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**NEW APPROACHES
TO MAINTAINING AND PROMOTING
WOMEN`S HEALTH AT POST-REPRODUCTIVE AGE**

**SUMMARY OF
DISSERTATION
FOR AWARDING OF EDUCATIONAL AND SCIENTIFIC
DEGREE "DOCTOR"**

Field of higher education 7. Healthcare and Sport

Professional field 7.4. Public health

**Doctoral Program Social Medicine and Organization of Healthcare and
Pharmacy**

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Sofia, 2024

The dissertation was approved and directed for defense by an extended department council of the Department of Social Medicine at the Faculty of Public Health "Prof. Dr. Tsekomir Vodenicharov, DSc, Medical University - Sofia. The dissertation contains 224 pages and is illustrated with 44 figures and 14 tables. 3 attachments are included. The bibliographic reference includes 351 sources, 7 of which in Cyrillic and 344 in Latin.

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The numbering of the tables and figures does not correspond to that in the dissertation.

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ABBREVIATIONS USED IN THE TEXT:

BMI – Body Mass Index

CBC – Complete Blood Count

HRT – Hormone Replacement Therapy

MET - Metabolic Equivalent of Task

NZOK – National Health Insurance Fund

ORL - Otorhinolaryngology

WHO – World Health Organization

INTRODUCTION

The onset of menopause and associated symptomatology vary widely among individuals due to genetic, cultural, behavioral, socioeconomic, health, educational and dietary differences. Many women of post-reproductive age complain that they experience different types and severity of symptomatic, and for some of these women, the quality of life is negatively affected by these symptoms. The most significant menopausal symptoms can be divided into vasomotor, psychological, physical, urogenital and sexual, whereas the post-reproductive age is also characterized by many typical health problems such as cardiovascular, oncological, endocrinological and musculoskeletal diseases.

The problematic of the postreproductive years, combined with the high levels of polymorbidity and chronic diseases among elderly women, determine the paramount importance of the issue of quality of life and the achievement of optimal health during the menopausal period. The quality of life and health of women in the post-reproductive years represent a serious public health problem, and optimizing the care of this part of the population should be among the main goals of health care. Due to the increasing life expectancy and relative share of peri- and postmenopausal women, improving health care and ensuring access to quality health services for this large social group is emerging as an important health care priority. An improved understanding of menopausal symptoms, age-related health conditions and their complex effect on the lives of menopausal women will help to reduce their morbidity and symptoms, as well as improve their well-being and quality of life. Thus, during the extra years of life gained, menopausal women will enjoy better health. All possible efforts should be made in the development and implementation of preventive, educational and treatment activities for women of post-reproductive age, so that the period of menopause is modified into a healthy and positive stage of the female life cycle.

AIM AND OBJECTIVES OF THE STUDY

AIM

The aim of this dissertation is to make recommendations for health promotion and optimization of health care for women of post-reproductive age, based on an analysis of the health status, health culture, health behavior and women's participation in preventive activities.

OBJECTIVES

To achieve the aim of the dissertation we set ourselves the following main tasks.

1. To study some specific demographic, social and health characteristics of women of post-reproductive age.
2. To determine the prevalence of menopause-related symptoms in women of post-reproductive age.
3. To analyze the knowledge, beliefs and understandings about menopause of the women studied.
4. To investigate the health behavior of women in post-reproductive age and to analyze their participation in preventive activities.
5. To analyze the awareness, attitude and opinion of medical students regarding important health issues of post-reproductive women and to make recommendations regarding education on these issues.
6. To give recommendations regarding health promotion and optimization of health care for women of post-reproductive age in the territory of the Republic of Bulgaria.

METHODOLOGY

Object and subject of the study

The object of this dissertation is women's health.

The subject of the study is the health and preventive activities of women of post-reproductive age.

Study setting, temporal and territorial framework

A complex socio-medical research was conducted, covering three scientific studies:

- The first study (abbreviated as "P1") is a pilot study that was part of a scientific development prior to the present dissertation, studying changes in the health and subjective health status of women during menopause. It helped us to assess the problematic of menopause and to definitively plan the main study.

- The main second study (referred to in the thesis as 'P2') studies the knowledge, perceptions and awareness of post-reproductive age women about menopause, their health behaviors and their participation in preventive activities.

- The third study (henceforth "P3") analyzes the awareness, attitude and opinion of medical students regarding the health problems of women of post-reproductive age.

A total of 762 respondents are covered in the surveys and the complex issue of women's health in the post-reproductive years is studied multidimensionally. Figure 1 graphically depicts the time frame for conducting the three separate studies as part of the complex socio-medical research.

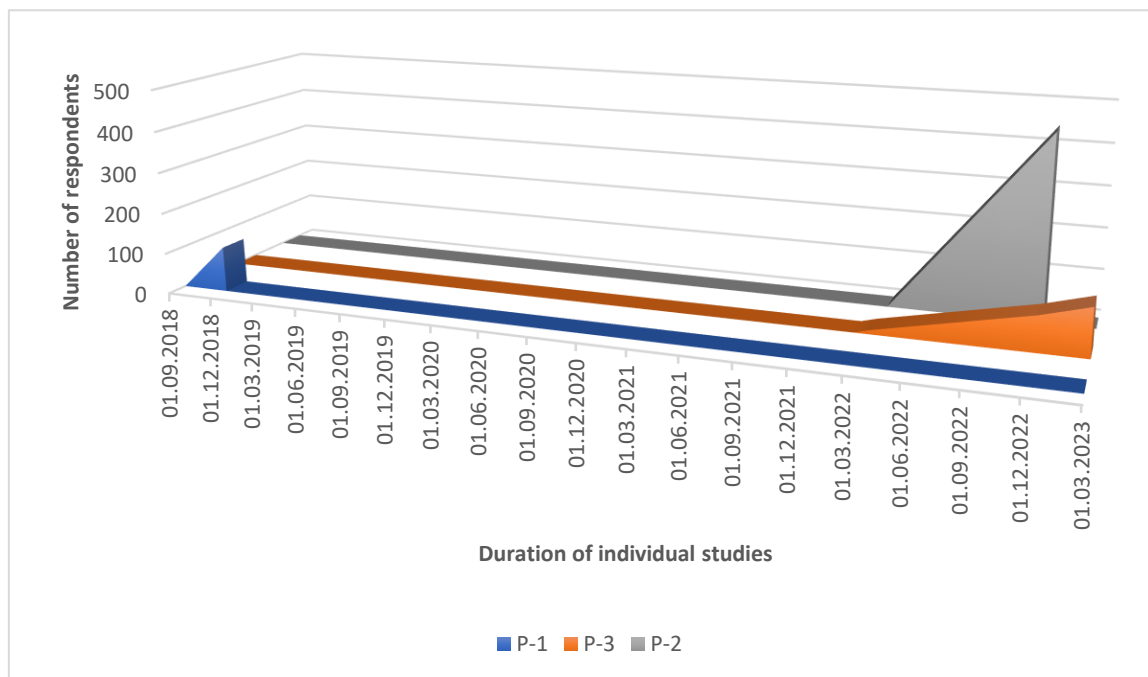


Fig. 1. Graphical representation of the conduct of the three surveys

The first population-based cross-sectional study P1 was conducted through a direct individual survey (PAP - Pen and Paper) in the period 24.09.2018 - 05.11.2018 and included 110 women aged between 45 and 65 as observation units.

Study inclusion criteria: because of the study nature and determined aim and objectives, inclusion criteria were females between 45 and 65 years of age, females under 45 with early menopause, willingness and consent to participate in the study

Study exclusion criteria: our only criteria for excluding women from the study were: females under the age of 45 years who are not in early menopause; females over the age of 65; refusal to participate in the study

The survey was conducted on the territory of the city of Sofia, the city of Varna and the city of Razgrad. In the city of Sofia, questionnaires were distributed in the private medical practices of four general practitioners and one office in orthopedics and traumatology. In the city of Varna, the survey cards were distributed between the practices of one general practitioner and one dentist. In Razgrad survey cards were distributed to employees in state and municipal

offices.

The second major population-based cross-sectional survey P2 was also conducted through a direct individual survey. This method is guaranteed to reach respondents who meet the recruiting criteria, namely females living on the territory of the Republic of Bulgaria with a lower age limit of 45 years.

Given the nature of the study and the aim and objectives set, the criteria for inclusion were: females over 45 years of age, living on the territory of the Republic of Bulgaria and readiness and consent to participate in the study. Our only criterion for excluding women from the survey was refusal to participate.

The fieldwork on the study took place in the period March – December 2022. After the completion of the field activity, field control and logical inspection of the information collected was carried out. 445 individual surveys were conducted effectively. The realized volume corresponds to the planned and is adequate to solve the set aim of the current dissertation.

A pseudorandomized, representative sample for the general population was generated, and the survey was conducted in settlements throughout the whole territory of the Republic of Bulgaria. The fieldwork was performed by the author of the dissertation, by experienced and reliably trained interviewers of the NASOKA Agency throughout the country, as well as by medical specialists and certain employees in state and municipal institutions. Women aged 45+ from all districts of the country were interviewed. Territorial distribution of the realized surveys is presented.

In order to analyze the awareness, attitude and opinion of the medical students on important menopausal topics we conducted an online-based survey P3. It was held in the period February 2022 – March 2023, with the participation of 117 medical students at the Medical University of Sofia.

Methodology of data registration

In order to adequately cover the observation units in the defined study volume P1 we chose a representative design. As the most appropriate method of registration we defined the inquiry method. The main toolkit in the conducted survey is a questionnaire. To collect the primary information from the observation units we chose a direct individual survey.

Level of identification: given the delicate nature of the questions asked, our survey is absolutely anonymous and does not contain any personally identifiable information.

Method of distribution and monitoring authorities: questionnaires were personally handed over to respondents by the author of the dissertation, our colleagues in their practices, as well as by certain employees in state and municipal institutions. The women participating in the survey were informed about the optional, voluntary nature of participation in the survey and were guaranteed full confidentiality about the information shared.

The questionnaire is developed by the author of the dissertation. The questionnaire is formulated after a thorough review of the literature available on the topic, taking into account the aim and objectives of the study. Main observational attributes in our study were socio-demographic and anthropometric characteristics, general health characteristics, specific obstetric and gynecological characteristics, sexual characteristics, as well as the frequency and severity of menopause-related symptoms manifested in our units of observation.

In order to adequately cover the observation units in the specified volume of the main study P2 we chose a representative design. As the most appropriate method of registration we defined the inquiry method. The main toolkit in the survey conducted is a questionnaire. To collect the primary information from the observational units we chose a direct individual survey.

Method of distribution and monitoring authorities: the questionnaires

were personally passed on to the respondents by the author of the dissertation, experienced and reliably trained interviewers from the NASOKA Agency's own interviewing network, by our colleagues in their medical practices, as well as by certain employees in the state and municipal institutions.

The main attributes of observation are socio-demographic and anthropometric characteristics, general health characteristics, specific gynecological characteristics, sexual characteristics, characteristics related to health behavior, eating habits and prophylactic activities among our units of observation.

As the most appropriate method of registration in the survey P3 we defined the inquiry method. The main toolkit in the conducted survey is a questionnaire. To collect the primary information, we chose an online-based survey, which is absolutely anonymous. Respondents filled in the questionnaires themselves online.

Statistical analysis

The data collected in the surveys were entered into an MS Excel worksheet and statistically analyzed with statistical processing software SPSS (Statistical Package for the Social Sciences). The results are presented as the relative share for the qualitative variables and the minimum, maximum, arithmetic mean and standard deviation for normally distributed quantitative variables.

Alternative and variational analysis, nonparametric analysis with a Pearson test (Chi-square test) is used to test hypotheses for the presence of correlation. A level of significance for the null hypothesis H_0 is determined at $p \leq 0.05$, whereby we assume that the differences between the groups compared are statistically significant. A graphical method is applied in the organization and presentation of data,

RESULTS OF OWN STUDIES AND DISCUSSION

1. Demographic, social and health characteristics

Age

The average age of women who participated in P2 is 56.63 ± 8.00 years (45-89 years). The age distribution of the studied group of women is presented on Figure 2.

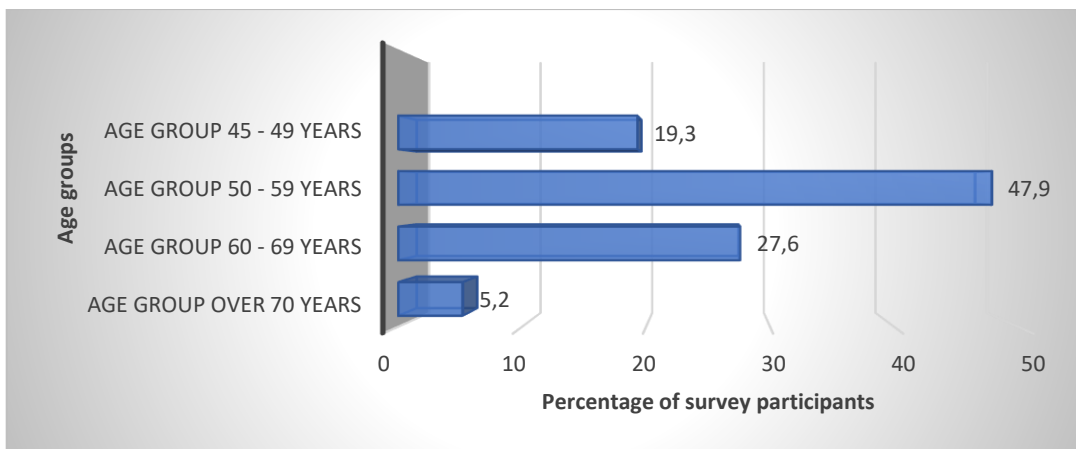


Fig. 2. Age distribution of women surveyed

Education

The educational status of women is important for their health behavior and the prophylactic activities undertaken during the post-reproductive period. The distribution by level of education is presented on Figure 3.

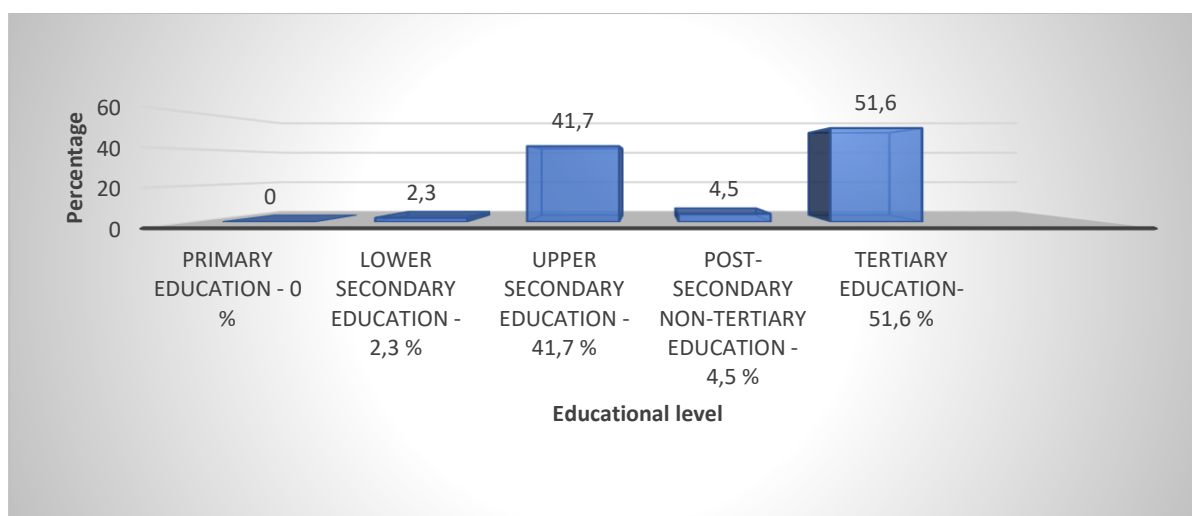


Fig. 3. Distribution of women surveyed by educational level

In our survey P2 the high percentage of respondents with tertiary education, representing as much as 51.6% is noticeable. The data from the conducted study is consistent with this from P1, conducted shortly before the start of the Covid-19 pandemic.

Health status

Some parameters of the general health status are studied, such as height, weight, body mass index, presence of chronic diseases, falls and fractures, medication intake, family history for major socially significant diseases. Self-assessment of health as an important element of health status is also studied.

Stature

The average height of the women studied in P2 is 163.14 ± 8.361 cm (143 – 187 cm), and it did not differ significantly from the average height of the women included in P1 - 164.28 ± 6.73 cm (150 – 180 cm).

Weight and body mass index (BMI)

The average weight of the women studied is 71.69 ± 14.85 kilograms (43-130 kilograms), and it did not differ significantly from the average weight of women in P1 - 69.20 ± 13.22 kilograms (40-100 kilograms).

For each woman, the body mass index is calculated. The average BMI in the P2 study for women is 27.25 ± 9.79 kg/m² (16.55 – 52.07 kg/m²). In the previous study P1 before the Covid-19 pandemic, the average BMI of the respondents was significantly lower at 25.71 ± 4.11 kg/m² (15.63 – 35.25 kg/m²). A distribution of women by BMI category is presented on Figure 4. Nearly two-thirds of women are overweight and obese. Worrying is the fact that only 38.4% of respondents are of normal weight.

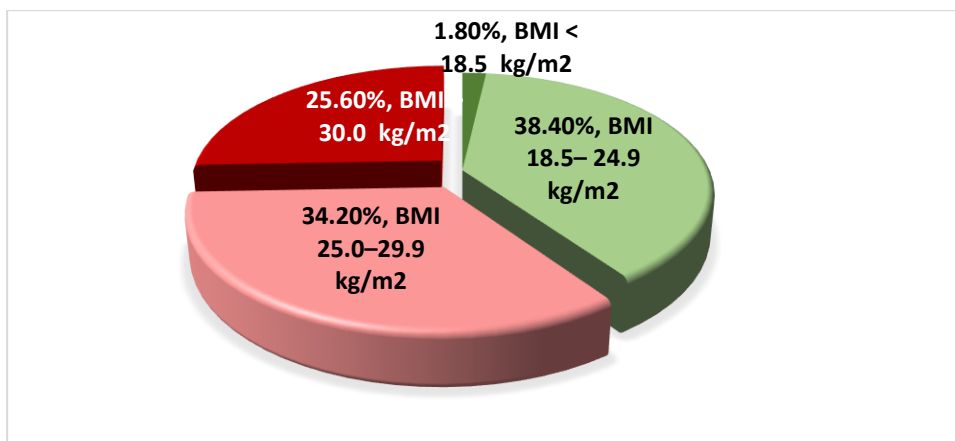


Fig. 4. Distribution of women by body mass index (BMI)

Comparing the BMI distribution among women with different levels of education, we find statistically significant differences ($\chi^2 = 26.6488$, $p = 0.002$), the data being presented graphically on Figure 5. It is noteworthy that women with primary education are mainly in the overweight and obese groups.

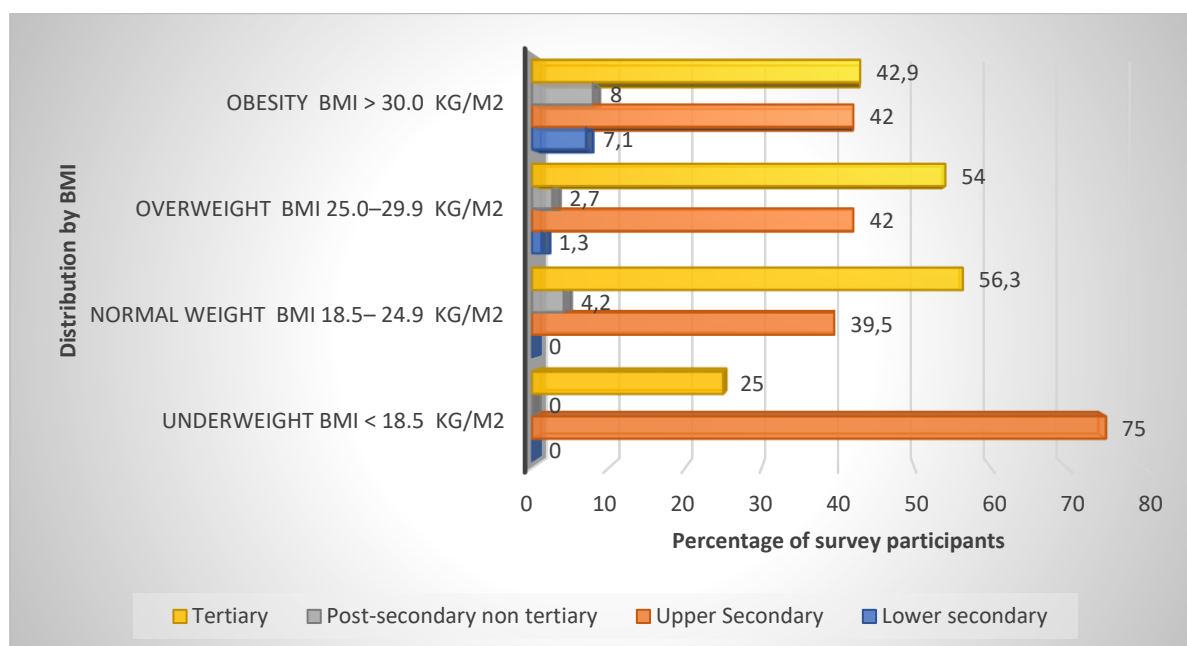


Fig. 5. Distribution of women by BMI and level of education

Overweight and obesity are clearly recognized by women as a potential health threat, as confirmed by the statistical significance of the desire for change of personal weight correlated to BMI ($\chi^2 = 144.128$, $p = 0.001$). 92% of obese women and 68% of overweight women have a desire to lose weight, while only

27.7% of respondents with normal-weight express such a desire.

Chronic diseases

Chronic noncommunicable diseases are the dominant type of disease with advancing age in women. They result both from genetic and biological predispositions and risk factors and from the cumulation of a number of behavioural risks in the earlier phases of the life cycle. On Figure 6 is presented the distribution of chronic diseases among women in the conducted study.

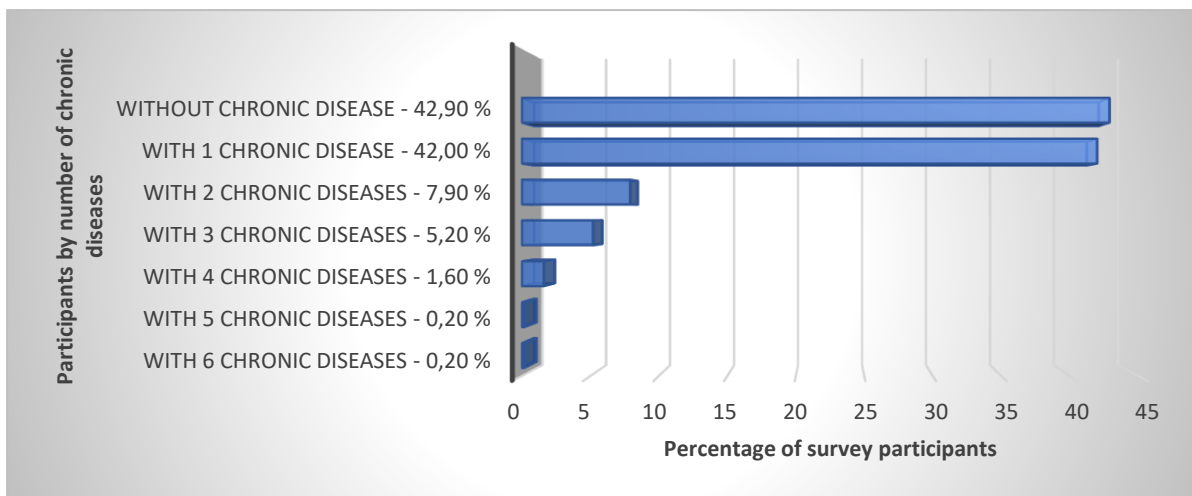


Fig. 6. Distribution of women by presence of chronic diseases

Polymorbidity with the presence of two or more chronic diseases is found in 15.10% of the participants in the study.

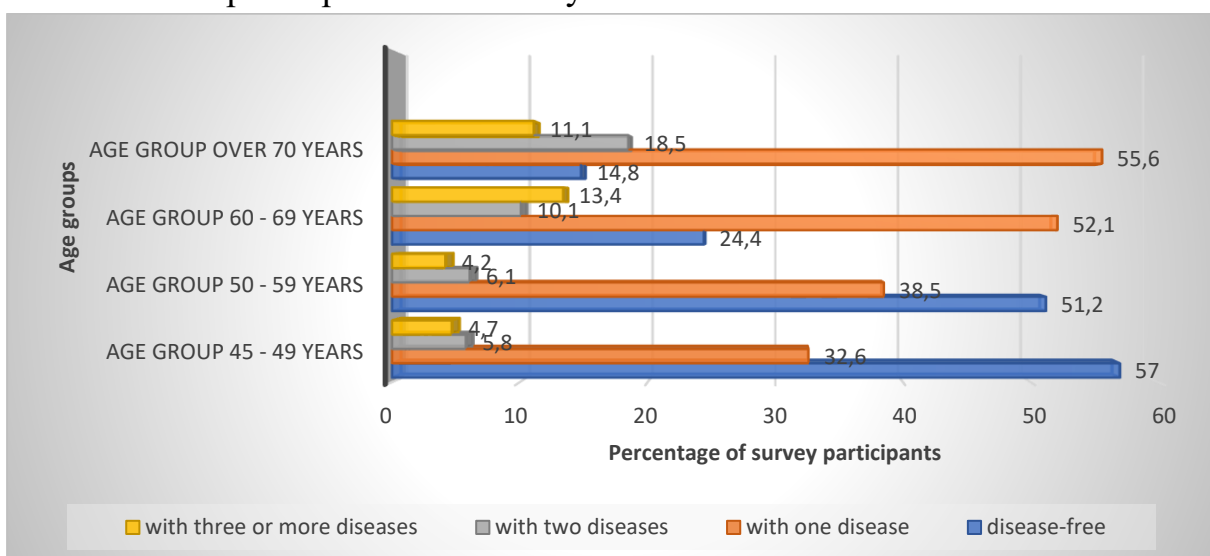


Fig. 7. Distribution of number of diseases by age

The proportion of women with chronic diseases increases with age ($\chi^2 = 54.299$, $p = 0.001$). A clear gradient of the number of chronic diseases is observed as ageing progresses (Figure 7).

Figure 8. presents the distribution of reported chronic diseases among women by system.

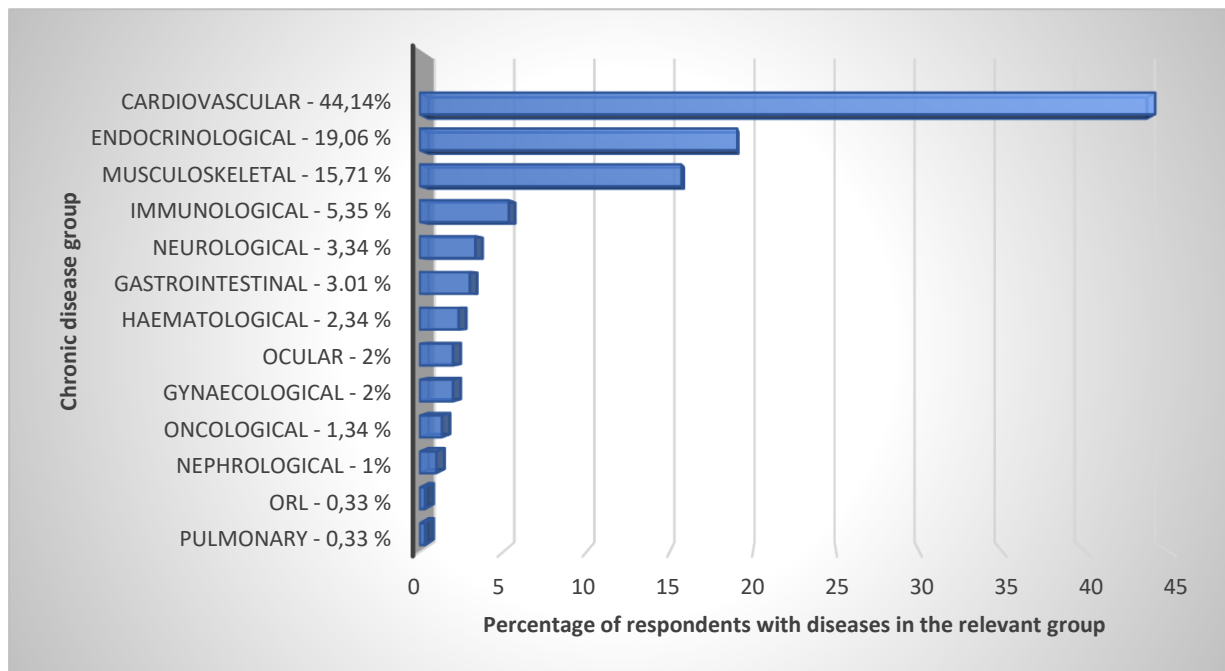


Fig. 8. Distribution of chronic diseases by systems

Cardiovascular diseases lead significantly over other classes of diseases, followed by endocrinological and musculoskeletal diseases. In the previous study P1, the ranking of diseases by system is very similar, but with a lower relative share due to the limitation of the upper limit of the age of the participants to 65 years. Cardiovascular diseases are dominant (25%), followed by endocrinological diseases (20.45%) and bone joint (15.91%) diseases. The study tests the relationship between body mass index and the number of chronic diseases reported by women. In the comparison of the BMI distribution among respondents with different numbers of diseases, statistically significant differences are found ($\chi^2 = 55.436$, $p = 0.001$), and the data are presented on Fig.9.

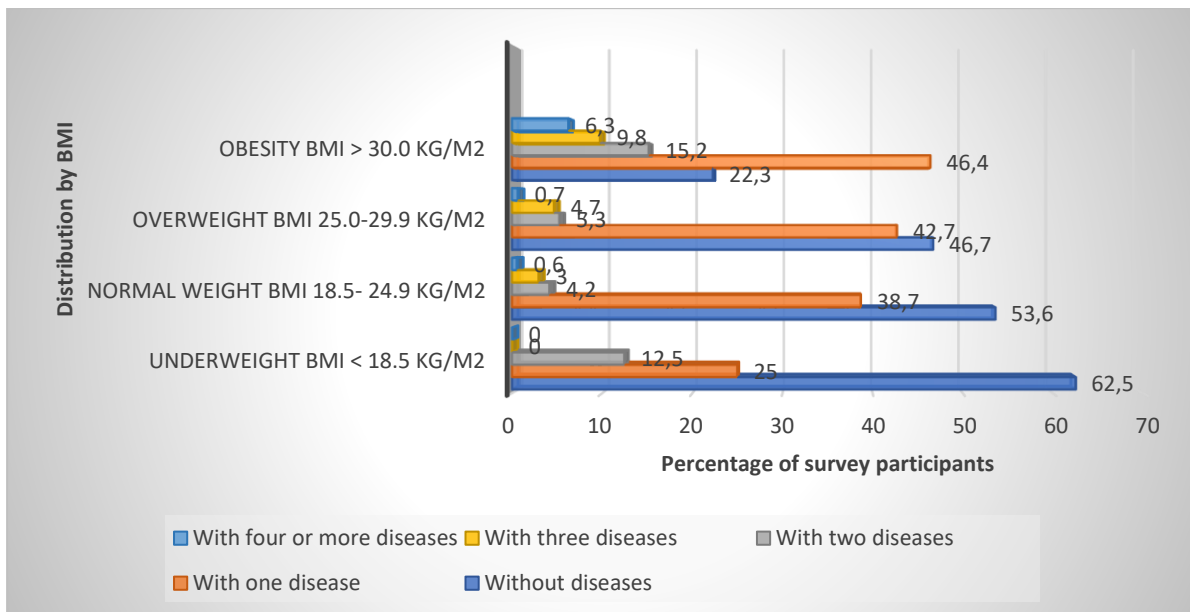


Fig. 9. Distribution of women by BMI and presence of chronic disease.

The relatively highest proportion of women without disease (62.5%) is found in the underweight group, with the proportion of disease-free women decreasing with increasing BMI and being 53.6% in normal body weight women, 46.7% in overweight women and only 22.3% among obese women.

The number of chronic diseases also differs in women by BMI category. Every tenth obese woman has three different diseases, while in women of normal weight their share is only 3%. Four or more different diseases have 6.3% of obese women, while in all other groups similar polymorbidity is less than 1%.

Falls and fractures

Falls and fractures become more frequent among post-reproductive women as a result of changes in balance and bone density during menopause. On Figure 10 is presented the distribution of respondents according to the presence of falls and fractures after the age of 45.

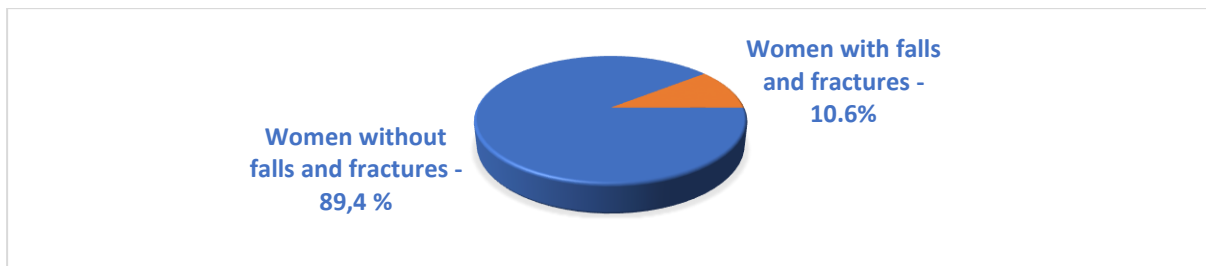


Fig. 10. Falls and fractures after 45 years of age

Slightly more than 10% of all women surveyed had severe falls or fractures after age 45. This proves the need for targeted training to improve the balance of women of post-reproductive age, as well as strength training with weights to improve bone density and strength. Of paramount importance for the injured women are physiotherapeutic and rehabilitative measures to restore lost or impaired motor function.

In the comparison of the age distribution among respondents who had severe falls or fractures after the age of 45, statistically significant differences are found ($\chi^2 = 34.605$, $p = 0.001$). The proportion of women who had severe falls or fractures is greater among women in senior age groups – 22.7% in the 60-69 group and 22.5% in women over 70 years of age. A statistically significant difference in BMI ($\chi^2 = 12.847$, $p = 0.005$) is found among women who suffered severe falls or fractures after age 45. Every sixth obese woman and 13.3% of overweight women respond that they had had similar incidents, while in the normal weight groups the proportion of these women is 4.8%.

Medication intake

Of all respondents, nearly half 46.4% take at least one medication and 4.94% of the women surveyed take two or more medications. Figure 11 presents the intake of medication by the participating women in P2. The analysis of the intake of individual groups of drugs shows, as we expect, that the most used group of drugs are antihypertensive agents given the predominant cardiovascular pathology in the structure of morbidity in old age. This group of medications accounts for 67.52% of all medicines taken and is used by 17.75% of all study

participants. Among them, the most frequently mentioned are ACE-inhibitors, beta-blockers, calcium antagonists and combined preparations.

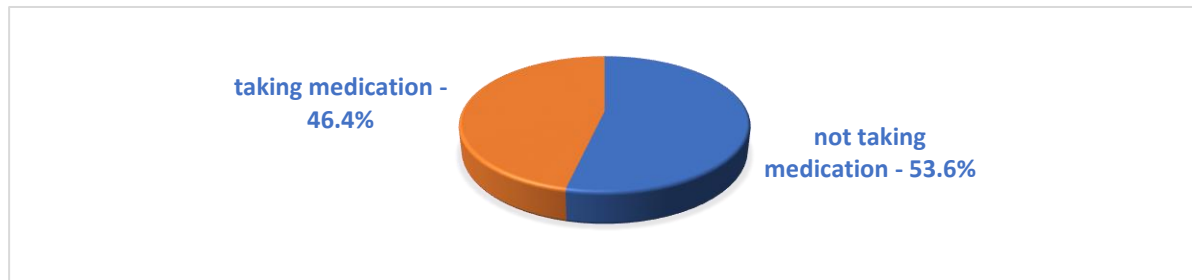


Fig. 11. Distribution of women by medication intake

The second most popular drugs are iodothyronine and antidiabetics with 8.55% each. These medications are taken by 2.25% of the women surveyed. Of the iodothyronins, the most commonly used is L-thyroxin. Among the antidiabetic medications, metformin, insulin and ozempik are most commonly used. Anticoagulants rank third in terms of usability with 2.56% percent, and they are used by 0.67% of survey respondents. Syntrom, Elequis and Xarelto are mentioned here. The proportion of women taking medication increases in older age groups ($\chi^2 = 45.739$, $p = 0.001$). BMI has statistically significant influence on medication intake, with 68.5% of obese women taking medication, followed by overweight women (44.7%). Normal and underweight women receive drugs only in 32.7% and 25% of the cases, respectively. This clearly shows the trend of deterioration of the health condition and the need to take medication with an increase in body mass.

Family predisposition

Family predisposition for some somatic diseases is an integral part of women's health status. Among the participants in P2, 18.9% have a family history with the presence of serious chronic non-communicable diseases among first-degree relatives. In the positive family history, oncological diseases prevail, followed by cardiovascular and endocrinological diseases.

Health self-assessment

Health self-assessment is an important subjective integral indicator of women's health, with a proven predictive effect on future health outcomes. Figure 12 presents the data from the health self-assessment of the women surveyed.

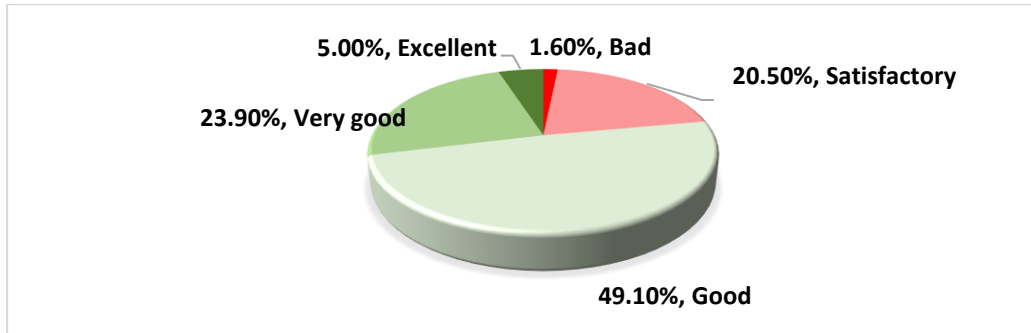


Fig. 12. Distribution of women by health self-assessment

When analyzing the data for health self-assessment from the conducted survey, there is a tendency for normal distribution, despite the positive formulation of 3 out of the possible 5 answers in the classification. In the comparison of the age distribution among respondents with different health self-assessment, we find statistically significant differences ($\chi^2 = 60.854$, $p = 0.001$). On Figure 13 the distribution of women with different health self-esteem by age group is presented.

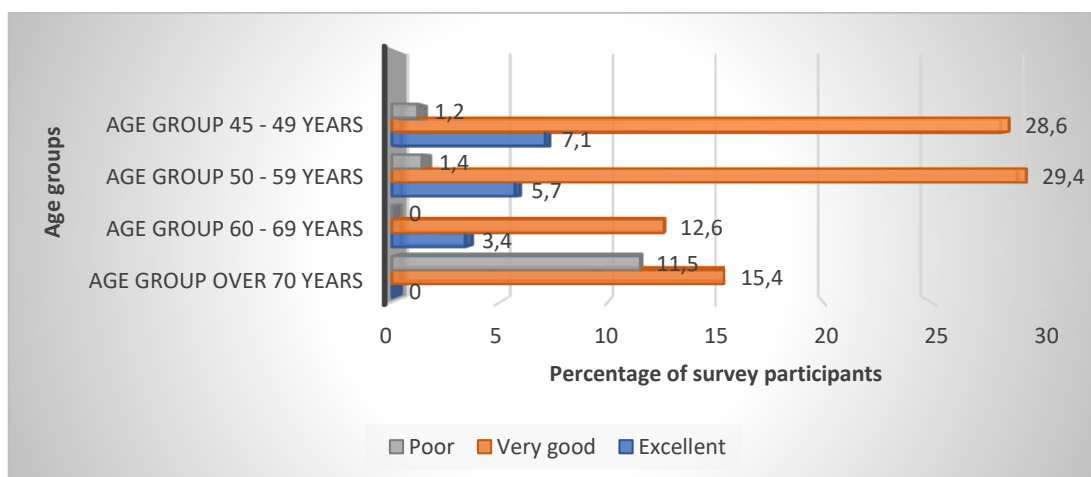


Fig. 13. Health self-assessment of women by age

The relatively lower share of women with excellent health self-assessment in the groups of women over 60 compared to the groups of women

between 45 and 49 years (7.1%) and between 50 and 59 years (5.7%) is noteworthy.

Specific gynecological characteristics

Menstrual history and menopausal status

Menarche

The average age of menarche among women in P2 is 13.75 ± 2.91 years (9–18 years). The results obtained are almost identical to the data for the participants in P1 - 13.51 ± 1.41 years (11 – 18 years).

Menopausal status

Women are classified according to menopausal status by STRAW definition into 4 categories. Women in category 4 (early stage of the transition phase) and category 5 (late stage of the transition phase) account for a total of 19.03% of the participants. The significant proportion (80.09%) are menopausal, aged between 45 and 89 years. Of these, 33.48% are in Category 6 (referring to the early stage of postmenopause). In category 7 (coinciding with the late stage of postmenopause) fall 46.61% of respondents.

The average age of onset of menopause is 48.08 ± 5.52 years. This age in P1 is 49.37 years (32-58 years), and the difference of 1.29 years between the two studies can be explained by differences in the populations of women among whom they are conducted.

Sexual activity

More than half (55.5%) of women surveyed report being sexually active at the time. This shows that in the later years of the female life cycle, sexuality continues to play an important role. Of married women, 72.7% report being sexually active, while among unmarried, divorced and widowed women, the relative shares are 33.3%, 27.3% and 30.8%, respectively ($p=0.002$). This shows the importance of marriage in maintaining healthy sexual relationships as we age. With age, the proportion of sexually active women decreases ($\chi^2 = 83.014$, $p=0.001$).

Replacement therapy with female sex hormones

Hormone replacement therapy was seldom used among the women studied. 92.9% of them have never used HRT and 5.5% of respondents have used one in the past, but not at the time. P1 results are similar, with 94.9% saying they do not use HRT. The very low HRT use obtained from the surveys are very likely due to the selection of participating women from the general population, and higher HRT use could be expected when conducting a survey among patients in gynecological practice or ward.

2. Results and discussion on menopausal symptoms in postreproductive women

Vasomotor symptoms

Vasomotor symptoms are one of the most common and at the same time with the greatest effect on quality of life in middle-aged women in the transition to menopause and early postmenopause.

Hot flashes are the most widely known menopausal symptom. They have appeared at least once in 74.2% of the women surveyed by us. In the group of postmenopausal women, hot flashes are present daily in the life of 29.3%, while in the peri- and premenopausal group, this symptom do not occur daily in any respondent ($\chi^2 = 15.707$, $p = 0.008$). In 9.7% of the women surveyed, hot flashes have a "strong" effect and in 9.7% a "very strong" effect on quality of life.

Another common symptom among middle-aged women is heavy night sweating. Despite its relatively rarer manifestation, it has a "strong" or "very strong" effect on quality of life in 11.2% of women. Women assessing their quality of life after the onset of menopausal changes as worse report a "strong" or "very strong" effect of profuse night sweating on their quality of life in 20% of cases, while those evaluating the change as positive do not report a "strong" or "very strong" effect of profuse night sweating on quality of life ($\chi^2 = 2,086$. $p = 0,015$).

Somatic symptoms

The many adverse physical changes during the period of menopausal transition can significantly affect the quality of life of affected women.

One of the most common somatic symptoms during the menopausal years is physical fatigue. Nearly 80% of the women indicate that they have more severe than usual fatigue, and in the group of postmenopausal women, fatigue is present on a daily basis in the lives of 17.6% of respondents, while in the peri-/premenopausal group this symptom do not occur daily ($\chi^2 = 14.547$, $p = 0.012$).

Of the respondents surveyed, 18.9 percent report a "strong" or "very strong" effect of physical fatigue on quality of life. Women who rated their health as "poor" or "satisfactory" experience more severe than usual fatigue in 95.5% of cases, while among women with "very good" and "excellent" health self-assessments, the symptom occur to 77.1% of respondents ($\chi^2 = 20.351$, $p = 0.026$). Among the women surveyed by us, 86.5% have pain and stiffness in the joints and muscles, and 84.7% report that their quality of life is affected by these symptoms. In the pre- and perimenopausal group 33.3% report that this symptom does not affect their quality of life, while in postmenopausal women, only 10.3% respond that their quality of life is not affected by joint and muscle pain and stiffness ($\chi^2 = 11.798$, $p = 0.038$).

Many post-reproductive women gain weight, with 77.3% of respondents to our survey reporting such an increase.

Among the women surveyed by us, 62.5% say that weight gain has worsened their quality of life. For a significant percentage of women, the effect on the quality of life is "strong" (17.0%) or "very strong" (9.1%). Of the married women, 29.6% note that weight gain has a "strong" or "very strong" negative effect on quality of life, with the same score given by 9.1% of widowed women ($\chi^2 = 26.862$, $p = 0.030$). An estimate of a "strong" or "very strong" effect is much more common in the groups of unmarried and divorced women, with percentages of 60% (single) and 75% (divorced), respectively. An explanation

for this result may be the desire of unmarried and divorced women to be attractive and find a partner, while appearance and personal weight do not matter so much to married and widowed women in their relationship with the other sex. Of non-smoking women, 69% report a weight gain, of ex-smokers the percentage is 83.3%, while for current smokers it is 86.8% ($\chi^2 = 19.907$, $p = 0.030$). The phenomenon can be explained by the tendency of smokers to lead a generally unhealthy lifestyle. The above facts are a strong argument for targeted efforts to improve the eating habits and physical activity of women of post-reproductive age.

Severe headaches are common in post-reproductive women, with 70.8% of women surveyed reporting the presence of this symptom. More than two-thirds (69.3%) say this symptom has an effect on their quality of life.

Palpitations occur in 76% of the women surveyed, and in 72.2% of the women surveyed, the symptom influences quality of life.

Itchy skin is a somatic symptom affecting 61.8% of the women surveyed. Effect on quality of life is seen in 46.2% of respondents. Newly occurring hair growth in the face area can be seen in 48.7% of the women who participated in the study, and in 30.9% of them the symptom has an effect on the quality of life, but only in 2.9% it is rated as "strong".

Psychological and psychosocial symptoms

Among the women surveyed by us, 63.9% report the presence of depressive moods, and for 57.1% of the participants in the survey, depressive moods have an effect on the quality of life. Among women with a "strongly negative" and "negative" attitude towards menopausal symptoms, 33.3% report a "moderate" and 25% a "strong" effect of the symptom on quality of life, while in those with a positive attitude towards menopause-related changes, 8.3% report a "moderate" effect of depressive disorders on quality of life, and no woman has a "strong" effect ($\chi^2 = 24,129$. $p = 0,002$).

Sleep disorders

Among the survey participants, 82.5% report sleep disturbances. This high frequency is alarming, given the impact it could have on physical and social functioning, performance, general health and immunity. Of the respondents, 76.7% say that sleep disturbances have an effect on their quality of life, and for 4.1% of them this effect is "strong" and for 15.1% "very strong". Women with "very good" and "excellent" self-reported health assessment have daily and persistent sleep disturbances in 11.5% of cases, while those with "poor" and "satisfactory" health conditions report daily or persistent manifestation of these symptoms in 31.8% of cases ($\chi^2 = 18.846$, $p = 0.042$). This phenomenon has an obvious and logical explanation. A good and full night's sleep is a prerequisite for good functioning of the immune system, while sleep disorders can lead to high levels of stress hormones, which in turn disrupt the optimal functioning of the immune system and lead to diseases.

Among the women surveyed by us, 59.7% reported problems in concentration. For 59.7% of women, poor concentration has an impact on their quality of life. The deterioration of memory with advancing age is a widely known fact, with 74% of the women surveyed by us reporting the presence of this symptom. In 5.4% of respondents, poor memory has a "strong" or "very strong" effect on quality of life. Daily manifestation of this symptom is reported by unmarried and divorced women in 25% of cases, with daily manifestation of the symptom occurring only in 4.8% of married and 7.7% of widowed women ($\chi^2 = 25.748$, $p = 0.041$). A possible explanation for this phenomenon may be the protective function of the family's sense of security about stress, with the correlation of stress-poor memory being a widely known scientific fact.

Irritability and anxiety are common in the years of hormonal changes during the menopausal transition. Of the participants in the P-1 survey, 79.2% report having irritability, respectively, and 84.2% anxiety. Of the respondents, 8.7% indicated that irritability has a "strong" effect on the quality of life, and for

2.9% the effect is very strong. Among respondents, 66% report frequent and rapidly changing moods, with 19.2% of women experiencing erratic moods. In 52.7% of the women surveyed, this symptomatology has an effect on the quality of life, and for 7.5% the effect is "strong" or very strong.

Urogenital and sexual symptoms

Of the women who participated in our study, 30.4% report uncontrollable leakage of urine when coughing or exercising, and 18.9% report uncontrollable leakage of urine when having the urge to urinate. Stress incontinence has a negative effect on quality of life in 28.3% of the women surveyed, and imperative urinary incontinence in 18.9%.

31.6% of the women report uncontrollable release of feces or gases, and in 3.2% of the respondents it happens on a daily basis. Of the women surveyed, 27.5 percent report that fecal incontinence has an effect on their quality of life, with 4.2 percent saying it was "strong" or "very strong." In the group of pre-/perimenopausal women, only 10.5% report having similar symptoms, while in the postmenopausal group, the rates are significantly higher and reach 36.5% ($\chi^2 = 8.821$, $p=0.032$). Among women who give a negative assessment of the change in their quality of life in the menopausal years, 9.1% report a daily manifestation of fecal incontinence, while of women for whom there is no change in their quality of life in menopause, only 1.7% report a permanent occurrence of this symptom ($\chi^2 = 16.184$, $p= 0.040$).

In our study, 32.1% of women complain having frequent urinary infections, all of whom report that their quality of life is affected. Respondents with a "negative" attitude towards menopause report the presence of frequent urinary infections in 69.2% of cases, 35.1% of women with a "neutral" attitude have frequent urinary infections, while for women with a "positive" attitude to menopausal changes frequent urinary infections occur only in 23.1% of respondents ($\chi^2 = 16.866$, $p= 0.032$). Of the respondents who participated in our survey, 41.3% complain of frequent vaginal infections. Of the women, 37.9

percent say frequent vaginal infections have a negative impact on their quality of life, with 7.6 percent saying the effect is "strong" or "very strong." In a significant percentage of women of postreproductive age, anatomical changes occur in the pelvic floor area and urogenital system: uterine descence, lateral defects, cystocele, urethrocele, enterocele, rectocele, etc. These anatomical changes are often accompanied by an unpleasant pressure or a feeling of a foreign body in the vagina. Of the women surveyed, 15.2% report similar symptoms. Two other symptoms inseparably related to the hypoestrogenic state of menopause and the resulting atrophy, impaired lubrication, decreased elasticity and loss of vaginal rugs are dyspareunia and vaginal dryness. Of the participants in the survey, 33.7% report a feeling of dryness in the vagina, and 34.4% complain of pain and unpleasant sensations during intercourse. Vaginal dryness has a "strong" or "very strong" effect on quality of life in 7% of respondents, and dyspareunia in 3.3% of women surveyed. In the group of women with a negative attitude, 72.7% of respondents report a negative effect on quality of life from vaginal dryness, and in women with a positive attitude, the reported rates of negative effect on quality of life are significantly lower - 33.3% ($\chi^2 = 20.237$, $p = 0.027$).

Of the women who participated in our study, 53.3% report a loss of interest in sexual activity. The loss of interest in sexual activity negatively affect the quality of life of 47% of the women surveyed, with the effect being "strong" or "very strong" in 9.1% of them.

On the other hand, 34.1% of respondents report reduced sex life satisfaction, which negatively affect the quality of life of 31.2% of the women surveyed.

3. Analysis of knowledge, beliefs and understandings about menopause

Assessment of menopause-related change in quality of life

The quality of life in women in the postreproductive years is largely a function of the objective changes that have occurred and the subjective psychological assessment they give to the changes according to their adaptation abilities, factors of the living environment and other accompanying life events.

On Figure 14 is presented the data on the self-report of menopause-related change in the quality of life of the women surveyed in P2.

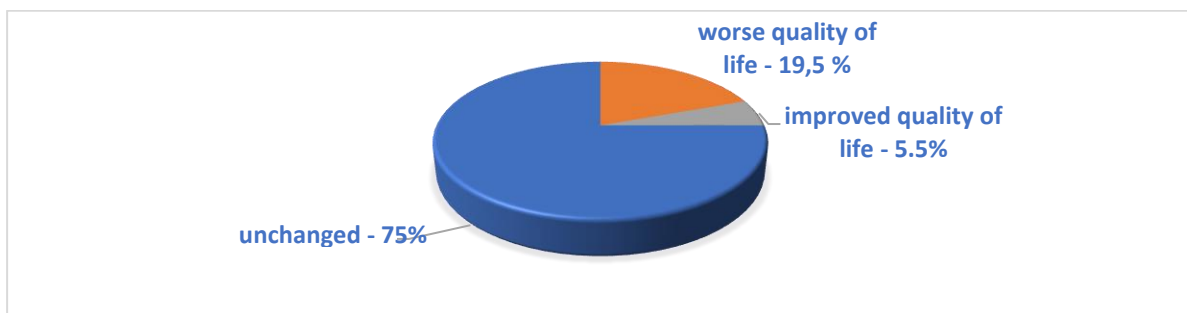


Fig. 14. Women's assessment of quality of life after the onset of menopausal changes

The data shows that nearly 4 times more women rate quality of life as poor compared to those who feel a positive change in menopause. The data is very similar to our previous survey, in which 25% rate the quality of life as worse and only 6.8% describe it as better. In the majority of women in both studies, menopause occurred without any significant change in quality of life. The proportion of women with poorer quality of life after menopausal changes is relatively higher in older age groups, with 30.5% for women aged 60-69 and 22.2% for women over 70 ($\chi^2 = 21.332$, $p = 0.002$). In the younger age groups, 10.3% of women between 45 and 49 years and 15.9% of women between 50 and 59 years of age had a poorer quality of life after menopausal changes.

Attitude towards menopausal changes

Every woman experiences menopausal changes specifically and uniquely depending on her health and psychological state. Some acknowledge them as a

disease, while others accept them as a normal part of life. Figure 15 provides information on the percentage distribution of the responses of the women surveyed regarding their attitudes towards menopause-related changes in P2. The normal distribution of responses is noteworthy, with most women indicating that they have a "neutral" attitude towards menopause-related changes. The results of the study are identical to those of our previous P1 survey, conducted before the start of the Covid-19 pandemic. Health professionals should focus on the nearly 15% of women who have a negative attitude towards menopausal symptoms, as they are the individuals most likely to experience menopause as a negative event. The main reason for this may be insufficient or poor adaptation to changes, high frequency and/or strong effect of menopausal symptoms, inadequate strategy for coping with stressors, presence of additional stressors, etc.

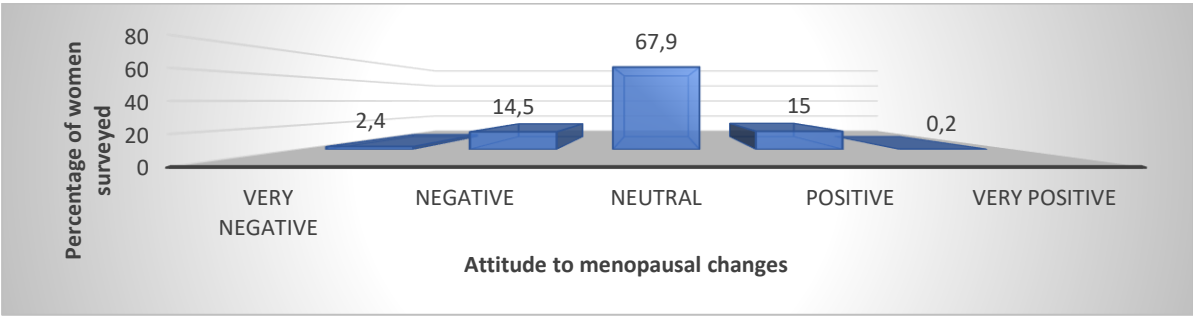


Fig. 15. Attitudes of the surveyed women towards menopausal changes

Self-assessment of awareness of menopausal-related changes and complaints

On Figure 16 are presented the data on the self-assessment of the women surveyed about their awareness of menopausal-related changes and complaints.

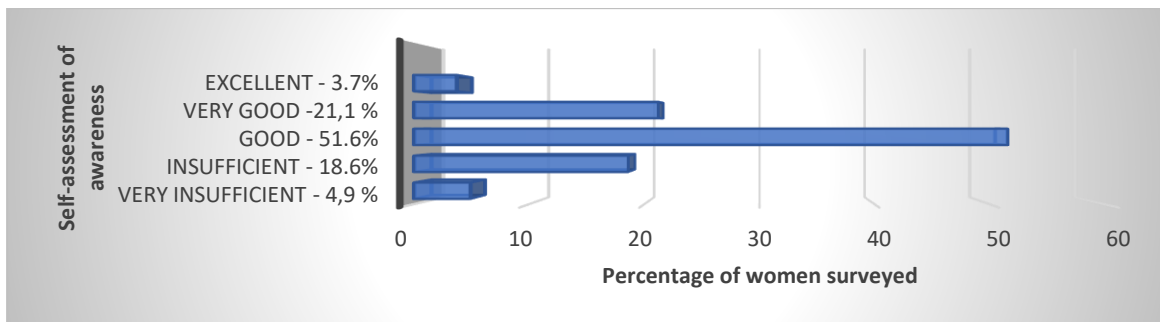


Fig. 16. Self-assessed awareness of menopausal changes

It is important to note that a high proportion of respondents give a positive self-assessment of their awareness.

Sources of information about menopause

The survey found that the largest percentage of women use the internet as a source of information about menopause. On second and third place are the friends of the women surveyed and the consultations with a medical specialist.

Impressive is the large share of participants in the study who would consult with medical professionals and use written materials. This shows the need to improve access to medical specialists, as well as the preparation and distribution of written materials containing information in the field of menopause.

Health education topics that post-reproductive women are interested in

Respondents are most interested in healthy nutrition and healthy lifestyles. Maintaining weight ranks third among the interest of the women surveyed. Relatively low interest have the interviewed women in menopausal-related trainings, indicating the need for active work by health professionals to motivate women to participate in training events.

The participants in our study were asked through an open question what they would change in the care for their health. The largest share of women surveyed would like more prevention and prophylactic. After analyzing the data

on the screening tests, we can conclude that women need more information about the scope of the prophylactic activities provided for them and the access to the relevant institutions, as a large part of the respondents have not even attended the mandatory examinations.

4. Health behaviour and participation in prophylactic activities

Nutrition

The data illustrates women's pursuit of a healthy diet, in which they adhere most to regular fluid intake and the consumption of more fruits and vegetables. Approximately one-third of women included these eating habits as a permanent element of their behavior. Similar is the relative share of women who constantly limit the consumption of alcohol, juices and carbonated drinks, foods with a "lot of E".

Frequency of certain eating habits

The study found that between 12-25% of women do not adopt positive eating practices, such as fiber and reduced salt intake, limiting fat content and alcohol consumption. The consumption of fat-free dairy products is not practiced by 35.7% of the respondents in the study. This dietary habit could be especially helpful in reducing calories and maintaining a healthy weight.

Most rarely, women aspire to consume soy and soy products, with 37.2% never consuming these products and only 1.7% constantly striving to include in their diet these important foods for post-reproductive women.

Another dietary habit that is not particularly widespread among women surveyed is checking the content of food products, with 25.3% of respondents never doing so. These women should be informed about the benefits of checking food ingredients, with particular importance being the calorific value of foods, the amount of table salt and sugar, the presence of preservatives, trans fats and potentially health-hazardous chemicals, shelf life, and the amount of beneficial substances such as fiber, protein and vitamins.

An analysis of the correlation between eating habits and BMI of women was made. In normal-weight females, a number of positive dietary practices are found at a higher frequency: consumption of whole grain food products ($\chi^2 = 25.624$; $p = 0.042$); fruit consumption ($\chi^2 = 24.449$; $p = 0.058$); vegetable consumption ($\chi^2 = 30.207$; $p = 0.011$); fibre consumption ($\chi^2 = 25.913$, $p = 0.039$). At the same time, overweight and obese women report limiting sugar consumption more frequently ($\chi^2 = 28.062$; $p = 0.021$); the consumption of skimmed milk products ($\chi^2 = 28.267$; $p = 0.020$) and reduced consumption of table salt ($\chi^2 = 24.483$; $p = 0.033$).

Physical activity and sport in postreproductive age

Physical and sport activities

Figure 17 reflects the distribution of women in P2 according to their physical activity. The data clearly shows that nearly 70% of the women surveyed are not physically active, and this should be the target group to be motivated to change their habits.

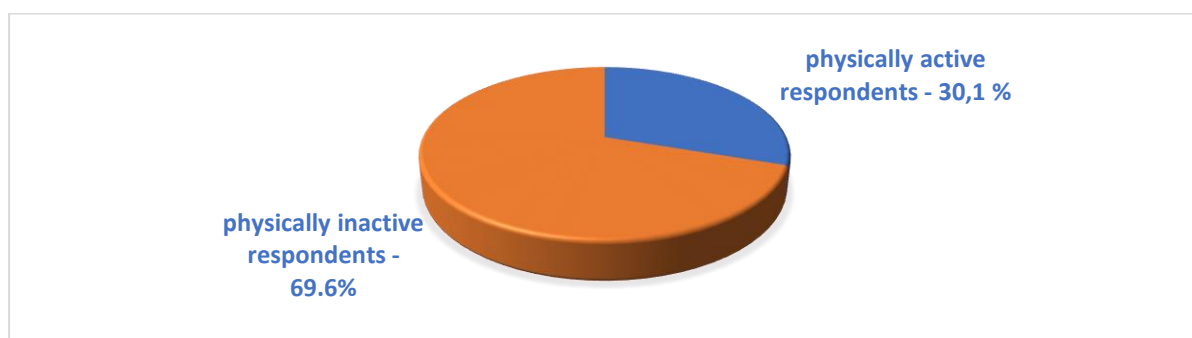


Fig. 17. Distribution of women by physical activity

Types of sports activities

The women in our study listed lengthy walking as the most practiced physical activity, accounting for 36.30% of all sports activities. On second and third place are gymnastic exercises and dancing, accounting for 12.33% and 9.59%

respectively of all sports activities. The extremely rare practice of important sports activities in old age such as balance and stretching exercises, which are practiced by single respondents, is noteworthy. Strength exercises are also not widely included among respondents in our survey, with only 2% of women visiting a gym, and exercise with weights or sports equipment being practiced only by individuals. The most preferred form of sports activity for women is lengthy walking, indicated by 55.7% of the group. Dancing and yoga ranked second and third, with 36.9% and 21.6% approval from women, respectively. Most often, women involved in sports activities indicate by the same proportion that they exercise twice a week or daily. The next popular frequency of workouts is three times a week. Combined with data on the average weekly duration of sports activities, it is clear that most women do not meet the WHO recommendations for activities of at least 150-300 minutes per week with medium intensity physical activity.

Alcohol intake

Alcohol consumption in menopausal women is associated with an increased risk of cardiovascular disease, metabolic disorders, osteoporosis, breast cancer, colon cancer, and other adverse health effects. In Tab. 1 the data on alcohol consumption of the women surveyed in P1 and in P2 are presented.

When analyzing the above data, it became clear that the percentages of non-alcohol-taking women in the two studies were close: 45.3% and 51.6%. The average amount of alcohol consumed by the women who filled out the questionnaire in P1 was 3.36 ± 2.02 drinks per week, and in the study P2 was 1.58 ± 2.75 drinks per week. No statistical correlation was found between alcohol intake and BMI.

Table 1. Alcohol consumption data

Alcohol intake	Proportion of women in P1	Proportion of women in P2
Abstainers	45.3%	51,6 %
Having drunken alcohol in the past	4.2%	3,5 %
Drinking alcohol	50,5%	44,9 %

Smoking

In Tab. 2 the data about smoking habit of the women surveyed in our two questionnaire surveys are presented.

Table 2. Smoking data

Smoking	Proportion of women in P1	Proportion of women in P2
Non-smokers	45.2%	53,7 %
Ex-Smokers	7.5%	5,6 %
Smokers	47.3%	40,7 %

From the data we can conclude that smoking in women of postreproductive age is a harmful habit with a fairly wide prevalence – over 40% are the current smokers in both studies. The average amount of cigarettes smoked among women participating in P2 was 5.5 ± 7.6 cigarettes daily (1-30 cigarettes daily) and 10.93 ± 6.65 cigarettes daily (1-30 cigarettes daily) in women in P1. When comparing alcohol intake among smokers and nonsmokers in P1 statistically significant differences were found ($\chi^2 = 16.958$; $p = 0.002$). Nearly a third of women (33.70%) are both smokers and drinkers. The trend of grouping women with harmful habits is noteworthy, with more smoking drinkers than abstaining smokers (14.13%) and drinking non-smokers (16.30%) combined. This means that women with one bad habit are more likely to have a second one, and it is possible that this kind of people are more likely to have a generally unhealthy lifestyle. On the other hand, there is also a tendency to group non-smoking abstainers (35.87%), which shows that people are more likely to have

no harmful habits than to have only one of them, i.e. a certain share of society is trying to purposefully live a healthier life.

Prophylactic activities in postreproductive age

Data from P2 show that women over the age of 45 most often participate in prophylactic examinations that are within the scope of activity of general practitioners, as well as health self-care, such as blood pressure measurement and breast self-examination. The relative share of women who participated in the prophylactic activities is presented on Table 3.

More than three-quarters of the women in the survey had a prophylactic examination with their GP, and 66.51% of the respondents had this in the last year. Only 40.22% of women consulted a doctor about changes during menopause. More than half of women (58.20%) measured their weight, waist and hips, with 17.75% doing so once a month.

Table 3. Proportion of women who participated in prevention activities

Prophylactic activity	Proportion %	Prophylactic activity	Proportion %
Consultation with a doctor about changes in menopause	44.22	Prophylactic examination by a general practitioner	77.30
Measurement of weight, waist and hip circumference	58.20	Measurement of arterial blood pressure	85.17
Complete blood count tests	89.66	Lipid profile	40.67
PAP-smear	77.30	Colposcopic examination	13.9
Ultrasound examination of the uterus and ovaries	53.93	HPV Test	9.44
Self-examination for breast masses	46.52	Mammography of the breast	63.37
Ultrasound examination of the breast	52.13	Prophylactic colonoscopy	9.66
Test for occult bleeding	2.91	Osteodensitometry for osteoporosis	27.19

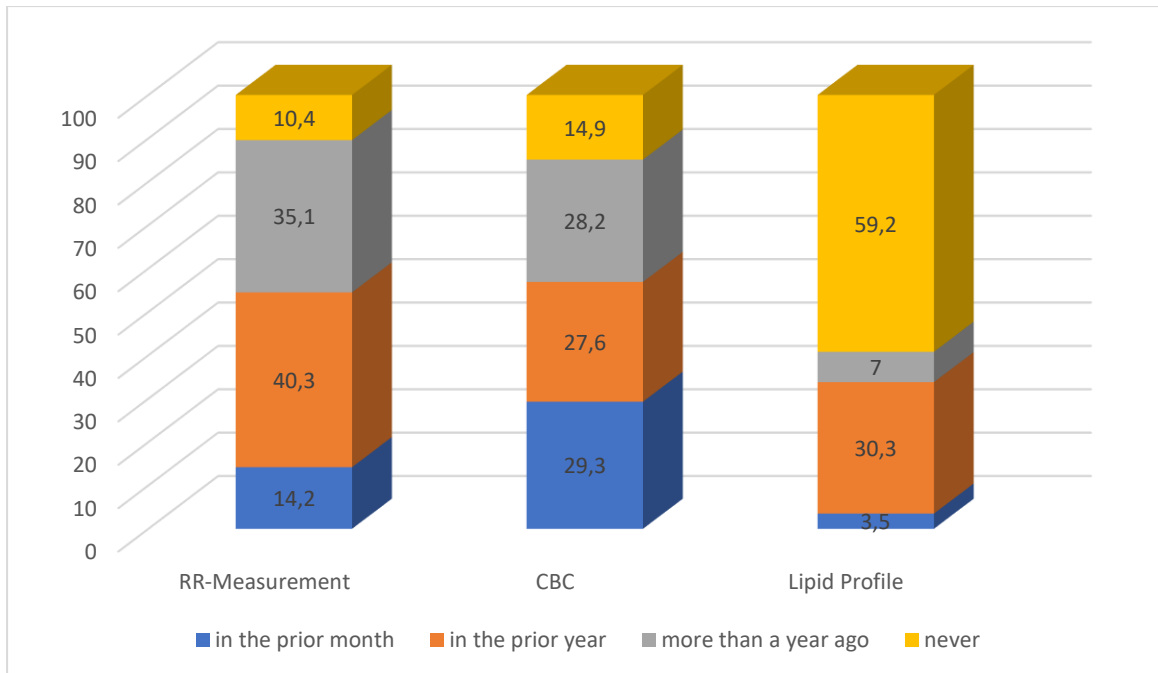


Fig. 18. Frequency of routine prophylactic examinations

The distribution of women by frequency of measurement of blood pressure, lipid profile and blood count is presented on Figure 18. Although lipid profile is a part of mandatory preventive examinations every 5 years, 59.33% of women have never conducted this study.

In our study, 50% of women had a pap smear (Papanicolaou) more than 3 years ago or have never participated in this screening. On Figure 19. is illustrated the participation in the pap screening.

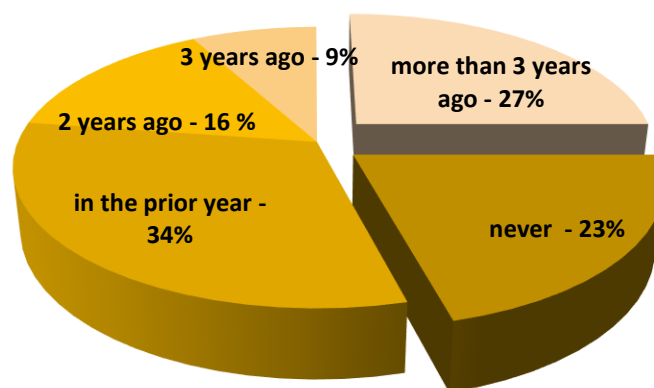


Fig. 19. Frequency of PAP-Smear

According to our data, a test for the presence of human papillomavirus was done by only 9.44% of women. In 4.49% of the respondents, the same test was carried out in the last year and in 2.95% in the previous 2 years.

Ultrasound examination of the uterus and ovaries was performed in 53.93% of women. Only a little more than a quarter of the respondents (28.53%) had it in the last year, and in 15.96% in the previous 2 to 4 years.

Another important focus of prevention in women is breast cancer, which has the highest incidence and is a major cause of cancer mortality. It is noteworthy that 53.49% of women have never done a self-examination of the breasts. This relative share is significantly higher than the share of women who have never performed mammography ($p=0.001$). The carrying out of a mammography examination among the respondents in our survey is presented in Figure 20.

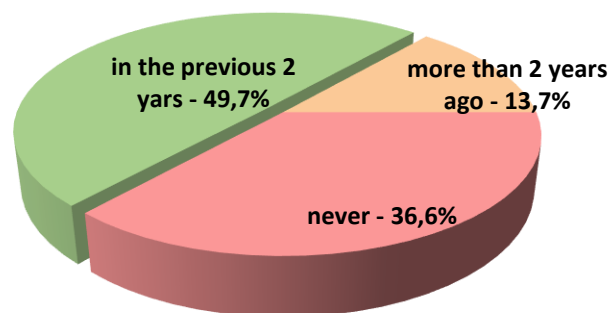


Fig. 20. Frequency of mammographic examination

The subgroup of women who had never had mammography had lower participation rates for each of the 16 prophylactic activities, compared to the general group of respondents, e.g., breast self-examination performed 36.40% vs. 46.52%, osteodensitometry – 13.26% vs. 27.19%, breast ultrasound – 35.73% vs. 52.13%.

More than half of the women had an ultrasound examination of the breasts, 29.21% in the previous year and 17.30% in the previous 2 to 4 years.

One of the socially significant health problems associated with menopause is the loss of bone density. According to our survey, osteodensitometry was conducted in 27.19% of respondents. In 11.91% of women, bone density was examined in the last year, in 7.64% - two years ago.

Colon cancer screening via colonoscopy is not popular and only 9.66% of women surveyed have had one. In the majority of those who had the examination, it was carried out in the last three years - 7.64%. A test for occult bleeding from the gastrointestinal tract was performed only in 2.92% of the women surveyed.

For all the prophylactic activities studied, a relationship between women's participation and age, education and self-assessment of health was sought. Age affects participation in: Papanicolaou Pap smear study, with increasing age participation decreases significantly ($p=0.035$); Mammography tests in older women, although showing no significant difference in frequency, were performed more than 5 years ago ($p=0.014$). The higher level of education positively influenced the preventive behaviors of self-care – breast self-examination ($p = 0.026$), weight measurement, waist circumference and hips ($p = 0.003$) and blood pressure measurement ($p = 0.001$).

Health self-assessment had an impact on women's preventive behavior regarding breast cancer, with better self-reported health associated with higher breast self-examination rates ($p=0.008$) and more frequent mammograms ($p=0.001$). Poorer health self-assessment was associated with higher rates of participation in colon cancer screening activities ($p=0.001$).

Our results regarding women's participation in specific screening tests may be influenced by the COVID-19 pandemic and reflect refraining from seeking prophylactic tests for fear of infection. This requires regular monitoring of the scope with screening tests and prophylactic examinations of post-reproductive women in the coming years.

5. SURVEY AMONG MEDICAL STUDENTS

The study among medical students was conducted online during the state pre-graduate internship in social medicine. Participants are students from the 6th year of medical training, more than two-thirds (67.5%) being female. This structure by sex probably reflects the interest of the same sex in the health problems in a specific part of women's lives.

Opinion of medical students about menopause as a topic in the training of medical students

The majority of medical students consider that the topic of menopause is not sufficiently addressed in their medical training. Only 2.6% of the students think that the topic is covered in detail, and no student replies that the topic is addressed in great detail.

The students' self-assessment of the level of awareness about menopause-related changes and complaints is presented on Figure 21. Only 1.7% of the students rate their awareness as excellent and 14.5% as very good. The need for a more detailed discussion of the topic of menopause in the educational process of medical students is clearly visible.

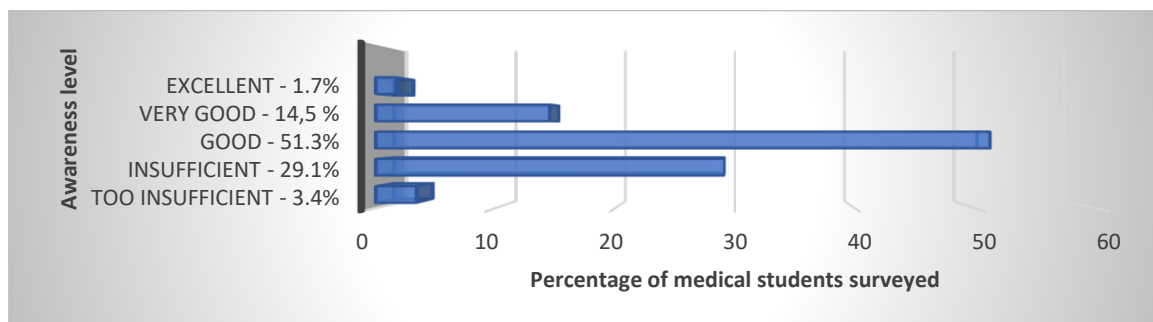


Fig. 21. Medical students' awareness of menopause-related changes and complaints

Opinion of medical students on the change in the quality of life of menopausal women

The majority of medical students (91.4%) think that women's quality of life after menopause-related changes is worse, only 8.6% of respondents believe that quality of life does not change, and no student expects that quality of life may be better.

Comparing the opinion of medical students with that of the women surveyed on the same topic, it is clear that the students have an unrealistic idea about the change in the quality of life in the menopausal years, as the majority of women (75%) believe that the quality of life has not changed and even 5.5% of women assess their quality of life as better. Despite the clear discrepancy between the opinion of the medical students and women on the topic, we can conclude that the students do not underestimate the topic of menopause, but there is a tendency to perceive an absolutely normal phenomena of gradual reduction and cessation of women's reproductive functions as pathological.

Sources of information helping the improvement of the health knowledge of postreproductive women

According to the students, the most important source of information is consultation with a medical specialist, with 76.1% indicating this source as mandatory. The women surveyed classify this source in 3rd place, with less than half of them (43.5%) acquiring information in this way. This shows an overestimation by students of the real role of healthcare professionals as a source of information about menopause and the need for more active participation of physicians and health care professionals in improving women's knowledge. Second in importance, medical students put the Internet, with 23.1% classifying it as mandatory and 29.9% as very important source of information.

Importance of certain topics for the health education of women of postreproductive age

The opinion of medical students on the importance of certain topics for women's health education in postreproductive years has been studied. Cancer screening convincingly takes the top spot as the most important topic with 64.1% responding that it is 'mandatory' and no one classifying it as 'unimportant' or 'not important'. Osteoporosis ranks second, with 60.7 % of medical students rating the topic as mandatory and again no one giving a "not important" rating.

Importance of certain eating habits

As most important students rate the intake of more vegetables, with 51.3 % rating it as mandatory, only 0.9 % as unimportant and no one classifying it as not important. The second place in importance the students give to the intake of more fruits, with 47% describing it as mandatory and only 1.7% as unimportant. Third place takes the intake of more fluids, which 46.2% of students rating it as mandatory and none gave the rating "unimportant" or "not important". Similar is the ranking in the TOP 3 eating habits in post-reproductive women, where the same three eating habits with small dislocations of the sequence are present.

Importance of certain prophylactic methods

The medical students rate breast cancer as a serious health problem and place breast self-examination and mammography first and second in importance of all screening methods in postreproductive age. Almost three-quarters (74.4%) of the students rank breast self-examination as mandatory, while this percentage is 70.9% for mammography. In third and fourth place in importance, with a very similar result to the previous studies, the medical students put two ultrasound examinations: of uterus and ovaries and that of the breast, respectively ranked as mandatory from 70.9% and 70.1% of the medics participating in the study.

Career in a medical specialty focused on post-reproductive women

The medical students are asked if they would devote their career to a medical specialty focused on the health of postreproductive women. Nearly half of the respondents (43.6%) gave a positive answer and would be professionally involved in a specialty related to menopausal women's health. When comparing the opinion of the students by gender about a career in a medical specialty with a focus on women of postreproductive age, a statistically significant difference is observed ($\chi^2 = 11.625$, $p = 0.001$). The proportion of female students (54.4 %) who would devote themselves to such a career is convincingly higher than the proportion of male students (21 %).

Recommendations for optimizing the health of post-reproductive women

Due to the complex nature of care for post-reproductive women and the many different participants in its implementation, we have given separate recommendations to the Ministry of Health, medical universities, NZOK and health professionals that provide care for menopausal women.

Recommendations to the Ministry of Health

Organisational measures are urgently needed to increase the scope of screening programmes and regular monitoring of women's health. Among them, we recommend the establishment of specialized preventive units for the realization of active coverage of the female population with screening procedures, removal of economic barriers to women's participation in screening tests, the creation of a specialized web-based portal for women's health promotion, incl. in post-reproductive age, as well as the application of the provided for by the law sanctions in case of unjustified failure to perform a prophylactic examination.

The National Health Strategy should involve special attention to women of post-reproductive age, their specific needs and the improvement of their health. We recommend that the Decree on the scope of preventive examinations on the territory of the Republic of Bulgaria be updated regularly so that it complies with the best medical practices, taking into account the recommendations of leading medical societies around the world and new research in the field.

Recommendations to the NZOK

Of particular importance is the updating and optimisation of the clinical policies related to the care of the elderly population, and in particular women in

the post-reproductive years, so that the payment of medical activities corresponds to the real costs of carrying them out. Only in this way can adequate medical care be guaranteed to this vulnerable part of the population.

Recommendations to healthcare professionals

Undoubtedly, every post-reproductive woman has her own, unique individual needs and ideas about what healthy menopause is, and therefore the care of healthcare professionals should be strictly personalized to the particular patient.

Recommendations to health professionals for healthy menopause, the necessary skills in caring for women and conducting screening programs and preventive examinations

Our research shows that some post-reproductive women would like better and more affordable healthcare and more attention from doctors. In order to help health professionals in this difficult task, some basic recommendations can be made, which are based on the results of our studies, the personal clinical experience of the author of the dissertation and the analysis of the literature available in the field.

The existence of harmonious relationships between women and their service professionals based on trust, understanding and empathy is of particular importance. This can be achieved with close contact between specialist-patient, consistency in service by the same medical staff, examinations at regular intervals and with pre-arranged appointments for the next consultations. For health professionals themselves, keeping perfect medical records is of paramount importance, both from a medical and legal point of view, especially in onco-prophylactic activities. Documentation (whether in paper or electronic form) must be kept for the minimum time limits according to law. Informing patients with a combination of telephone calls and sending written invitations has been empirically well proven, and we recommend that any attempt at notice also be well documented.

It is important that those involved in the care of post-reproductive women have the relevant knowledge and expertise in providing medical care. They should take a detailed personal and family history and be familiar with osteoporosis and determine menopausal status. Special attention should be paid to post-reproductive women who have never participated in prophylactic studies, as this is an established behavioral pattern. They have a higher rate of non-participation for all prophylactic activities studied, statistically significant in cancer and cardiovascular disease prevention activities. Particular attention should be paid to more modern and not so widely known methods of prophylaxis, such as the HPV test and the test for occult bleeding.

The most common desire for change in women's care is to carry out more preventive and preventive measures, while the levels of attendance at such events are unsatisfactory. This proves the need for better awareness of women about the tests already provided for them by law (when and where they can be conducted, how the results can be obtained and what consequences positive screening results bring). The scope of prophylactic activities on the territory of the Republic of Bulgaria is defined in Decree No 8 of 3 November 2016 of the Ministry of Health on prophylactic examinations and dispensary, as well as in Decree on amendment and supplement to Decree No 8 of 2016 on prophylactic examinations and dispensary in Annex No 2 to Art. 8, Subparagraph. 1 "Type and periodicity of prophylactic activities and examinations in persons over 18 years of age"

Our study confirms the important role of health professionals in the prevention of diseases in post-reproductive women. We recommend that all specialists who take care of women of post-reproductive age are well acquainted with the above regulations, inform their patients on the topic and motivate them to adhere to the recommendations given. It is necessary that health professionals actively invite women to conduct annual preventive examinations of insured persons, as well as to recommend and assist in participation in specialized

prophylactic programs and screening tests of women's health. Conducting health education campaigns among post-reproductive women on prevention issues, especially cardiovascular diseases, malignant neoplasms and osteoporosis, will help to increase their health literacy and improve motivation to participate in preventive activities.

Recommendations on obesity in postreproductive years

The high incidence of obesity among women of postreproductive age determines the great social importance of this health problem. There is an obvious need for proper nutrition, exercise regimen and a balance between calories consumed and burned, so that individuals have optimal weight to their height and age, without reaching extreme situations with overfeeding and immobilization with the accumulation of adipose tissue. At the same time, exhausting long-term hypocaloric diets with malnutrition, hypovitaminosis, electrolyte imbalance and reduced bone density are not recommended. Of paramount importance is the provision of opportunities for women of post-reproductive age to adhere to appropriate diets and participate in weight reduction programs.

Although the amount of calories consumed is fundamental to the reduction of body mass and adipose tissue, the energy value of the food consumed is not the only criteria to be controlled. The nutritional density, the distribution of micro and macronutrients are no less important than the caloric density of the substances consumed with food. The above statement can be illustrated by the comparison of 500 calories of refined hydrogenated vegetable fat with their equivalent in the form of fresh vegetables or fruits. On the one hand, the degree of satiety achieved is radically different because of the difference in the volume of the portion taken, on the other hand, the empty non-nutritive calories have only an energy contribution and do not help to meet the daily needs of vitamins, minerals and other vital substances.

Physical exercise also plays a major role in the fight against extra pounds

at post-reproductive age. Especially important here are both aerobic exercise and strength training. Aerobic exercise plays a major role in maintaining heart health and burning calories, while strength training helps maintain muscle mass and bone density. The degree of sport activity should also take into account the individual physical characteristics of each woman, and the volume and intensity of physical activity should be increased gradually under the supervision of health specialists in kinesitherapy and rehabilitation. In dealing with extra pounds in menopause, pharmaco- and psychotherapy agents can also be used. Finally, in therapy-resistant cases, bariatric surgery could also play a role.

Reducing the incidence and health effects of obesity requires knowledge of the mechanisms essential for the accumulation of excess fat in postreproductive age. Firstly, this will build a solid knowledge base among health professionals, allowing a logical explanation of the somatic and metabolic changes taking place, and the possibility of providing this knowledge in synthesized form to women before and during menopause. Secondly, future research on the problem will allow the discovery of new methods and drugs that can be successfully incorporated in the fight against extra pounds.

All health professionals who are directly involved in caring for women of postreproductive age, as well as in creating programs to improve their health, should be optimally informed on the main topics related to obesity and its prevention. For clinicians, the leading importance is the possibility of quantitative assessment of the degree and determination of the type of obesity, knowledge of the available diagnostic methods, used indices and quantities, as well as therapeutic options. For health promotion professionals and for health managers, the possibilities for creating appropriate policies, health programs and legislative improvements in the field are further relevant.

Despite the available solid knowledge base on obesity in post-reproductive women, continued efforts to enrich it, as well as the training of competent health professionals in this field and the optimal incorporation and

effective use of available resources in the fight against extra pounds and related poor health will be important.

Recommendations for nutrition in postreproductive age

Proper nutrition is undoubtedly the basis of good physical, psychological and social functioning of people. Following some basic nutritional rules could help maintaining or even improving the quality of life in the postreproductive years.

The data from our study show that healthy eating is the leading topic of interest among post-reproductive women in Bulgaria. Healthy eating ranked first as a desire for better education, with only 18.1% of women surveyed saying they had no interest in getting more information on the subject, and as many as 30.4% find it mandatory to be better informed in this area. According to our data, 48.2% of post-reproductive women have in-depth knowledge of healthy nutrition, which differentiates a predominant group of 51.8% of women who could benefit from additional education in the field. Nearly 5% of all survey participants cite healthy eating as a desire to change their health care. The analysis of the data on the eating habits of the respondents shows that the nutrition of women in the post-reproductive fit is far from optimal and needs improvement.

The abundance of conflicting information about nutrition in the media and the Internet could lead to misinformation among post-reproductive women, so the availability of reliable sources of nutrition information is of paramount importance. Many medical societies and organizations around the world publish nutrition guidelines for postmenopausal women that can benefit both women themselves and all medical specialists.

In addition, we would like to draw attention to some important eating habits that are not particularly widespread among the women surveyed, such as checking the content of food products. According to our data, as many as 25.3%

of respondents never check the content of food products. These women should be informed about the benefits of checking food ingredients, with particular importance being the calorific value of foods, the amount of table salt and sugar, the presence of preservatives, trans fats and potentially health-hazardous chemicals, shelf life, and the amount of beneficial substances such as fiber, protein and vitamins. The consumption of soy and soy products is also not particularly popular among post-reproductive women in Bulgaria and an informational campaign about the merits of these products as a meat substitute and the benefits of phytoestrogens in these foods could have a positive impact and improve their intake. Another important and often neglected dietary habit is the sufficient consumption of fiber, which has a major role in the regulation of peristalsis and feelings of satiety.

Only through proper intake of vitamins, sufficient complete proteins, complex carbohydrates, essential fatty acids, macro- and microelements can be expected to reach the genetic potential for longevity in full health.

Recommendations on physical activity in the reproductive years

Physical activity is extremely important for both optimal physical and good mental state and self-esteem. Physical activity improves sensitivity to insulin, helps maintain optimal weight, reduces the risk of developing diabetes and cardiovascular diseases, reduces stress and favorably affects many pathologic conditions. Exercises are recommended to improve posture. Safe movements and awareness of body position and posture can be practiced at any time in order to reduce the likelihood of back injuries, falls and fractures.

Physical activity plans must be tailored to individual age, abilities and preferences. Women with a sedentary lifestyle should be encouraged to start physical activity with a slow onset and gradual progression of exertion.

Recommendations to medical universities

Given the important role of post-reproductive women in society and the increasing percentage they represent of this society, it is important that health

care should be focused on their problems and needs. The years of education that future health professionals spend in health education institutions are extremely important for proper upbringing and drawing their attention to the needs of post-reproductive women. It is necessary that they become interested and motivated to choose careers in specialties that care for older women, such as gerontology, gynecology, endocrinology, oncology, cardiology, etc. We recommend including more educational hours about menopause in the workload of student education (both lectures and more practical exercises involving direct contact with women).

Timely and easy access to well-trained specialists is of paramount importance for women in the postreproductive years. This shows the need for an adequate analysis of the shortage of specialists in the relevant medical specialties who take care of this female population. It is important to take into account not only the absolute number of specialists, but also their territorial distribution, because often there is a cluster in certain well-developed centers and a shortage or lack in the province and smaller settlements. The turnover of medical personnel to other countries should be considered and appropriate measures such as improving working conditions and pay, as well as opening up sufficient places for specialization should be planned. We recommend that the programs for specialization of the medical students be constantly updated according to the new discoveries and the global medical trends, while at the same time a system of post-specialization training is developed to motivate and maintain the knowledge of the already accomplished specialists at the optimal level.

CONCLUSIONS

On the basis of the surveys carried out, the statistical processing and analysis of the collected data, the following conclusions can be drawn:

1. More than half of post-reproductive women suffer from chronic diseases, and polymorbidity is observed in 15% of them, with the highest prevalence of diseases of the cardiovascular, endocrine and bone and joint systems. With age and weight gain, the proportion of women with chronic diseases, falls, fractures and medication intake increases. At the same time, nearly two-thirds of post-reproductive women are overweight and obese, but women are aware of the health threat posed by the extra pounds gained and the majority (almost all obese and over 2/3 overweight women) want to lose weight.

2. Specific gynecological and obstetric history reflects the trends of population reproduction, contraceptive use and obstetric and gynecological practice in the country during the fertile period of the studied women. The use of hormonal replacement therapy is very rare (in less than 10% of women), as their applicational use is not well known and there is a fear of possible carcinogenic and other side effects.

3. The prevalence of menopause-related symptoms and their effect on women's quality of life depend statistically significantly on socio-demographic characteristics: age, marital status and education; of health characteristics: weight, alcohol intake, smoking, health self-assessment and of specific gynecological and obstetric characteristics: menopausal status, number of pregnancies.

4. Some of the menopause-related symptoms are widespread among post-reproductive women, such as joint and muscle pain and stiffness, anxiety, sleep problems, more severe than usual fatigue and irritability, which affect over 3/4 of women and negatively affect quality of life.

5. Approximately 1/5 of women report poor quality of life after menopause and this proportion increases in senior age groups. 15% of women have a negative attitude towards menopausal changes, and they are the people most likely to experience menopause as a negative event.

6. Over 1/5 of post-reproductive women give a negative assessment of their awareness of menopause. The Internet, friends and medical consultations stand out as the main sources of information. Women share many important topics to them, such as healthy lifestyle and nutrition, as well as weight maintenance, which rank in the top three places. It is important for women to obtain reliable information on the topics that are important to them through appropriate and preferred sources.

7. A significant proportion of postreproductive women do not participate in preventive examinations and screening programmes. There is a tendency for those who do not participate in certain preventive measures to have lower levels of participation in all other prophylactic activities, which may indicate a generalized behavioral pattern and a lower level of health culture. Grouping of women with bad habits is also proven, indicating that those with one harmful habit are more likely to have a second one. People tend to have no harmful habits rather than having only one, which probably reflects a purposeful motivation for a healthy life.

8. The data show the need to optimize eating and motor habits in a significant part of women of post-reproductive age, as on average between 12% and 25% of them do not apply individual positive eating practices, and over 2/3 are not physically active. This is the target group that would have a positive effect from motivational activities for proper nutrition and participation in sports activities.

9. Medical students have an unrealistic idea about menopause and largely pathologize this normal physiological process. On the other hand, medical students do not underestimate the importance of prophylactic tests and define the

majority of them as mandatory.

10. The majority of medical students consider that the topic of menopause is not sufficiently addressed in their medical training. Less than 1/5 of them give a positive assessment of their awareness of menopause. At the same time, nearly half of the graduates are ready to devote themselves professionally to a career in a specialty related to the health of postmenopausal women.

CONTRIBUTIONS OF THE DISSERTATION

Scientific and theoretical contributions:

1. A complex socio-medical study was conducted among contemporary cohort of women of postreproductive age, providing specific knowledge about their health awareness, beliefs, health behavior, changes in physical and mental health, subjective health status and participation in general and specialized prophylactic activities during menopause.
2. Important correlations have been established regarding the frequency of manifestation of 27 menopausal-related symptoms and their effect on the quality of life of post-reproductive women.
3. Through a thorough analysis, significant gaps in health education work have been proven on essential components of women's lifestyles in the post-reproductive period. Generalized negative behavioral patterns and factors determining the risk groups of women who do not participate in preventive examinations and screening programs are identified.
4. The awareness, attitude and opinion of the medical students about the health problems of post-reproductive women have been studied and educational deficits in this area, not addressed by the curricula during the student training and pre-graduate internship in medicine, have been identified.

Practical and Applied Contribution:

1. An original innovative toolkit has been developed that allows to comprehensively cover and study the problems of health in the postreproductive years in women.

2. Based on the established correlations of health, health culture, health behavior and participation of women in prophylactic activities, appropriate innovative recommendations for health promotion and optimization of health care for post-reproductive women are given, aimed at both women themselves and health professionals in the healthcare system in Bulgaria, medical universities, the Ministry of Health and the NZOK.

LIST OF PUBLICATIONS BY: Dr. Yaroslav Dimitrov

Publications related to the dissertation:

1. Yaroslav D. Dimitrov, Angelika S. Velkova, The Impact of menopausal symptoms on quality of life of women in post-reproductive age, Health policy and Management 2019, Volume 19 No2, p. 18-24 ISSN 1313-4981

2. Yaroslav Dimitrov, Obesity and the fight against excess weight in women of post-reproductive age, Health policy and Management 2022, Volume 22 No2, p. 26-31 ISSN 1313-4981

3. Yaroslav Dimitrov, Angelika Velkova, Disease prevention in women of post-reproductive age, Sbornik dokladi shesta nauchna konferencia na BNDOZ „Obshtestveno zdrave: predizvikatelstva pred zdravnata sistema" Pleven 26-27 May 2023 ., p. 73-81, ISBN 978-954-756-335-3