Original papers

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EVALUATION OF DIETARY PATTERNS AMONG MEN AND WOMEN OVER 80 YEARS OF AGE LIVING IN A RURAL AREA OF SOUTH-WEST POLAND

ABSTRACT

Background: Proper nutrition is an important factor in maintaining health and preventing disease development or progression regardless of age, but is especially relevant for elderly people. Seniors rarely follow nutritional and life-style guidelines, which may correlate with poor health, multiple morbidities, polypharmacy and premature death.

Aim of the study: The aim of this study was to evaluate the nutritional pattern, food choices, knowledge about healthy eating, body mass and health issues among men and women over 80 years of age living in a rural area of south-west Poland.

Material and methods: 100 participants, women and men, aged 79.6–93.3 years, responded to a questionnaire on nutritional choices. Anthropomorphic measurements were also taken.

Results: Only 40% of responders declared drinking 2 litres of water daily. Fruit and vegetables were eaten in inadequate quantities: only 10% of responders declared eating fruit and vegetables at least twice a day. Wholegrain products were regularly chosen by 30%. Dairy products were eaten once daily by 50% of seniors. 45% of the elderly chose meat, including red meat and its products, three to four times a week, and 66% chose fish only once a week. Almost 50% of responders ate only three meals a day. All participants declared suffering from at least one disease (chronic or acute). 45% of seniors had never heard of any nutritional guidelines.

Conclusions: Based on this study most responders do not follow the nutritional guidelines for elderly people. Intake of water, dairy products, fruit and vegetables was inadequate. These food choices by the elderly may impact on their health and well-being.

KEYWORDS: elderly nutrition, nutritional habits, seniors, healthy ageing, rural areas

BACKGROUND

A close relationship between nutrition and health status exists at any age but is particularly evident for the elderly [1]. Older people often exhibit a lower sense of well-being, body weight which is either too low or too high, multiple complaints (due to the progressive dysfunction of e.g. gastrointestinal tract or immune system) and chronic non-communicable diseases (sarcopenia, hypertension, arthritis, diabetes, COPD etc.). This higher morbidity often results in the need for multi-specialist medical care and a polypharmacy of medication [2,3]. Causes of malnutrition in the elderly can be divided into three main groups: medical factors (e.g. gastrointestinal disorders, loss of appetite, taste...
and smell), socio-economic factors (e.g. lack of knowledge, poverty, difficulties in acquiring high quality food products or meal preparation) and psychological factors (depression, dementia, anorexia). Similarly, causes of overeating leading to overweight and obese individuals are: medical factors (side effects of drugs, e.g. steroids, reduced metabolic rate, decreased physical activity), socio-economic factors (choosing more low quality foods, preserving the nutritional pattern from earlier years of professional activity), and psychological factors (boredom, loneliness, anxiety relieved by emotional eating) [4,5].

General nutrition recommendations for the elderly have been published by the World Health Organisation [6] and the nutrition or health Organizations of many individual countries. In Poland recommendations have been published by the Nutrition and Food Institute in Warsaw, and were updated in December 2017 [7]. Nutritional guidance for older people is depicted by a food and physical activity pyramid. The pyramid is intended to provide an easily understood framework, which, if followed, will increase nutritional and health awareness, increase nourishment, help to maintain proper body mass, and limit progression of chronic diseases.

However, the majority of the studies on nutritional guidelines for the elderly have focussed on seniors living in industrialized countries, in the bigger cities, where information about a healthy lifestyle is more easily available (posters and leaflets at pharmacies and medical centres, national programs advertised on posters in the city), and where seniors are generally better educated with access to modern mass media (e.g. internet). Little is known about dietary patterns and the state of health in seniors from rural areas, who have lower income and education, and worse access to information sources.

In this study we investigated a population of seniors aged over 80 years living mostly in rural areas, in their own households, (alone or with their family), in order to assess their nutritional patterns, food choices, the knowledge about healthy eating as well as their body mass and health issues.

**Aim of the study**

The aim of this study was to evaluate the nutritional pattern, food choices, knowledge about healthy eating, body mass and health issues among men and women over 80 years of age living in a rural area of south-west Poland.

**Material and Methods**

The following inclusion criteria were used for the study:
- age over 80 years,
- no diagnosed cognitive disabilities,
- ability to independently provide logical responses,
- living in their own household, alone or with family.

Each participant was informed about the aim and methods of the study, and gave informed consent participate.

Participants were visited individually in their households and answered questions from the authors’ questionnaire about their nutritional choices, lifestyle habits, well-being and diagnosed diseases. Anthropometric and epidemiologic data were also collected.

The study was conducted between April and November 2015 (7 months of data collection) in Opole and Lower Silesian Voivodeship.

The study was approved by the Bioethical Committee of Opole Medical School.

Statistical analysis was performed by the Statistical Analysis Office at AWF in Wroclaw using Statistica 9.0.

**Results**

**Participant characteristics**

The study cohort consisted of a group of 145 seniors, 98 women and 47 men. However, 45 people were excluded due to distrust, altered consciousness, or cognitive disorders which affected the questioning. Therefore 100 participants were enrolled for the study, 67 women and 33 men, age 79.6–93.3 (82.97 ± 2.91).

The group characteristics (age, height, weight and BMI) are presented in table 1. Most of the participants (76%) lived in small villages, and had a basic (60%) or vocational (20%) education.

**Nutritional habits**

The frequency of consumption of different food products by the study group is depicted in table 2.
In this study only 37% of women and 42% of men drank the recommended 2 litres of water per day.

Wholegrain bread was consumed daily by only 30% of women and men.

Only 17% of women and 9% of men ate fruit and vegetables several times per day, while over 60% of both groups consumed them only once per day.

Dairy products were eaten daily by 60% of women and 30% men. 30% of men totally avoided milk products.

Red meat and its products were prepared several times per week by 76% women and 78% men. Fish was served at least once per week by 70% women and 60% men.

More than 50% of both genders ate sweets every day.

Almost half of participants consumed 2–3 meals per day, while 50% of men and 40% of women had more than 3 meals per day.

When asked about the Food Pyramid and nutritional guidelines for seniors, 45% of respondents of both genders didn’t know what it was.

### Discussion

Nutritional and lifestyle guidelines for seniors, depicted in the form of a Food Pyramid, aimed to present clear and easy to follow meal preparation guidelines for the elderly, in order to maintain good nutritional status, optimal body weight, physical fitness and overall well-being [8].

Our study showed that seniors aged 80+ were not following the proposals and had scarce knowledge of official nutritional guidelines.

Polish diet and physical activity recommendations for seniors are based on World Health Organization guidelines which suggest decreased sugar, salt and fat intake, along with increased intake of fruit, vegetables and fibre. Recent studies show that increase in intake of vegetables and fresh fruits, that are rich in fibre, water, minerals, vitamins and other phytochemicals (e.g. polyphenols) and low in caloric macronutrients, is correlated with a decrease in cardio-vascular diseases, type 2 diabetes and cancer. This can therefore have a direct impact on the prolongation of healthy life [9,10]. In light of this, vegetables and fresh fruits...
are at the base of the pyramid and should comprise half of the food products consumed daily; at least 3 servings of vegetables (300g or more), and 2 serving of fresh fruits (200g).

In our study 65% of women and men consumed only one serving of fruit or vegetables daily. Only 20% women and 10% men were eating vegetables and fruit several times per day.

Low intake of fruit and vegetables by seniors can have several causes, including difficulties in chewing, intestinal bloating and flatulence after fresh products, difficulties in meal preparation (heavy shopping bags, effort needed for rinsing, peeling, cutting and cooking), general lack of appetite, or simply lack of good nutritional habits [5].

Another important factor is the intake of adequate liquids. The food pyramid recommends at least 8 glasses (or 2 litres) of liquids per day. Most of this should be comprised of still mineral water, (with not more then 2 cups of coffee or black tea), herbal and other teas and soups. Sweet beverages should be avoided.

In our study 2 cups of coffee or less was consumed by most of respondents (79% women and 66% men), similarly with sweet beverages (in total 16% women and 21% men drink 3 or more glasses of soda per day). However, the majority of respondents drank inadequate amounts of water. Only 40% women and 42% men drink 6–10 or more glasses of water per day, as recommended by national nutritional guidelines.

Drinking an optimal amount of liquids is particularly important for elderly as they are more sensitive to dehydration, they show higher water perspiration through thinner skin, deteriorating kidney function and reduced excretion of gastrointestinal liquids (e.g. saliva, stomach and pancreas juices) [11]. Moreover, during ageing the anterior midcingulate which forms part of the limbic system of the brain becomes less active, resulting in disturbances in thirst recognition [12]. The elderly cannot rely on intrinsic hydration signalling and should consciously remember to drink adequate fluid volumes each day in order to avoid dehydration and its consequences [13].

Nutritional guidelines recommend the consumption of 3 glasses of milk or fermented milk products (e.g. yoghurt, kefir) per day, occasionally partly replaced with sour cream and different types of cheese (e.g. cottage cheese, camembert etc.). In our study only 30% men and 65% women were eating the advised amount of dairy products each day.

It has been shown that fermented milk products are beneficial for health, particularly for the elderly as they contain living acidophilus milk bacteria, or probiotics. These stimulate the immune system and regulate intestinal microbiota balance, as well as providing easy to digest proteins, vitamins and minerals, and butyric acid (SCFA, short chain fatty acid), which nourishes intestinal cells and diminishes intestinal inflammation [14].

National dietary guidelines suggest eating 5–6 small meals per day, every 2–3 hours. Smaller portions are easier to digest, increase metabolic rate and thermogenesis, and may help in maintaining proper body weight [15,16]. However, with age the sensitivity of taste and smell deteriorates, which, together with digestive disabilities, may cause loss of appetite, loss of interest in eating, or even lead to seniors anorexia [5,17].

As shown in fig. 1 many participants in our study consumed only 3 or fewer meals per day (60% women, 50% men). This could put them at risk of micronutrient deficiencies, malnutrition, lack of energy, and sensitivity to infections and organ dysfunction.

Taken together, all of these dietary errors may have contributed to the poor state of health of the study group. All participants declared existing health issues, as shown in tab. 3.

45% of both male and female participants had never heard of the Polish Food Pyramid for Seniors, were not aware of any health guidelines and couldn’t describe the

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basics of healthy eating. This lack of knowledge may be associated with their low education level and/or home location. It has been previously noted that where people live has an impact on nutritional habits in the elderly [18–20]. Previous work has also reported that seniors living in villages or small towns showed more dietary errors and a worse state of health than those living in bigger cities [2]. Our analysis found numerous dietary errors in a group of 100 men and women, aged 80 years or more, and lack of knowledge about food guidelines for seniors. These have the potential to lead to malnutrition, poor health, and a lower quality of life and lifespan.

Education programmes directed to seniors living in rural areas may help in raising nutritional awareness and improving overall health. Further investigation is required to determine the best way of providing this education e.g. alongside routine medical services [21,22].

Conclusions

1. Seniors aged 80 years or more, showed inappropriate nutritional habits including drinking insufficient amount of water, consuming insufficient dairy, fruit and vegetables, and eating too few meals per day.
2. Almost half of participants (45%) had never heard of the Food Pyramid, which may contribute to dietary errors and therefore their state of nutrition and health.

References


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