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ПРИБЛИЗНА ОЦІНКА СТАНУ ХАРЧУВАННЯ ОСІБ ПОХИЛОГО ВІКУ В ПРЯШІВСЬКОМУ РЕГІОНІ

Недостатнє споживання їжі чинить негативний вплив на організм, що призводить до зниженого живлення, так само, як і надмірне споживання їжі веде до формування ожиріння. Причини неадекватного споживання їжі в старшому віці різноманітні. Лікар, що обстежує пацієнта похилого віку, повинен досліджувати харчовий статус при кожному контакті. Індекс маси тіла (ІМТ) є простим, але, звичайно, тільки оціночним показником для визначення харчового статусу пацієнта. Між тим, для оцінювання харчового статусу великих груп населення він є цілком об'єктивним параметром. У 1028 осіб похилого віку у Пряшівському регіоні Словаччини було проведено визначення ІМТ (у всіх осіб похилого віку в 4 медичних округах). У 13,4% старших людей було знайдено ознаки кахексії, у 19,4% — ожиріння. При порівнянні чоловічої і жіночої популяції виявлено більший відсоток худих жінок, ніж чоловіків ($p<0,01$). Більшість значних відмінностей зареєстровано у віковій групі 75-84 років. Результати опосередковані стимульованою вищою фізичною активністю жінок у нашому регіоні.

Ключові слова: харчування, індекс маси тіла, кахексія, ожиріння

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APPROXIMATE NUTRITIONAL STATUS ASSESSMENT OF SENIORS IN PREŠOV REGION

Nutrition for the elderly is very important. Insufficient food intake has negative impact on the individual which leads to malnutrition, as well as excessive food intake with obesity creation. Causes of improper nutrition in older age are manifold. The attending physician should assess the nutritional status at every contact with seniors. Body mass index (BMI) is a simple, but certainly only an indicative test to evaluate the nutritional status of the individual. However to assess the nutritional status of large groups of people it has certainly a relevant value. 1028 seniors in Prešov region were examined for BMI (all seniors in 4 health districts). 13.4% of elderly people showed signs of cachexia, 19.4% — of obesity. When comparing male and female population, there is a higher percentage of slim women than men (at the level of statistical significance $p<0.01$). Most striking differences were recorded in the age group 75-84 years old. The results are conditioned by stimulated higher physical activity of women in our region.

Key words: nutrition, body mass index, malnutrition, obesity

Introduction. Nutrition for the senior is very important. In comparison with younger age groups, older people are less tolerant of inappropriate nutrition for several reasons. These may be for example a bad state of teeth or poor dentures, irregular food intake caused by loneliness (they often argue that they do not need to cook – "because they are themselves"). Loss of appetite may also be conditioned by on-present depression, which evokes a false physiological aging. Poor nutrition can be caused also by somatic problems such as constipation, chronic cardiac failure (with blood stagnation in the abdominal parenchymatous organs), pancreatic insufficiency, but also dementia and malignant diseases. We must also state that currently the lack of financial funds is often causing less food intake as well as incapability to prepare a meal [7].

Treating physicians should consider a complete review of the nutritional status with any change of symptoms of the elderly. These symptoms are often associated with altered and unbalanced intake of various nutrients [15].

Objectives. The purpose of our study was to assess the nutritional status of seniors in Prešov region.

Materials and methods. While assessing the nutritional status, we should take into consideration the following criteria:

- comparing actual weight with ideal body weight, the best way is to identify BMI (cachexia, obesity);
- weight changes in the last period (2-4 months);
- current use of drugs and their possible effect on the patient's nutritional status;
- capacity of the patient (and roommates) to determine whether a patient can buy and prepare food;
- an assessment of his mental state regarding to his/her interest of food and quality of meal deliveries (diversity and adequacy of diet, vitamin / mineral supplements — indicative by the consumption of fruit and vegetables).

BMI in the elderly may reach a little higher value due to kyphosis growth of the chest spine and the degenerative changes of back and intervertebral discs, which consequently causes a reduction in body height during aging. The risk of death increases in men with BMI less than 23.5, in women mortality increases with the value of BMI less than 22.0. The lowest mortality in men is with BMI between 23.5 to 24.9 and women

ranging from 22.0 to 23.4 [13]. In anamnesis, with which we want to clarify the nutritional status of elderly we concentrate on these data [10]:

Health data

- any significant chronic diseases or recently overcome acute illnesses/operations;
- presence of diet-related diseases in the family (family history);
- changes of weight recently;
- presence of dentures and satisfaction with it;
- various psychiatric diagnoses;
- use of drugs with adverse effects on food intake — antibiotics, chemotherapeutic agents, preparations containing iron, digoxin;
- poor diet, late nights (TV), sleeping during the day, restraining the activity.

Social data

- pension income and its amount, possible job;
- participation in the economic support programs;
- living arrangements (savings for financial assistance for children, grandchildren);
- the ability of transport and shopping;
- level of education;
- motivation and adherence to medical recommendations.

In addition to medical and social data in nutrition assessment, there are four areas that are specific to geriatric age only:

- nutrition history, we need to assess it with each control of nutritional health;
- explanatory value has also a 24-hours record of food intake (which may a senior consider as "usual");
- physical examination with particular attention to symptoms that could be related to overeating or poor nutrition;
- selected laboratory tests aimed at assessing the nutritional status.

Nutritional health questionnaire. Nutritional health questionnaire was developed by a group of experts specializing in the nutrition for the elderly. The questionnaire may be completed by a patient or healthcare professional. If for any of the ten questions (below) the answer is positive, then it indicates a nutritional problem [15]:

- I have a disease or condition that has caused that I had to change the type or amount of food I eat;
- I accept fewer than two meals during the day;
- I receive little fruit, vegetables or dairy products;
- I drink three or more beers, hard liquor or wine almost every day;
- I have problems with teeth or oral cavity, due to which I have difficulty eating;
- I do not always have enough money, for me to buy the food I need;
- I usually eat without the company of the others;
- I take daily three or more doctors prescribed or OTC drugs;
- I changed my weight without a focused interest (I lost or gained 10 kg over the last six months);
- I am not always mentally attuned to shopping, cooking and/or eating alone.

For a relatively accurate assessment of nutritional status of geriatric patients Mini nutritional questionnaire — Mini Nutritional Assessment (MNA) is suitable.

Malnutrition. Generally speaking, the malnutrition is the result of insufficient or inadequate nutrition, which leads to a decrease of total body weight, fat mass loss and to complex metabolic and somatic changes. According to different criteria there are present the occurring weight loss, insufficient food intake, low body mass index (BMI) and anthropometric and laboratory parameters (hypalbuminemy + hypocholesterolemy, arm and leg volume) [17].

With the elderly the malnutrition is often unrecognized and untreated. It represents an independent and adverse prognostic factor, which leads to deterioration of physical performance, increases mortality and healthcare costs [15]. With increasing age there is an increasing occurrence of malnutrition (15% of people in the age group 65-74 years and 45% of individuals in the age group 75 years and older). A particular problem is malnutrition in institutions for the elderly (especially in departments for disabled), where up to 80 % of the population is at risk of developing malnutrition [11]. For assessment of malnutrition it is appropriate to use "Nottingham screening system to evaluate the occurrence of malnutrition".

Malnutrition in old age is most commonly caused by [9]:

- Malabsorption, maldigestion;
- Anorexia (in various disease states);
- Drugs;
- Inability to obtain food;
- Pathological affections of the oral cavity;
- Thyreopathies (hyperthyroidism);
- Long-term residence in various social establishments;
- Psychiatric disorders (depression).

Consequences and risks of malnutrition are:

- reduce of immunity level (cellular and hormonal disorders of immunity), increased susceptibility to infections;
- loss of muscle mass, so called. sarcopeny (affecting skeletal and cardiac muscle), leading to reduced overall physical performance, poorer mobility and self-sufficiency, increase of the risk of pulmonary infection;
- impaired wound healing, formation of bedsores, worsening of chronical diseases;
- the long-term malnutrition edema, anemia, lymphopenia, impaired internal environment (hypokalemy, hypophosphatemy, hypomagnesemy), atrophy of intestinal mucosa.

Prolonged malnutrition leads usually to cachexia in an individual. In Table 1 there are the diagnostic criteria for cachexia.

Table 1

Diagnostic criteria for cachexia (free by Morley, 2004)

№	Diagnostic criterium
1.	Weight loss (greater than 5%)
2.	BMI less than 20 for people under 65 years, to 22 for people aged 65 and over
3.	Albumin concentration less than 35g/l
4.	Reduced fat amount (less than 10%)
5.	Increased levels of cytokines and CRP

Obesity. Older individual has an increased risk of obesity due to physical inactivity and financial inaccessibility of quality food (cheap products on the market are encouraging an obesity). Its occurrence, however, decreases during aging (aged 60 years — 32%, aged 65 years — 25% and aged 75 years — 15% of the senior population) and, conversely, grows the numbers of people with evident malnutrition. With age, there is the steadily increasing amount of intra-abdominal fat, which is associated with a particular risk of cardiovascular morbidity and mortality [4]. For this reason, waist circumference in elderly patients is a better predictor of mortality than BMI. Moreover, in old age there often appears the atrophy of the gluteal muscles as well as other muscles (”sarcopenic” obesity), the waist circumference is therefore a better indicator than the ratio of waist/hips.

Mortality in older persons increases almost linearly with increasing fat tissue in the body. Higher content of fat tissue in older people leads to slower walking speed, which besides others leads to a reduction in total energy activity. Decline in physical activity is even more striking in sick and obese individuals. The result of these events is a positive energy balance (intake greater than energy expenditure), which leads to a further increase of fat tissue, and especially to the accumulation of visceral fat. Similarly, unhealthy lifestyle increases the occurrence of obesity, although the change of lifelong habits may be poorly tolerated in the older age. For the very elderly (age over 75-80 years) the modest overweight is less harmful than malnutrition [15].

Losing weight is for the individual’s benefit: it reduces the morbidity of joint apparatus, diabetes mellitus, respiratory complications, enables surgery performance to implant the prosthesis joint, plastic operation of large hernia, may reduce cardiovascular risks, improve well-being and etc. In terms of composition and contents of dietary regimes for the senior population the recommendations do not differ significantly from those for younger age groups [5].

Within the physical activity it is recommended primarily aerobic one, but also less intense anaerobic exercise is appropriate. Regular physical activity may represent 10 to 15% of total energy expenditure. To promote weight loss we can also use drug therapy, although in studies of “evidence based medicine” patients were evaluated mostly only up to the 65-th year of life.

Specific interventions of the treatment of obesity in the senior age are:

• the treatment is considered successful if weight loss is of 5%, maximum 10% of initial weight,

• rational diet remains basis for treatment a with restriction of total energy intake (mainly the reduction of fat and carbohydrates), while maintaining protein intake, vitamins and minerals,

• adequate intensity of physical activity (in old age enough time should be given to less intense movements),

• in case of serious medical complications drug therapy with orlistat may be considered (sibutramine is unsuitable due to the possibility of serious psychiatric disorders or glaucoma).

Results and discussion. *Approximate nutritional status assessment of seniors in Prešov region by setting BMI.* In Prešov region there are 58 non-governmental health clinics for adults (hereafter NZA). By random selection of two urban and two rural health districts, we created a set of 1028 probants who were 65 years or more and who agreed to testing BMI. BMI is simple, an indicative only test to assess the nutritional status of the tested unit. BMI does not distinguish between fat and muscle. There is ”sarcopenic obesity“ (big belly and thin legs) at which the BMI is in the normal range.

BMI is the proportion of body weight (in kilograms) to height (m^2). Its nominal value was determined in a set out of tables that calculated its value after the height and weight of probant was specified. Values below 20 indicate that the individual is poor — cachectic, and thus wen can expect the poor nutrition. Conversely — the value above 25 means that a person is obese, has a surplus of food intake. Both extreme poles have a negative impact on the health of individuals, especially seniors.

The results of the BMI among the elderly of Prešov district are reported in Table 2. More than 67% of seniors were in the standard range of BMI. This phenomenon was a positive finding and it makes clear that the majority of the elderly population is likely to eat relatively rationally. In table 3 and table 4 the results of female and male population file are shown.

Table 2

Summary results of the BMI

BMI (women and men), dr. K.,Ks.,Z.,M.)								
Age	65-69y.	70-74y.	75-79y.	80-84y.	85-89y.	Above 90y.	Total%	No total
No pr.	347	306	178	132	44	21		1028
% no	*34%*	*30%*	*17%*	*13%*	*4%*	*2%*		
Under 20	30	30	25	25	16	12	13,4%	138
20-25	247	209	119	85	23	8	67,2%	691
Above 25	70	67	34	22	5	1	19,4%	199
% und.20	*14%*	*14%*	*22%*	*27%*	*50%*	*86%*		
% 20-25	*113%*	*99%*	*104%*	*90%*	*72%*	*57%*		
% above 25	*32%*	*32%*	*30%*	*23%*	*16%*	*7%*		

Table 3

Results of BMI in the female population

BMI (women), dr. K.,Ks.,Z.,M.)								
Age	65-69y.	70-74y.	75-79y.	80-84y.	85-89y.	Above 90y.	Total%	No total
No pr.	218	212	114	94	32	14		684
% no	*32%*	*31%*	*17%*	*14%*	*5%*	*2%*		
Under 20	20	23	18	21	12	9	15,1%	103
20-25	153	141	76	57	16	4	65,4%	447
Above 25	45	48	20	16	4	1	19,6%	134
% und.20	*9%*	*11%*	*16%*	*22%*	*38%*	*64%*		
% 20-25	*70%*	*67%*	*67%*	*61%*	*50%*	*29%*		
% above 25	*21%*	*23%*	*18%*	*17%*	*13%*	*7%*		

Table 4

Results of BMI in the male population

BMI (men), dr. K.,Ks.,Z.,M.)								
Age	65-69y.	70-74y.	75-79y.	80-84y.	85-89y.	Above 90y.	Total%	No total
No pr.	129	94	64	38	12	7		344
% no	*38%*	*27%*	*19%*	*11%*	*3%*	*2%*		
Under 20	10	7	7	4	4	3	10,2%	35
20-25	94	68	43	28	7	4	70,9%	244
Above 25	25	19	14	6	1		18,9%	65
% under 20	*8%*	*7%*	*11%*	*11%*	*33%*	*43%*		
% 20-25	*73%*	*72%*	*67%*	*74%*	*58%*	*57%*		
% above 25	*19%*	*20%*	*22%*	*16%*	*8%*			

For completeness of the data it still needs to be noted that probants were weighed with so called rising electronic scale of the same type in all four health districts investigated, subject to standard conditions (without coarse clothes and shoes, and after using the toilet in case of compulsive feeling). Scales have been checked day before each weighing day, probants were weighed in 95% during before lunch hours.

With increasing age there are physiological changes that affect the body's metabolic processes. Characteristic feature of aging are changes in body composition. There is a reduction in non-fatty mass of the body, cell mass, decreased bone density, weight of body muscle mass and body water content in the body. Conversely we can see an increasing proportion of total fat, especially fat accumulation in the central areas of the body (abdominal and visceral fat accumulation) [19].

BMI is considered an indicative examination in the assessment of nutritional status of the test unit. Its value was determined from the nominal tables after entering the height and weight of the individual. De-

fault values are in the range of 20 to 25, cachexia is confirmed at levels below 20, we determine obesity at levels above the 25. According to the obtained values, we can divide obesity into severe (over 35) and extreme (over 45).

The literature discusses whether the reported values are correct for the geriatric population [11]. There are suggestions that the lower limit of BMI shifted to 18.5 and the top above the 27. Moving the upper limit of body mass index to 27 means a closer correlation of obesity as a predictor of increased mortality. BMI in the range of 25 to 27 does not appear as a risk factor for overall and cardiovascular mortality in old age. Opposite way pushed boundaries of "normal range" at 18.5 BMI provoke usual involution changes in the elderly [19].

Despite these debates in our study the traditional values of BMI are accepted. Out of tested probants 67.2% had BMI in the normal range, 13.4% was in the range of cachexia and 19.4% of seniors were located in the range of obesity.

When comparing male and female population, there is a higher percentage of slim women than men (at the level of statistical significance $p<0.01$). Most striking differences are recorded in the age group 75 to 84 year old. The results are most likely conditioned by stimulated greater physical activity of women in this region.

Literature data indicate higher proportions of slim population in men than women [1]. Thomas et al. (2004) states that in the senior age group in the U.S. there is up 35 to 40% of obese individuals [15]. When tracking changes of food intake during the last 20 years it has been found that in the group of retirees there is strikingly increased consumption of butter, vegetable fats and oils, meat products, especially sausages, sugar, but also fresh vegetables, fruit and milk [14]. The question is whether the increased consumption of these products is proportional to the needs of an aging body and not being forced by current financial situation.

In theory, easier procedures are required for obesity than malnutrition. In the treatment of obesity the most effective is increased physical activity. Among suitable types of exercise there is walking, but also exercises adjusted to age and physical fitness of a client, aerobic and of less intensive anaerobic nature (bodybuilding without load) [6]. Wegemans et al. (1997) points out that malnutrition can occur even in overweight body [18]. Lack of relationship between the content of micronutrients and anthropometric indicators was observed in the SENECA study in 2004.

McPhee and Chapman (2008) believe that we should fight the idea that confirm that lifestyle change in terms of influencing obesity in old age does not play a role, given the short life prognosis [8]. Reduction of overweight has benefits for all ages. Reducing weight can also in senior age reduce morbidity caused by osteoarthritis, enable full-scale joint prosthesis implantation, reduce obesity, reduce the occurrence of different hernia, reduce risk of cardiovascular disease and improve well-being in particular [12].

The problem of malnutrition in old age is much more difficult to be influenced than the previous extreme. At the age of over 80 years almost all seniors have at least mild symptoms of malnutrition, regardless to their socioeconomic status. Malnutrition is a condition caused by lack of nutrients. For advanced stages of protein and energy malnutrition we use the term cachexia. The highest degree of cachexia is known as marasmus. With hospitalized patients, we diagnosed malnutrition in 80% of cases in recent years [3]. Moreover, we can say that over the age of 80 years almost all individuals have at least mild symptoms of malnutrition, regardless to socio-economic status [19].

In the National Institute of Gerontology — National Institute on Aging in the U.S. longitudinal study of reducing the nutrition without malnutrition takes place since 1987, (under nutrition without malnutrition), initiated in young monkeys Macacus rhesus. A similar situation is being tested on human volunteers within the environmental experiment Biosphere 2. With reduced calorie intake without malnutrition there is expected delayed occurrence of diabetes mellitus, atherosclerosis, cardiovascular and cerebrovascular diseases. Several biomarkers of caloric restriction appear to be markers of predilection of longevity in humans [4]. The above stated calorie restriction would probably need to initiate in childhood, or at least in middle age.

Conclusions.

1. The majority of the elderly population (67.2%) is likely to eat relatively rationally.
2. Over the age of 80 years almost all individuals have at least mild symptoms of malnutrition, regardless to socio-economic status.

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