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**HEALTHY AGING – AN INDICATOR FOR A  
QUALITY LIFE OF ELDERLY PEOPLE IN  
BULGARIA**

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The dissertation work has been approved and directed for defense by the departmental council of the Department of "Preventive Medicine" at the Faculty of Public Health "Prof. Dr. Tsekomir Vodenicharov, MD, PhD, DSc" of Medical University of Sofia.

The dissertation is represented by 154 pages and contains 46 tables and 25 figures. The book collection contains 148 titles, of which 89 are in Cyrillic and 59 are in Latin.

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## **ABBREVIATIONS USED**

**ADLs** - Activities of daily living

**AGE** – European platform of the elderly

**APD** - Agency for People with Disabilities

**ASA** – Agency for Social Assistance

**CSR** - Social Security Code

**CVD** – Cardiovascular diseases

**EC** – European Commission

**EHIS** - European Health Interview System

**EQLS** – European Quality of Life Survey

**ESF** - European Social Fund

**EU** - European Union

**EUROFOUND** - European Foundation for the Improvement of Living and Working Conditions

**EUROSTAT** - Statistical Office of the European Union

**EY 2012** - European Year of Active Living for Older People and Intergenerational Solidarity – 2012 (European Year 2012)

**GDP** – Gross Domestic Product

**GSDS** - "Groningen Social Disability Table"

**HDI** - United Nations Human Development Index

**HIP** – Health-insured person

**HRD OP** - Human Resources Development Operational Program

**ICF** - International Classification of Functioning, Disability and Health

**IME** - Institute for Market Economy

**LB NHIF** – Law on the budget of the NHIF

**LH** – Law of Health

**LTC** – Long-term care

**LPD** - The Law on Persons with Disabilities

**LMI** – The Law on Medical Institutions

**LSP** - Law on Social Assistance

**LSC** - Law on Social Services

**LTC** – Long-term care

**MH** - Ministry of Health

**MC** - Council of Ministers

**MLSP** - Ministry of Labor and Social Policy

**MF** - Ministry of Finance

**NHIF** – National Health Insurance Fund

**NII** - National Insurance Institute

**NP APD** - National Program "Assistants of People with Disabilities"

**NSI** - National Statistical Institute

**NCPHA** - National Center for Public Health and Analysis

**OECD** - Organization for Economic Co-operation and Development

**PPZIHU** – Regulations for the implementation of the Law on Persons with Disabilities

**PPZSP** - Regulations for the implementation of the Law on Social Assistance

**QL** - Quality of life

**QLrH** - Quality of life related to health

**SSF** - The Stiglitz / Sen / Fitoussi Commission

**WHO** - World Health Organization

**WHO / DAS** - Original Disability Assessment Table published by WHO to measure functioning

**WHOQOL** - a WHO quality of life instrument that assesses subjective well-being in various areas of life

## INTRODUCTION

The number and share of people over the age of 60 in the population has been gradually increasing in recent years. In 2019, it is 1 billion. Its increase is expected to reach 1.4 billion by 2030 and 2.1 billion by 2050. By 2070, 30.3% of the population is likely to be 65 or older (compared to 20.3% in 2019) and also 13.2% of people aged 80 or over (compared to 5.8% in 2019).

To cope with the aging population in Europe and the world, health and care systems will need to adapt further, and countries will need to decide how to finance the higher public costs associated with ageing.

Prevention is the most powerful tool to ensure healthy aging. In addition to prevention, the following topics related to:

1. Socio-economic issues
2. Organization of health systems
3. Health inequalities

Aging presents both challenges and opportunities.

Older people contribute significantly to the economy and society. This is the aim of the policy approach for 'active older living' and healthy ageing.

The environment in which older people live can either promote health or harm it.

Aging in good health and maintaining the functional ability that allows well-being in older age is accepted as one of the most important indicators of the quality of life of the elderly. Assessing the health status of the population as a quality of life is also perceived as a fundamental position in the modern philosophy and strategy of the WHO.

The concept of healthy aging is detailed in the World Report on Aging and Health. It is defined as "the process of developing and maintaining the functional abilities that enable well-being in older age." This functional ability is determined by the internal capacity of the individual, the environment he or she inhabits and the interaction between them.

Healthy aging is a process of optimizing opportunities for health, safety and an active lifestyle in order to improve the quality of life of older people. Quality life is a prerequisite for active aging and at the same time a result of healthy aging.

Active aging is related to healthy ageing, because to be active in the work, social and living environment, a person must be physically and mentally healthy and with good functional abilities.

In addition, healthy aging means a healthy lifestyle. The aging process is biologically determined, but largely subject to human control.

Healthy aging is influenced by the following factors: 1) health and social systems, 2) behavioral factors, 3) personal factors, 4) physical environment, 5) social environment, and 6) economic factors.

**In WHO's annual report on the state of world health in 1997, Director-General Dr. Hiroshi Nakajima concluded that “health expectancy is much more important than life expectancy, because in enjoying the extra years we must we recognize that an extended period without quality of life is a meaningless reward“.**

## **CHAPTER I. PURPOSE, TASKS, MATERIALS AND METHODS OF THE STUDY**

### **Purpose**

The purpose of this paper is to prove that healthy aging is a factor of the quality of life of the elderly in Bulgaria.

### **Tasks**

The following tasks were set to fulfill the main objective:

1. To prepare a survey card and conduct a survey among the elderly population in Sofia city, Sofia region and Shumen city about health status and functional ability.
2. To make a comparative analysis of the health status and functional abilities of the elderly and old people by gender and age.
3. To make a comparative analysis of the health status and functional abilities of the elderly and old people depending on the environment of residence (in social institutions and family environment).
4. To carry out an analysis of demographic trends in the developed countries of the world, Europe and Bulgaria and the socio-economic and health consequences for society.
5. To assess the place and role of health and the health system in providing conditions for access to comprehensive health services and prolonging the lives of older people in good health.
6. Formulate recommendations to the Ministry of Health, the National Health Insurance Fund, the Ministry of Labor and Social Policy, the Ministry of Education and Science, local governing bodies, etc., regarding policies aimed at health promotion, disease prevention, health conditions of labour, adequate behavior of health care and monitoring of interventions and progress achieved.

## **Materials and methods of the study**

Depending on the scientific tasks set in this way, the object of observation, the units and their signs are specified.

**The subject** of the current study is healthy aging.

The study is complex. The specific scientific tasks, object, units and signs of the observation are related to the specificity of the development.

**The subject** of the research is the study of the relationship between healthy aging and the quality of life of the elderly and elderly in Bulgaria.

### **Setting of the survey**

Within the framework of this dissertation, the results of a targeted survey among elderly and old people from two social institutions and living in a home environment, randomly selected, were developed, conducted and analyzed. Their subjective sense of health, functional ability, independence and quality of life were assessed.

The conducted research is anonymous and was done solely and only for the purposes of the present scientific research, which was declared to each respondent according to research standards established in practice.

The method of collecting primary information is self-filling of paper questionnaires. The survey was conducted in the period March 2020 - November 2021.

The target group of respondents are persons over 60 years of age in the territory of the city of Sofia, Sofia region and the city of Shumen.

For the purposes of the study, a pre-tested questionnaire was developed and included questions about the health status, functional ability, independence and quality of life of the elderly and elderly.

### **Sample**

The total number of examined persons is 462, of them men - 180, women - 282. Of the respondents, 312 persons reside in social institutions, and 150 live in a family environment. Of those living in social institutions, 100 persons are

from the Home for Old People "Dr. St. Smyadovski" in the city of Shumen, and 212 reside in the "Serdika" Residence for Adults in the city of Sofia. There are 139 men in a social institution, and 173 women.

The respondents were divided into five age groups, according to the Classification of age groups according to the WHO:

- 0-14 years – childhood;
- 15-44 years – young age;
- 45-59 years – middle (mature) age;
- 60-74 years old - elderly people;
- 75-89 years old - old people (old age);
- 90+ - longevity.

Of the 150 persons surveyed, living in a family environment, 90 persons are from the city of Sofia and 60 from the Sofia region. Of them, 41 respondents were men and 109 were women.

The primary information thus collected was used for the needs of the statistical analysis and derivation of basic attitudes and statistically significant interrelationships, establishing the position of the respondents regarding the healthy physical and mental state of the elderly and the elderly and their activity and independence and participation in social life.

### **Methods**

The methodological basis of the dissertation is a complex of general scientific and special scientific methods and approaches for conducting scientific research. The following research methods were used during the research process:

1. Documentary method:
  - a) Data from medical documents of the respondents (Prescription books, outpatient lists);
  - b) Relevant official normative and scientific-applied documents;

2. Sociological/survey method – A survey was conducted based on a survey card (Application 1).

3. Statistical methods:

- ✓ Descriptive statistics - results are summarized by absolute frequencies (n) and relative frequencies (%).

- ✓ Chi-square test to examine the relationship between descriptive (categorical) data with two or more categories.

The threshold level of significance adopted is  $\alpha=0.05$ . The corresponding null hypothesis is rejected when the p-value is less than  $\alpha$  ( $p<0.05$ ).

The specialized statistical package SPSS (Statistical Package for the Social Sciences) version 20.0 was used to process the survey data.

Microsoft Office products were used for table, graphic processing and presentation.

## CHAPTER II. ANALYSIS OF THE RESULTS OF OWN STUDIES

The group of elderly and old people from the point of view of the aging process is a heterogeneous group. Among them there are those with preserved vitality and ability to work, others are burdened with many diseases, others are dependent and need care and supervision. Diagnosis and symptoms are not sufficient in assessing the health of the elderly. It is extremely important to determine their functional status and their ability to cope independently in daily life, which is associated with good health and quality of life. Therefore, questions about people's functional abilities inform us when assessing the health of older persons.

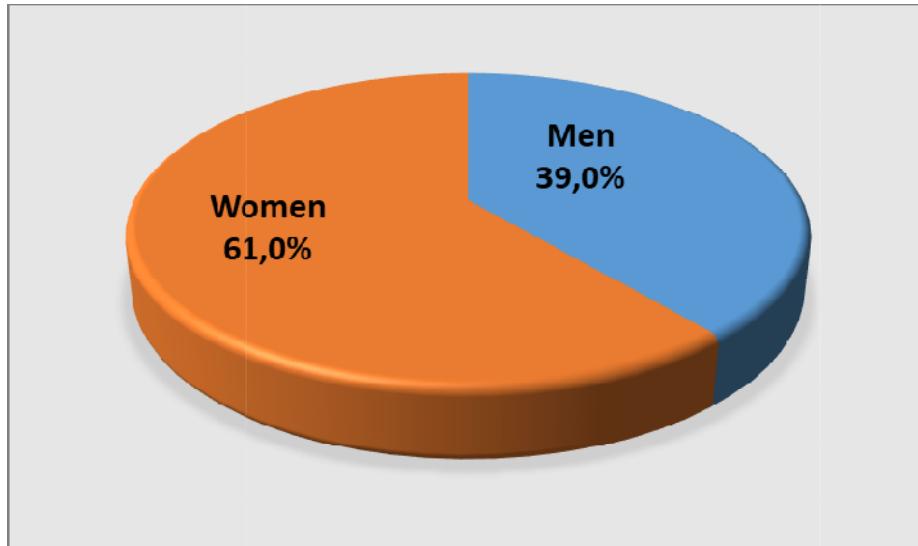
Functional status is represented by the physical capacity of individuals to cope with basic activities that are normal for everyday life and daily activities necessary for the autonomous existence and adaptation of the individual to the living environment.

The questionnaire of the present study used listed items to measure each area of internal capacity or functional ability as suggested by the WHO technical experts. From the conducted survey, the data were analyzed in 4 directions:

- Distribution of the respondents by answers to the questions;
- Relationship between answers to questions and gender;
- Relationship between answers to questions and age;
- Dependence between the answers to the questions and the environment of residence (in social institutions and family environment).

**Distribution of the respondents by answers to the survey questions and analysis of the structure of the distribution of the answers.**

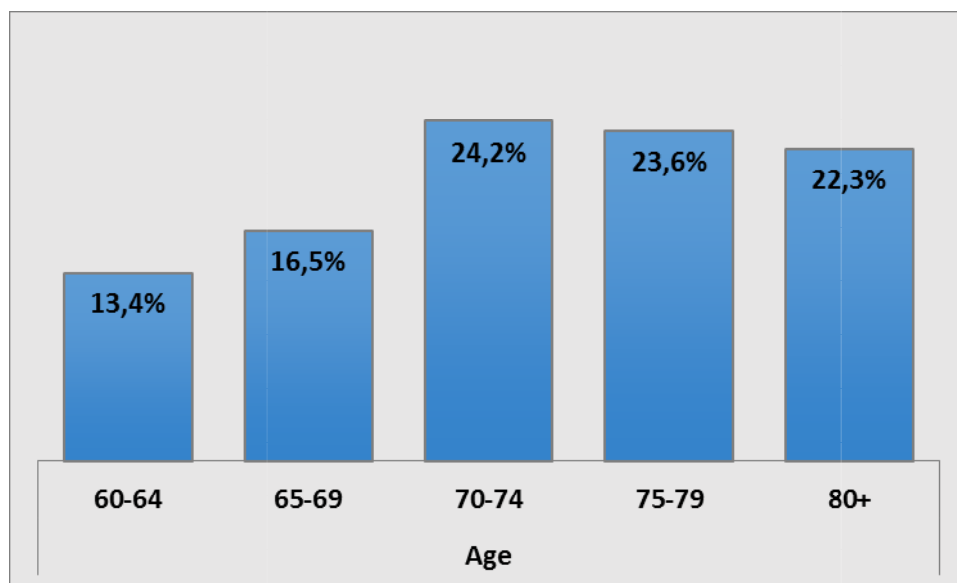
Of the 462 respondents over 60 years of age, 61.0% were women and 39.0% were men, as shown in Figure 1.



*Figure 1. Distribution of respondents by gender*

By age distribution, the largest group - 24.2% is aged 70-74; 23.6% are between 75-79 years old; 22.3% are over 80 years old; 16.5% are aged 65-69; 13.4% are in the 60-64 age range.

The distribution of respondents by age is presented in Figure 2.



*Figure 2. Distribution of respondents by age group*

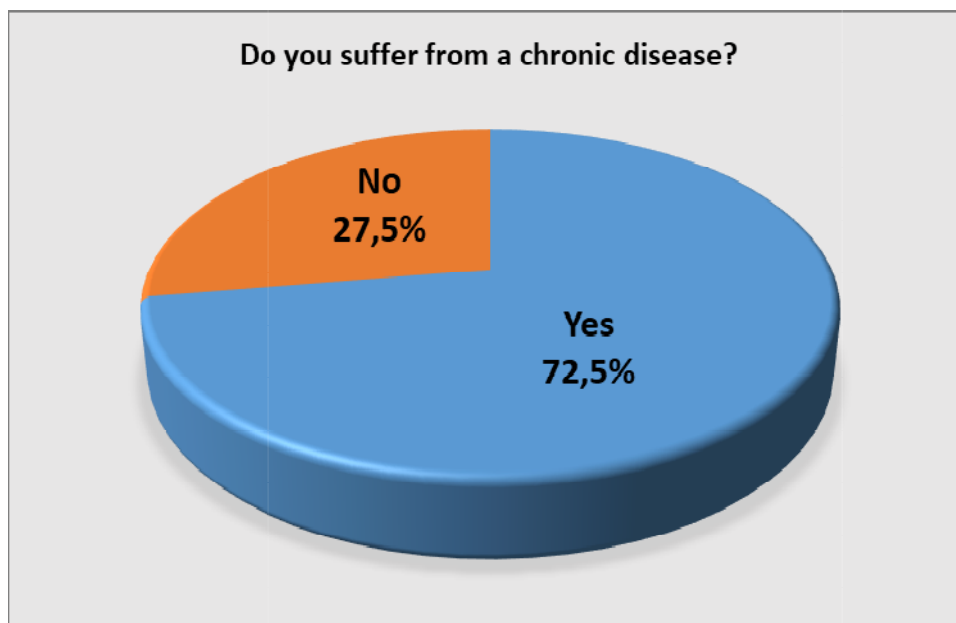
The distribution of respondents by gender and age group does not show a significant difference [ $\chi^2(4)=3.799$ ,  $p=0.434$ ], and is presented in Table 1.

*Table 1. Distribution of respondents by gender and age group*

Age		Men	Women	Total	$\chi^2$	df	p
60-64	N	23	39	62	3,799	4	0,434
	%	12,8%	13,8%	13,4%			
65-69	N	27	49	76			
	%	15,0%	17,4%	16,5%			
70-74	N	52	60	112			
	%	28,9%	21,3%	24,2%			
75-79	N	42	67	109			
	%	23,3%	23,8%	23,6%			
80+	N	36	67	103			
	%	20,0%	23,8%	22,3%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

To the question "Do you suffer from a chronic disease?", 72.5% of the respondents answered positively, and 27.5% answered that they do not suffer, and for people over the age of 80, this percentage increases to 85.4%.

The data are presented in Figure 3.



*Figure 3. Distribution of the respondents according to the presence of a chronic disease*

Self-rated health is one of the most commonly used integrated indicators for measuring individual and population health. The indicator provides information about personal perceptions, expectations, and preferences for good health resulting from individual psychological orientation, values, and experiences with illness, from prevailing sociocultural norms, and from shared resources and knowledge among community members [134].

The distribution of respondents by responses to the question “How would you rate your overall health in the last 4 weeks?” is presented in Figure 4.

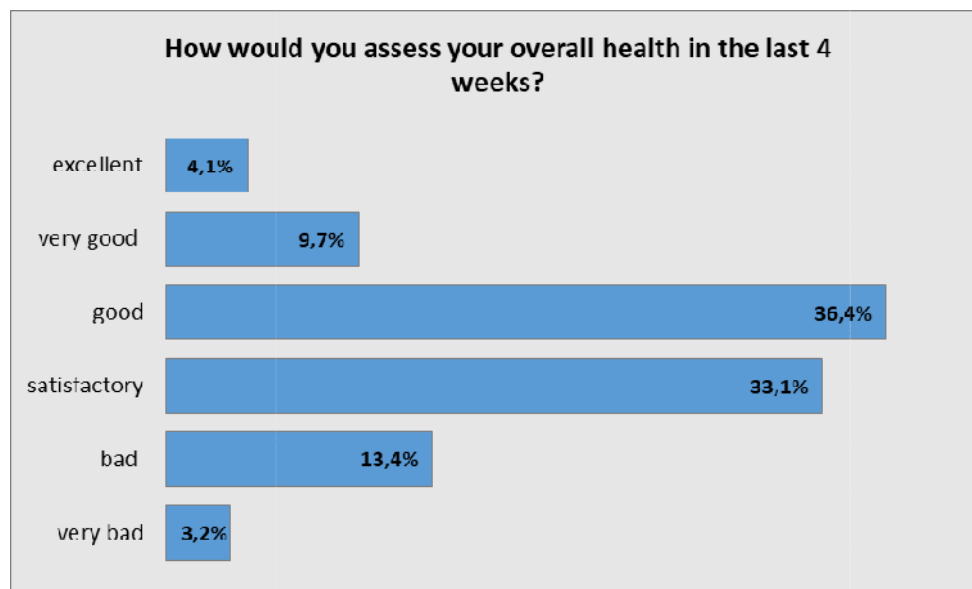


Figure 4. Distribution of respondents by answers to the question "How would you assess your overall health in the last 4 weeks?"

The highest percentage -36.4% of the respondents rated their health in general in the last 4 weeks as "Good", 33.1% as "Satisfactory", 13.4% as "Bad", 9.7% as "Very good", 4.1% as "Excellent" and 3.2% as "Very bad".

As age increases, the share of "Good" and "Satisfactory" responses decreases by 25%. A similar finding has been reported in other publications and explained by the healthy trajectory of humans [134].

Analysis of the distribution structure of the responses of individuals with and without a chronic disease shows a relationship between the presence of a chronic disease and self-rated health.

The results show that 41.73% of persons without a chronic disease responded that they rated their health as "Good" and 36.41% of persons suffering from a chronic disease rated their health as "Satisfactory".

There is a statistically significant relationship between the presence of a chronic disease and the self-assessment regarding the health status in general for all examined.

[ $\chi^2(5)=51,722$ ,  $p=0.001$ ].

The relationship between the presence of a chronic disease and self-reported health status is presented in Table 2.

*Table 2. Relationship between the presence of a chronic disease and the self-assessment regarding the state of health in general for all examined*

How would you rate your overall health over the past 4 weeks?		Do you suffer from a chronic disease?		Total	$\chi^2$	df	p
		Да	He				
Very bad	N	13	2	15	51,722	5	<0,001
	%	3,9%	1,6%	3,2%			
Bad	N	58	4	62			
	%	17,3%	3,1%	13,4%			
Satisfactory	N	122	31	153			
	%	36,4%	24,4%	33,1%			
Good	N	115	53	168			
	%	34,3%	41,7%	36,4%			
Very good	N	21	24	45			
	%	6,3%	18,9%	9,7%			
Excellent	N	6	13	19			
	%	1,8%	10,2%	4,1%			
Total	N	335	127	462			
	%	100,0%	100,0%	100,0%			

When asked to what extent physical health limits usual physical activities, 39.2% of respondents answered that their physical health limits usual physical activities "To some extent", 28.1% - "Very little", 17.7% - "Quite a lot", 9.1% - "No, not at all" and 5.8% answered "I could not do physical activity".

The distribution of respondents by responses to the question "During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?" is presented in Figure 5.

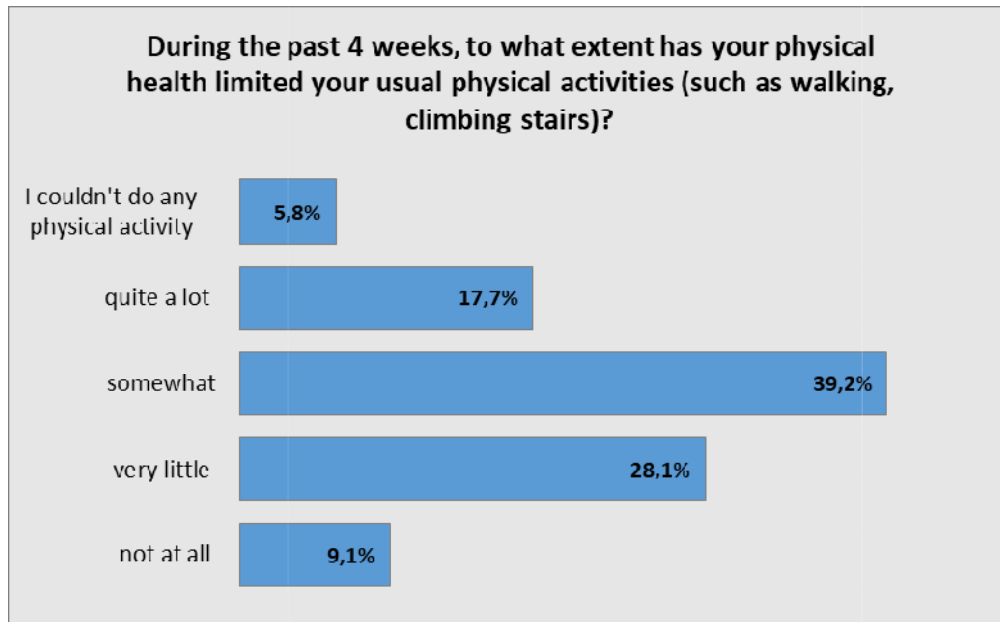


Figure 5. Distribution of respondents by responses to the question "During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?"

Despite the responses of "Good" and "Satisfactory physical health, it limits the respondents' usual physical activities (such as walking, climbing stairs)" "To some extent" (39.2%) and "Very little" (28.1%).

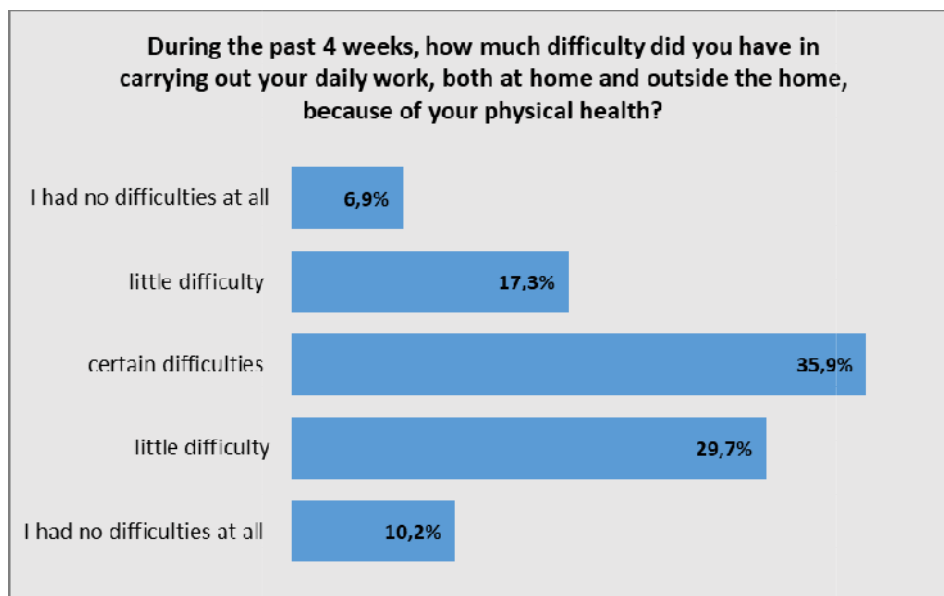
When elderly people have difficulty moving, respectively in mobility, this leads to difficulties and impaired functional abilities and a low quality of life.

Impaired mobility limits access to health services, social, cultural and other activities.

To the next question, "During the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?", the highest percentage of respondents - 35.9% answered that they had "Known difficulties" when performing their daily

work, both at home and outside their home, because of their physical health, 29.7% answered with “A little difficulty”, 17.3% - “A lot of difficulty”, 10.2% - “I had no difficulty at all” and 6.9% - "I couldn't do my daily work".

The distribution of respondents by responses to the question "During the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?" are presented in Figure 6.



*Figure 6. Distribution of respondents by answers to the question "During the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?"*

Difficulties encountered in performing daily work, both at home and outside the home, due to their physical health, self-rated as "Good" and "Satisfactory" are "Known difficulties" and "Minor difficulties".

Activities of daily living (ADLs) that are difficult to varying degrees lead to limitations and addictions.

The performance of activities in everyday life has a favorable effect on the quality of life of the elderly, which determines the need to expand opportunities for communication and physical activity. Physical capacity and the

ability to perform activities of daily living (ADLs) is an essential indicator of the quality of life of the elderly and the elderly.

To the question "What intensity of body pain have you had in the last 4 weeks?", 39.6% answered - "Moderate pain", 17.7% - "Mild pain", 15.6% - "Severe pain", 14.1% - "Very mild pain" , 9.3% - "No pain" and 3.7% - "Very severe pain". 39.6% of respondents reported "Moderate body pain" in the last 4 weeks, which is relevant to "Good" physical health.

The pain is a symptom of impaired physical health and limitations in function.

The distribution of respondents by answers to this question is presented in Figure 7.

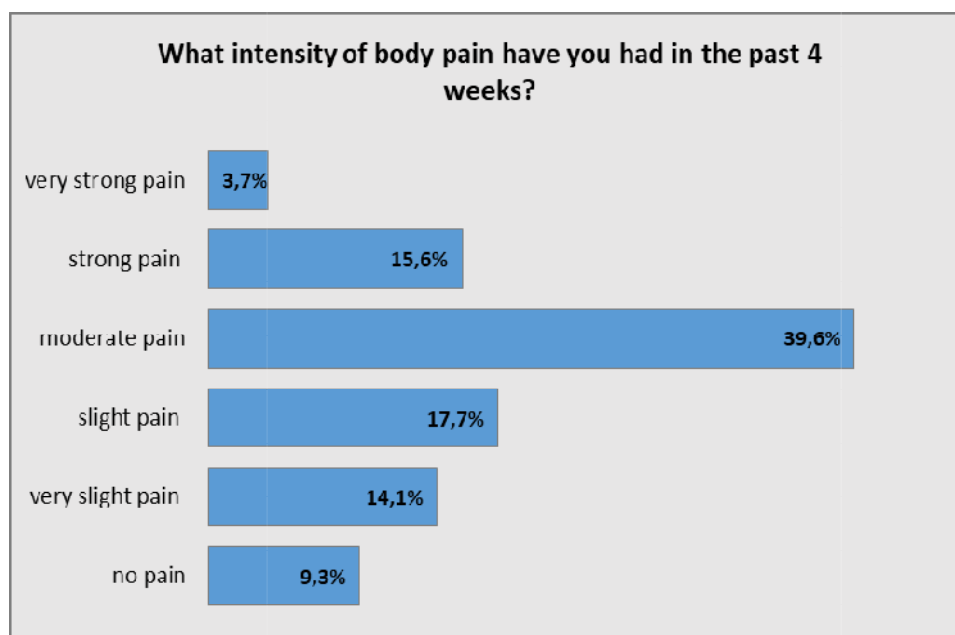


Figure 7. Distribution of respondents according to answers to the question "What intensity of body pain have you had in the last 4 weeks?"

When asked about the feeling of vitality "In the last 4 weeks, how much energy did you have?", 44.2% answered "A lot of energy", 43.9% answered "Notably little", 7.4% - "No energy", and 4.5% - "A lot of energy".

The distribution of respondents by answers to the question "In the last 4 weeks, how much energy did you have?" is presented in Figure 8.

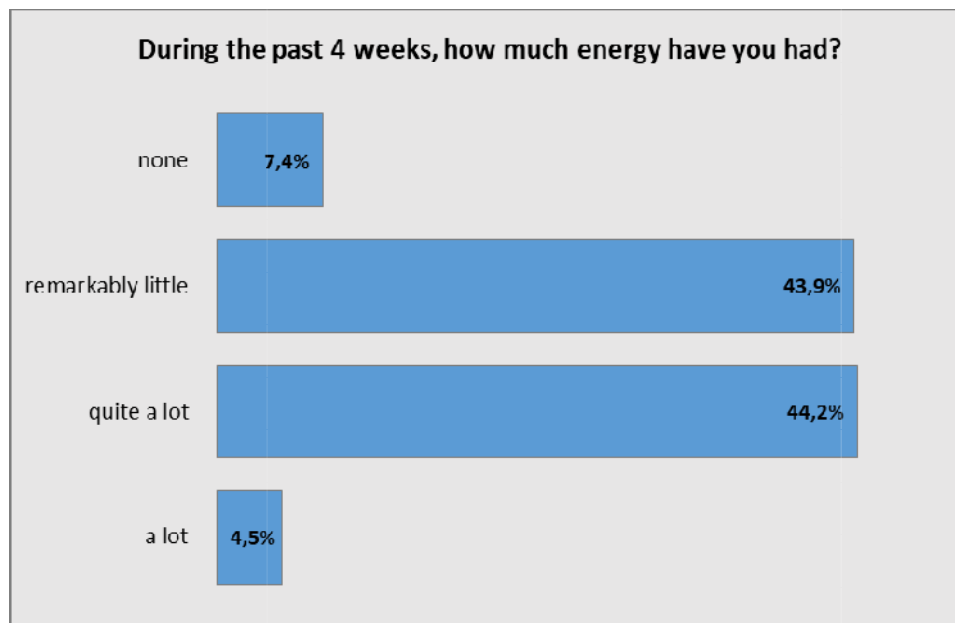


Figure 8. Distribution of respondents by answers to the question "In the last 4 weeks, how much energy have you had?"

The sense of vitality and energy is a measure of happiness and well-being as a result of being satisfied with the things one can have and achieve, not specifically related to any illness.

To the question "In the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with your family or friends?" 42.0% of respondents answered "Somewhat", 21.9% answered "Very little", 18.4% - "Quite a lot", 13.6% - "Not at all", 4.1% answered "Extremely much".

The distribution of respondents by responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?" is presented in Figure 9.

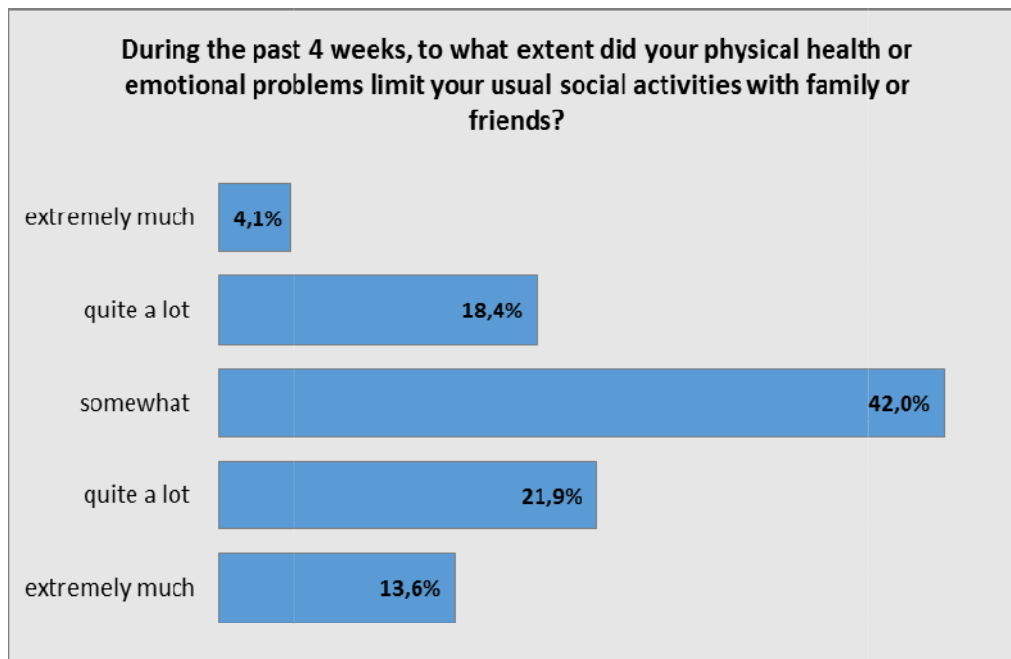
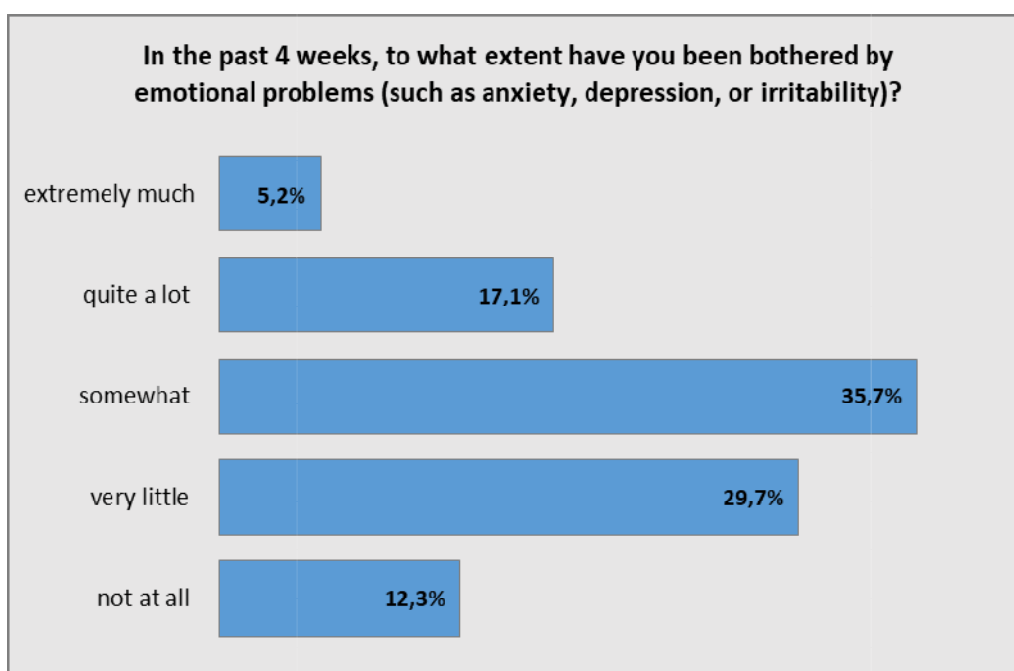


Figure 9. Distribution of respondents by responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?"

Quality of life is related to social participation. It is understood as the satisfaction experienced by the elderly and old people, as a result of their participation in various activities within the family, at the workplace and in the community, in which they use their abilities and develop their personality [130]. Disorders in the physical health lead to limited social contacts and social activity of the elderly and the elderly and their isolation.

Regarding the presence of emotional problems (such as anxiety, depression, or irritability) 35.7% of the respondents answered that "somewhat" they were bothered by emotional problems in the last 4 weeks, 29.7% answered "very little", 17.1% answered "a lot" ", 12.3% - "Not at all", and 5.2% answered "Extremely much".

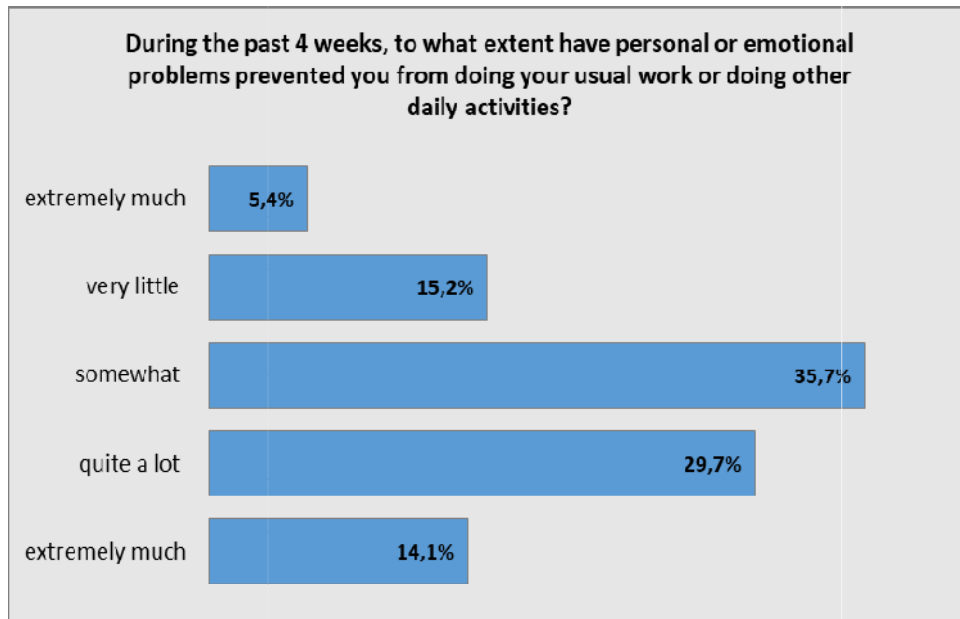
The distribution of respondents by responses to the question "In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?" is presented in Figure 10.



*Figure 10. Distribution of respondents by responses to the question "In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?"*

Psychological problems such as anxiety, depression or irritability are characteristic of the elderly and old people who do not see perspective and meaning in life.

The distribution of respondents by response to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?" is presented in Figure 11.



*Figure 11. Distribution of respondents by responses to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?"*

The highest percentage of the respondents - 35.7% answered that "Somewhat" personal or emotional problems prevented them from doing their usual work or other daily activities, 29.7% answered "Very little", 15.2% answered "A lot", 14.1% answered "Not at all" and 5.4% answered "Extremely much".

Subjective quality of life measures a person's sense of well-being. Subjective quality of life includes subjective states, such as current emotional state, sense of fulfillment and purpose in life, and personal self-evaluation of these [75].

### **Analysis of the relationship between gender and question responses**

No statistically significant relationship was observed between the presence of a chronic disease and gender [ $\chi^2(1)=0.566$ ,  $p=0.452$ ].

The relationship between responses to the question "Do you suffer from a chronic disease" and gender is presented in Table 3.

Table 3. Relationship between answers to the question "Do you suffer from a chronic disease" and gender

Do you suffer from a chronic disease?		Men	Women	Общо	$\chi^2$	df	p
Yes	N	127	208	335	0,566	1	0,452
	%	70,6%	73,8%	72,5%			
No	N	53	74	127			
	%	29,4%	26,2%	27,5%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

The surveyed women and men equally suffer from chronic diseases.

The relationship between gender and the assessment regarding the health status of the respondents is not statistically significant.

[ $\chi^2(5)=2.288$ ,  $p=0.808$ ]

Women and men rate their overall health equally in the survey.

The relationship between the answers to the question "How would you rate your overall health in the last 4 weeks?" and gender is presented in Table 4.

Table 4. Relationship between gender and responses to the question "How would you rate your overall health in the last 4 weeks?"

How would you rate your overall health in the last 4 weeks?		Men	Women	Total	$\chi^2$	df	p
Very bad	N	4	11	15	2,288	5	0,808
	%	2,2%	3,9%	3,2%			
Bad	N	27	35	62			
	%	15,0%	12,4%	13,4%			
Satisfactory	N	57	96	153			
	%	31,7%	34,0%	33,1%			
Good	N	66	102	168			
	%	36,7%	36,2%	36,4%			
Very good	N	17	28	45			
	%	9,4%	9,9%	9,7%			
Excellent	N	9	10	19			
	%	5,0%	3,5%	4,1%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

There was no statistically significant relationship between gender and the score on limited usual physical activity as a result of respondents' physical health [ $\chi^2(4)=4.973$ ,  $p=0.290$ ].

The physical health of the surveyed men and women equally limits their usual physical activity such as walking, climbing stairs.

The relationship between gender and responses to the question "During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?" is presented in Table 5.

*Table 5. Relationship between gender and answers to the question "During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?"*

During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?		Men	Women	Total	$\chi^2$	df	p
Not at all	N	21	21	42	4,973	4	0,290
	%	11,7%	7,4%	9,1%			
Very little	N	42	88	130			
	%	23,3%	31,2%	28,1%			
Somewhat	N	73	108	181			
	%	40,6%	38,3%	39,2%			
Quite a lot	N	34	48	82			
	%	18,9%	17,0%	17,7%			
I couldn't do any physical activity	N	10	17	27			
	%	5,6%	6,0%	5,8%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

When examining the relationship between gender and the assessment of the performance of daily work, both at home and outside the home as a result of the physical health of the respondents, no such relationship was found [ $\chi^2(4)=0.175$ ,  $p=0.996$ ].

The physical health of men and women equally limits the performance of daily work, both at home and outside the home.

The relationship between gender and the answers to the question "During the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?" is presented in Table 6.

*Table 6. Relationship between gender and answers to the question "In the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside the home, because of your physical health?"*

During the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?		Men	Women	Total	$\chi^2$	df	p
I had no difficulty at all	N	19	28	47	0,175	4	0,996
	%	10,6%	9,9%	10,2%			
Little difficulty	N	54	83	137			
	%	30,0%	29,4%	29,7%			
Certain difficulties	N	64	102	166			
	%	35,6%	36,2%	35,9%			
Lots of difficulties	N	30	50	80			
	%	16,7%	17,7%	17,3%			
I couldn't do my daily work	N	13	19	32			
	%	7,2%	6,7%	6,9%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

The relationship between gender and the assessment of the intensity of body pain in the last 4 weeks of the respondents was not statistically significant. [ $\chi^2(5)=4,374$ ,  $p=0.497$ ].

This dependence is presented in Table 7.

Table 7. Relationship between gender and answers to the question "What intensity of body pain have you had in the last 4 weeks?"

What intensity of body pain have you had in the last 4 weeks?		Men	Women	Total	$\chi^2$	df	p
No pain	N	20	23	43	4,374	5	0,497
	%	11,1%	8,2%	9,3%			
Very slight pain	N	26	39	65			
	%	14,4%	13,8%	14,1%			
A slight pain	N	35	47	82			
	%	19,4%	16,7%	17,7%			
Moderate pain	N	65	118	183			
	%	36,1%	41,8%	39,6%			
Strong pain	N	30	42	72			
	%	16,7%	14,9%	15,6%			
Very strong pain	N	4	13	17			
	%	2,2%	4,6%	3,7%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

Men and women rate the intensity of body pain equally in the last 4 weeks, i.e. the gender of the respondents is not a factor that affects the intensity of bodily pain.

When examining the relationship between gender and the rating of energy that respondents had in the last 4 weeks, no statistically significant relationship was observed. [ $\chi^2(3)=1,202$ ,  $p=0.753$ ]

This dependence is presented in Table 8.

Table 8. Relationship between gender and answers to the question "In the last 4 weeks, how much energy did you have?"

In the last 4 weeks, how much energy did you have?		Men	Women	Общо	$\chi^2$	df	p
A lot	N	9	12	21	1,202	3	0,753
	%	5,0%	4,3%	4,5%			
Quite a lot	N	77	127	204			
	%	42,8%	45,0%	44,2%			
Remarkably little	N	83	120	203			
	%	46,1%	42,6%	43,9%			
None	N	11	23	34			
	%	6,1%	8,2%	7,4%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

Men and women rated the energy they had in the past 4 weeks equally.

A decrease in the level of vital energy is inherent in the process of biological aging regardless of gender and is manifested equally in men and women.

No statistically significant relationship was found between gender and the assessment of limited usual social activities with family or friends as a result of respondents' physical health or emotional problems [ $X^2(4)=4,973$ ,  $p=0.290$ ].

The relationship between gender and responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?" is presented in Table 9.

*Table 9. Relationship between gender and responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?"*

During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?		Men	Women	Total	$X^2$	df	p
Not at all	N	28	35	63	2,706	4	0,608
	%	15,6%	12,4%	13,6%			
Very little	N	38	63	101			
	%	21,1%	22,3%	21,9%			
Somewhat	N	73	121	194			
	%	40,6%	42,9%	42,0%			
Quite a lot	N	36	49	85			
	%	20,0%	17,4%	18,4%			
Extremely much	N	5	14	19			
	%	2,8%	5,0%	4,1%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

Physical health or emotional problems for men and women equally limit usual social activities with family or friends.

The relationship between gender and responses to the question "During the past 4 weeks, to what extent were you bothered by emotional problems (such as anxiety, depression, or irritability)?" is presented in Table 10.

*Table 10. Relationship between gender and responses to the question "In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?"*

During the past 4 weeks, to what extent were you bothered by emotional problems (such as anxiety, depression, or irritability)?		Men	Women	Total	$X^2$	df	p
Not at all	N	31	26	57	7,746	4	0,101
	%	17,2%	9,2%	12,3%			
Very little	N	52	85	137			
	%	28,9%	30,1%	29,7%			
Somewhat	N	62	103	165			
	%	34,4%	36,5%	35,7%			
Quite a lot	N	25	54	79			
	%	13,9%	19,1%	17,1%			
Extremely much	N	10	14	24			
	%	5,6%	5,0%	5,2%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

No statistically significant relationship was found between gender and the respondents' assessment of concerns about emotional problems (such as anxiety, depression, or irritability).

[ $X^2(4)=7.746$ ,  $p=0.101$ ].

Men and women were equally bothered by emotional problems in the past 4 weeks.

When examining the relationship between gender and the assessment of limitations in doing their usual work or doing other daily activities as a result of personal or emotional problems of the respondents, no statistically significant relationship was found.

[ $X^2(4)=4.973$ ,  $p=0.290$ ].

The correlation between gender and responses to this question is presented in Table 11.

*Table 11. Relationship between gender and responses to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?"*

During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?		Men	Women	Total	$X^2$	df	p
Not at all	N	31	34	65	5,431	4	0,246
	%	17,2%	12,1%	14,1%			
Very little	N	47	90	137			
	%	26,1%	31,9%	29,7%			
Somewhat	N	64	101	165			
	%	35,6%	35,8%	35,7%			
Quite a lot	N	25	45	70			
	%	13,9%	16,0%	15,2%			
Extremely much	N	13	12	25			
	%	7,2%	4,3%	5,4%			
Total	N	180	282	462			
	%	100,0%	100,0%	100,0%			

Personal or emotional problems for men and women equally limited usual work or other daily activities in the past 4 weeks.

## Analysis of the relationship between age and question responses

A statistically significant relationship was observed between the presence of a chronic disease and age [ $\chi^2(4)=38.87$ ,  $p<0.001$ ].

Older respondents are more likely to suffer from chronic diseases. Cramer's coefficient indicates that this relationship is weak ( $V=0.279$ ).

The study found that 48.4% of persons aged 60-65 suffer from a chronic disease, while for persons over 80 years of age this percentage increases to 85.4%.

The relationship between the answers to the question "Do you suffer from a chronic disease" and age is presented in Table 12.

*Table 12. Relationship between answers to the question "Do you suffer from a chronic disease" and age*

Do you suffer from a chronic disease?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
Yes	N	30	46	80	91	88	335	38,87	4	<0,001	0,279
	%	48,4%	60,5%	71,4%	83,5%	85,4%	72,5%				
No	N	32	30	32	18	15	127				
	%	51,6%	39,5%	28,6%	16,5%	14,6%	27,5%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

The relationship between age and self-assessment of the health status of the respondents is statistically significant.

[ $\chi^2(20)=58.49$ ,  $p<0.001$ ].

Cramer's coefficient indicates that this relationship is moderate ( $V=0.335$ ).

38.5% of old people aged 75-79 years and 38.8% of old people over 80 years of age rate their health status as "Satisfactory".

A total of 3.2% of respondents self-assess their health as "Very bad", with 4.6% of people aged 75-79 who rate their health as "Very bad", and those over 80 who rate their health as "Very bad" represents the highest percentage - 6.8%. Conversely, persons in the age ranges of 60-64 years and 65-69 years rate their health as "Very Good" and "Excellent" in the highest percentage. There is no self-assessment of health "Very bad" in the age groups 60-64 years and 65-69 years.

The relationship between age and responses to the question "How would you rate your overall health in the last 4 weeks?" is presented in Table 13.

Table 13. Relationship between age and responses to the question "How would you rate your overall health in the last 4 weeks?"

How would you rate your overall health in the last 4 weeks?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
Very bad	N	0	0	3	5	7	15	58,49	20	<0,001	0,335
	%	0,0%	0,0%	2,7%	4,6%	6,8%	3,2%				
Bad	N	3	2	15	25	17	62				
	%	4,8%	2,6%	13,4%	22,9%	16,5%	13,4%				
Satisfactory	N	18	24	29	42	40	153				
	%	29,0%	31,6%	25,9%	38,5%	38,8%	33,1%				
Good	N	26	35	47	29	31	168				
	%	41,9%	46,1%	42,0%	26,6%	30,1%	36,4%				
Vwry good	N	11	13	10	4	7	45				
	%	17,7%	17,1%	8,9%	3,7%	6,8%	9,7%				
Excellent	N	4	2	8	4	1	19				
	%	6,5%	2,6%	7,1%	3,7%	1,0%	4,1%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

The physical and mental health, as well as the quality of life of the elderly and old people, depend on the risks they have been exposed to throughout their lives. Therefore, the risk for the manifestation of a number of diseases increases with increasing age, and persons over 80 years of age rate their health as "Very bad" in the highest percentage [129].

A statistically significant relationship was found between age and limited physical activity as a result of physical health [ $\chi^2(16)=62.31$ ,  $p<0.001$ ]. Cramer's coefficient indicates that this relationship is moderate ( $V=0.345$ ).

The relationship between age and answers to the question "During the last 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?" are presented in Table 14.

*Table 14. Relationship between age and answers to the question "During the last 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?"*

During the last 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-80	80+					
Not at all	N	13	7	15	5	2	42	62,31	16	<0,001	0,345
	%	21,0%	9,2%	13,4%	4,6%	1,9%	9,1%				
Very little	N	21	27	31	23	28	130				
	%	33,9%	35,5%	27,7%	21,1%	27,2%	28,1%				
Somewhat	N	22	37	39	43	40	181				
	%	35,5%	48,7%	34,8%	39,4%	38,8%	39,2%				
Quite a lot	N	5	4	25	29	19	82				
	%	8,1%	5,3%	22,3%	26,6%	18,4%	17,7%				
I couldn't do any physical activity	N	1	1	2	9	14	27				
	%	1,6%	1,3%	1,8%	8,3%	13,6%	5,8%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

When looking for a relationship between age and difficulties encountered in performing daily work, both at home and outside the home, due to physical health, it was proven to be statistically significant.

[ $\chi^2(16)=78.83$ ,  $p<0.001$ ].

Cramer's coefficient indicates that this relationship is moderate ( $V=0.382$ ).

Until 69 age 40% of the respondents answered that "They have no difficulties at all" and 21.5% over the age of 80 answered "I could not do my daily work".

The correlation between age and responses to the question "In the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?" is presented in Table 15.

*Table 15. Relationship between age and answers to the question "During the past 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside the home, because of your physical health?"*

In the last 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside your home, because of your physical health?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
I had no difficulty at all	N	15	12	15	4	1	47	78,83	16	<0,001	0,382
	%	24,2%	15,8%	13,4%	3,7%	1,0%	10,2%				
Little difficulty	N	22	31	29	23	32	137				
	%	35,5%	40,8%	25,9%	21,1%	31,1%	29,7%				
Certain difficulties	N	20	26	49	38	33	166				
	%	32,3%	34,2%	43,8%	34,9%	32,0%	35,9%				
Lots of difficulties	N	3	5	15	35	22	80				
	%	4,8%	6,6%	13,4%	32,1%	21,4%	17,3%				
I couldn't do my daily work	N	2	2	4	9	15	32				
	%	3,2%	2,6%	3,6%	8,3%	14,6%	6,9%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

With advancing age, chronic pathology leads to a deterioration of the quality of life from a degree of severely limited to lost ability to self-care.

The relationship between age and responses to the question "What intensity of body pain have you had in the past 4 weeks?" is presented in Table 16.

*Table 16. Relationship between age and answers to the question "What intensity of body pain have you had in the last 4 weeks?"*

What intensity of body pain have you had in the past 4 weeks?		Age group					Total	$X^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
No pain	N	12	7	12	6	6	43	57,96	20	<0,001	0,334
	%	19,4%	9,2%	10,7%	5,5%	5,8%	9,3%				
Very slight pain	N	13	16	16	9	11	65				
	%	21,0%	21,1%	14,3%	8,3%	10,7%	14,1%				
Slight pain	N	14	18	25	15	10	82				
	%	22,6%	23,7%	22,3%	13,8%	9,7%	17,7%				
Moderate pain	N	17	30	43	49	44	183				
	%	27,4%	39,5%	38,4%	45,0%	42,7%	39,6%				
Strong pain	N	6	5	15	21	25	72				
	%	9,7%	6,6%	13,4%	19,3%	24,3%	15,6%				
Very strong pain	N	0	0	1	9	7	17				
	%	0,0%	0,0%	0,9%	8,3%	6,8%	3,7%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

A statistically significant relationship was found between the intensity of bodily pain and age [ $X^2(20)=57.96$ ,  $p<0.001$ ].

Cramer's coefficient indicates that this relationship is moderate ( $V=0.334$ ).

Up to the age of 69, 28.6% of the respondents answered that "They have no pain at all", and 21.5% over the age of 80 answered "Very severe pain".

The presence of bodily pain is associated with the presence of disease.

The relationship between age and answers to the question "In the last 4 weeks, how much energy did you have?" is presented in Table 17.

*Table 17. Relationship between age and answers to the question "In the last 4 weeks, how much energy did you have?"*

In the last 4 weeks, how much energy did you have?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
A lot	N	5	3	8	4	1	21	53,54	12	<0,001	0,322
	%	8,1%	3,9%	7,1%	3,7%	1,0%	4,5%				
Quite a lot	N	41	40	49	36	38	204				
	%	66,1%	52,6%	43,8%	33,0%	36,9%	44,2%				
Remarkably little	N	16	31	53	57	46	203				
	%	25,8%	40,8%	47,3%	52,3%	44,7%	43,9%				
None	N	0	2	2	12	18	34				
	%	0,0%	2,6%	1,8%	11,0%	17,5%	7,4%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

There was a statistically significant relationship between available energy and age [ $\chi^2(12)=53.54$ ,  $p<0.001$ ].

Cramer's coefficient indicates that this relationship is moderate ( $V=0.322$ ).

Up to the age of 69, 58.69% of respondents answered that they had "A lot of energy", and 44.7% over the age of 80 answered "Remarkably little energy". The answers of 17.5% of persons over 80 years of age are that they have "No" energy with an average level of this answer -7.4%.

With increasing age, the physical and neuro-psyche energy of the respondents naturally decreases.

The relationship between age and responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?" is presented in Table 18.

*Table 18. Relationship between age and responses to the question "During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?"*

During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?		Age group					Total	$\chi^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
Not at all	N	15	16	15	12	5	63	49,6 3	16	<0, 001	0,311
	%	24,2%	21,1%	13,4%	11,0%	4,9%	13,6%				
Very little	N	19	19	23	16	24	101				
	%	30,6%	25,0%	20,5%	14,7%	23,3%	21,9%				
Somewhat	N	22	35	51	50	36	194				
	%	35,5%	46,1%	45,5%	45,9%	35,0%	42,0%				
Quite a lot	N	5	5	20	27	28	85				
	%	8,1%	6,6%	17,9%	24,8%	27,2%	18,4%				
Extremely much	N	1	1	3	4	10	19				
	%	1,6%	1,3%	2,7%	3,7%	9,7%	4,1%				
Total	N	62	76	112	109	103	462				
	%	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %				

There was a statistically significant association between age and limited usual social activities with family and friends as a result of physical health or emotional problems.

$$[\chi^2(16)=49.63, p<0.001]$$

Cramer's coefficient indicates that this relationship is rather weak ( $V=0.311$ ).

Up to the age of 69, 45.3% of respondents answered that they had "not the least difficulty", and 9.7% over the age of 80 answered "Extremely much".

With advancing age, social contacts are limited, which is determined by the deteriorating state of health, reduced physical capabilities and psycho-emotional problems.

A statistically significant relationship was also found between age and the presence of emotional problems (such as anxiety, depression, or irritability) [ $X^2(16)=45.89, p<0.001$ ].

Cramer's coefficient indicates that this relationship is weak ( $V=0.301$ ).

Up to the age of 69, 36.8% of respondents answered that "They are not at all worried" by emotional problems, and 12.6% over the age of 80 answered "Extremely much".

The relationship between age and responses to the question "In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?" is presented in Table 19.

*Table 19. Relationship between age and responses to the question "In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?"*

In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?		Age group					Total	$X^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-79	80+					
Not at all	N	13	12	15	9	8	57	45,89	16	<0,001	0,301
	%	21,0%	15,8%	13,4%	8,3%	7,8%	12,3%				
Very little	N	21	36	29	28	23	137				
	%	33,9%	47,4%	25,9%	25,7%	22,3%	29,7%				
Somewhat	N	22	20	42	44	37	165				
	%	35,5%	26,3%	37,5%	40,4%	35,9%	35,7%				
Quite a lot	N	6	6	22	23	22	79				
	%	9,7%	7,9%	19,6%	21,1%	21,4%	17,1%				
Extremely much	N	0	2	4	5	13	24				
	%	0,0%	2,6%	3,6%	4,6%	12,6%	5,2%				
Total	N	62	76	112	109	103	462				
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%				

During the processing of the data, a dependence was established between age and limitations in the performed usual work or other daily activities due to personal or emotional problems.

[ $X^2(16)=39.32, p<0.001$ ]

Cramer's coefficient indicates that this relationship is weak ( $V=0.280$ ).

Up to the age of 69, 48.5% of the respondents answered that "They do not have the slightest difficulty" in carrying out their usual work or other daily activities due to personal or emotional problems, and 10.7% over the age of 80 answered "Very much".

The relationship between age and responses to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?" is presented in Table 20.

*Table 20. Relationship between age and responses to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?"*

During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?		Age group					Total	$X^2$	df	p	Cramer's V
		60-64	65-69	70-74	75-80	80+					
Not at all	N	17	16	15	10	7	65	39,32	16	<0,001	0,280
	%	27,4 %	21,1 %	13,4 %	9,2%	6,8%	14,1%				
Very little	N	20	28	34	26	29	137				
	%	32,3 %	36,8 %	30,4 %	23,9 %	28,2 %	29,7%				
Somewhat	N	21	23	42	44	35	165				
	%	33,9 %	30,3 %	37,5 %	40,4 %	34,0 %	35,7%				
Quite a lot	N	4	7	16	22	21	70				
	%	6,5%	9,2%	14,3 %	20,2 %	20,4 %	15,2%				
Extremely much	N	0	2	5	7	11	25				
	%	0,0%	2,6%	4,5%	6,4%	10,7 %	5,4%				
Total	N	62	76	112	109	103	462				
	%	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %	100,0%				

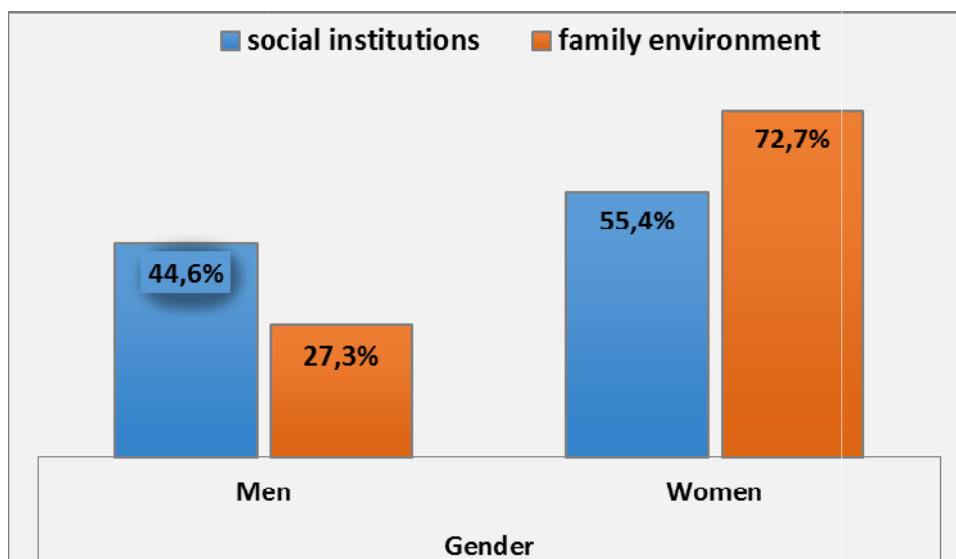
**Analysis of the relationship between the environment of residence (in social institutions and family environment) and the answers to the questions.**

The relationship between gender and residential environment was investigated.

A statistically significant relationship was observed between the gender and the residence environment of the respondents [ $\chi^2(1)=12.628, p<0.001$ ].

More men live in social institutions - 44.6%, and more women live in a family environment - 72.7%.

The relationship between gender and residential environment is presented in Figure 12.



*Figure 12. Relationship between gender and environment of residence*

A relationship between age and environment of residence was examined.

There is a statistically significant relationship between the age and the residence environment of the respondents [ $\chi^2(4)=75.39, p<0.001$ ].

81.3% of respondents aged up to 75 live in a family environment. Conversely, 59% of respondents over the age of 75 reside in social institutions.

The relationship between age and residential environment is presented in Figure 13.

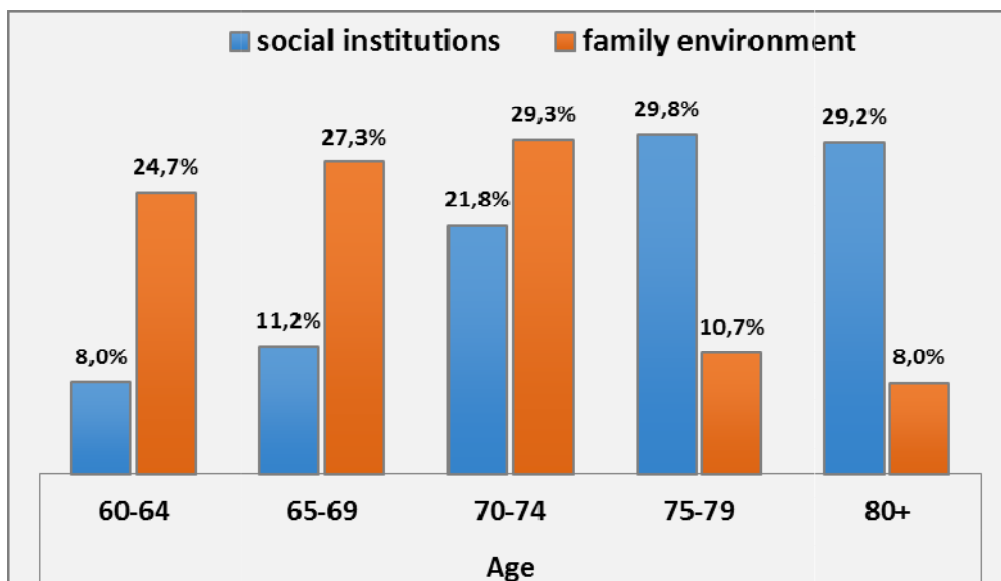


Figure 13. Relationship between age and environment of residence

With advancing age and the aging process, maintaining autonomy and independence becomes more difficult. "Independence" is defined as the ability to live independently in society without or with help from others.

The correlation between the presence of a chronic disease and the environment of residence was also studied.

The relationship between the presence of a chronic disease and the environment of residence is presented in Figure 14.

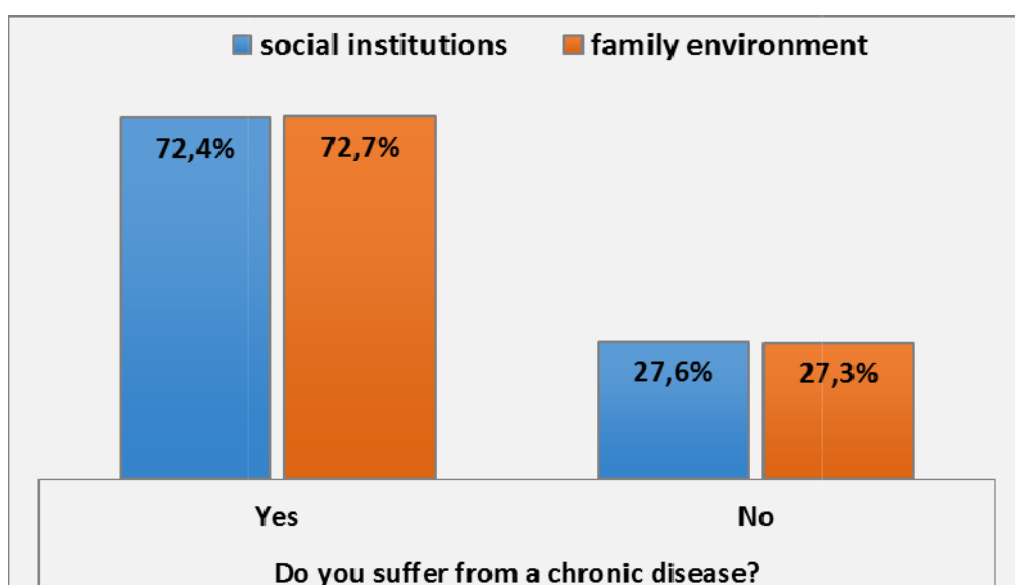


Figure 14. Relationship between the presence of a chronic disease and the environment of residence

No statistically significant relationship was observed between the presence of a chronic disease and residence in a family environment or social institution [ $X^2(1)=0.003$ ,  $p=0.959$ ].

Respondents residing in family and institutional settings equally suffer from chronic diseases.

Regarding the self-assessment of health in general and the environment of residence, no statistically significant relationship was found between the environment of residence and the self-assessment of the health status of the respondents [ $X^2(5)=5.85$ ,  $p=0.321$ ].

The relationship between self-rated health in general and residential environment is presented in Figure 15.

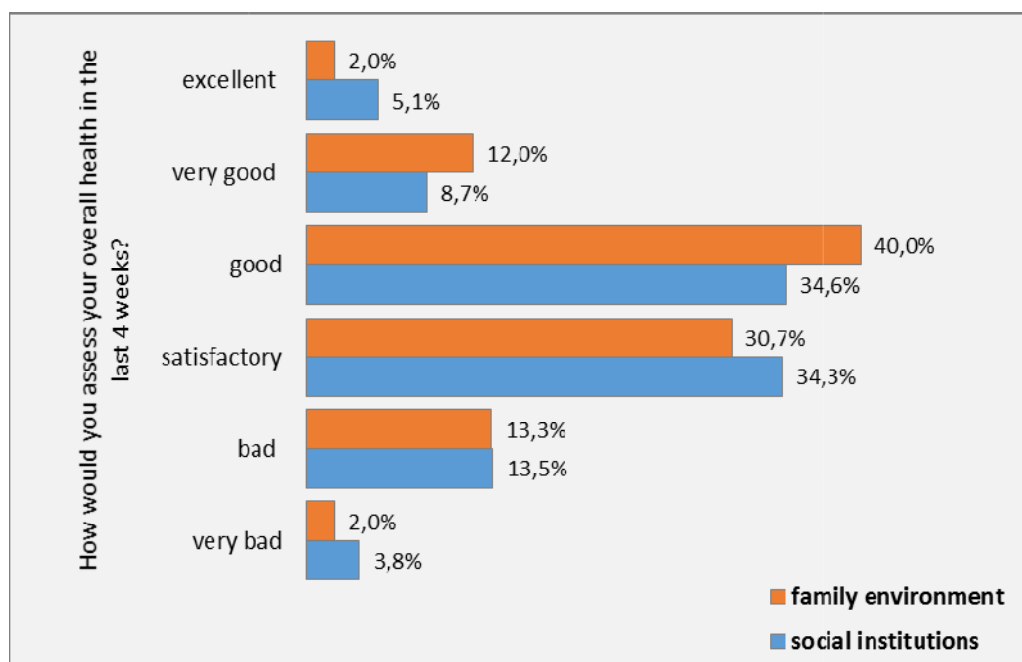


Figure 15. Relationship between self-rated health in general and living environment

The relationship between the presence of a chronic disease and the self-assessment regarding the state of health, depending on the status of living, is investigated.

Group: Social institutions

There is a statistically significant relationship between the presence of a chronic disease and the self-assessment regarding the health status of the respondents residing in social institutions [ $\chi^2(5)=48,878$ ,  $p=0.001$ ].

The relationship between the presence of a chronic disease and the self-assessment regarding the health status of the residents of social institutions is presented in Table 21.

*Table 21. Relationship between the presence of a chronic disease and the self-assessment regarding the state of health of residents of social institutions*

How would you assess your overall health over the past 4 weeks?		Do you suffer from a chronic disease?		Total	$\chi^2$	df	p
		Yes	No				
Very bad	N	10	2	12	48,878	5	<0,001
	%	4,4%	2,3%	3,8%			
Bad	N	42	0	42			
	%	18,6%	0,0%	13,5%			
Satisfactory	N	83	24	107			
	%	36,7%	27,9%	34,3%			
Good	N	76	32	108			
	%	33,6%	37,2%	34,6%			
Very good	N	10	17	27			
	%	4,4%	19,8%	8,7%			
Excellent	N	5	11	16			
	%	2,2%	12,8%	5,1%			
Total	N	226	86	312			
	%	100,0%	100,0%	100,0%			

#### Group: Family environment

No statistically significant relationship was found between the presence of a chronic disease and the self-assessment regarding the health status of the respondents living in a family environment.

[ $\chi^2(5)=10.392$ ,  $p=0.065$ ]

The relationship between the presence of a chronic disease and the self-assessment regarding the health status of those living in a family environment is presented in Table 22.

Table 22. Relationship between the presence of a chronic disease and the self-assessment regarding the health status of those living in a family environment

How would you assess your overall health over the past 4 weeks?		Do you suffer from a chronic disease?		Total	$\chi^2$	df	p
		Yes	No				
Very bad	N	3	0	3	10,392	5	0,065
	%	2,8%	0,0%	2,0%			
Bad	N	16	4	20			
	%	14,7%	9,8%	13,3%			
Satisfactory	N	39	7	46			
	%	35,8%	17,1%	30,7%			
Good	N	39	21	60			
	%	35,8%	51,2%	40,0%			
Very good	N	11	7	18			
	%	10,1%	17,1%	12,0%			
Excellent	N	1	2	3			
	%	0,9%	4,9%	2,0%			
Total	N	109	41	150			
	%	100,0%	100,0%	100,0%			

Изследването на връзката между физическото здраве и обичайната физическа активност в социална институция и семейна среда не показва статистическа зависимост [ $\chi^2(4)=4,407$ ,  $p=0.354$ ].

Данните са представени на Фигура 16.

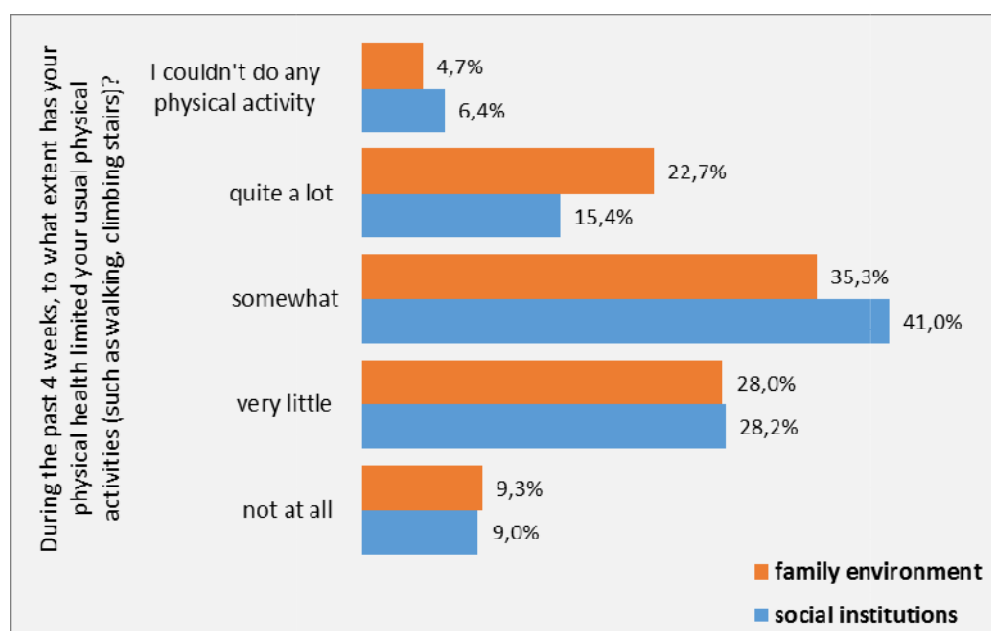


Figure 16. Relationship between physical health and usual physical activity in social institution and family environment

No statistically significant relationship was found between residence environment and difficulties in performing activities of daily living due to physical health [ $\chi^2(4)=6.863$ ,  $p=0.143$ ], presented in Figure 17.

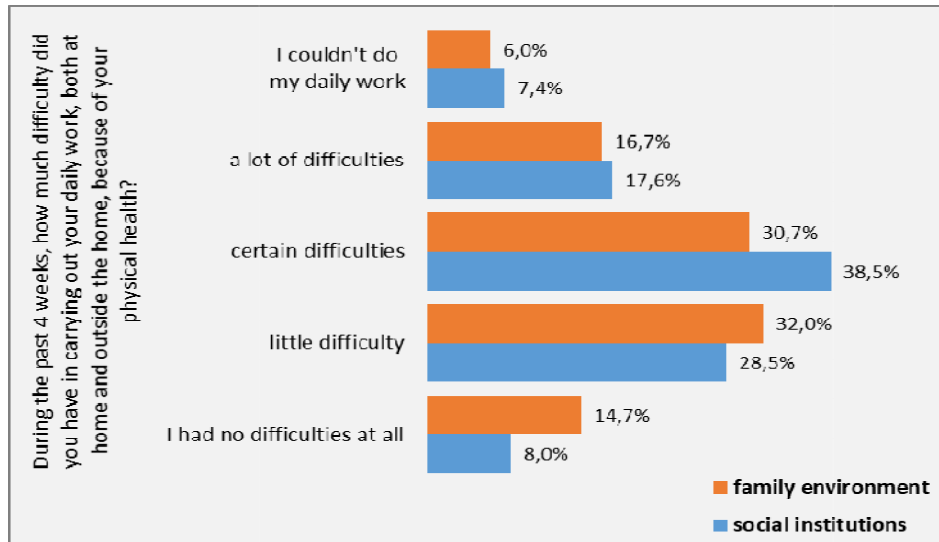


Figure 17. Relationship between the environment of residence and difficulties in performing ADLs due to physical health

When studying the intensity of bodily pain - in a family environment and a social institution, no statistically significant relationship between the environment of residence and the intensity of bodily pain was proven. [ $\chi^2(5)=6.356$ ,  $p=0.273$ ].

The results are presented in Figure 18.

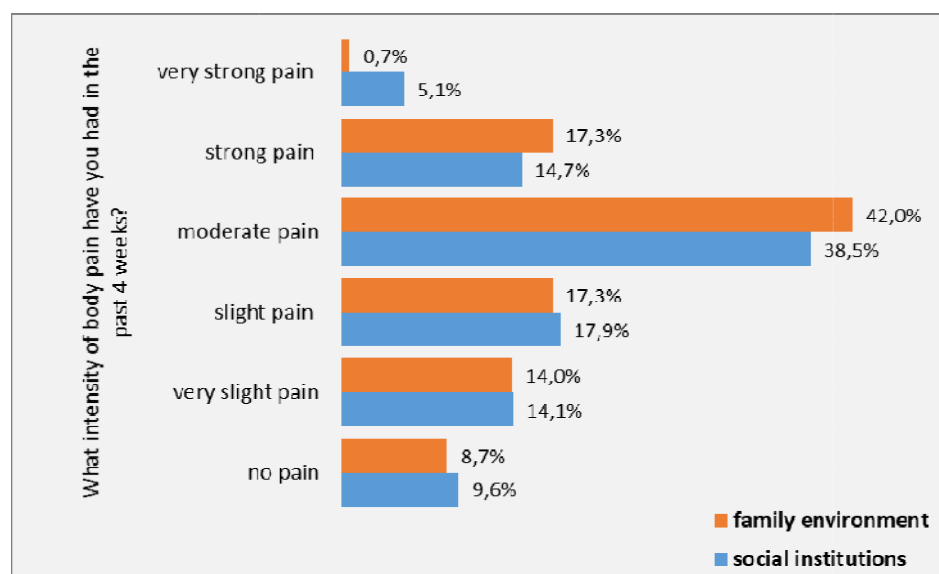


Figure 18. Relationship between residential environment and intensity of bodily pain

In the analysis of the energy level assessment - in a family environment and a social institution, no statistically significant dependence was proven. [X2(3)=5.595, p=0.133].

The results are shown in Figure 19.

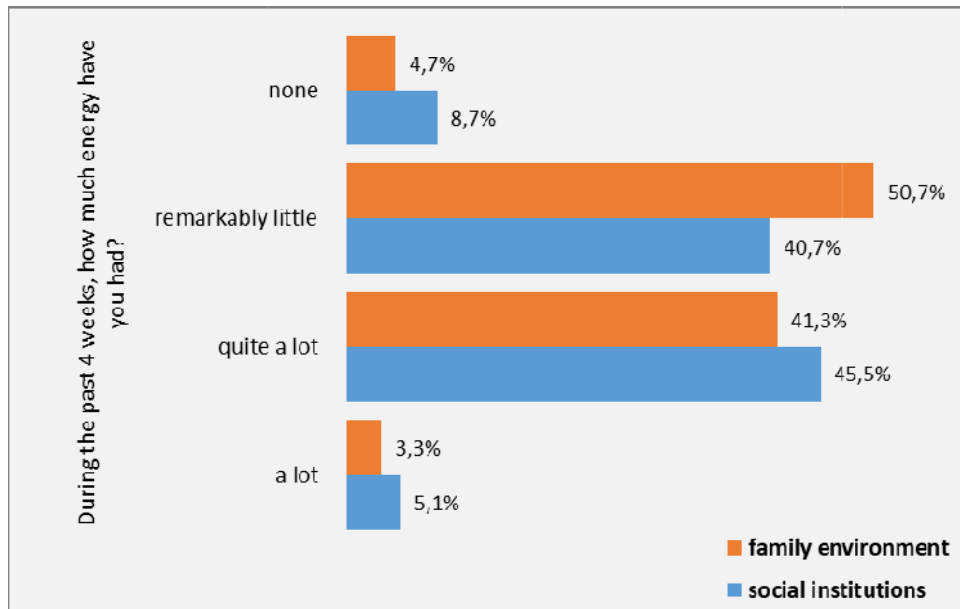


Figure 19. Relationship between residential environment and energy level score

Respondents residing in institutions and family environments equally rate their level of vital energy.

The impact of physical health or emotional problems on usual social activities with family or friends - in a family environment and a social institution - has been studied.

No statistically significant relationship was found between respondents residing in institutions or family environment and the assessment of limited usual social activities with family or friends as a result of respondents' physical health or emotional problems [X2(4)=6.289, p=0.179 ].

The relationship between living environment and the impact of physical health or emotional problems on usual social activities with family or friends is presented in Figure 20.

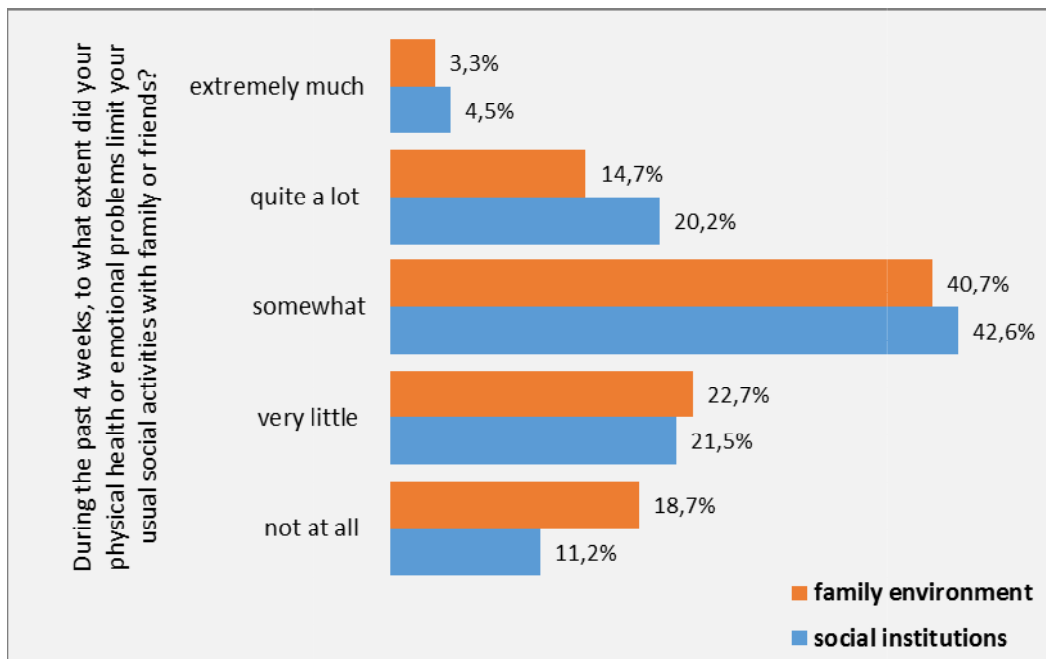


Figure 20. Relationship between residential environment and the impact of physical health or emotional problems on usual social activities with family or friends

The physical health or emotional problems of respondents residing in institutions and those in family settings equally limited the usual social activities with family or friends.

The relationship between the presence of emotional problems (anxiety, depression or irritability) and living status was investigated.

There is a statistically significant relationship between the presence of emotional problems and the respondents' living environment [ $\chi^2(4)=16.395$ ,  $p<0.003$ ].

The correlation between residential environment and emotional problems (anxiety, depression, or irritability) is presented in Table 23 and Figure 21.

Table 23. Relationship between residential environment and emotional problems (anxiety, depression or irritability)

During the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?		social institutions	family environment	Total	$X^2$	df	p
Not at all	N	29	28	57	16,395	4	0,003
	%	9,3%	18,7%	12,3%			
Very little	N	85	52	137			
	%	27,2%	34,7%	29,7%			
Somewhat	N	121	44	165			
	%	38,8%	29,3%	35,7%			
Quite a lot	N	56	23	79			
	%	17,9%	15,3%	17,1%			
Extremely much	N	21	3	24			
	%	6,7%	2,0%	5,2%			
Total	N	312	150	462			
	%	100,0%	100,0%	100,0%			

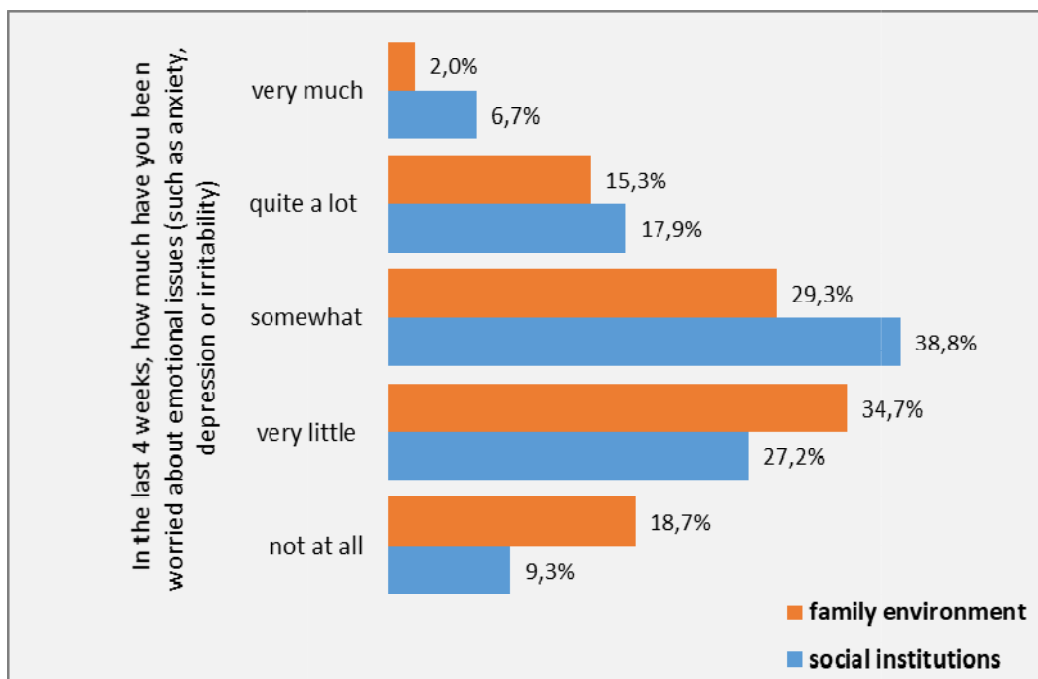


Figure 21. Relationship between the environment of residence and the presence of emotional problems (anxiety, depression, or irritability)

Elderly and old people living in social institutions were bothered to a greater extent by emotional problems (such as anxiety, depression, or irritability) compared to elderly and old people living in a family environment.

The relationship between the difficulty in performing usual work or performing other activities of daily living as a result of emotional problems and the living environment of the respondents was studied, which was statistically significant [ $\chi^2(4)=21,594, p<0.001$ ].

This relationship is shown in Table 24 and Figure 22.

*Table 24. Relationship between residential environment and response to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?"*

During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?		social institutions	family environment	Total	$\chi^2$	df	p
Not at all	N	30	35	65	21,594	4	<0,001
	%	9,6%	23,3%	14,1%			
Very little	N	88	49	137			
	%	28,2%	32,7%	29,7%			
Somewhat	N	119	46	165			
	%	38,1%	30,7%	35,7%			
Quite a lot	N	56	14	70			
	%	17,9%	9,3%	15,2%			
Extremely much	N	19	6	25			
	%	6,1%	4,0%	5,4%			
Total	N	312	150	462			
	%	100,0%	100,0%	100,0%			

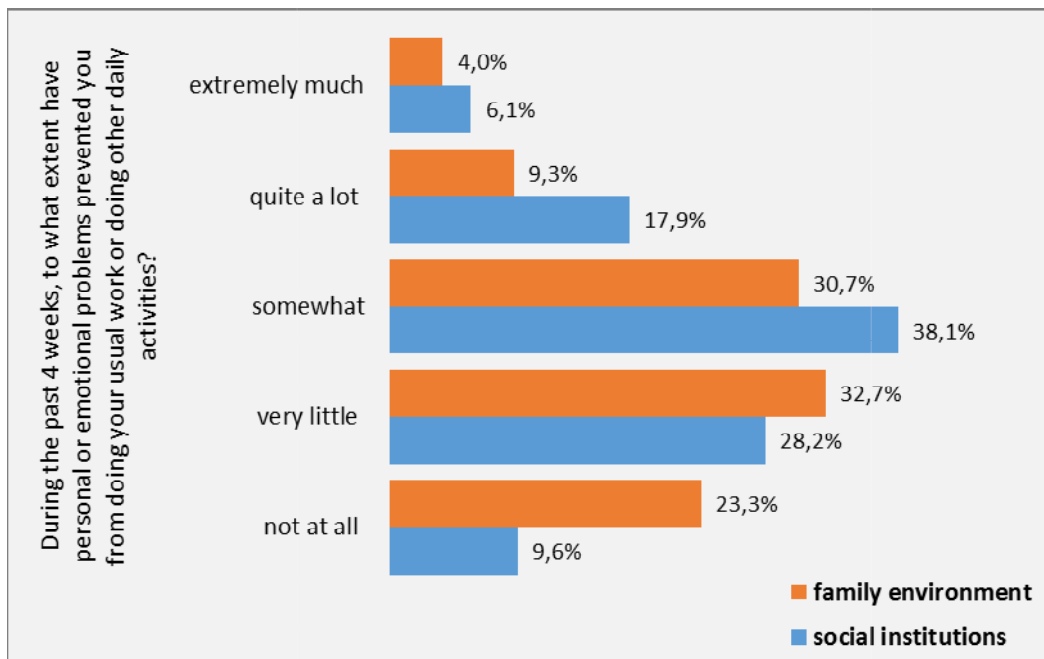


Figure 22. Relationship between residential environment and response to the question "During the past 4 weeks, to what extent did personal or emotional problems prevent you from doing your usual work or doing other daily activities?"

The personal and emotional problems of the elderly living in social institutions interfere more with carrying out usual work or other daily activities, compared to the elderly living in a family environment.

The analysis of the responses received from the respondents confirms the data from global and our authors regarding healthy aging and its relationship with lifestyle.

**Analysis of demographic trends in the developed countries of the world, Europe and Bulgaria and the socio-economic and health consequences for society.**

Data from foreign and national sources confirm that Bulgaria ages differently compared to developed countries in the world and Western Europe. There is a large inequality in longevity according to social and economic grouping [43]:

1. The population in Bulgaria, in addition to aging and decreasing.

2. Bulgarians have the lowest life expectancy in the EU - 73.6 years, with an average of 81 years for the EU countries. Despite the increase in the average life expectancy in Bulgaria, the big difference with the EU-15 remains (5-7 years ). Expected life expectancy at birth in Bulgaria is 71.4 years, and in the EU - 80.1 years.

3. The main factors leading to aging in Bulgaria are: low birth rate, high levels of total mortality, intensive emigration of young people, lack of quality healthcare and difficult access to medical services, including high levels of co-payments for health.

4. In developed countries, the causes of aging are different: almost universal access to better health care, introduction of new drugs and innovative technologies, advances in medicine, promotion of public health and leading a healthy lifestyle, which is the reason for a reduction in morbidity and mortality in old age, the costs of pensions, healthcare and long-term care are higher and expected to grow, higher socio-economic status and improved living and working conditions, which is a prerequisite for leading a healthy lifestyle life, management of risk factors for cardiovascular diseases and reduction of CVD mortality, increased awareness of the benefits of a healthy lifestyle;

**The place and role of health and the health care system in providing conditions for access to complex health services and prolonging the lives of elderly people in good health.**

Achieving a higher quality of life for the elderly in Bulgaria and preserving their independence from the point of view of their health status and well-being is possible with a more even distribution of the health network in the regions and the country. It is necessary to provide adequate medical care to the population living in small settlements and remote areas. In this way, conditions for equal access of the elderly and old people to medical and medico-social services will be ensured.

Outpatient and hospital networks must be developed according to the needs of the elderly. Active treatment hospitals lack beds for assessing the condition, treatment and rehabilitation of the elderly and the elderly and people with disabilities, which activities should be adequately financed, including through the tools of the insurance system. Outpatient care lacks centers for medico-social rehabilitation of elderly and old people, where integrated health and social services can be offered.

At the moment, there is a lack of services in the community for elderly people who leave hospitals and have health problems requiring long-term care. The National Strategy talks about the provision of integrated health and social services, and the teams offering this service are not defined. It is necessary to legally regulate multidisciplinary teams, including a doctor, social workers, psychologist, rehabilitator, nurse. Now in Bulgaria, people are facing serious difficulties in coordinating their treatment - finding health specialists with appropriate qualifications, specialized health facilities, organizing access to them, etc.

From the performed analysis of the implementation of the reported activities in PIMP, SIMP and MDD by types of activities, according to the RZOK in 2019, it can be concluded that when performing prophylaxis, patients in risk groups are not referred by GPs to specialist doctors for - further follow-up of the risk and in outpatient care, an insufficient number of preventive and dispensary examinations by PIMP contractors are provided, and there is no data for persons over 60 years old. The data is registered, but there is no unified information system in which to report and analyze the medical services by type, volume and age.

Bulgaria remains among the EU countries that continue to spend significantly less money on health care, compared to the average level of the member states. The share of long-term care costs from GDP is relatively

constant and amounts to 0.01%. Long-term care is not included in the package of health activities included in the health insurance system.

We lack specialists in "Social gerontology and geriatric medicine" to comprehensively help the elderly and prolong their lives in health and activity.

The study proved that health is an important factor in the quality of life, therefore healthy aging is an indicator of quality life for the elderly and the elderly. Healthy aging means living a healthy lifestyle throughout the lifespan.

Promoting a healthy lifestyle, preventing socially significant diseases and creating a more favorable living environment for the elderly and the elderly, allowing them to remain independent and active as long as possible and to maintain their functional ability that allows well-being in older age.

## **CONCLUSION**

Healthy aging and active older adults should aim to promote healthy lifestyles throughout their life course and include patterns of consumption and nutrition, as well as levels of physical and social activity.

Increasing the social activities of the elderly and their participation in public life supports their mental and physical activity and independent living, which would lead to greater life satisfaction.

In the study, a connection was made between the physical health, functional abilities and quality of life of the surveyed elderly and old people. The understanding that family support and intergenerational solidarity is very important for the emotional state and well-being of the elderly and old people has been confirmed.

Medico-social problems in the third age are a key task of the national health system. The discrepancy between longevity as a reality and the quality of life of the elderly and old is seen as an extremely important challenge. A key place is occupied by measures against the factors limiting the independence of the elderly. They are usually factors of a social and psychological nature or related to illness.

The solution to this challenge is active and healthy ageing, which is also enshrined in the Health 2020 Strategy and the reports and decisions of the World Health Organization, where the emphasis is on promoting and investing in the health of people throughout their lives.

## INFERENCES

1. A high percentage of the studied group of elderly and old people - 72.5% suffer from a chronic disease, and for people over the age of 80 this percentage increases to 85.4%. The physical health or emotional problems of people in these age groups limit their usual physical activities at the performance of daily work and limit their social contacts and social activity.

2. Age strongly affects the quality of life of the elderly and old people in Bulgaria (deteriorated physical health, limited physical activity, existing body pain, difficulty in everyday activities, limited social activities, presence of emotional problems).

3. The family environment creates fewer emotional problems (such as anxiety, depression, or irritability) and better opportunities for the elderly and the elderly to carry out their usual work, or to carry out other daily activities, than the institutional environment.

4. The population in Bulgaria is aging at an accelerated rate and the number of elderly and old people is increasing. People over 65 by 2021 are already 23.5%, which requires urgent measures related to their specific needs and needs.

5. There is a lack of complex (health and social) services that meet the needs of the elderly and people with disabilities, as well as funding for treatment, rehabilitation and long-term treatment activities.

## **RECOMMENDATIONS**

From the analysis of the results of the dissertation, recommendations can be made to the following institutions:

### **Ministry of Health**

1. Development of legislation and implementation of practical actions in the field of health promotion and prevention aimed at the aging process and the specific needs of the elderly.

2. Update of Ordinance No. 3 of 28.02.1987 on mandatory preliminary and periodic medical examinations of workers.

3. Evaluation of the practical results of the introduction of working complex long-term care, according to the adopted National Strategy for long-term care 2018-2021, with the aim of efficient use of resources and optimization of the health system.

4. Strengthen primary health care to provide affordable, fair and safe care for the elderly.

5. Improving the coordination between health and social services, in order to implement the model of integrated health and social services, according to the Law on Health.

6. Promotion of medical specializations in the field of social gerontology and geriatric medicine.

7. To collect data on healthy aging (internal capacity and functional abilities), applying unified indicators and analytical methods to measure the wide range of problems of old people.

8. Development of a National Strategy for Geriatric Care and Aging in Good Health in the Republic of Bulgaria.

## **Ministry of Labor and Social Policy**

1. Implementation of health and social activities at the regional level that support the elderly in their daily life in their homes, according to their needs and expectations.
2. Creation of a network of services for comprehensive care of the elderly near the place of residence, taking into account the special needs of the elderly in order to provide them with as long an independent life as possible.
3. Regulating combined public and private investment in the aged care sector.
4. To balance the roles of the family and the state when, in the process of aging, people need help from others.
5. Organization of training for adults in accordance with the needs of the labor market and the requirements of employers.

## **Local authorities**

1. Accelerating the introduction of the National Card of Social Services.
2. Improving living conditions and infrastructure in rural areas.
3. To ensure good medical care in rural areas as well.
4. Construction of infrastructure without physical barriers suitable for safe movement and easy access.

### **National Health Insurance Fund**

1. Take steps to introduce universal health coverage for the elderly and fully cover their needs for medical and dental care.
2. In the package of medical services covered by the mandatory health insurance, "Complex long-term care of the elderly" should be included.
3. General practitioners should actually visit the elderly in their homes.

### **Union organizations and employers**

1. Provision of workplaces without barriers, adapted to the physiological characteristics of elderly workers.
2. Improving working conditions and work opportunities for the elderly, as well as incentives for a longer working life.
3. To promote interaction between research institutions and business representatives.

## **CONTRIBUTIONS**

The following theoretical and scientific-applied contributions can be mentioned in the dissertation:

### **Of a theoretical nature:**

1. A critical review of the scientific, normative and professional literature in the field of healthy aging was carried out.

2. The demographic picture of the aging population in Bulgaria and their consequences is presented.

3. Specific health and social needs have been studied the elderly and old people.

4. The influence of the various determinants on healthy aging, which influence with their cumulative effect and most significantly affect health, is deduced.

5. A dependence was established between physical health and functional abilities (locomotor capacity, activities of daily living, mobility, ability to build and maintain relationships, vitality, psychological capacity) and quality of life (well-being and social inclusion).

### **Of an applied nature:**

1. On the basis of the complex study and the established dependence between physical health, functional abilities and quality of life, changes are proposed in the provision of care for chronically ill and elderly patients (with specific geriatric problems).

2. An analysis of the need for the practical introduction of complex long-term care was carried out in order to satisfy the needs of the elderly.

3. Specific recommendations have been made to the responsible institutions for the implementation of a number of structural and organizational changes, with the aim of optimizing the opportunities for health, independence and autonomy and achieving a higher quality of life for the elderly.

## LIST OF DISSERTATION PUBLICATIONS

### Publications:

1. **Dimitrova Yu.**, Zh. Staykova, "Lifestyle - the main factor in aging in good health", "Preventive Medicine", ISSN: 1314-5681, issue 20, pp. 18-21, 2021.

2. **Dimitrova Yu.**, Zh. Staykova "Study of the lifestyle and health status of elderly people from the city of Sofia, Sofia Region and the city of Shumen", Collection of reports from the Jubilee scientific online conference "MAN, SOCIETY, MEDICINE", pp. 399-407, ISBN 978-954-652-037-1, Kardjali, 2022.

3. Staykova Zh., **Yu. Dimitrova**, "Active lifestyle in the elderly and healthy aging in the legislation and programs of the EU and the Republic of Bulgaria", "American scientific journal", issue 1, pp. 38-41, 2020.

4. Staykova Zh., **Yu. Dimitrova**, "The active life of the elderly and aging in good health - programs in the EU and Bulgaria", "Medical Meridians", ISSN 1314-1091, issue 2, pp. 31-36, 2020.

5. **Yuliya Dimitrova**, Jeni Staykova, Todor Kundurzhiev, Study of lifestyle and health status of elderly people from Sofia city, Sofia district and city of Shumen, Official journal of EMCEI Euro-Mediterranean Journal for Environmental Integration (indexed in Web of Science and Scopus), ISSN 2365-7448 (Springer), Tunisia, 2022, (in print).

## **Participation in scientific events:**

1. **Dimitrova Yu.**, Zh. Staykova, "Review of the normative and professional literature in the EU and Bulgaria, related to the active life of the elderly and aging in good health", XI national conference on preventive medicine in Pomorie - 6-8.11.2019.

2. **Dimitrova Yu.**, Zh. Staykova, "Study of the lifestyle and health status of elderly people from the city of Sofia, Sofia Region and the city of Shumen", Jubilee scientific online conference "MAN, SOCIETY, MEDICINE", Kardjali, 27.04.2022.

3. Staykova Zh., **Yu. Dimitrova**, "Study of the dependence between physical health and functional abilities of the elderly in Bulgaria", Fifth scientific conference "Challenges for public health care in the conditions of a health crisis", University "Prof. Dr. Asen Zlatarov" - city Burgas, building, "Medical Sciences", May 12-13, 2022.

4. **Yuliya Dimitrova**, Jeni Staykova, Todor Kundurzhiev, Study of lifestyle and health status of elderly people from Sofia city, Sofia district and city of Shumen, 4th Euro-Mediterranean Conference for Environmental Integration, Sousse, Tunisia, 1-4 november, 2022

## APPENDIX

### *Appendix 1. Survey card*

### SURVEY CARD

Mark the correct answer with an X

#### 1. Gender

- M
- W

#### 2. Age

- 60-64 г.
- 65-69 г.
- 70-74 г.
- 75-79 г.
- over 80

#### 3. Do you suffer from a chronic disease?

- Yes
- No

#### 4. How would you rate your overall health over the past 4 weeks?

- Excellent
- Very good
- Good
- Satisfactory
- Bad
- Very bad

#### 5. During the past 4 weeks, to what extent did your physical health limit your usual physical activities (such as walking, climbing stairs)?

- Not at all
- Very little
- Somewhat
- Quite a lot
- I couldn't do any physical activity

#### 6. During the past 4 weeks, how much difficulty did you have in carrying out your daily work, both at home and outside the home, because of your physical health?

- I had no difficulty at all
- Little difficulty
- Certain difficulties
- Lots of difficulties
- I couldn't do my daily work

**7. What intensity of body pain have you had in the past 4 weeks?**

- No pain
- Very slight pain
- Slight pain
- Moderate pain
- Strong pain
- Very strong pain

**8. In the last 4 weeks, how much energy did you have?**

- A lot
- Quite a lot
- Remarkably little
- None

**9. During the past 4 weeks, to what extent did your physical health or emotional problems limit your usual social activities with family or friends?**

- Not at all
- Very little
- Somewhat
- Quite a lot
- Extremely much

**10. In the past 4 weeks, to what extent have you been bothered by emotional problems (such as anxiety, depression, or irritability)?**

- Not at all
- Very little
- Somewhat
- Quite a lot
- Extremely much

**11. During the past 4 weeks, to what extent have personal or emotional problems prevented you from doing your usual work or doing other daily activities?**

- Not at all
- Very little
- Somewhat
- Quite a lot
- Extremely much