine approach.

They were informed about the purpose of the study and obtained written consent.

Exclusion criteria were: lack of the abovementioned requirements, lack of information about the examination, presence of cancer less than a year ago and / or signs of clinical activity, severe psychiatric symptoms or any of them, list of artificial active nutrition (parenteral, enteral), chronic renal failure (creatinine > 3 mg / dl), prolonged life below 6 months was not allowed.

Because there are no absolute criteria that are widely accepted to determine vulnerability, we focus on sociodemographic features and components associated with physical and social domains. As a result, people who have at least one of these conditions are considered fragile: having more than two chronic diseases or one complex chronic disease, living alone or in a disadvantaged social environment, with exclusionary provisions for low income.

Nutritional evaluation

Nutritional status was tested using the Mini Nutritional Assessment Form (MNA-SF) provided by the Mille win / Mille GPG software used by family physicians. MNA-SF is a short version of the MNA nutrient detection tool designed specifically for the elderly. It consists of six questions about weight loss and appetite, mobility, acute illness or mental stress and body mass index (BMI). Each question is scored from zero to two or three, with a maximum of 14 points. A score of 12 and higher indicates a satisfactory nutritional status; a score in the range of 8-11 indicates a risk of malnutrition, and 7 or less indicates malnutrition. Plasma pre-albumin, albumin and CRP levels were evaluated in patients

with a score of 11. While albumin and pre-albumin are commonly used indicators for the definition and classification of malnutrition, PCR allows to control the possible effect of entanglement of inflammation. We measured prealbumin and albumin using a nephelometric test (BNII, laser nephelometry, Dade

Behring). CRP was assessed by turbidimetric method (Modular PP, Roche). All procedures comply with the standards of quality of health services. The degree of malnutrition in patients with MNA results below 12 was classified according to the algorithm shown in Table 1.

Table 1: Algorithm for malnutrition assessment

Albumin		Prealbumin	
	≥17 mg/dl	10-17 mg/dl	<10 mg/dl
≥3000 mg/dl	Possible recent recovery of good nutritional status	Recent mild PEM	Recent severe PEM
<3000 mg/dl	PEM in recent improvement	Chronic mild PEM	Chronic severe PEM

Developed and adapted from (29)

Nutrition Tips

People with an MNA score of ≥ 12 and malnourished were given recommendations for maintaining adequate nutritional status as well as maintaining and improving their lifestyle. The attending physician recommended a personalized dietary recommendation, which refers to the most suitable dietary indications for patients with a certain degree of disability and individual characteristics (gender, weight, chewing ability, independence, shopping skills). PEM was confirmed using MNA scoring and biochemical parameters below 12. In the case of impaired chewing ability, a soft diet was recommended. The selection of patients who needed dietary advice was made by the attending physicians in cooperation with the local Nutrition Unit that prepared the diet. Two months after applying the proposed diet regimen, an additional nutritional status assessment and an additional assessment of plasma biochemical parameters using MNA-SF was performed. The study was approved by the Ethics Committee.

Statistical analysis:

The MNA-SF score expressed as mean \pm standard deviation, albumin and prealbumin concentration was compared between the sexes using the Student t test. Multivariate regression analysis (factors adjusted for gender and age) was performed to assess the variability of biochemical parameters before and after treatment and corrected assessment of MNA-SF for the effect of entanglement associated with CRP. Statistical analysis was performed using R (free R software, version 3.0.3) and the significance was set to 0.05.

RESULTS:

The study involved 11 general practitioners with 1039 people over 75 years of age. Full data is available for 821 of them, offering a 79% participation rate. The main demographic characteristics are shown in Table 2. The average age of patients included was 82; 65% were women.

Table 2: Demographic characteristics of the enrolled elderly people

Variable	Females n (%)	Males n (%)	Total n (%)
	537 (65.4)	284 (34.6)	821 (100)
Age. (mean \pm s.d, yr)	82 \pm 6.1	82 \pm 4.9	82 \pm 5.7
Frailty	520 (96.8)	266 (93.7)	786 (95.7)
Due to disease	446 (83.1)	230 (80.1)	676 (82.3)
Living alone	234 (43.6)	47 (16.6)	281 (34.2)
Social disadvantage	28 (5.2)	6 (2.1)	34 (4.1)
Prescription charge exemption	431 (80.3)	197 (69.4)	628 (76.5)
MNA-SF score (mean \pm s.d.)	12.1 \pm 2.1	12.7 \pm 1.7	12.3 \pm 2.0
0-7	24 (4.5)	4 (1.4)	28 (3.4)
8-11	124 (23.1)	48 (16.9)	172 (21.0)
12-14	389 (72.4)	232 (81.7)	621 (75.6)

Almost all participants (95.7%) can be considered fragile, mainly due to the presence of diseases and their low-paid prescription fee. Nutritional assessment using MNA-SF showed that 21% of older people living in the community are at risk of malnutrition, and the incidence of malnutrition is 3.4%. Both conditions were more common in women (23.1% and 4.5% vs. 16.9% and 1.4%, respectively). Determination of biochemical parameters to confirm malnutrition allowed us to estimate the prevalence at 3.5% (Table 3). Although no statistically significant difference was observed between the sexes, malnutrition was again

more common in women. The majority of malnourished people (69%) achieved an MNA-SF score between 8 and 11, which only indicates the risk of malnutrition. Average levels of biochemical parameters have recently suggested improvement for men and mild PEM for women.

The corrected regression analysis for CRP showed that dietary intervention improved all parameters considered, but the difference was statistically significant only for the MNA-SF result ($P = 0.00613$).

Table 3: Levels of albumin and prealbumin in patients with MNA-SF <12 and malnutrition confirmed by biochemical parameters (n = 29) according to gender and MNA-SF score (mean±s.d.)

n, %	MNA-SF score	Prealbumin (mg/dl)	Albumin (mg/dl)
Females (17, 58.6%)	7.8±2.9	14.8±3.2	3421.5±585.9
Males (12, 41.4%)	9.0±1.7	17.8±5.6	3189.9±608.4
<i>P</i>	0.2142	0.0788	0.3113
MNA-SF score 0-7 (9, 31.0%)		13.2±4.0	3061.1±718.9
MNA-SF score 8-11 (20, 69.0%)		17.8±5.6	3444.7±507.5
Total		16.0±4.5	3325.7±595.9

The average MNA-SF reached 11. Despite the increase in results, only two subjects remained in the area of malnutrition, while 8 subjects received more than 12 points indicating that their normal nutritional status had improved (data not shown). Albumin and pre-albumin levels have increased and exceeded the 17 mg / dL threshold, in particular indicating that good nutritional status has recently improved.

DISCUSSION:

The elderly population is particularly prone to malnutrition. Although this is more common among institutionalized people, prevalence rates, which are not completely insignificant and vary depending on the degree of independence, have been recorded among older people living in society. Asian countries are characterized by a growing increase in life expectancy, but this means that the incidence of negative health events is higher¹⁰. They are strongly associated with malnutrition and include lower quality of life, greater disease complications, and greater risk of institutionalization, greater fragility and higher mortality. More attention should be paid to malnutrition, which is often not recognized and neglected.

In relation to the Indian population, this area is one and a half times more than 64 years old and more than twice more than 84 years old (4% vs. 2%).

This study predicted the prevalence of malnutrition in the community for over 75 years with family physicians¹¹. 3.5% of registered older people showed malnutrition, which is confirmed by biochemical parameters. Due to the differences depending on the method used, it is very difficult to compare this finding with the results reported in other studies. However, obtaining updated

epidemiological data on the malnutrition of the elderly is a basic requirement for identifying programs to control and prevent malnutrition¹². MNA-SF has proved to be a reliable, simple and easy tool to detect the risk of malnutrition in older people living in the community. Adoption of the standard methodology offered to family physicians can contribute to timely monitoring of the nutritional status of elderly patients, and early identification of deficiencies can enable the implementation of effective corrective measures¹³.

Earlier, the region's nutrition service had already carried out nutritional supervision in hospitalized patients in both hospital and protected facilities. This study is also the first experience in personalized nutritional counseling managed by general practitioners according to the Nutrition Service to improve the nutritional status of their patients. In addition to assessing malnutrition, surveillance provided information to maintain the nutritional status of older people with an adequate MNA result, and dietary indications for people with different levels of malnutrition depending on weight and ability of chewing¹⁴. The interaction and coordination between GPs, nutrition and hygiene, and public health services guarantees a positive multidisciplinary approach that enables the creation of a medical care path with personalized nutrition

advice that can improve nutritional status within two months and relevant biochemical parameters in the elderly living in the community¹⁵. Past experience with nutritional intervention in the elderly population in Europe has yielded conflicting results. A study in the Netherlands did not show any results in terms of weight improvement, physical fitness and grip strength 6 months after dietary recommendations. A year later, a group of older people who received personalized nutrition and physiotherapist advice on physical activity from a dietitian noticed an increase in MNA score of 2.5 points. Older people who received advice also improved their sensitivity and achieved a higher score in the Mini Mental Status Exam (MMSE), which showed that MNA had a better cognitive function compared to the control group in which it was assessed.

Although the study included a limited number of general practitioners and people over 75 years of age, based on a predetermined methodology with two previous observational studies, this allowed us to examine the problem of malnutrition in older people living in the community. In addition, the study population reflects the demographic characteristics that will characterize all Western societies at the end of the demographic transformation period. Therefore, it can be considered as a paradigm for testing activities aimed at promoting healthy aging.

CONCLUSION:

GP, a valuable reference point for elderly patients, can effectively monitor and recognize malnutrition or associated risk by successfully implementing personalized intervention to ensure PEM regression. This finding may be influenced by patients receiving personalized dietary indications and motivated by a trusted person such as the attending physician to change their lifestyle; In addition, our study participants reported only mild PEM. Given the positive results achieved during a two-month follow-up, we can assume that prolonging the "strengthening" intervention may encourage the patient to follow dietary recommendations, strengthen the result and provide better confidence over time.

Malnutrition can be assessed using a simple tool, such as MNA-SF, which is diagnosed at the earliest stage and successfully treated by family doctors, as evidenced by a two-point increase in the result observed in patients on a personalized diet. This result has important and promising results in managing the elderly community, as most of them live in the community and can benefit greatly from nutritional counseling. Improving the nutritional status of people living in the community can actually be an effective method of preventing adverse health

events such as hospitalization, complications, readmission, institutionalization and mortality.

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