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NUTRITIONAL STATUS AND DIETARY HABITS OF MENOPAUSAL WOMEN

Samir Tursunović[1], Midhat Jašić[2], Azijada Beganlić[3] Nadia Hot[4]

[1]JZU Dom zdravlja Srebrenika, Zlatnih ljiljana 75350 Srebrenik, Bosna i Hercegovina
[2]Farmaceutski fakultet Univerziteta u Tuzli, Univerzitetska 8, 75000 Tuzla, Bosna i Hercegovina
[3]Edukativni centar Porodične medicine Tuzla
[4]Farmavita doo Sarajevo, Igmanska 5a, Vogošća 71320

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Summary

Introduction: The majority of menopausal women is changing nutritional status. The causes of this may include: hormonal changes, bad eating habits, heredity, lifestyle etc. The most common symptoms of menopause are hot flushes, sweats and mood swings. Women entering menopause unprepared to cope with the changes of this period of life and with insufficient knowledge of dietary habits that lead to over-supply or lack of nutrients.

Objective: The aim of this study was to determine the degree of nutritional status in postmenopausal women and to determine the degree of correlation between nutritional status and dietary habits of women with menopausal symptoms and the frequency of certain health disorders.

Methodology: The study was carried out collecting, systematization and statistical analysis of data on the nutritional status and dietary habits of a sample of 300 women aged 45 to 55 years old. For women, the absence of a menstrual cycle longer than three consecutive months, it was considered to be in menopause.The survey was conducted in five ambulance of family medicine. To collect the data is used standardized list of questions about eating habits, based on the Likert scale.

Results and discussion: According to the body mass index (BMI), 12:33% of the patients were within the normal range of nutrition, while 87% of respondents were from overweight and obese.

BMI was significantly higher in patients with an increased intake of: soft drinks, sweets and white bread. Soy as a food is present in the diet in only 18% of respondents. Women who have never had symptoms of menopause and menopausal disorders have significantly lower BMI ($p<0,05$).

The most common diseases in the period of menopause in a patient were examined: hypertension (57%), diabetes (12%), depressive disorders (25%) and cancer (1%).

Conclusion: Food habits of the respondents indicate insufficient knowledge of nutritional needs and recommendations, which resulting in the consumption of food that is not adapted to this period of life. The subjects are not feed buy the standards and recommendations of the WHO, and among them there is an increased risk of diseases typical for menopause, and as a result of the effects of improper nutrition. Nutrition according to the standards and recommendations of the WHO resulting in improved nutritional status of women in menopause, and as result of that is a reduction in the occurrence of diseases and negative symptoms of menopause.

Recommendation: It's needed a systematic and organized education in menopausal women in order to achieve proper nutrition and normal nutritional status, which may contribute to a better quality of life, reducing related diseases and negative symptoms of menopause.

Keywords: menopause, eating habits, nutritional status

Introduction

In the most of menopausal women is changing nutritional status. The causes may be: hormonal changes, bad eating habits, heredity, lifestyle, frequent use of alcohol and tobacco, etc. Many studies point to the importance of nutrition during certain periods of life. In the life of a woman, three important periods related to the endocrine function of the ovary are: puberty, pregnancy

*Corresponding author: samirself04@yahoo.com

and menopause. Menopause, as a period of a woman's life, is marked by changes in endocrine secretion, which marks the end of her menstrual cycle and fertile years. Menopause represents the end of the reproductive period, the average age of onset of menopause is about 50 years (Mc Nagny, 1999). This means that an average woman will spend one-third of her life in menopause. The most common symptoms of menopause in women are sweating, heart palpitations, mood swings, hot flashes, dizziness, fatigue, irritability, anxiety, loss of self-esteem, depression and many others. That is an individual experience, that rarely passes without symptoms. Also, menopause can have an impact on the overall quality of life of women as one of the main causes of osteoporosis and cardiovascular diseases (Ossewaarde ME, 2005). Besides these diseases, obesity and high BMI contributes to morbidity and mortality, leading to some forms of cancer and chronic diseases, such as osteoarthritis, liver and kidney diseases, sleep apnea, and depression (Pi-Sunyer, 2009). Women entering menopause unprepared to cope with changes of this period of life and with insufficient knowledge of dietary habits which lead to oversupply or lack of nutrients. A healthy diet should be balanced, safe and protective. A balanced diet prevents obesity and diseases that arise due to lack of energy and essential nutrients. Protective activity involves the protection of man-made and other diseases (Pokorn, 2003). An unbalanced diet, low physical activity and emotional stress can intensify the symptoms of menopause. Menopausal symptoms may vary in their strength, so some women have not problems, while others suffering during this period of life. About 75% of women going through menopause with minimal discomfort, but 25% of women have expressed problems that affect the ability to work and reduce the vitality and quality of life. Previous studies have proved that between 8% and 15% of menopausal women suffering from depression, although there is no strong association between hormonal changes at menopause and the occurrence of depression (Matthew, 2010). The results showed that menopausal status has a significant effect in response to antidepressants, because it slows down the recovery of depression, and the main reason is the increased basal levels of the FSH, which interferes with metabolism of antidepressants (Chi-Un et al., 2009). There are many sources of stress for women in menopause: changes in physical appearance, fear of aging, weight gain and many others (Salčić, 2010). This can lead to depressive conditions and loss of life energy. It is known that with a reduced amount of estrogen skin and vagina become drier, which can cause painful intercourse and loss of the woman's libido (Radakovic, 2004). In menopause, lower level of estrogen reduce their protective role, and increase incidence of cardiovascular diseases (Barret-Connor, 1991). Persons with reduced secretion of progesterone and anovulatory have decreased bone density (Prior, 1990). This study seeks to determine the contribution of quality nutrition and physical activity on nutritional status, expressed as BMI of menopausal women, to determine correlation between the level of nutrition and the symptoms of menopause and to define the relationship between dietary habits and incidence of diseases that are typical for menopause.

Methodology

Cross-sectional study was carried out for collection, systematization and statistical analysis of data on nutritional status and dietary habits of 300 women aged 45 to 55 years of age. The survey was conducted in five ambulances of family medicine. Patients were interviewed and measured anthropometric.

Anthropometric Measurements

For all patients were conducted anthropometric measurements that include measurement of body height (BH), body weight (BW), waist circumference (WC) and calculate nutritional status using body mass index (BMI).

BH – was measured with medical altimeter, expressed in centimeters. Measured person standing on a flat surface, without shoes, with placed heels and the head is in the Frankfurt horizontal, which is the line that connects the upper edge of the tragus and the lowest point of the lower edge of the orbit, in parallel with the bottom edge of the plate (Stojanović et al., 2007). The measure-

ment is performed to the nearest 0.1 cm.
BW - was measured with decimal medical scales, expressed in kilograms. Measured person standing in the center of the scales with placed heels and dressed in underwear (weight clothing must be removed). The measurement is carried out to the nearest 100 grams.
WC – was measured with elastic centimeter, expressed in centimeters. Measured person standing freely, and heels are spaced 25 to 30 inches. The measurement is performed in the middle, between the bottom edge of the last rib and the iliac crest in the horizontal plane. The measurement is performed to the nearest 0.1 cm.
BMI is calculated by dividing the BH (body height) expressed in kilograms, with BW expressed in meters squared:

$$BMI\ (kg/m^2) = BW\ (kg) / BH\ (m)^2$$

Malnutrition is considered a BMI of less than 18.5, range of the body mass index 18.5 to 24.99 is defined as the normal body weight. People with a body mass index above 25 is considered overweight, while individuals with a BMI over 30 are considered obese. In case of further classification of obesity, BMI over 40 used the term extreme, or morbid obesity (Ogden et al., 2006). The obtained values for BMI will be interpreted according to the classification of nutritional status WHO: malnutrition <18:50, physiological nutritional status 18.50-24.99, 25.0-29.99 overweight, level I obesity 30.00-34.99, 35.00-39.99 level II obesity, level III obesity > 40.00.
Questionnaire
Information about dietary habits of menopausal women, the representation of certain foodstuffs in the diet, physical activity and socio-economic status, will be obtained by questionable list. Questionnaire was adapted to eating habits and type of consumed food. Food standards, recommendations and guidelines are used as a criterion for testing scientifically substantiated claims which define this issue. Questionnaire has 28 questions, which provide answers about nutrition in menopausal women, their health problems that may occur during the period before and during menopause. It also determines the symptoms of menopause among our patients, using of dietary supplements and hormone therapy, and environmental habits.
The survey was conducted using a standardized questionnaire, drawn up on the dietary recommendations, standards and guides (DRI) given by the Committee on Food and Nutrition of the American Academy of Sciences (Anonymous, 2005b), and the World Health Organization (Anonymous, 2010). In preparing the questionnaire were considered guides of American Association for Nutrition (USDA, 2005; USDA, 2010; Guenther et al. 2008), as well as the recommendations of the EU institutions (EFSA 2010).
Principles of Likert scales were used for the formation of the questionnaire (J. Dawes, 2008) to examine the frequency of food consumption and food quality. Most of the questions are formed so that the gradation of possible answers is from 1 to 5, where 5 is the preferred response and represents the highest level of quality food according to the recommendations, standards and guides. ‘’Questionnaire on eating habits of women in menopause’’ was used to prove the objectives and hypotheses.
Questionnaire about eating habits contains questions based on frequency of use certain food, characteristic for dietary habits in Bosnia and Hezegovina. The first part of the questionnaire describes the general information of an anonymous respondent, such as the level of consumption of cigarettes, alcohol, and physical activity. The rest of the questionnaire contains questions about the eating habits of the respondents, in terms of desirable and undesirable foods during this period of life, while the final section provides information on the health status and their behaviors related to these conditions and usage of certain medications. These questions is related to the following entities of food quality:
frequency of food consumption,

- drinking water and beverages,
- consumption types of bread and kind of fat,
- consumption of fresh fruits and vegetables,
- consuming protein-lipid foods
- frequency of consumption foods that have adverse effects on health,
- presence of the disease in patients and
- consuming dietary supplements

Statistical analysis

Non-parametric and parametric methods were used to calculate statistical significance. Distribution of values was determined by D'Agostino and Pearson omnibus normality test. Student's t-test, Mann-Whitney test, Fisher's test and $\chi 2$ test were used to calculate the difference between the groups.

ANOVA test was used to calculate the relative difference distribution of variance between variables. Statistical hypotheses were tested at the level of $\alpha = 0.05$, and the difference between groups in the sample was considered significant when $p<0.05$ or less. Statistical significance is indicated as: (*) $p<0.05$ (**) $p<0.01$ and (***) $p<0.001$. All data were analyzed using GraphPad Prism version 5 (San Diego, California, USA).

Reuslts and discussion

According to the body mass index (BMI), 12:33% of the respondents were within the normal range of nutrition, while 87% of respondents were overweight and obese. Only 0.33% was malnourished, and about 13.6% belonged to the level II and III of obesity. The largest percentage of respondents in the group was with obesity grade I, what is about 38.67% of the respondents.

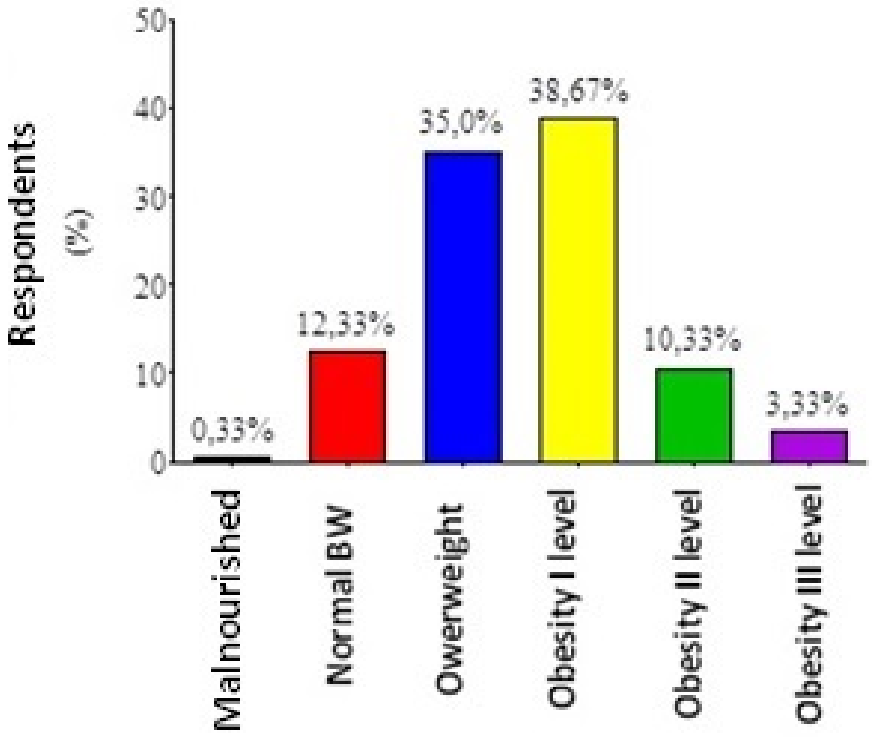

Fig. 1. Representation of the body mass index of subjects according to the World Health Organization

After stratifying to the respondents who mostly sitting or performing household activities, and respondents who walk, it was noted that the BMI of respondents who walk, was significantly lower than in the first group ($p<0.01$), which indicated the significance of physical activity for body weight regulation. The appearance of the menopausal symptoms every day, is directly linked to higher BMI value. Subjects with symptoms of menopause every day, generally had higher BMI values.

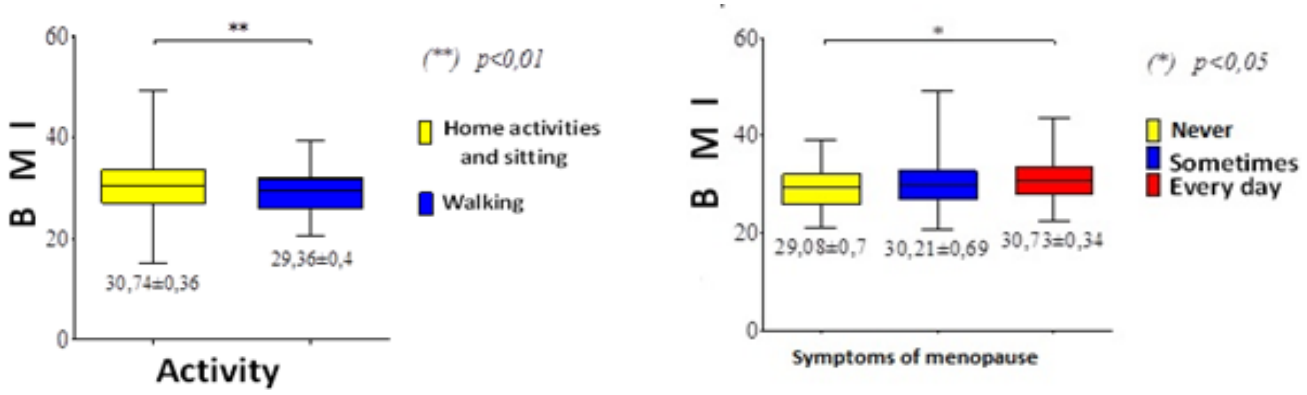

Fig. 2. The relationship of body mass index in the patients with different frequency of menopausal symptoms and the different types of activities

BMI was significantly higher in the patients with an increased intake of: soft drinks, sweets and white bread. Higher BMI was associated with an increase in the daily amount consumed carbonated beverages, or increasing the amount consumed beverages, and result was remarkably higher BMI. ($p<0.05$; overall Spearman's correlation coefficient: $r = 0.12$; 95% CI from -0.002600 to 0.2484). There was a significant positive correlation between body mass index and weekly amounts consumation of sweets ($p <0.01$); overall Spearman's correlation coefficient: $r = 0.19$; 95% CI 0.07174 to 0.3103).

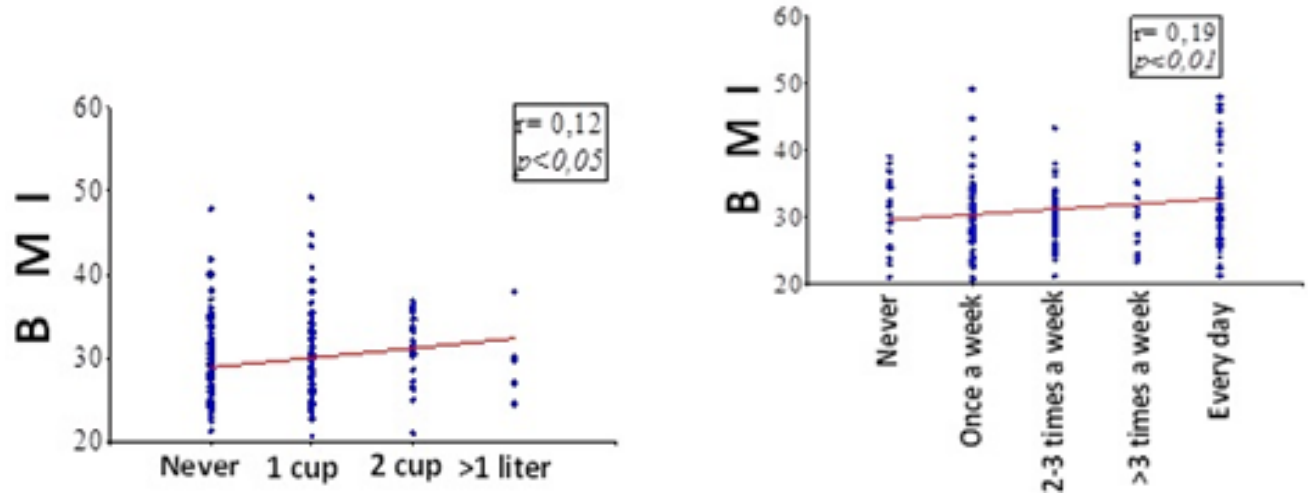

Fig. 3. A) Correlation between body mass index and the daily amount consumed carbonated drinks
B) Correlation between body mass index and weekly amounts consumed delicacy

A significant decrease in body mass index was correlated with the number of daily meals ($p<0.05$). It's not considered the amount of food intake, and we assumed that the amount of meals is not overabundant, and that the frequent intake of food as result had the acceleration of metabolism, which resulted in a reduced BMI.

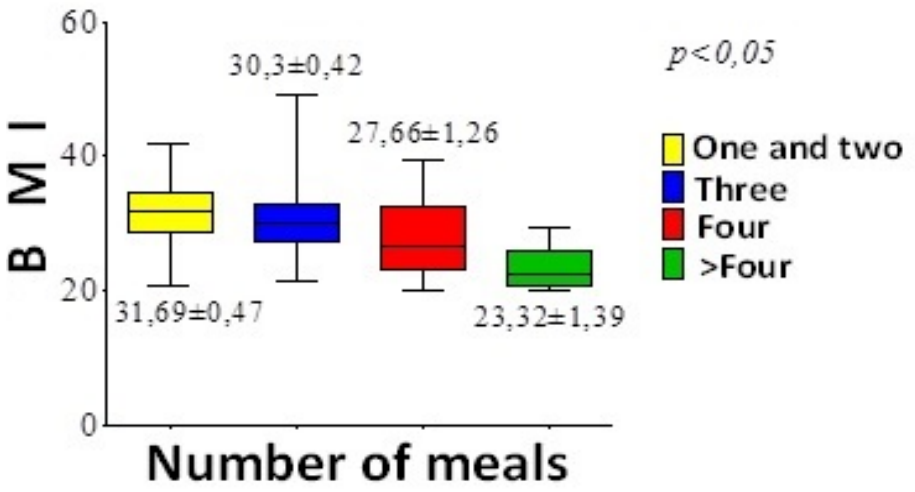

Fig. 4. The relationship of body mass index and number of daily meals.

Quality of life during menopause, mainly depends on the frequency of negative symptoms of menopause and the occurrence of certain diseases of menopause. Respondents who have never had symptoms and diseases in menopause, have a significantly lower BMI ($p<0.05$). The most common diseases in menopausal women were: hypertension (57%), diabetes (12%), depressive disorders (25%) and cancer (1%). The subjects, who had menopausal symptoms every day make up 31.2% of the total, 32.8% had symptoms sometimes, at 24% of the women the symptoms are there 2-3 times a week, while those who have had symptoms of 1-2 times week were in the lowest percentage ($p<0.05$). The application of hormonal therapy in patients with severe menopausal symptoms, resulted in a higher body mass index than female respondents who have not received this treatment ($p <0.05$).

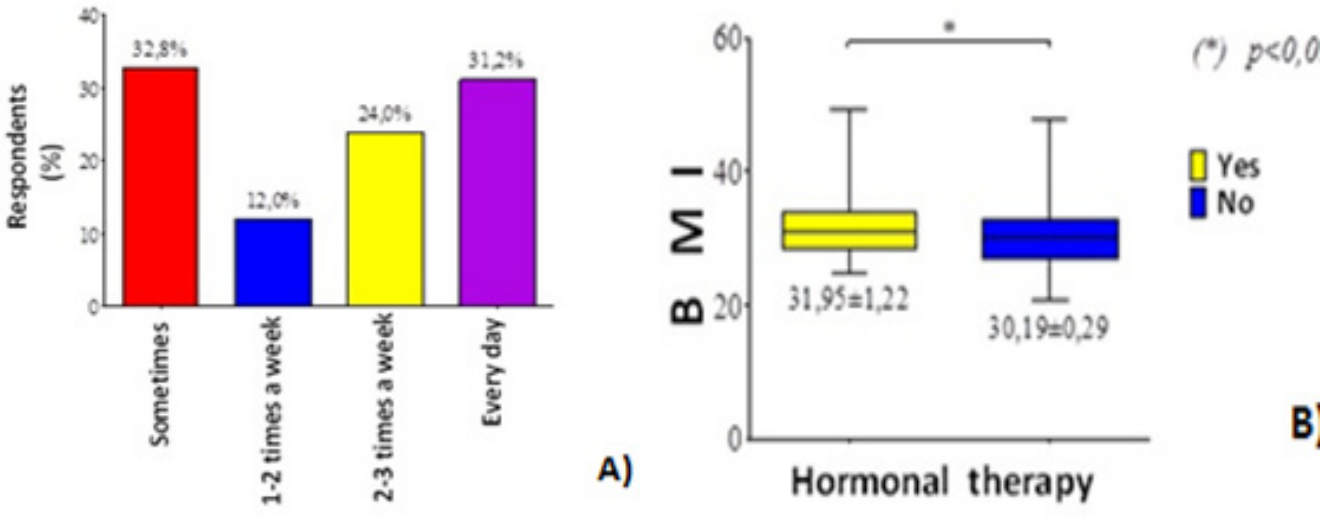

Fig. 5. A) The incidence of symptoms in women who have symptoms of menopause
B) Correlation between body mass index and the use of hormonal therapy

It was examined the relationship of eating habits of respondents and frequency of certain diseases that occur during menopause (hypertension, diabetes mellitus, depression and intestinal diseases). Some diseases are significantly associated with wrong eating habits and increased values of body mass index. BMI in patients with depression, hypertension, or diabetes mellitus was significantly higher than women without these diseases ($p<0.05$, $p<0.001$ and $p<0.001$), while body mass index patients with and without intestinal disease was equally distributed.

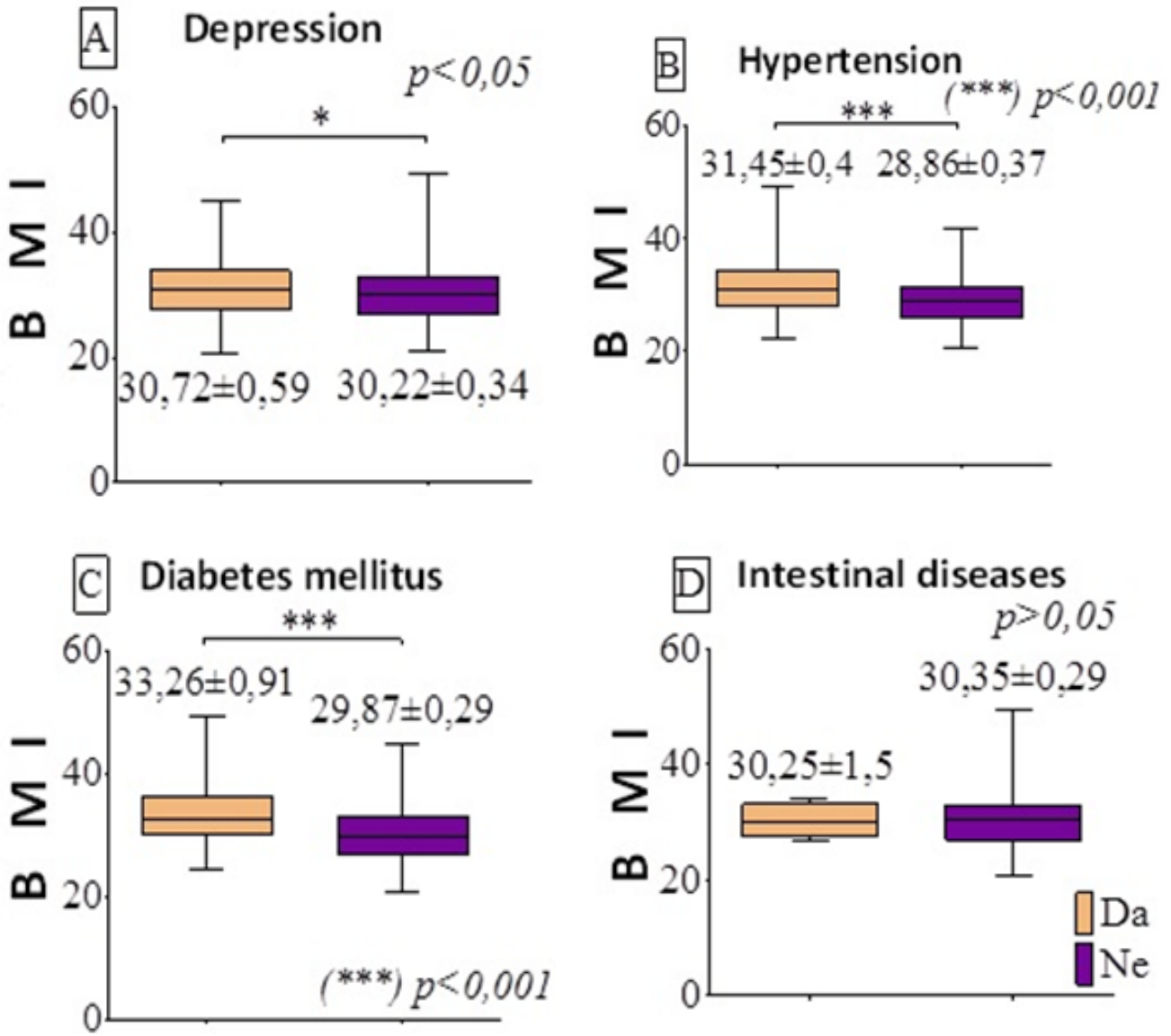

Fig. 6. (A, B, C and D) Body mass index in postmenopausal subjects with and without depression (A), hypertension (B), diabetes mellitus (C), and intestinal diseases (D).

Hypertension and diabetes mellitus were more common in women who consume a greater amount of table salt ($p<0.05$ for both measurements). It has been noted that there is no connection between salinity and incidence of depression and intestinal diseases. Diabetes is more prevalent in the patients with a higher consumption frequency of carbonated beverages. There was no significant correlation between daily amounts of carbonated beverages and the incidence of hypertension, depression, and intestinal diseases.

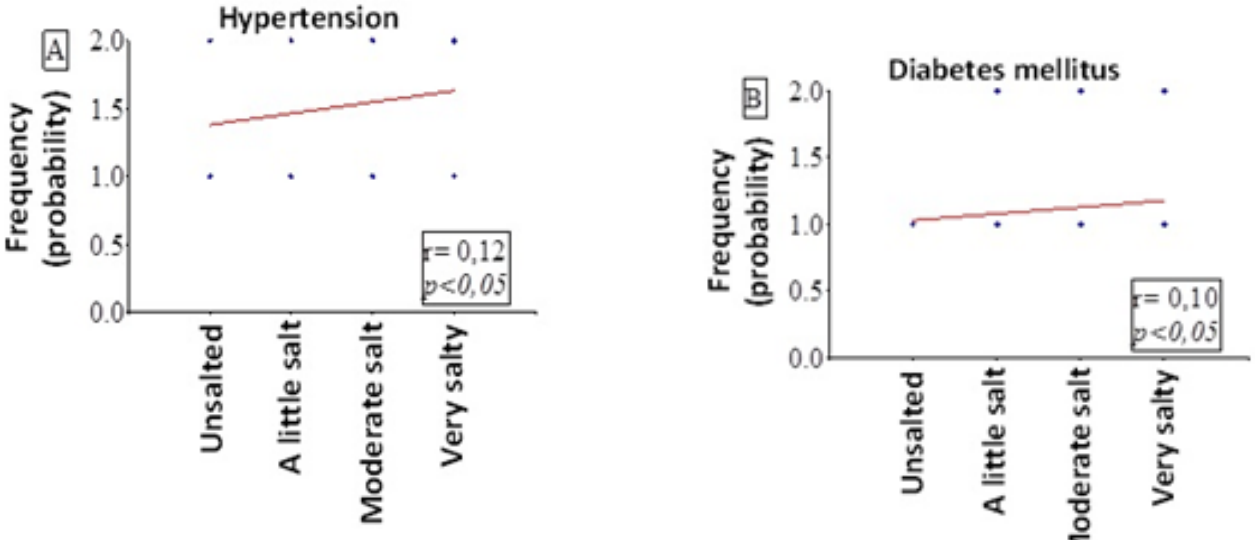

Fig. 7. Correlation between food salinity and frequency of hypertension (A), diabetes mellitus (B)

Discussion

Bad eating habits have resulted in a significant deviation of the body mass index and physiological nutritional status. Only 12.33% of respondents had a physiological nutritional status, underweight was one patient, all other respondents were overweight or obese. Most respondents fall into the category of obesity grade I, even 38.67%. Respondents who mostly sitting or do household activities than women who walk, had significantly higher body mass index. About 25% of respondents had a positive smoking status.

Most respondents do not abide by dietary recommendations. It is observed a significant decrease in body mass index in women who often had a breakfast, and it was observed an increase in body mass index in the patients with lower intake of water in the body, less than one glass per day. Hypertension, diabetes mellitus and depression were significantly less common in the patients who walked more often than respondents with household activities or sitting (hypertension: $p<0.05$). The body mass index of patients with depression, hypertension, or diabetes mellitus was significantly higher than women without these diseases.

Obesity, high blood pressure, high triglycerides and glucose levels, along with menopause make a set of risks for women, that are commonly called metabolic syndrome. In the treatment of metabolic syndrome, in addition to medications, it is necessary to change the nutritional and lifestyle habits and increase physical activity.

However, comparative studies in adults have shown that the effect of physical activity on weight control is limited and generally lower than those obtained by restriction diet (Hill and Wyatt, 2005; Atlantis et al., 2006; Epstein and Goldfield, 1999; Garrow and Summerbell, 1995; Wing, 1999; Donnelly et al., 2009). It was found that the relative effectiveness of diets and physical activity depends on the degree of obesity and to the maximal effect of diet and physical activity is achieved at low levels obesity (Garrow, 1986). A large number of patients do not follow the recommendations on the intake of carbonated beverages and they are at risk of entry of excessive amounts of carbohydrates and additives that have a negative consequences for the health. It was observed a significant increase in body mass index with the increase in the daily amount consumed carbonated drinks. Also, respondents who consumed higher amounts of carbonated drinks per day were significantly higher incidence of diabetes ($p<0.05$). 82.67% of respondents had some symptoms of menopause, every day or occasionally, and 25.33% of the total number of respondents had symptoms of menopause every day. Subjects with symptoms of diseases in the menopause had a significantly higher body mass index than women without symptoms.

Less than 10% of the respondents consumed olive oil. Sunflower oil consumed almost 90% of

respondents. However, although the body mass index of subjects who consumed olive oil was lower, than women who consumed margarine or sunflower oil, the differences between those groups were not statistically significant.

Soybeans as an essential food, especially for menopause, is used by about 17.3% of the respondents, which is a small percentage, considering the importance of soybeans to feed menopausal women as a source of phytoestrogens, which are very essential for the regulation of menopausal symptoms. However, research has not demonstrated a statistically significant difference in the occurrence of menopausal symptoms in women who consume and do not consume soybeans, probably due to small sample size and lack of initial amount of soy.

8.3% of respondents have used or now using hormonal therapy for menopausal symptoms and generally, this therapy, and nutritional supplements were prescribed and advised by a physician.

Conclusion

Dietary habits of respondents indicate on insufficient knowledge of nutritional needs and recommendations, which resulting in the consumption of food that is not adapted to this period of life. Respondents do not feed by the standards and recommendations of the WHO, and among them there is an increased risk of diseases typical for the menopause, as a result of the effects of improper nutrition. All these mistakes in diet and other lifestyle habits have yielded results in an increased body mass index, which is also associated with many diseases of our time, as the examined population of women, but also for all other categories of the population. Nutrition according to the standards and recommendations of the WHO results in better physiological nutritional status of menopausal women, which resulting in reduced morbidity and negative symptoms of menopause.

Considering the results of the research, the main recommendation would be seeking to achieve a physiological nutritional status, which will certainly contribute to a more comfortable menopause with less intensity of menopausal discomforts, and also reducing the disease in menopausal women.

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