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The prevalence of overweight and obesity among cardiac patients

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ABSTRACT

Cardiovascular diseases, despite the increasing progress made in the field of cardiology, are still the most common cause of death for people over 60. Factors conducive to cardiovascular diseases include poor physical activity, high blood cholesterol, hypertension, diabetes, smoking, and obesity. The lifestyle, a determinant of health, is in more than 50% influenced by the diet, that is the type and amount of food consumed. The World Health Organization points to the growing problem of obesity in the world. Especially excess weight and obesity among children are of a great importance as these conditions can survive to the adulthood and lead to the development of cardiovascular diseases.

This article aims to analyze the anthropometric data of cardiac patients in terms of excess weight and obesity.

The study included 94 cardiac patients, including 35 women and 59 men aged between 40 and 88. The study used anthropometric data such as age, height, weight, body mass index, gender, and information on underlying illnesses and co-morbidities. The BMI helped to identify the overweight and the obese in the studied group. Out of the total number of patients aged between 40 and 88, 42% were overweight and 30% obese (grade 1), 11% (grade 2), 2% (grade 3).

The overwhelming majority of patients diagnosed with obesity also have other risk factors for developing cardiovascular diseases such as hypertension, diabetes, and hypercholesterolemia. Excess weight and obesity are dangerous for cardiac patients. It is crucial to adapt meals to the needs and avoid generating excess energy and take into account the medicines. Preventing childhood obesity requires a high priority.

Keywords: overweight, obesity, diet, cardiovascular diseases

INTRODUCTION

Despite the increasing progress made in the field of cardiology cardiovascular diseases (CHUK) are still the most common cause of death for people over 60. Due to cardiovascular causes, over 177 000 people died in Poland in 2012. This number accounts for 45.8% of all deaths and 51% of all deaths among the women (95 000). Among the men, the rate was about 41% - 82 500 thousand deaths [1]. The situation in other European Union (EU) countries is slightly different. In the Eastern countries (Lithuania, Latvia, Estonia, Bulgaria, Romania) CHUK mortality was around 50% in 2012, in the Western countries (France, Belgium, Netherlands and in Denmark and United Kingdom) it was below 30%. The leading cause of death in Poland and throughout the Europe is coronary artery disease that includes angina pectoris, acute myocardial infarction, recurrent heart attacks, complications of acute myocardial infarction, other acute forms of ischemic heart disease, and chronic ischemic heart disease. Factors that promote CHUK are low physical activity, high blood cholesterol, hypertension, diabetes, smoking and obesity [2]. CHUK belong to the so-called diseases of affluence, which are influenced by the lifestyle that determines health in over 50%. The lifestyle consists of physical activity, use of stimulants, and diet, that is the type and amount of food consumed [3]. The World Health Organization (WHO) points to the growing problem of obesity in the world. In Poland, the percentage of overweight and obese people is still growing. In 1996 it was 27,7%, in 2004 – 29,6%, and in 2009 it elevated to 53%. Similar growth was also recorded in other EU countries. The excess weight and obesity among children are the most serious public health challenges of the 21st century. This is a global problem that occurs in many low- and middle-income countries and especially in the cities. The incidence of obesity increases at an alarming rate. It is estimated that in 2016 the number of overweight children under five surpassed 41 million. Overweight and obese children are likely to become obese adults and develop non-infectious diseases such as diabetes and cardiovascular diseases at an early age. Excess weight and obesity, as well as many related diseases, can be very often prevented [4]. To avoid an epidemic of overweight and obesity in adulthood and thus cardiovascular diseases, the education of young children should start as early as possible.

The most common criterion for evaluating overweight and obesity is body mass index (BMI), also known as the Quetelet's Index. BMI is the relationship between the mass and the body height, and is calculated with the following equation: BMI = body weight [kg] / height^2. According to the WHO, people with a body mass index of ≥ 30.0 kg/m^2 are considered obese.

The classification of BMI for adults is shown in Table 1. The correct weight gain and/or weight maintenance for people under 60 is between 20-25 kg/m². According to Queensland Government, a standard BMI for elderly people over 65, due to aging and body composition, may be higher and range between 24 - 30 kg / m² [5].

Table 1. BMI according to WHO

BMI (kg/m²)	**WHO classification**
< 18,5	underweight
18,5-24,9	norm
25,0-29,9	overweight
30,0-34,9	obesity I°
35,0-39,9	obesity II°
≥ 40,0	obesity III°

Despite the positive direction of change excess weight and obesity are becoming an important health problem in Poland. The diet of Polish people differs from that recommended by WHO. Diet of Poles is characterized by high content of calories, fats, carbohydrates, cholesterol, sodium, and low content of protein, dietary fiber, vitamins and minerals. Dietary habits such as overeating, irregular meals, eating between meals, as well as eating while spending free time have a negative impact on health. The Polish Dietetic Association recommends a special diet for cardiac patients that includes controlled levels of fatty acids and cholesterol, protein, carbohydrates, dietary fiber, potassium, magnesium and vitamins. The macronutrient ratio is presented in Table 2.

Table 2. Macronutrient ratio in CHUK diseases treatment

MACRONUTRIENT RATIO	
fatty acids and cholesterol	total fat intake < 30% of total energy, saturated fatty acids intake < 7% of energy, intake of trans acids as low as possible, cholesterol intake < 300 mg/dl
proteins	the intake is determined individually and depends on the patient's health, increase of plant protein intake
carbohydrates	limiting the intake of carbohydrates, mainly fructose and sucrose, selecting products with a low glycemic index
dietary fiber	dietary fiber intake ≥ 14 g per 1000 kcal diet or 25 g per day in a women's diet and 38 g in a men's diet [7]
potassium	increased daily intake of potassium from foods to at least 90 mmol (3510 mg) as recommended by the WHO [8]
magnesium	the intake of magnesium from 500 to 1000 mg may lead to the reduction in systolic blood pressure by 2.8 to 5.6 mmHg and diastolic blood pressure by 1.7 to 3.4 mmHg [9]
vitamins	vitamins intake according to the recommendations for the population of healthy people or established individually [10]

AIM OF THE RESEARCH

This article aims to analyze anthropometric data of cardiac patients in terms of overweight and obesity.

MATERIAL AND METHODS

The study included 94 cardiac patients, including 35 women and 59 men aged between 40 and 88. The study used anthropometric measurements such as age, height, weight, body mass index, gender, and information on underlying illness and co-morbidity. The BMI rate allowed to distinguish patients with excess weight and those suffering from obesity. For this purpose, the BMI thresholds were set for the overweight and for obese (Table 1). The excess weight was determined between 25.0-29.9, obesity I° between 30.0-34.9, obesity II° 35, 0-39.9 and obesity III° if the BMI was at or above 40.0.

RESULTS

The study included 94 cardiac patients aged between 40 and 88 (the average age was 69). The majority were male (63%). The gender characteristics of the study group are shown in Figure 1.

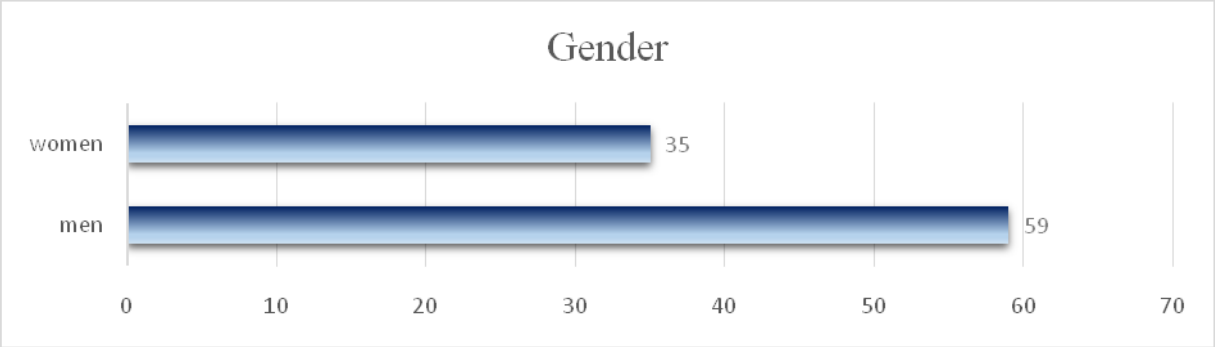

Figure 1. Characteristics of the study group by gender

The levels of the BMI determined in accordance with the WHO standards allowed the members of the group to be classified as overweight or obese. Figure 2 shows the abundance of the population qualified for the above mentioned groups. Of the total number of patients tested, 42% were overweight, and 30% were obese I°, 11% obese II° and 2% obese III° (the average BMI 29.4).

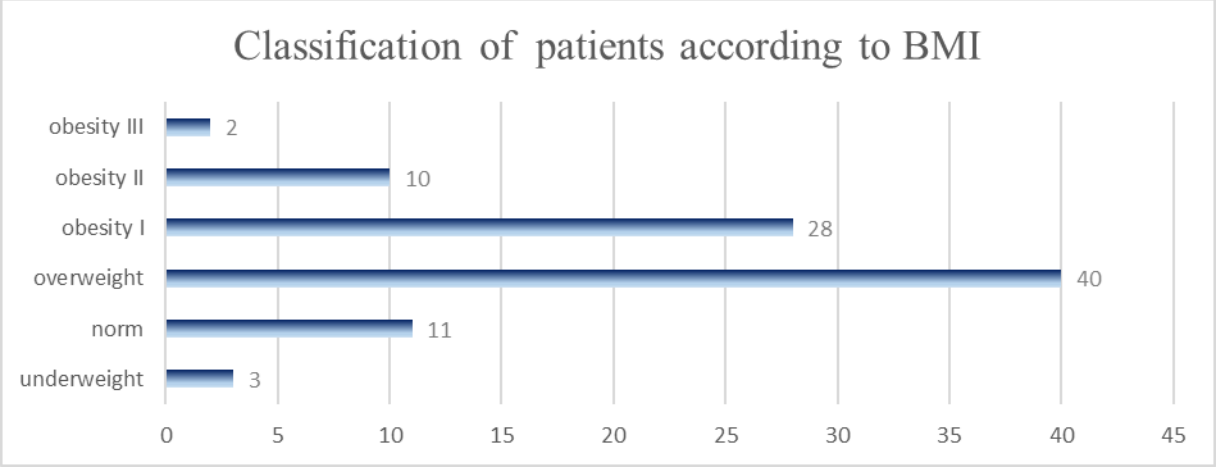

Figure 2. Classification of patients according to BMI

Patients included in the study suffer from ischaemic heart diseases (41%), cardiac arrhythmias (18%), cardiac failure (18%), sick sinus syndrome (14%), atherosclerosis (4%), anterograde block (3%) and circulatory failure (2%). The number of patients with underlying diseases is shown in Figure 3.

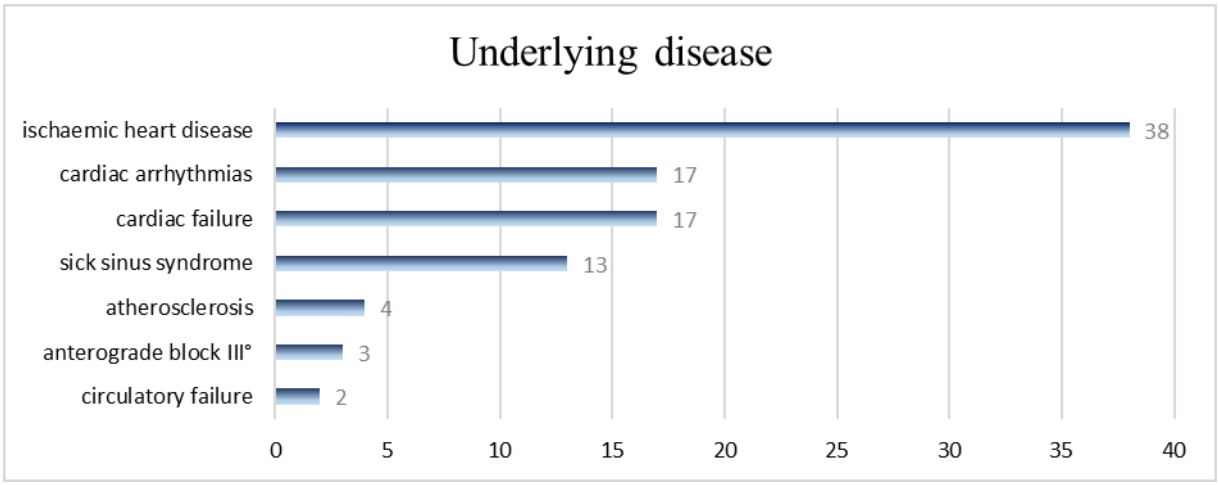

Figure 3. Underlying disease unit of the study group

Co-morbidities occurred in 100% of patients. The number of coexisting diseases in one patient varied from 1 to 5. In the study group, there were 15 different diseases coexisting with the aforementioned underlying diseases. Most common were hypertension (69%), diabetes (21%), hypercholesterolemia (15%), motion sickness (13%), cardiac arrhythmias (12%), anemia (4%), nicotinism (4%), cancer (4%), heart disease (3%), chronic kidney disease (3%), sciatica (3%), atherosclerosis (3%), stroke (2%), COPD (2%), hypothyroidism (1%). Figure 4 shows the number of co-morbidities in cardiac patients.

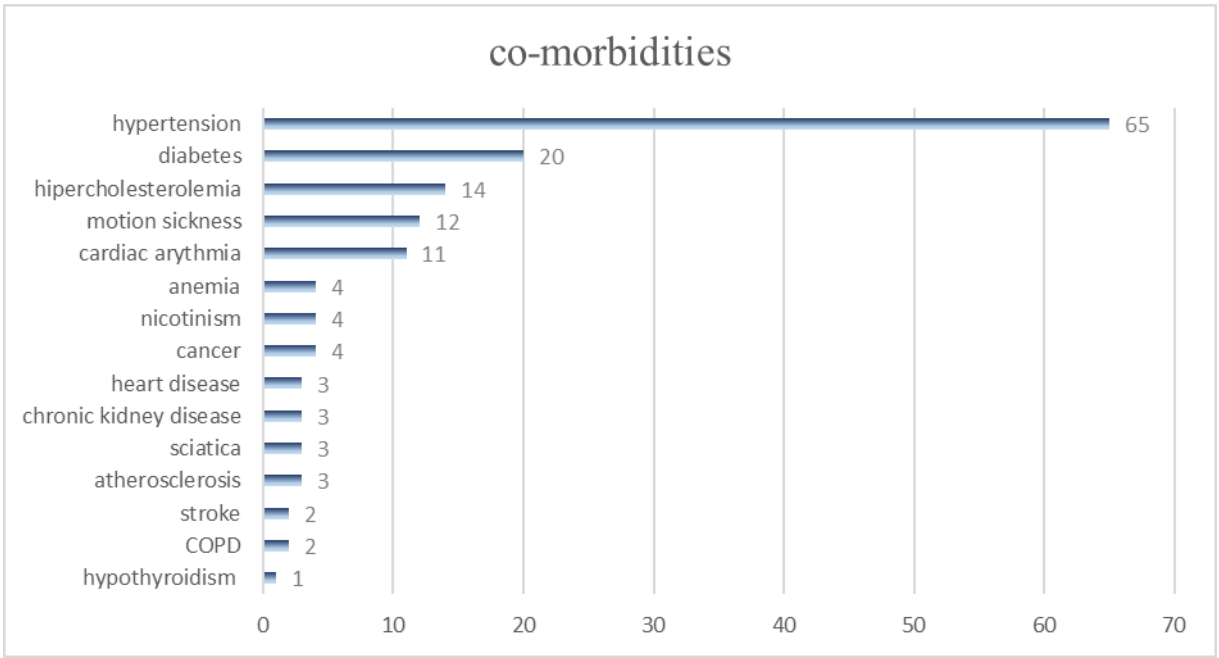

Figure 4. Analysis of the incidence of co-morbidities in the primary disease unit in the study group

DISCUSSION

Excess weight and obesity bring an increased risk of developing cardiovascular diseases and are considered a major public health problem. The occurrence of excess weight and obesity at a young age is of particular importance as it can survive to adulthood and lead to the development of other serious diseases of affluence. This is confirmed by many researchers, e.g. Friedman and co-authors discovered that 77% of obese children would remain obese in adulthood [11].

Results from author's our own studies indicate that there is a significant percentage of overweight and obese people among the total number of studied patients treated for various cardiovascular diseases, where 42% were overweight and 43% obese I º, IIº and IIIº (average BMI 29.4). Such a high proportion of overweight and obesity can also be observed in other studies. Dziedzic and co-authors studied a group of 200 patients treated for stable ischemic heart disease – 92 patients (46%) were overweight and 66 were obese (I º, II º and III º) (33%). Abdominal obesity occurred in 130 patients (69%) [12]. Other researchers also noted an increased percentage of obesity in cardiac patients. Kuźma and co-authors analyzed the medical records of 335 hypertensive patients with a BMI of 45.7%. The BMI index indicated that 45,7% patients were overweight and 36.4% patients were obese. [13] The recommendations of the Polish Society of Hypertension from 2011, state that the abdominal obesity occurs in every second patient aged 50 with hypertension and the proportion has reached 76%. Furthermore, Sulicka and co-authors have used the data of hypertensive patients with other cardiovascular risk factors and discovered that the average BMI in the studied group was 27, and that 46,7% patients were overweight and 24,6% were obese [15].

The INTERHEART study has shown that there are 9 independent factors that can influence the development of a coronary heart disease. Those are: hypertension, lipid disorders, obesity, diabetes, smoking, low physical activity and low intake of fruit and vegetables. Various studies have shown that the coexistence of several risk factors for coronary heart disease has a stronger adverse effect on the cardiovascular system [16]. The increasing incidence of overweight and obesity increases the possibility of developing co-morbidities in younger age groups. In a self-carried study it was noted that coexisting diseases occurred in 100% of patients. The number of co-morbidities in one patient ranged from 1 to 5. In the study group, 15 different diseases coexisted with the aforementioned underlying diseases. The most common underlying diseases were: hypertension (69%), diabetes (21%),

hypercholesterolemia (15%), motion sickness (13%), cardiac arrhythmias (12%), anemia (4%), nicotinism (4%), cancer (4%), heart disease (3%), chronic kidney disease (3%), sciatica (3%), atherosclerosis (3%), stroke (2%), COPD (2%), hypothyroidism (1%).

CONCLUSIONS

- In the study group, a high proportion of overweight and obese people can be observed
- The majority of patients diagnosed with obesity also have other cardiovascular risk factors such as hypertension, diabetes, and hypercholesterolemia.
- Overweight and obesity are a significant problem for cardiac patients
- It is important to adapt meals to one's needs without generating energy surpluses, while taking into account any taken medications
- Prevention of obesity in childhood should be a high priority

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