

# ASSESSMENT OF THE INFLUENCE OF SELECTED BEHAVIOURS ON INCIDENCE OF OVERWEIGHT AND OBESITY AMONG WOMEN FROM RURAL AREAS

## OCENA WPLYWU WYBRANYCH ZACHOWAŃ NA CZĘSTOŚĆ WYSTĘPOWANIA NADWAGI I OTYŁOŚCI WŚRÓD KOBIET Z OBSZARÓW WIEJSKICH

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**Słowa kluczowe:** *kobiety wiejskie, BMI, styl życia, zachowania żywieniowe*

### ABSTRACT

*The aim of the study was to examine the influence of selected health behaviours of women living in the country, in one county on incidence of overweight and obesity.*

*The study indicated that 50% of women living in the country were overweight or obese and that the normal value of BMI decreased with age. It was found that overweight and obese women suffered from arterial hypertension and diabetes more frequently. Women living in the country still did not attach significance to nutritional and energy value of purchased food products. It proves that there is little awareness of rational nutrition in the rural community and little interest in health effects connected with an excessive intake of specific food. Overweight and obesity did not motivate women living in the country to take more exercise. Women attempted to lose weight only through a diet without increased energy expenditure.*

### STRESZCZENIE

*Celem pracy było zbadanie wpływu wybranych zachowań zdrowotnych kobiet mieszkających na wsi na częstość występowania nadwagi i otyłości. Badania wykazały, iż co druga kobieta mieszkająca na wsi posiadała nadwagę lub otyłość, a prawidłowe wartości wskaźnika BMI malały wraz z wiekiem. U kobiet z nadmierną masą ciała znacznie częściej występowało nadciśnienie tętnicze i cukrzyca. Kobiety mieszkające na wsi nie przywiązywały wagi do wartości odżywczej i energetycznej kupowanych produktów żywnościowych. Świadczyć to może o braku świadomości środowisk wiejskich na temat racjonalnego odżywiania, jak również o małym zainteresowaniu konsekwencjami zdrowotnymi związanymi z nadmiernym spożyciem określonej żywności. Nadwaga i otyłość nie była stanem motywującym kobiety mieszkające na wsi do większej aktywności fizycznej. Kobiety podejmowały próby schudnięcia jedynie dietą, bez zwiększonego wydatku energetycznego.*

### INTRODUCTION

In recent years obesity has become one of the fundamental problems that pose a threat to human health. Obesity is recognized as one of the so-called metabolic diseases of civilization. It is both an independent disease and a risk factor for many other diseases such as arteriosclerosis, arterial hypertension, diabetes and uratic gout. Furthermore, it increases a risk of incidence of joint degenerative changes, thrombotic processes as well as respiratory and digestive system diseases. It is extremely important to assess the spread of overweight

and obesity in separate regions of the country, which will be indispensable for developing an appropriate strategy to fight excessive body weight and then monitor its effectiveness [2].

### MATERIAL AND METHODS

The study covered 60 women aged 23 - 69 who were asked to provide their age, height and weight. The parameters were used to calculate BMI which helped to find out what percentage of the respondent women were marked by abnormal body mass. Moreover, the

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respondents completed anonymous questionnaires concerning their health state, physical activity and awareness of composition, nutritional and energy value of purchased foodstuffs.

The results were statistically analyzed. The value of parameters analyzed were characterized according to number and percentage. The inter-group differences for unrelated traits were found by using the homogeneity  $\chi^2$  test. The independence  $\chi^2$  test was used to examine the relationship between the examined traits.  $P < 0.05$  was accepted as statistically significant. The database and statistical analysis were based on the STATISTICA 7.1 software (StatSoft, Polska).

## RESULTS

The findings showed that 48% of women living in the country had normal body weight, 32% were overweight, 20% were obese. Neither underweight nor giant obesity occurred among the population analyzed. The graphic distribution of body mass of women living in rural areas was presented in Figure 1.

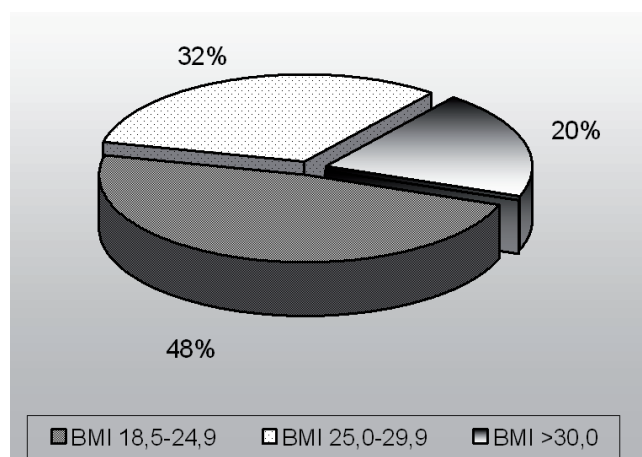


Fig. 1. Distribution of BMI ( $\text{kg}/\text{m}^2$ ) of the examined population of women living in rural areas  
Rozkład BMI ( $\text{kg}/\text{m}^2$ ) dla badanej populacji kobiet zamieszkujących na wsi

In Table 1 the percentage distribution of BMI was presented according to the age of the examined population of women.

Table 1. Distribution of BMI of the examined population of women living in rural areas according to age  
Rozkład BMI dla badanej populacji kobiet zamieszkałych na wsi w zależności od wieku

Age	Underweight BMI < 18.5 ( $\text{kg}/\text{m}^2$ )	Normal weight BMI 18.5-24.9 ( $\text{kg}/\text{m}^2$ )	Overweight BMI 25.0-29.9 ( $\text{kg}/\text{m}^2$ )	Obesity BMI $\geq 30$ ( $\text{kg}/\text{m}^2$ )	Giant obesity BMI $\geq 40$ ( $\text{kg}/\text{m}^2$ )	p
till 39	0%	55.2%	5.3%	0%	0%	>0.05
40-49	0%	31.0%	15.8%	25.0%	0%	
50-59	0%	6.9%	36.8%	41.7%	0%	
60-69	0%	6.9%	42.1%	33.3%	0%	

The study revealed that the normal value of BMI decreased with age, yet the differences were not statistically significant. Normal BMI values ( $18.5\text{-}24.9 \text{ kg}/\text{m}^2$ ) were most commonly observed in a group of women who did not reach 40 years of age (55.2%) whereas overweight and obesity were commonly characteristic of older women, namely body mass above the accepted norm was found among 78.5% of women aged 50-59 and among 75.4% of respondents aged 60-69.

The group of respondent women living in the country completed the questionnaires concerning the incidence of civilization diseases such as diabetes, arterial hypertension and lifestyle including some dietary behaviours. The study was divided according to the state of nutrition (BMI) of women with normal body weight (group I) and overweight and obese women (group II). The results were presented in Table 2.

Table 2. Health state and lifestyle of women with normal and excess body weight  
Stan zdrowia i styl życia kobiet z normalną i nadmierną masą ciała

Examined traits	Normal body mass - grupa I (n=29)	Overweight and obesity - group II (n=31)	p
Diabetes			
- yes	0.0	21.9	>0.05
- no	100.0	78.1	
Arterial hypertension			
- yes	13.8	77.1	<0.05
- no	86.2	22.9	
Checking of composition and energy value of purchased food products			
- yes	24.1	15.8	>0.05
- no	75.9	84.2	
Keeping fit			
- yes	36.7	0.0	<0.05
- no	63.3	100.0	
Attempts to lose weight through diet			
- yes	25.0	45.0	>0.05
- no	75.0	55.0	

The findings indicated that none of the women with normal body weight suffered from diabetes, but most of respondents (78.1%) with excess body weight showed this disease entity. Yet these differences were not statistically significant. However, statistically significantly

more ( $<0.05$ ) overweight and obese women admitted that they suffered from arterial hypertension (77.1%). The study did not reveal any statistically significant differences concerning the checking of composition, nutritional and energy value on packaging of purchased foodstuffs as most respondents living in the country stated that they had not developed this habit.

Women with normal body weight statistically significantly more often (36.7%) declared that they kept fit, 100% of overweight and obese respondents did not feel motivated to take exercise. Half the respondents (45%) with excess body weight attempted to lose weight through a diet. Most respondents (75%) with normal body weight had not followed any low energy diet, but the differences were not statistically significant.

## DISCUSSION

Although excess body weight during childhood and youth is an important problem, most people do not put on weight until later in life [4]. *Rössner* [9] thinks that BMI increases with age, which was confirmed by individual studies which reported the highest weight gain above the accepted norm in people who reached 50 years of age. According to *Demissie* and *Milewicz* [4, 6] it can be explained by the fact that in the period after menopause a drop in concentration of circulating estrogens changes the biology of fat cells, which leads to an increase in fat deposit in the woman's body.

The increased deposit of visceral fat is an important factor determining the risk of cardiovascular system disease [4], which is confirmed by individual studies indicating increased incidence of arterial hypertension in overweight and obese women. Arterial hypertension is several times more common for people with excess body weight than with normal weight [3]. Pathomechanism of its development is complex. Fatty tissue becomes, among others, a significant endocrine organ producing leptin that shows a positive correlation with arterial hypertension [1]. An increase in peripheral resistance and in minute heart volume play an essential role in pathogenesis of arterial hypertension in overweight and obese people [3].

There is also more and more evidence to support the thesis that fatty tissue, as an endocrine organ, has an influence on activity of particular hormones including insulin. Hormone disturbances may lead to metabolic disturbances, among others, to the development of diabetes which often accompanies obesity [4]. Disturbances of carbohydrate metabolism occur more frequently in overweight and obese people than in people with normal weight. Excess body weight, above all, may cause insulin resistance – connected with impairment of insulin binding to fat and muscle cell receptor and

others sensitive to insulin [4]. As individual studies indicated, diabetes as a disease entity was only found in overweight and obese women.

Despite an increase in a range of foodstuffs available on the market, women living in the country still do not attach significance to nutritional and energy value of purchased food products. It proves that there is little awareness of rational nutrition in the rural community and little interest in health effects connected with an excessive intake of specific food (e.g. rich in saturated fatty acids, cholesterol or easily assimilable carbohydrates).

Knowledge of food and nutrition acquired in the process of nutrition education is a basic factor influencing nutrition awareness [5]. That is why promotional activities concerning the development of proper dietary habits should be conducted in the rural community, which, in years to come, may have a direct effect on the health state of rural society.

Low levels of physical activity are primarily responsible for overweight and obesity, which was confirmed by individual studies. Modern civilization has transformed human lifestyle, eliminating any physical work. Technological progress achieved in recent years definitely facilitates work activities, moving from one place to another and functioning in daily life. Such a situation led to avoidance of physical exercise, which has negative health effects. Physical inactivity clearly leads to many physiological disturbances. The most significant changes resulting from physical inactivity include deteriorating general fitness and obesity [7, 8]. Furthermore muscle inactivity induces many metabolic disturbances, which, as indicated by individual studies, accompanied overweight and obese women.

The study shows that nearly half the women with excess weight attempted to lose weight only through a diet, which, in the end, was ineffective. Those diets were probably found in illustrated magazines for women – they did not have much to do with proper low energy diet, created by a nutritionist and monitored by a doctor. A reduction in body weight can be achieved through following a proper diet in combination with increased energy expenditure conditioned by physical activity. It has been proved that the most effective method for fighting obesity is following an appropriate diet with simultaneous energy expenditure through physical activity. One of the reasons for giving up physical activity is lack of time, equipment and space for exercise as well as self-consciousness about participation in group classes. This is why family support is very important when it comes to motivating an obese patient to take intensive exercise [7].

Prophylaxis oriented at a change of lifestyle and dietary habits forms the basis for fighting overweight and obesity. This fight, however, is very difficult as the

main trend of modern civilization is eliminating any physical activity. Growing prosperity, improved and easier access to food – first of all - highly purified products as well as easily assimilable and highly energetic products are conducive to providing an organism with excess of calories. That is why one should think how to eliminate environmental factors which have the strongest influence on the growing problem of overweight and obesity both in cities and the country.

## CONCLUSIONS

1. The study revealed that 50% of women living in the country are overweight or obese and also pointed out that the normal values of BMI decrease with age. Overweight and obesity are most frequently observed in women who reached 50 years of age.
2. Women with excess weight suffer from arterial hypertension and diabetes more frequently.
3. Women living in the country still do not attach significance to nutritional and energy value of purchased food products. It proves that there is little awareness of rational nutrition in the rural community and little interest in health effects connected with an excessive intake of specific food. That is why promotional activities concerning the development of proper dietary habits should be conducted in the rural community, which, in years to come, may have a direct effect on health state of rural society.
4. Overweight and obesity do not motivate women living in the country to take more exercise. Women attempt to lose weight only through a diet, which is ineffective. A reduction in body mass can be achieved through following a proper diet in combination with increased energy expenditure conditioned by physical activity

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