

DIET AND PHYSICAL ACTIVITY AMONG ELDERLY PEOPLE – A SURVEY STUDY

DIETA I AKTYWNOŚĆ FIZYCZNA WŚRÓD OSÓB STARSZYCH – BADANIE ANKIETOWE

Damian Durlak

Faculty of Health Sciences, Radom College, Poland

<https://orcid.org/0000-0001-8978-1162>

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ABSTRACT

Introduction. Diet and physical activity are important factors influencing health. In the case of elderly, they help slow down the changes in the organism, related to the aging process.

Aim. The aim of this paper was to check if diet and physical activity significantly influence respondents' subjective health evaluation.

Material and methods. In this paper a survey form consisting of 19 closed questions about usage of diet, physical activity and health status of respondents was used. The results were analysed using the Chi-squared test.

Results. The most commonly used means of transport significantly influenced the respondents' health evaluation. The number of meals per day and main nutritious ingredient significantly influenced the objective health evaluation.

Conclusions. Due to the impact of diet and psychical activity on elderly's health, it is justified to encourage older people to get used to healthy habits. Financial problems and problems with access to professional equipment discourage living healthy lifestyle. This is why information and promotion events aimed at elderly are so important.

KEYWORDS: diet, physical activity, health, patients, old age.

STRESZCZENIE

Wstęp. Dieta i aktywność fizyczna są czynnikami w istotny sposób wpływającymi na stan zdrowia. W przypadku osób w wieku podeszłym umożliwiają spowolnienie zmian w organizmie związanych z procesem starzenia.

Cel. Celem badania było sprawdzenie, czy stosowanie diety i aktywność fizyczna osób starszych w istotny sposób wpływają na ich subiektywną ocenę stanu zdrowia.

Materiał i metody. W badaniu wykorzystano autorski formularz ankiety złożonej z 19 pytań zamkniętych dotyczących zarówno dotychczasowego stosowania diety i aktywności fizycznej, jak i stanu zdrowia respondentów. Wyniki badania ankiety zostały przeanalizowane z wykorzystaniem statystyki Chi-kwadrat.

Wyniki. Najczęściej wybierany środek transportu w istotny sposób wpływał na stan zdrowia respondentów. Częstotliwość spożywania posiłków w ciągu dnia i dominujący składnik diety w istotny sposób wpływały na ocenę stanu zdrowia ankietowanych.

Wnioski. Ze względu na fakt, że dieta i aktywność fizyczna mają duże znaczenie dla stanu zdrowia osób starszych, zasadne jest zachęcanie osób z tej grupy wiekowej do kształtowania zdrowych nawyków. Problemy finansowe i brak dostępu do specjalistycznego sprzętu zniechęcają do działań prozdrowotnych. Dlatego ważne są wszelkie akcje informacyjne i promocyjne skierowane do osób w wieku podeszłym.

SŁOWA KLUCZOWE: dieta, aktywność fizyczna, zdrowie, pacjenci, wiek podeszły.

Introduction

Old age is one of the stages in life, which in biological terms is characterised by a decline in the functional reserve of the individual organs and systems as well as the use of compensation mechanisms to achieve homeostasis [1]. Conventionally, the starting point of the ageing period is defined as the emergence of non-adapted regressive changes which tend to reduce the functional capacity of the body. Ageing should be viewed as a physiological process associated with an increasing risk of functional disability rather than a process involving an

accumulation of diseases. The ageing of society follows an upward trend both in Poland and worldwide [2]. The mean life expectancy varies according to the context of studies – focused on individuals, populations or a specific gender. The current global mean life expectancy is over 60 years of age. The longest mean life expectancy has been achieved by the Japanese – 82.2 years, Australians – 80.6 years, the French and Swedes – 80.6 years and Italians – 79.9 years [3]. In Poland, the corresponding age is 75.8 years, 80.1 years for women and 71.5 years for men. Forecasts suggest that the European

population of people over 80 years old can be expected to increase by 43 million in 2005–2050 while the population of young people will continue a downward trend. In Poland, the percentage of the elderly is expected to increase from 18.2% in 2010 to 29.4% in 2050 [4].

The World Health Organisation (WHO) defines old age as a stage of life which begins at the age of 60 years [5]. According to the WHO's definition, there are three elderly age groups: those from 65 through 74 years old are referred to as "early elderly" and those over 75 years old as "late elderly." The age of 90 years or above is referred to as "longevity". A different scheme has been developed by S. Klonowicz [6]: those between 60 and 69 years old are described as "early elderly", the age between 70 and 74 years is defined as a transition period between the early elderly age and the age of reduced physical and mental performance, those between 75 and 84 years old are referred to as "advanced elderly" while those aged 85 through 96 years are classified as "senile elderly".

Since the organs undergo physiological changes in their structure and functions, which are characteristic of the ageing process, the elderly needs to pursue physical activity aimed at slowing down changes in their bodies, improving their well-being and keeping a good body shape [7]. According to the WHO, adults aged 65 years and above should perform at least 150 min of moderate-intensity or at least 75 min of vigorous-intensity physical activity per week. Those with mobility issues should focus on physical activity enhancing balance and preventing falls for 3 or more days through a week. Muscle-strengthening activities should be performed 2 or more times per week [8]. Given the very low level of physical activity among Polish senior citizens, it is important to raise the awareness of the health benefits of an active lifestyle. A sedentary lifestyle has a negative impact on health in terms of the functioning of the cardiovascular, musculoskeletal, nervous, gastrointestinal and autoimmune systems [9]. In the elderly population, physical activity produces such effects as e.g. increased cardiac output, reduced blood pressure, expanded network of coronary blood vessels, better respiratory parameters, greater resistance to bone fractures, enhanced mobility of the joints, improved functions of the internal organs and the immune system [10].

Besides physical activity, the elderly require a well-balanced diet to maintain good health. The wide range of health problems and the heterogeneity of this age group makes it difficult to devise general dietary guidelines [11] which could be reduced to a couple of nutritional recommendations advising that the elderly should reduce consumption of fats, cholesterol, sugar, salt and alcohol, increase consumption of unsaturated fatty

acids, starch and fibre, follow a varied diet and monitor their body weight [12]. Carbohydrates should account for 55–60%, fats – 25–30% and proteins – 12–15% of the daily energy intake. An excessive consumption of saturated fatty acids and simple carbohydrates increases the likelihood of diabetes, arterial hypertension and ischemic heart disease. An insufficient intake of vitamins and minerals affects the functioning of the immune system, the ability to concentrate, normal body functions and mental health status of the elderly [13].

Health status of the elderly population is determined by various complementary factors. Therefore, it would be useful to analyse the effects of physical activity and dietary regimen on the health status of the elderly population.

Aim

The objective of this study was to assess physical activity and dietary regimen and to analyse relationships between physical activity and diet and health status defined as self-assessment of health and the presence of selected diseases among the elderly people. The following hypothesis was proposed for this study:

Engaging in physical activity and following a dietary regimen by the elderly respondents have significant positive effects on health status.

Material and methods

The study was performed based on a proprietary, anonymous questionnaire composed of 19 closed-ended questions concerning physical activity, dietary habits and health status of respondents. Health status was assessed based on respondents' self-evaluation of health, and separately, based on responders' answers to questions concerning health problems. Respondents were asked to give answers to the following questions:

a. Concerning physical activity:

1. How often did you engage in physical activity in your leisure time in the past?
3. What means of transport do you use most often?
4. Do you feel the need to engage in any physical activity?
5. What does physical activity mean to you?
6. What do you think is the most suitable type of physical activity for the elderly?
7. What do you do most often in your leisure time?
8. What do you think is the most popular type of physical activity today?
9. What are your main reasons for engaging in physical activity?
10. What are your reasons for not engaging in physical activity?

11. What do you think is the importance of physical activity in human life?
12. Is physical activity an important contributor to your health?
- b. Concerning health status:
 2. How would you assess your present health status?
 15. What is your weight?
 17. Do you have cardiovascular problems?
 18. Do you have hypertension?
 19. Do you have diabetes?
- c. Concerning diet:
 13. How often do you eat during the day?
 14. What are the main nutritional ingredients of your diet?
 16. Have you ever been on a diet?

The study was performed between 11 and 25 January 2019 and it involved a group of 130 patients of the Non-Public Health Care Centre for Management of Chronic Diseases in Radom, Poland.

Results obtained for respondents' physical activity, dietary regimen and the health status were considered as nominal. Chi-squared test was chosen to determine whether there is significant difference between the study variables [14].

Results

The study group included mostly patients aged 71–80 years (48.5%) and 61–70 years (37.7%) with a low percentage of patients aged exactly 60 years (8.5%) and more than 80 years (5.3%). Respondents included mostly women (58.5%) and city dwellers (51.5%). A greater part of them were retired (53.9%) or disability pensioners (38.5%) and only 7.6% were active workers. A total of 42.2% and 40.8% of respondents completed vocational and secondary education respectively, 7% – primary education while 10% had a university degree.

a. Physical activity

Even though the majority of respondents rarely engaged in active leisure time activities in the past (54%) (**Figure 1a**), they often felt the need to pursue physical activity at that point in their life (44%) (**Figure 1b**).

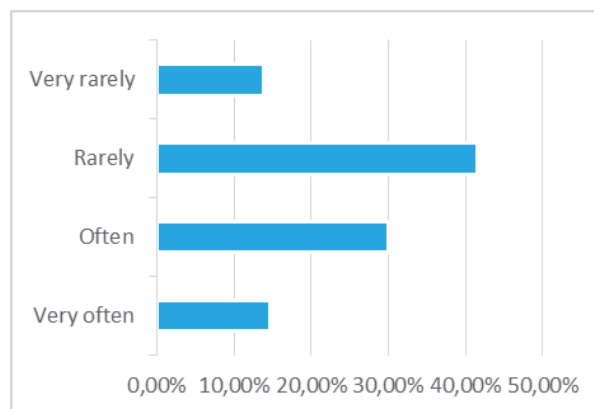


Figure 1a. The frequency of spending free time actively
Source: author's own analysis

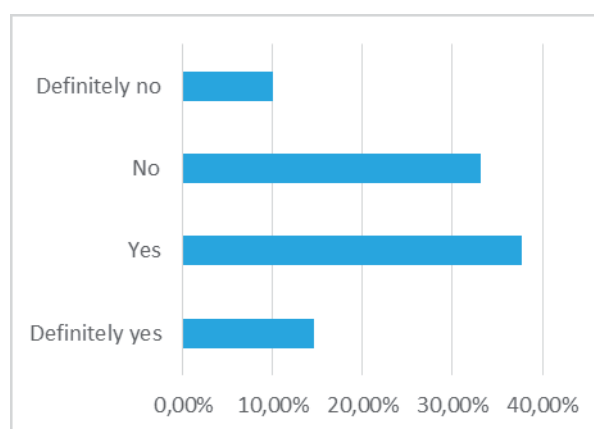


Figure 1b. The feel of need to pursue physical activity
Source: author's own analysis

No preferred means of transport (**Figure 2a**) or the most-liked leisure time activity (**Figure 2b**) could be determined based on the questionnaire results.

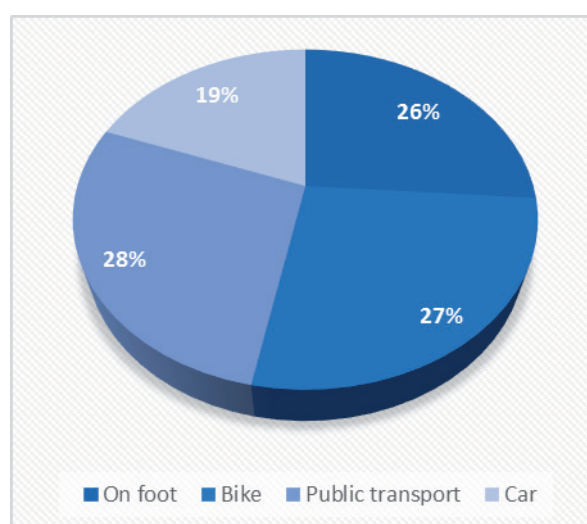


Figure 2a. Most commonly used means of transport
Source: author's own analysis

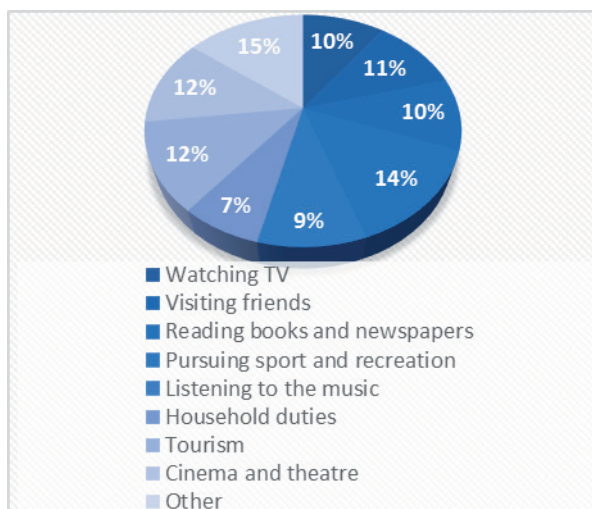


Figure 2b. Most preferred leisure time activity
Source: author's own analysis

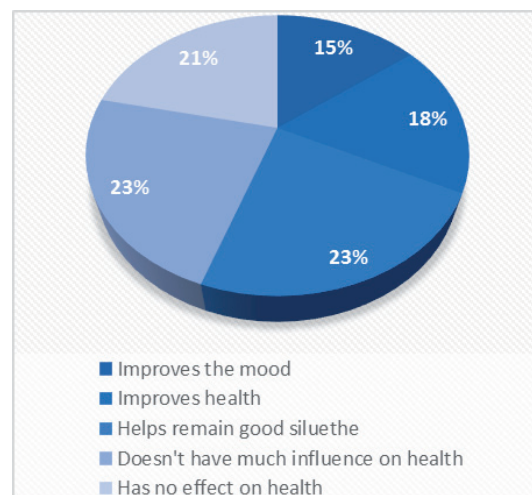


Figure 3b. Opinion about what the impact of physical activity is
Source: author's own analysis

The majority of respondents regarded physical activity as an obligation (17.7%) or a usual activity (19.2%) (**Figure 3a**). At the same time respondents appreciated that physical activity helped them to maintain a slim body shape (23%) (**Figure 3b**). The same percentage of respondents (23%) considered that physical activity had little impact on health status.

A substantial majority of respondents (38.5%) considered that endurance exercises were appropriate for the elderly (**Figure 4a**). Respondents pursued different types of physical activity which included mostly gardening (21.5%) and hiking (17%) (**Figure 4b**).

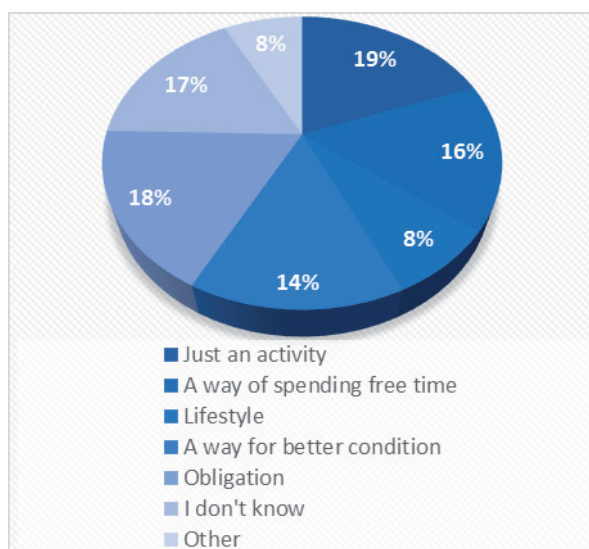


Figure 3a. Opinion about what a physical activity is
Source: author's own analysis

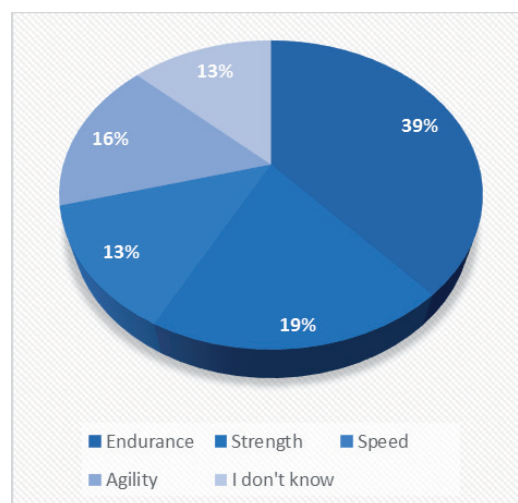


Figure 4a. Opinion about appropriate type of exercises for elderly
Source: author's own analysis

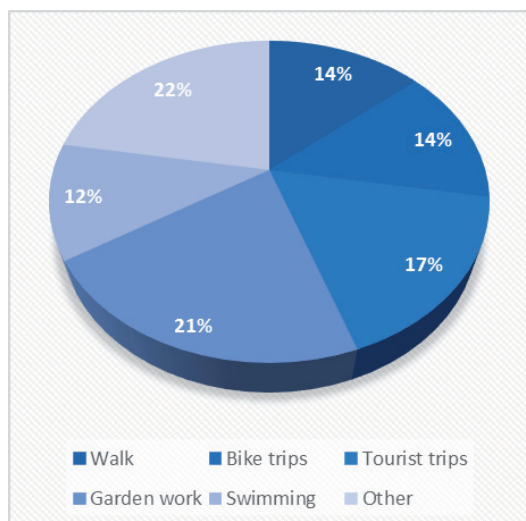


Figure 4b. Most commonly chosen type of physical activity
Source: author's own analysis

According to respondents, the main reason for engaging in physical activity was the desire to keep their body in good shape (30.8%) and to comply with doctor's recommendations (23%) (**Figure 5a**). Most often the reason for giving up physical activity was poor health status (39%) and lack of access to related facilities or equipment (20%) (**Figure 5b**). Additionally, 46% of respondents considered that physical activity had a moderate impact on their health status. Physical activity was considered to be highly relevant to health status by 30% of respondents.

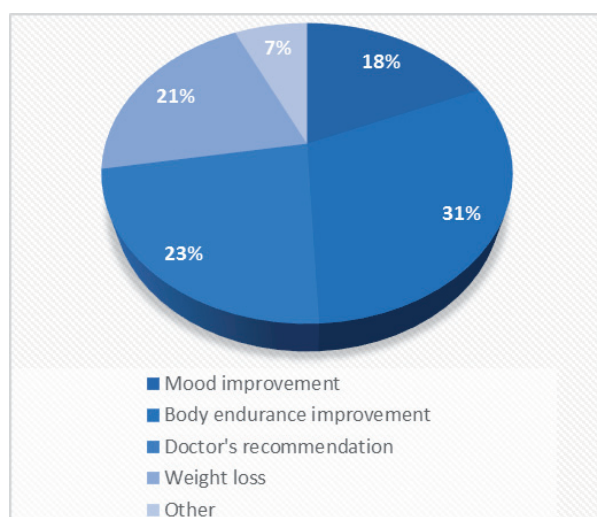


Figure 5a. Reasons for pursuing physical activity
Source: author's own analysis

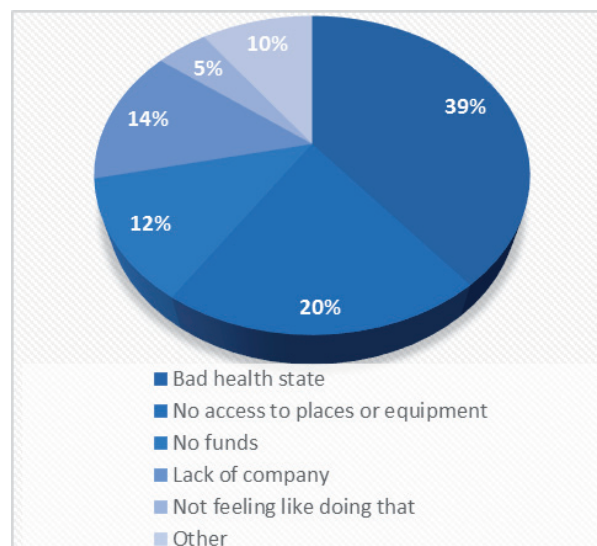


Figure 5b. Reasons for giving up the physical activity
Source: author's own analysis

b. Diet

A substantial majority of respondents had two or three meals a day: 57% and 40% of respondents respectively (**Figure 6a**). The dietary ingredient indicated by most respondents (57%) was carbohydrates (**Figure 6b**). Additionally, 63% of respondents declared that they had been on a diet in the past or were on a diet at the time of the study survey.

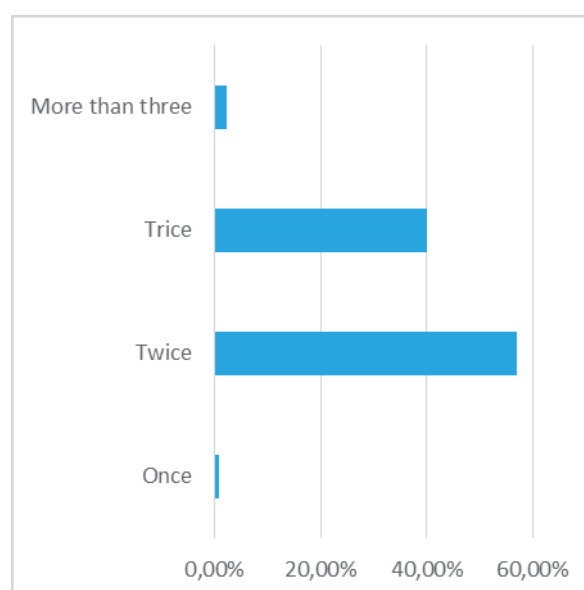


Figure 6a. The number of meals per day
Source: author's own analysis

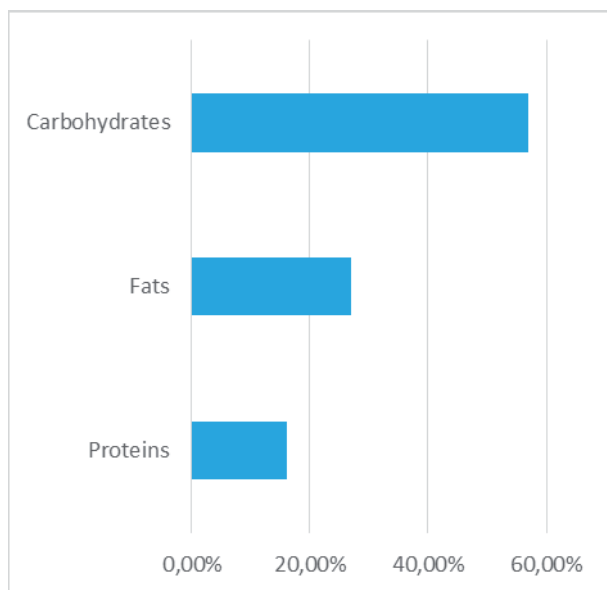


Figure 6b. The main dietary ingredient in diet
Source: author's own analysis

c. Relationship between physical activity, diet and health status

A total of 55% of respondents had hypertension, 57% – diabetes and 60% – cardiovascular problems. The majority of respondents were obese (31.5%) or overweight (28.5%). Only 17.7% of respondents were underweight. Respondents evaluated their health status as poor – 39.2%, neither good nor poor – 30.8% or good – 30%.

The study results are presented in summary tables (Tables 1 and 2).

Table 1. Summary table for chosen questions, subjective health state and fact of suffering from cardiovascular diseases

Question	Answer	Subjective health state			Cardiovascular disease		Sum
		Good	Middling	Bad	Yes	No	
Frequency of spending free time actively	Very often	6	6	7	9	10	19
	Often	11	15	13	29	10	39
	Rarely	12	16	26	26	28	54
	Very rarely	10	3	5	13	5	18
Most commonly chosen means of transport	On foot	12	13	9	18	16	34
	Bike	6	10	19	24	11	35
	Public transport	11	7	18	21	15	36
	Car	10	10	5	21	4	25

Most common way of spending leisure time	Watching TV	6	2	5	8	5	13
	Visiting friends	3	4	7	7	7	14
	Reading books and newspapers	4	8	1	10	3	13
	Pursuing sport and recreation	7	6	5	9	9	18
	Listening to music	5	3	4	7	5	12
	Taking care of household duties	3	4	2	4	5	9
	Tourism	2	6	8	12	4	16
	Visiting Cinema or theatre	3	4	9	6	10	16
	Other	6	3	10	14	5	19
Most commonly chosen type of physical activity	Walk	6	5	7	12	6	18
	Bike tourism	6	6	6	9	9	18
	Tourist trips	6	8	8	12	10	22
	Garden work	9	7	12	20	8	28
	Swimming	2	5	8	11	4	15
	Other	10	9	10	13	16	29
The number of meals per day	Once	1	0	0	0	1	1
	Twice	22	30	22	43	31	74
	Trice	16	9	27	31	21	52
	More than three times per day	0	1	2	3	0	3
Main dietary ingredient	Proteins	1	7	13	13	8	21
	Fats	15	9	11	19	16	35
	Carbohydrates	23	24	27	45	29	74
Practicing diet in the past	Yes	22	26	34	50	32	82
	No	17	14	17	27	21	48
Sum		39	40	51	77	53	130

Source: author's own analysis

Table 2. Summary table for chosen questions and fact of suffering from diabetes and hypertension

Question	Answer	Diabetes		Hypertension		Sum
		Yes	No	Yes	No	
Frequency of spending free time actively	Very often	13	6	9	10	19
	Often	20	19	25	14	39
	Rarely	34	20	29	25	54
	Very rarely	7	11	9	9	18
Most commonly chosen means of transport	On foot	9	25	21	13	34
	Bike	22	12	25	10	35
	Public transport	26	10	13	23	36
	Car	17	8	13	12	25

Most common way of spending leisure time	Watching TV	6	7	8	5	13
	Visiting friends	9	5	8	6	14
	Reading books and newspapers	7	6	7	6	13
	Pursuing sport and recreation	9	9	7	11	18
	Listening to music	4	8	8	4	12
	Taking care of household duties	5	4	6	3	9
	Tourism	11	5	10	6	16
	Visiting Cinema or theatre	8	8	8	8	16
	Other	15	4	10	9	19
Most commonly chosen type of physical activity	Walk	10	8	11	7	18
	Bike tourism	13	5	10	8	18
	Tourist trips	13	9	14	8	22
	Garden work	12	16	12	16	28
	Swimming	9	6	10	5	15
	Other	17	12	15	14	29
The number of meals per day	Once	1	0	1	0	1
	Twice	42	32	42	32	74
	Trice	29	23	27	25	52
	More than three times per day	2	1	2	1	3
Main dietary ingredient	Proteins	15	6	11	10	21
	Fats	17	18	17	18	35
	Carbohydrates	42	32	44	30	74
Practicing diet in the past	Yes	45	37	43	39	82
	No	29	19	29	19	48
Sum		74	56	72	58	130

Source: author's own analysis

It can be seen that:

1. Most respondents who rarely engage in active leisure time activities consider their health status to be poor, they have diabetes and hypertension more often. A similar percentage of respondents with cardiovascular diseases described their participation in active leisure time activities in the past as frequent or rare.
2. Cardiovascular conditions, diabetes and hypertension were most often observed in respondents who were regular car users. Respondents who most often walked considered their health status to be good or neither good nor poor in most cases.
3. Respondents who most often travelled in their leisure time also had cardiovascular diseases, diabetes and hypertension. They also considered their health status to be poor.

4. Respondents who pursued biking trips and hiking most often suffered from diabetes and hypertension. Respondents with cardiovascular diseases focused mostly on gardening.
5. No significant differences were determined in terms of the percentage of respondents with the diseases included in the study in function of the number of meals during the day.
6. Most respondents suffering from the diseases included in the study declared to have carbohydrate-rich meals.
7. Respondents who used to be on a diet in the past most often considered their health status to be poor and suffered from the diseases included in the study.

To check the statistical significance of the above relationships, the Chi-squared test was performed. The results were shown in **table 3**. Whenever results are in bold, it means that the relationships are statistically significant at $\alpha = 0.05$.

Table 3. Chi-square statistics obtained

Number of question:	Subjective health state	Cardiovascular diseases	Diabetes	Hypertension
1	0,169	0,032	0,193	0,579
3	0,046	0,042	0,000	0,021
7	0,221	0,259	0,339	0,869
8	0,960	0,244	0,532	0,615
13	0,043	0,313	0,825	0,737
14	0,036	0,781	0,247	0,540
16	0,580	0,597	0,538	0,377

Source: author's own analysis

Based on the analysis, the following variables were recognised to be statistically associated with subjective health state and the presence of cardiovascular diseases, diabetes, and hypertension:

1. The frequency of engaging in active leisure time activities in the past versus the presence of cardiovascular conditions.
2. The means of transport used by respondents versus the evaluation of health status and the presence of the diseases included in the study.
3. Intervals between meals during the day versus the health status evaluation.
4. The main nutritional ingredients versus the health status evaluation.

Discussion

Physical activity promotes normal physical and mental functions, improves functional performance and contributes to well-being. Health-promoting lifestyle is increasingly advocated in advertising campaigns and health-oriented information and education projects as well as scientific publications aimed at fostering the awareness of health benefits of an active way of living and dietary regimen. It is necessary due to the low level of physical activity among Polish senior citizens and non-adherence to dietary recommendations as well as due to the numerous barriers and restrictions which prevent them from pursuing active leisure activities. The promotion of a healthy lifestyle among senior citizens helps to reduce costs of treatment and improve their functional performance, which in turn reduces the number of patients in long-term health care centres as well as the number of visits in hospitals and outpatient clinics.

The study provides the basis for a number of conclusions. Regular engagement by the elderly in physical activity is the primary contributor to keeping good health and maintaining independence in a social group. It is therefore necessary to expand activation campaigns oriented towards senior citizens, including in particular those focused on increasing their participation in physical activities based on successful implementation of prevention programmes to support healthy ageing. Their importance stems from the fact that physical activity pursued on a regular basis and customized to the personal situation of elderly individuals helps them to reduce the prospect of becoming disabled and dependent on others or institutional assistance, thus significantly increasing the likelihood of independent and comfortable living in the twilight years.

Results from this research might be informative for nurses who are looking for a reason why their patients might be omitting physical activities and/or diet even though they are encouraged for that. The study relationships might be a good starting point of a discussion with a patient about changing the habits for a better health.

The importance of physical activity and dietary regimen for the elderly has been studied by several scientists. The strong correlation between physical activity and the quality of life has been demonstrated by Skotnicka and Pieszko [16]. Even though their study included a different age group (above the age of 80 years), their findings correspond to the results of this study which included respondents aged between 60 and 90 years.

The present study showed that engagement in active leisure time activities in the past has statistically significant effects only in the case of cardiovascular dise-

ases. However, similar studies [17] have demonstrated that participation in physical activity at young age had a greater impact on the evaluation of the here-and-now health status. The elderly are fully aware of the effects of physical activity and dietary regimen on their health status [18]. They know that both these factors may have a significant impact on their well-being if they neglected proper treatment in the past and have limited access to health care professionals. Regrettably, as demonstrated by Canadian studies [19], not all senior citizens can afford a properly balanced diet. Retirement schemes in some countries prevent the elderly living alone from following a diet containing all the necessary nutritional ingredients.

This study could be a prelude to further and wider research into the effects of physical activity and dietary regimen on the health status of the elderly. Subsequent studies could be oriented towards developing a better definition of the here-and-now health status, dietary regimen parameters and types of activities.

Conclusions

1. Physical activity of the elderly appeared to play an important role. Respondents most often preferred such forms of physical activity as going for a walk, making biking trips and gardening, i.e. pursuits which do not require excessively intense physical activity and make it possible to spend time with friends and family.
2. A substantial majority of respondents considered improved well-being and better physical performance as the most important benefits of physical activity. The major incentive which encourages the elderly to engage in physical activity is the health-related impact related to health care. Of importance to respondents was also the improvement of their physical performance, keeping a good body shape and adhering to doctor's recommendations.
3. The most popular type of physical activity among respondents was endurance workout.
4. The primary reason for not engaging in physical activities by the elderly is their poor health status and no access to appropriate equipment.
5. The frequency of engaging in active leisure time activities in the past, the means of transport used by respondents, the frequency of engaging in active leisure time activities in the past and the nutritional ingredients were the factors significantly associated with self-assessment of health and the presence of cardiovascular disorders, diabetes and hypertension.

Limitations

The author admits, that the survey method used in this paper has several weaknesses. Survey questionnaire used was prepared for this research only and was not fully checked in terms of psychometric properties. Subjective measures of respondents' health state do not correspond to official medical examinations performed during the research.

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Address for correspondence:

Damian Durlak

e-mail: dam.durlak@gmail.com

Faculty of Health Sciences, Radom College, Poland