Papers on Anthropology XXVI/2, 2017, pp. 136–143

ANTHROPOMETRICS PARAMETERS FOR LATVIAN WOMEN IN THE AGE OVER 40 YEARS

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ABSTRACT

The World Health Organization (WHO) recommends the anthropometrics parameters for the evaluation of overweight and obesity in adult population that is one of the risk factor for metabolic disorders and cardio-vascular pathology. The target of our study is to describe the variations of anthropometric parameters of the Latvian women population. The present paper includes the analysis of data of 200 women in the age 40–65 years. We evaluated the anthropometrics indicators in Latvian women in the age over 40 years, various somatometric measurements – height (cm), the body mass (kg), the circumference of the waist and hips (cm) – and calculated the mean parameters, the Body Mass Index and the Waist Hip Ratio. The respondents of the study group were divided into five age subgroups. We provided the analysis of anthropometric data, compared them with the data from other European countries. We have fixed the high prevalence of overweight and obesity in the examined women groups and proposed potential activities to reduce them.

Keywords: *anthropometric parameters; body mass index; waist-hip ratio; obesity*

INTRODUCTION

Women's body constitution changes during all the life period. We have used anthropometrics methods for collecting anthropometric data. The most popular indicators for the evaluation of the body constitution are the Body Mass Index (BMI) and the Waist Hip Ratio (WHR). They have been used

https://doi.org/10.12697/poa.2017.26.2.14

extensively as inexpensive indicators of obesity. High BMI and WHR have associated with the increased risk of cardiovascular diseases, metabolic disorders and cancer mortality, independently of general obesity [11]. The health problems were on the top of morbidity and mortality [4, 8], aggravated the life quality and reduced life duration. That is why obesity in combination with chronic diseases had a negative impact on the mental status and caused depression [7]. Blaine reported that an adult female with overweight had a higher risk of being depressed [2]. Also, Cummins et al. reported that the wellbeing status depended on the Body Mass Index (BMI). It should not reach 35 kg/m^2; the individuals with the determined severe obesity level (BMI>36 kg/m^2) have a significantly lower wellbeing status than the individuals with standard/normal weight [3]. The World Health Organization (WHO) reports contained data about a wide spread of obesity, the one from six adults was obese [10]. The National Health and Morbidity Survey (NHMS) showed the increasing trend of abdominal obesity of adults in Malaysia [5, 6]. Prevalence of obesity has increased from 14% (2006) to 15.1% (2011), and the abdominal obesity rate increased from 39.5% (2006) to 45.4% (2011), respectively. The BMI value and the WHR value have been used in clinical practice as a standard screening test of obesity, while the BMI reflected overall obesity and WHR indicated the abdominal obesity.

MATERIAL AND METHODS

Data collection was carried out from June 2016 to April 2017. The study population was randomized consisting of 200 women in the age 40–65 years. The participating women were categorized in five subgroups according to the age: the first subgroup included the respondents in the age 40–44 years (n= 46); the second subgroup included the respondents in the age 45–49 years (n=32); the third subgroup included the respondents in the age 50–54 years (n=32); the fourth subgroup included the respondents in the age 55–59 years (n=40); the fifth subgroup included the respondents in the age 60–65 years (n=50). We have controlled the body mass, the height, the waist and the hip circumferences. All the anthropometrics parameters were measured by using standard techniques in the women wearing light indoor clothing. Body circumferences were measured by using a flexible cloth tape. The waist circumference was fixed at the middle of the distance between the lower rib and the iliac crest. The hip circumference was measured at the level of the widest portion of the buttocks.

Also, we have calculated the BMI and the WHR in each subgroup. The BMI was calculated as body mass (in kg) divided by the square of height (in meters).

The BMI were analyzed by using the classification from the World Health Organization: Underweight < 18.50; Standard/Normal range 18.50–24.99; Overweight 25.0–29.9; Obese class (I) 30.00–34.99; Obese class (II) 35.00–39.9; Obese class (III) ≥40.00. Obesity was defined when the BMI value exceeded the level of 30 kg/m^2. The Waist Hip Ratio (WHR) was calculated by using the waist and hip circumference. Obesity was defined when the WHR value exceeded the level of 0.85 [9].

The National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) states that women are at the increased health risk if the waist hip ratios are more than 0.80, because of their fat distribution. It means that if a woman has the WHR 0.80 or below, she has a low health risk. If the WHR is from 0.81 to 0.85, the health risk is moderate, and if, the WHR reach more than 0.85, this is a high risk.

The study was approved by the Ethics Committee of Rīga Stradiņš University and the data were collected with the participant's informed consent. The studied 200 individuals agreed to participate and signed the participation consent form.

Data were analyzed by manual and computerized checking using SPSS version 20.0 (SPSS Inc. Chicago IL, United States, 2011). Descriptive results were expressed as the mean values with the standard errors or percentage.

RESULTS

Our study has included the data of 200 randomized women, 46 (23%) women of the first subgroup, 32 (16%) women of the second subgroup, 32 (16%) of the third subgroup, 40 (20%) women of the fourth subgroup and 50 (25%) women of the fifth subgroup.

The average value of the body mass for the first subgroup (N=46) was 70.7±1.8 kg (Fig. 1), with the variation of individual values from the minimum value that was 50 kg to the maximum value that was 102 kg. The average value of the height in the first subgroup was 164.1±0.6 cm that fluctuated between the minimum value - 154.9 cm to the maximum value – 174.0 cm (Fig. 2). The average value of the BMI was 26.2±0.6 (Fig. 3). Measurements of the circumferences of the waist and the hip, and the calculation of the average value gave the following results in the first subgroup: the average waist circumference

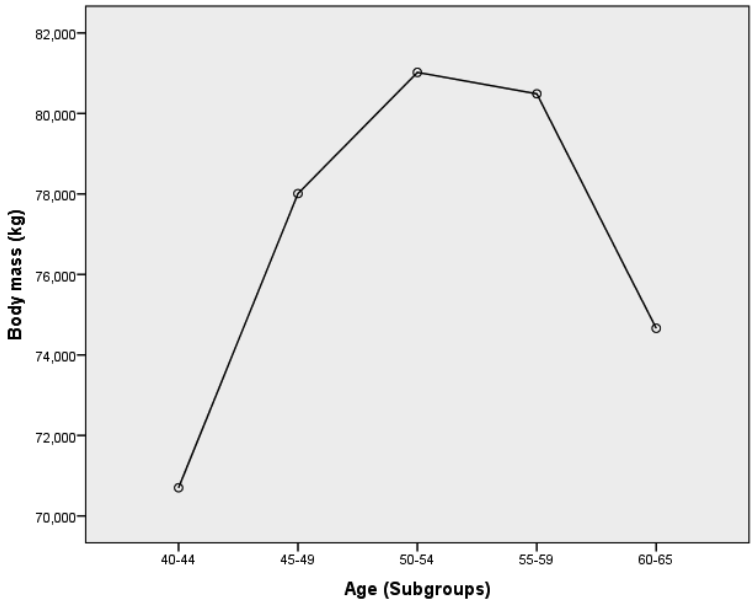

Figure 1. Average value of the Body mass data distribution of women in the examined group in various age subgroups.

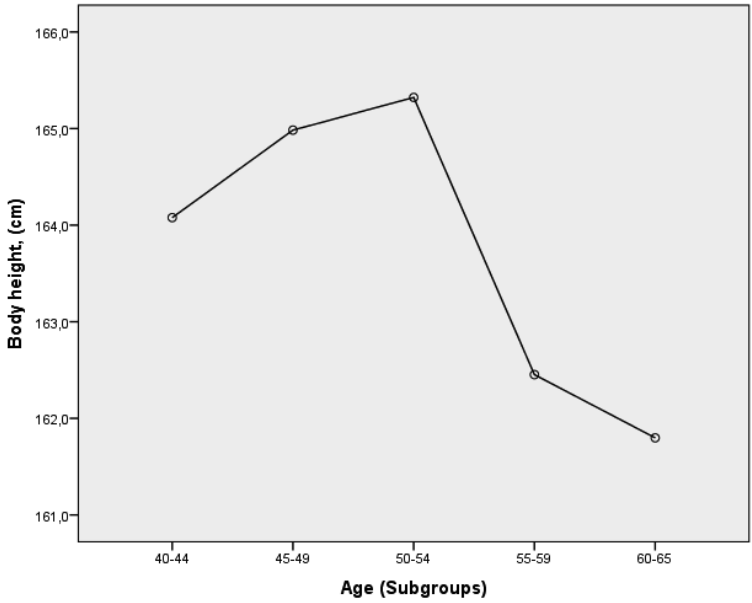

Figure 2. Average value of the Body height data distribution of women in the examined group in various age subgroups.

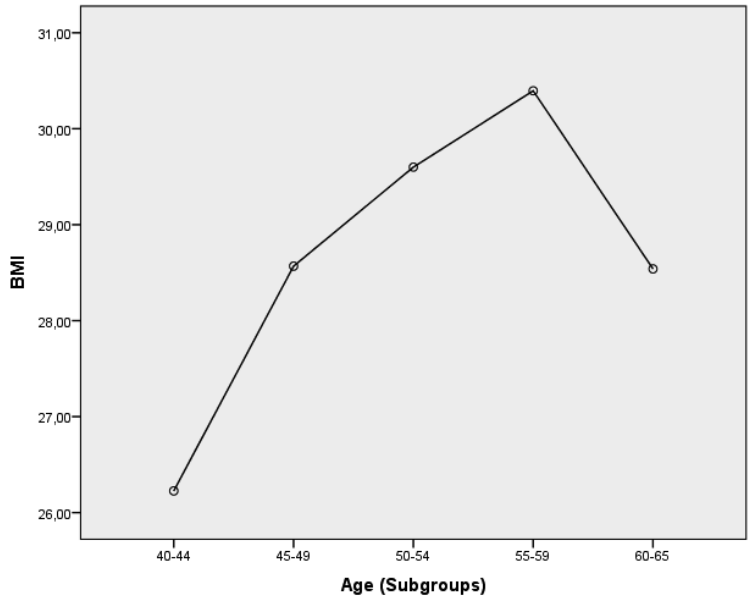

Figure 3. Average value of the BMI data distribution of women in the examined group in various age subgroups.

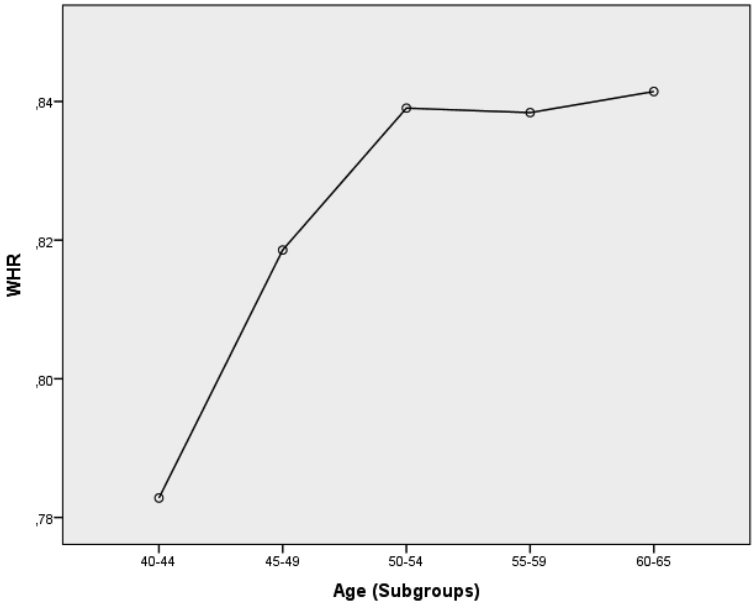

Figure 4. Average value of the WHR data distribution of women in the examined group in various age subgroups.

value was 80.8±1.6 cm (with variations from the minimum value – 67 cm to the maximal value – 106 cm); the average hip circumference value was 103.1±1.19 cm (changed from 86.2 cm to 124.0 cm). Thereby the average value of the WHR for the first subgroup was 0.8±0.06 (Fig. 4).

The mean value of the body mass increased for 7% in the second subgroup (N=32) and composed 78.0±3.5 kg (Fig. 1), that had changes in the interval between 51.2 kg and 135.3 kg. The minimum value of height in the second subgroup was 156, 6 cm and the maximal value of height was 184.3 cm. The average value of height was 164.9±1.05 cm (Fig. 2). In the second subgroup the BMI was 28.6±1.19 that indicates 20% of overweight (Fig. 3). The WHR for the second subgroup was 0.82±0.07 (Fig. 4), that includes the average waist circumference which was 90.5±3.21 cm, and the average hip circumference which was 109.9±2.7 cm.

The analysis of the anthropometric parameters for the third subgroup (N=32) indicated that the average values of the body mass were for 14% higher than for the respondents of the first subgroup and was 81.0±2.5 (Fig. 1). The average data of the body height was 165±1.03 cm (Fig. 2). The average value of the BMI reflected the tendency of increasing (about 13%) for the respondents of the third subgroup and it was 29.6±0.8 (Fig. 3). The average value of the WHR was 0.84±0.07 (Fig. 4). These anthropometric parameters of the respondents of the third subgroup were very similar to the anthropometrics parameters of the respondents of the fourth subgroup (N=40) where we have analyzed data of randomized women in the age from 55 to 59 years.

The average value for the body mass in the fifth subgroup (N=50) was 74.7±2.2 kg (Fig. 1), with changes from the minimum value – 44 kg up to the maximum value – 115 kg. The mean of the height in the fifth subgroup was 161.8±0.9 cm (from 151.5 cm to 178 cm) (Fig. 2). The BMI for the respondents of this subgroup was 28.5±0.9 (Fig. 3). Analyzing the circumferences as in the previous subgroups, we found that the average value of the waist circumference was 91.5±1.9 cm (minimum – 65 cm and maximum – 132 cm) and the average value of the hip circumference was 108.4±1.7 cm (from 86 cm to 152 cm). Thereby the average value of the WHR for this group was 0.84±0.06 (Fig. 4).

DISCUSSION

The analysis of the investigated anthropometrics parameters, the BMI and the WHR for Latvian women in the age over 40 revealed that the mean values of the BMI in all the groups have exceeded the standard level and were more than

25. According the WHO recommendation, we have fixed that the number of women with overweight or obese dominated in each age subgroup. More than a third of the examined persons have the BMI above the 25 level in the first age subgroup (34.8%), in the second age subgroup (31.3%) and in the third age subgroup (37.5 %). The tendency of decreasing the overweight level was found in the fourth age subgroup where the overweight women composed 17.5%. But in the fifth subgroup the number of respondents – women with the BMI values exceeding the standard level were 36%.

We have determined that in each examined subgroup there were women with obesity Class III where BMI≥40 by WHO. They composed 6.3% in the second age subgroup, 7.5% in the fourth age subgroup and 4% in the fifth age subgroup.

We have found statistically significant differences between all the five age subgroups according to the body mass value (p=0.029), the height value (p=0.023) and the BMI value (p=0.018).

The anthropometric data analysis showed that most of the examined respondents-women have a moderate health risk that means that all the WHR is from 0.81 to 0.85. This waist hip ratio is associated with cardiovascular and metabolic diseases. We have found statistically significant differences of the waist hip ratio between all the five age subgroups which are shown in Fig. 4.

The main anthropometric parameter of the women's body constitution is the indicator of the good health capacity for the women over 40 years is the body mass [1]. The individuals with overweight have more medical complications than the individuals with the standard body mass level. The values of the Body Mass Index above the standard level, recommended by the WHO, is frequently associated with higher morbidity and mortality [1].

The BMI and the WHR constituted a simple, easy, inexpensive, highly reproducible, and accurate tool for prevention, control, and intervention against the adult (women) obesity. It can represent an important issue in terms of the need for public health assessments among the adult population. These results will provide useful data for extending the knowledge on the anthropometric characteristic for Latvian women.

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