

EDUCATION IMPACT ON THE DECREASE OF OBESITY

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Summary

Introduction: Overweight and obesity present major challenges of the public healthcare system in the 21st century. Number of persons with diagnosed obesity is still increasing and there is also a significant risk for the up growth of the cardiovascular disorders. Basic disorder in the appearance of obesity is the misbalance between the nutrition input and the energy consummation. Sedentary lifestyle and the lack of physical activity also contributes toward development of this disorder.

Subjects and methods: The research was comprised from 221 subjects (41 male, 180 female). An individual nutrition plan to our patients on the basis of the nutrition habits (FFQ tests and 24h remembering test) and the anthropometric analysis. This was done with the assistance of the Omron apparatus and it included the calculation of the bodily mass, height, BMI, percentage of fat, percentage of muscle tissue, visceral fat and the necessities of basal metabolism. All the subjects had to go through the individual nutrition counselling. Advice was given about the necessity of the physical activity. Their progress was monitored in the period of 3 months, minimum number of visits was 3 and maximal 7.

Results and Debate: Subjects were divided in groups according to sex and we used the t-test to define the differences. The research encompassed 41 male subject (min TM = 69 kg ; max TM = 139 kg ; min BMI = 22,2 ; max BMI = 42,1) and 180 female subjects (min TM = 57 kg ; max TM = 134 kg ; min BMI = 20,8 ; max BMI = 50,2). Nutrition counselling had a high rate of success which become evident in fact that 92 % of participants achieved at least some sort of loss of bodyweight. The results point toward the positive correlation related to the number of counselling sessions attended, meaning that the higher rate of attendance leads to the loss of weight. Positive correlation between weight loss and exercise was not established, but a substantial progress in the loss of fat among the physically active subjects was established.

Conclusion: Overweight is a very big problem for the public healthcare system and one of its major challenges. It is linked with a series of physical and psychological difficulties and it substantially increases the risk and the mortality rate from cardiovascular disorders, cancer, diabetes and many other precarious conditions. It is necessary to give assistance to persons diagnosed with this condition, mainly by means of prevention and treatment via counselling about the necessity of the balanced and regular nutrition, physical activity and the psychological advice. Subjects which were persistent in attendance to the counselling centres for regular nutrition achieved better results in the struggle to decrease the bodyweight.

Key words: education, obesity, nutrition counselling, overweight

Introduction

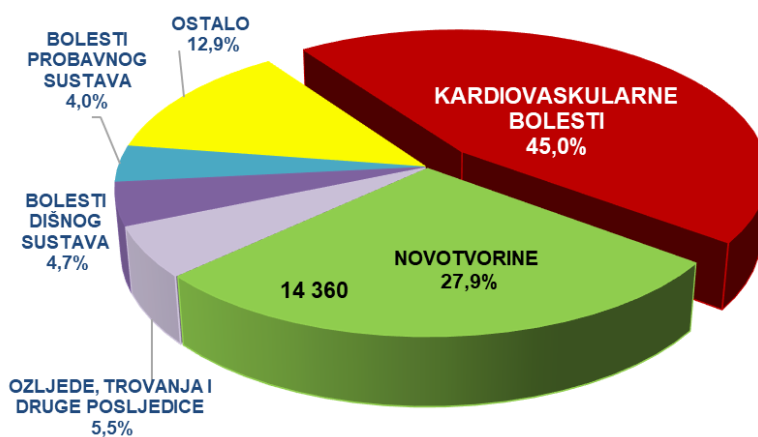
According to the World Health Organization, overweight bodily mass and obesity are classified as an abnormal or excessive accumulation of fat that presents a risk for health (1). It is one of the biggest challenges of the public healthcare system in the 21st century. In many countries of Europe and the rest of the world (1), prevalence has tripled since the last two decades of the 20th century. It is a very disturbing fact that the number of overweight persons is still growing, especially among the children. Obesity is linked with a series of both psychological and physical difficulties and it strongly contributes to the increase of the risk for the Non-Contagious Diseases (NCD), which include cardiovascular disorders, cancer and diabetes. Obesity is already responsible for the 2-8 % healthcare costs and the 10-13 % of mortalities in different parts of Europe (1). The impact of overweight is especially significant for the up growth of the diseases of the loco motor system, whose treatment presents a substantial expenditure for the health care system. Research conducted on patients with serious osteoarthritis of knee and hip demonstrated that the gonarthrosis of the 2. and 3. level was present in 97.1 % patients with BMI 30-35, and the gonarthrosis of 3. and 4. level was present in 83.3 % of patients with BMI >40 (13). In the First World countries, 84 % of the populace reports of having serious low back pain. Chronic or acute back pain is one of the leading factors of the temporary incapacity of the populace that presents the work and labour market. Increased mechanic stress to which the intervertebral discs of the spine are constantly exposed to, is partly caused by the contemporary inactive lifestyle, and they contribute to the back pain syndrome which eventually leads to development of obesity. It is proven that the physical activity, which is being so much elaborated and mentioned in the contemporary era, is one of the key factors for the appearance of different manifestations of the Non-Contagious Diseases (NCD). In Croatia, only 16 % of the populace capable for labour exercises some sort of the intensive physical activity. In groups which involve children and

adolescents this percentage is a bit higher and comes up to 19.5, whilst it is dramatically lower among senior citizens arriving only to 6 %. Overweight is the result of the complex interaction of genetic and environmental factors with significant mortality and morbidity. People with diagnosis have to cope with many difficulties which include physical impacts on their health and also emotional consequences of the social stigmatization as the result of their discouragement by their physical appearance and the lack of motive for treatment (2). Physicians of the General practice who have a major role in treatment and psychological support for this group of patients have only limited time to work with them and it often occurs that they are not able to mount up to all the necessities that the treatment of patients with obesity requires. Therefore, it is of the uttermost importance to make it very clear to the patients with an overweight issue that is pivotal that they become members of the diverse unions and organizations that provide assistance for this treatment. This assistance is done via counselling centres about healthy diet and the composition of individual diet programs in companionship with psychological support.

One of the modes to assess the overall nutrition status is the calculation of the body mass index (BMI), which is done by dividing the bodily mass of the person with square of height in metres. Body mass index (BMI) is just an orientation tool which can show fat index and obesity and it cannot be the only parameter to evaluate obesity, although it is being used as an useful statistical guideline to measure the nutrition status. Besides body mass index (BMI) there are other anthropometric methods to assess obesity, such as computation of fat, muscle tissue, visceral fat, necessity of basal metabolism, span of the waist and hips. Body mass index (BMI) lesser than 18.5 kg/m² is considered as malnutrition, BMI between 18.5 kg/m² and less than 25 kg/m² marks the standard body mass. BMI between 25 kg/m² and less than 30 kg/m² indicates an overweight, and BMI higher than 30.0 kg/m² is a sign of obesity (3). Risk for the high mortality rate as a result of obesity starts to increase with patients with BMI

of 23 kg/m². On the other hand, patients with za BMI 19.0-21.9kg/m² have the lowest risk. Patients enlisted in the overweight group with BMI between 25.0 i 29.9 kg/m² have a very strong chance to enter in the group of patients diagnosed with obesity who have BMI higher

than 30 kg/m² which drastically increases the mortality rate. It is estimated that the patients with BMI higher than 30 kg/m² have a mortality rate connected with obesity as high as 80 % (2).



Picture 1. Mortality cause in 2016 (15)

Cardiovascular diseases 45,0 %, Neoplasms 14 360/27,9 %, Injuries, poisoning and other conditions 5.5 %, Respiratory system diseases 4,7 %, Gastrointestinal diseases 4 %, Other causes 12,9 %.

Basic disorder which marks the appearance of obesity is the misbalance between food consumption and the energy consumption. During the evolution human species was inclined to consume the food energetically marked with abundant fat, which was conditioned with the exposure of our ancestors to famine (4). This fact makes modern humanity prone to high energy index food consumption and the risk to increase obesity. An additional factor which adds to obesity increase is the lack of physical activity and the sedentary lifestyle.

Misbalance of the macro nutrients consumption leads to further misbalance of the energy distribution. For example, fast food has a high percentage of fat on one hand and low percentage of fibres on the hand, which results in the overall increase of the calorie input (5). Consumption of this type of food was increased from 20 % of the overall calories in 1970 to 40 % of overall calories in 1995, in US alone. This is being directly put in connection with the increase of obesity in this time period (7). During last five decades the advancement of food industry has brought up to the increment of

the of the consummation of the refined carbohydrates whose usage is also linked with overweight problem. Few researches have clearly demonstrated that the limited input of the refined carbohydrates has an impact on the decrease of the bodily mass (8). During the 1990s, US had seen the increase of the consummation of beverages with higher percentage of sugar and the numerous studies have shown the relation between the increased input of this type of beverages and the presence of diabetes.

The absence of the physical activity is as important as the misbalance of the macro nutrients in the creation of obesity. Regular physical activity is important in both the prevention and treatment of obesity and it plays a role in detaining its metabolic complications. Various studies have proven that the physical activity has many beneficial effects on health, that it enhances the sensitivity of periphery receptors on insulin, regulates the lipid status, improves the regulation of the blood pressure of patients with artery hypertension, and it also decreases the risk of stroke (10). According to

the newest ESC directives for the treatment of the artery hypertension, physical activity is recommended, more precisely that its duration is a least 30 minutes of mild intensity (walking, running, swimming or bike riding) in intervals of 5-7 days a week (11).

The obesity and its consequences for human health have become one of the biggest public healthcare issues that exist in Europe. In attempt to pinpoint the locally based solutions, we have witnessed the creation of the agenda called European activity plan for food and nutrition 2015-2020, which aims to decrease marketing promotion of unhealthy food in order to decrease the obesity percentage. Republic of Croatia has joined to this initiative.

Our research was based to make an individual nutrition plan to our patients on the basis of the nutrition habits (FFQ tests and 24h remembering test) and the anthropometric analysis. Their progress in the decrease of the bodily mass was monitored during the period of 3 months.

Subjects and methods

The research was comprised from 221 subjects (41 male, 180 female). An individual nutrition plan to our patients on the basis of the nutrition habits (FFQ tests and 24h remembering test) and the anthropometric analysis. This was done with the assistance of the Omron apparatus and it included the calculation of the bodily mass, height, BMI, percentage of fat, percentage of muscle tissue, visceral fat and the necessities of basal metabolism. Subjects were questioned about chronic diseases, physical activity, smoking, alcohol consummation, food tolerance and the input of supplements. All the listed parameters were included in the creation of the individual nutrition plans. All the subjects had to go through the individual nutrition counselling. Nutrition plans were based on the Mediterranean cuisine and special emphasis was put on a regular energy density of each individual meal. Advice was given about the necessity of the physical activity. Their progress was monitored in the period of 3 months, minimum number of visits was 3 and maximal 7.

Results and debate

Subjects were divided in groups according to sex and we used the t-test to define the differences. The research encompassed 41 male subject (min TM = 69 kg; max TM = 139 kg; min BMI = 22,2; max BMI = 42,1) and 180 female subjects (min TM = 57 kg ; max TM = 134 kg ; min BMI = 20,8 ; max BMI = 50,2). Nutrition counselling had a high rate of success which become evident in fact that 92 % of participants achieved at least some sort of loss of bodyweight. In male participants the bodyweight was decreased by 7.7 kg (7.1 %) and the BMI was decreased for 2,4 kg / m² (7,2%). Decrease of bodyweight in female participants was 6,3 kg (6,9%) and the BMI was decreased for 2,3 kg / m² (6,9%). The difference between the groups was significant (p <0,00000). The results point toward the positive correlation related to the number of counselling sessions attended, meaning that the higher rate of attendance leads to the loss of weight. Subjects were also interviewed about their physical activity. Positive correlation between weight loss and exercise was not established, but a substantial progress in the loss of fat among the physically active subjects was established.

Conclusion

Overweight is one of the major issues of the public health system and of its biggest challenges. It is conjoined with a series of physical and psychological difficulties and it significantly increases health risks and mortality rate in cardiovascular diseases, cancer, diabetes and many other conditions. People diagnosed with overweight should be helped and treated accordingly, in the sense of prevention and treatment of obesity via counselling about the necessity of balanced and regular nutrition, physical activity and psychological assistance.

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