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Changing health behaviors under lockdown: the impact of the COVID-19 pandemic on adult physical activity and well-being

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Abstracts:
Introduction. Obesity is recognized as one of the increasingly common diseases of civilization. It poses a great threat to the health and life of every person. Overweight and obesity have also been called a worldwide epidemic. Obesity is most often caused by prolonged positive energy balance: bad eating habits, low physical activity and other problems such as emotional. The current pandemic situation also promotes the incidence of overweight and obesity. Aim of the study. The main aim of the study was to investigate the impact of lockdown on the occurrence of overweight and obesity in adult population, while the specific aim was to investigate the impact of COVID-19 pandemic on the level of physical activity among adults. Material and Methods. A total of 244 adults participated in the study on the impact of lockdown on overweight and obesity. The criterion for inclusion in the study was a correctly completed questionnaire. The questionnaire was properly completed by 237 respondents, who were then qualified for further analysis.

The study was conducted during the fall and winter seasons using a proprietary survey questionnaire. Data analysis was carried out using Microsoft Excel 2010, and the results and conclusions of the scientific study were obtained from it. Results and Conclusions. The results of the study indicate that the respondents do not have enough knowledge about proper nutrition. In addition, it was found that their physical activity is decreasing and they are working more and more often remotely, which limits their movement during the day.

Keywords: lockdown, lifestyle, physical activity, obesity, well-being

Background

Obesity is considered one of the increasingly common diseases of civilization. It poses a great threat to the health and life of every person (Sikorska-Wiśniewska, 2017). Overweight and obesity have also been called a worldwide epidemic (Olszanecka-Glinianowiscz, Dudek, Filipiak, Krzystanek, Markuszewski, Ruchała, Tomiak, 2020). Prolonged positive energy balance is the most common contributor to obesity: poor eating habits, low physical activity and other problems such as emotional (Sikorska-Wiśniewska, 2017). The current pandemic situation also promotes an increased incidence of obesity. All this is due to the fact that food is the most common way of coping with stress, and the number of stressors during an epidemic is very high. People feel anxious about their future, their health, their family, they are isolated, family conflicts increase or there are many restrictions related to the lack of access to many other opportunities to relieve stress. Cinemas, theaters, fitness clubs are often closed, one cannot travel, meet with friends, etc. (Olszanecka-Glinianowiscz, Dudek, Filipiak, Krzystanek, Markuszewski, Ruchała, Tomiak, 2020). Besides, other causes of obesity can be genetic factors or low physical activity (Muchacka, Cebula, 2017). It is still worth noting the relationship between sleep duration and body weight. Both deficiency and excess may be associated with a higher incidence of overweight and obesity (World Health Organization, 2011). During the pandemic, many new recommendations have been developed for doctors, nurses and dieticians regarding the diagnosis of overweight and obesity due to the observed significant increase in the percentage of people facing similar problems (Olszanecka-Glinianowicz, Dudek, Filipiak, 2020). Obesity poses a risk for many nutrition-related diseases such as liver disease, cardiovascular disease, type II diabetes and others (Sikorska-Wiśniewska, 2017). In addition, it contributes to lowered self-esteem, the presence of many complexes and emotional problems (Muchacka, Cebula, 2017). The aim of obesity treatment is primarily to reduce body weight and stop the effects of poor lifestyle (Sikorska-Wiśniewska, 2017). More and more attention is paid primarily to prevention with the idea that prevention is better than cure. The current tasks of dieticians and physicians are primarily to promote a healthy lifestyle, better nutrition or increase physical activity (Muchacka, Cebula, 2017). It should be remembered that the treatment of obesity in pandemic times is even more important than before because of the increase in the number of problems affecting many people struggling with many issues and compensating negative emotions with food as well as because of the impeded access to activities outside the home (Olszanecka-Glinianowicz, Dudek, Filipiak, 2020).

The primary objective of this study was to examine the impact of lockdown on the occurrence of overweight and obesity in an adult population, while the specific objective was to examine the impact of pandemic COVID-19 on physical activity levels among adults.

Material and methods

A total of 244 adults participated in the study on the effects of lockdown on overweight and obesity. The inclusion criterion for the study was a correctly completed survey questionnaire. The survey questionnaire was properly completed by 237 respondents (including 188 females and 49 males), who were then qualified for further analysis. ¾ of the respondents were between the ages of 18-25, 13% were between the ages of 26-35, and only 26 were over the age of 35. Most, 36%, of the respondents live in a city of more than 200,000 inhabitants, the rest in smaller towns. Their education was in most cases secondary (126 people), but a large part of them had higher education (98 people). The rest of them declared that they had vocational education. The study was conducted during the autumn-winter season, using a proprietary survey questionnaire. It consisted of six sociometric questions and fourteen problem questions including a question in which a frequency scale was used for the consumption of milk and dairy products, meat and meat products, legumes, fruits, vegetables, sweets, fast food and alcohol. Problem questions included change in body weight during lockdown, change in lifestyle during pandemic, physical activity before pandemic, change in physical activity level, change in amount of food consumed, snacking between meals, fear of going to the store or when handling food, change in food choice due to composition and price, amount of fluids drunk per day, mood during pandemic, and smoking. A seven-point scale of frequency of consumption, included the following values sequentially: several times per day, once per day, several times per week. Several times a month, once a month or less often, never. Sociometric questions included: gender, age, place of residence, weight, height, education level. Data analysis was conducted using Microsoft Excel 2010, and the results and conclusions of the scientific study were obtained from the data.

Results

In the study conducted, it was observed that most of the respondents participating in the study according to BMI is normal (152 people). However, it was observed that some people are also overweight (44 people) and underweight (23 people) Moreover, the least number of people participating in the study have obesity degree I or II. It was observed that most respondents noticed weight gain during lockdown (38%), but the difference between respondents who noticed weight gain (36%) and those who did not is only 2%. It was found that the largest number of respondents to the survey had changed their work mode to remote (46%). Still, 28% work stationary without any change. Only 2% of respondents had worked remotely before. On the other hand, 57 of the respondents are currently not taking any job (Fig.1.).

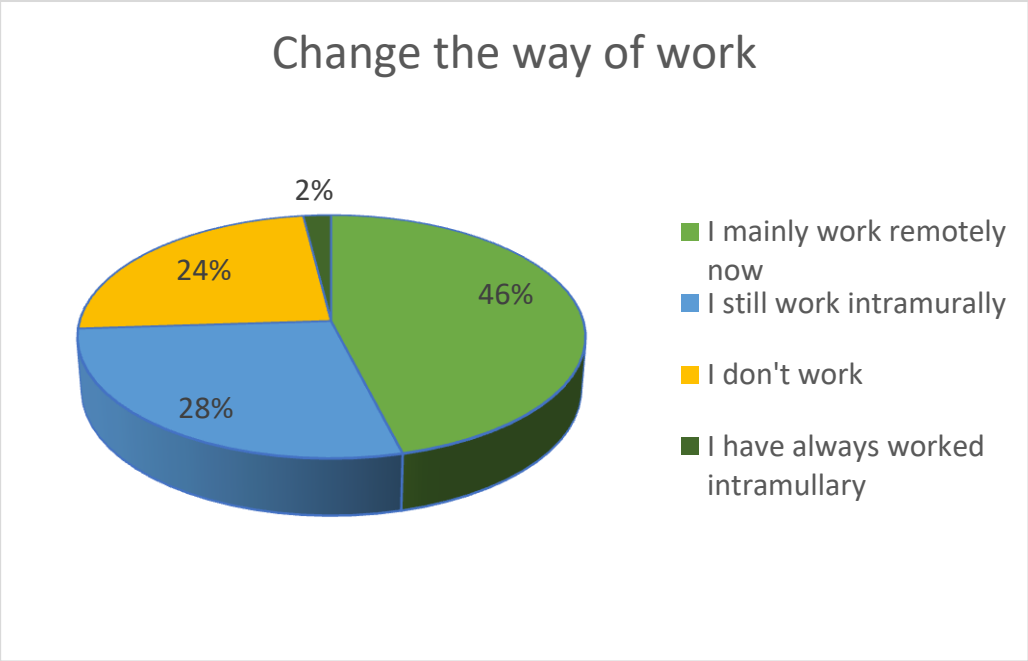

Figure 1 Mode change during lockdown among adults participating in the study.

Among the respondents, we found that most adults (120 people) participating in the study rated their physical activity before the pandemic as moderate. It is also noteworthy that a large portion of them also rated it as low (57 people) and some as high (41 people). On the other hand, a small number of respondents assessed their activity before the pandemic as very low (19 persons) (Fig.2.).

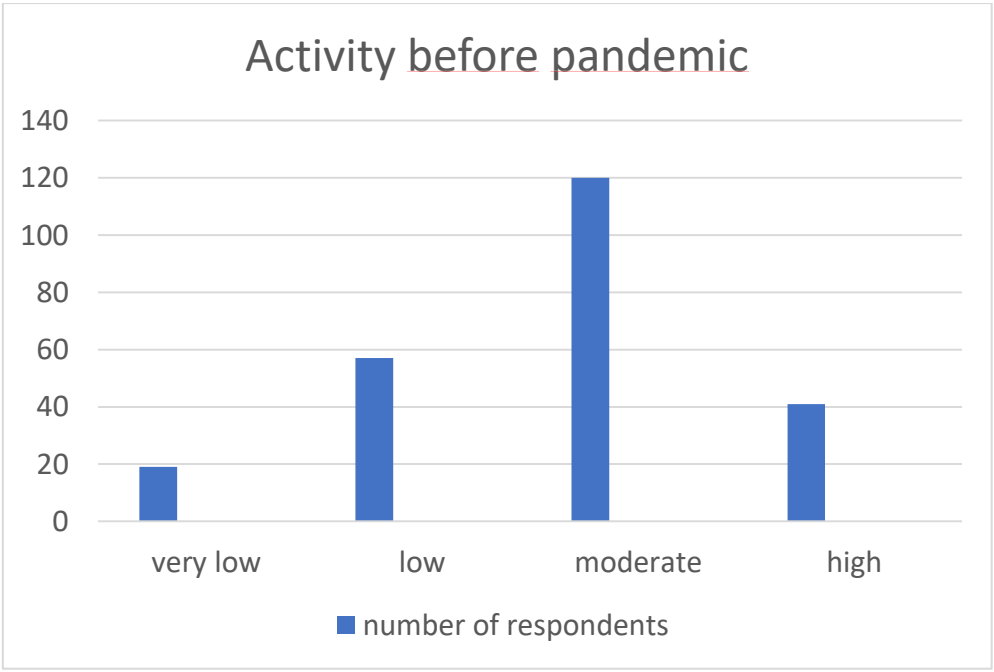

Figure 2 Physical activity before the pandemic among adults who participated in the survey.

It is disturbing that the level of physical activity during the pandemic was decreased in more than half of the respondents who participated in the study (55%), while the least respondents (26%) increased their level of physical activity during the lockdown.

Furthermore, it was found that 1/4 of the respondents announced that lockdown did not change their physical activity level in any way (Fig.3.).

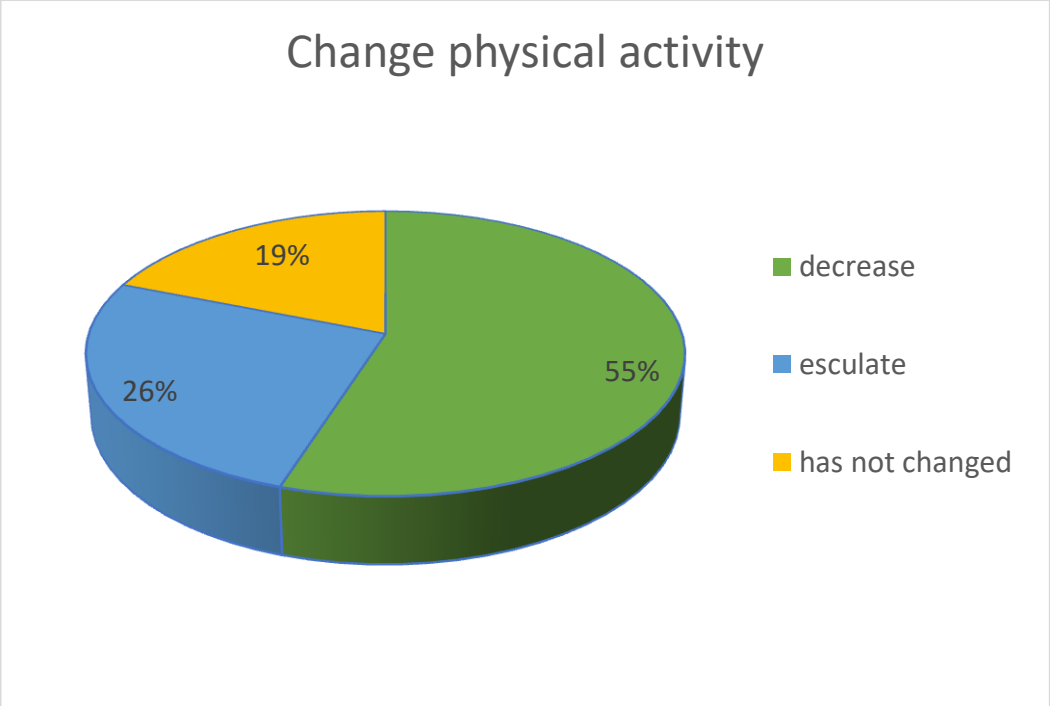

Figure 3 Change in physical activity level during lockdown among adults participating in the study.

Based on the study, it can be said that almost half of the respondents did not notice any change in the amount of food consumed during the lockdown. It was also observed that 32% of them noticed an increase in the amount of food consumed, while ¼ of the respondents decreased the amount of food consumed (22%). It was also found that by far the highest number of adults participating in the study snack sometimes between meals (154 people), even 52 people believe that they do it often, while in contrast to the rest of the people 31 people declared that they never eat between meals. Half of the adults in the survey drink between 1-1.5 liters of water per day, 22% of them more, between 1.5 liters and 2 liters, the least respondents drink more than 2 liters of water. The number of people who declared to drink even less than 1 liter is only 9%. It is disturbing to note that in the surveyed group the vast majority of adults declared that they do not smoke cigarettes (181 people). In contrast, the difference between the number of respondents who smoke cigarettes regularly and those who smoke sometimes is small.

When asked about the change in mood during lockdown, the majority of respondents said it had gotten worse (60%), with 31% noticing no change. An optimistic message from this study is that some people even felt better (9%) (Fig.4.).

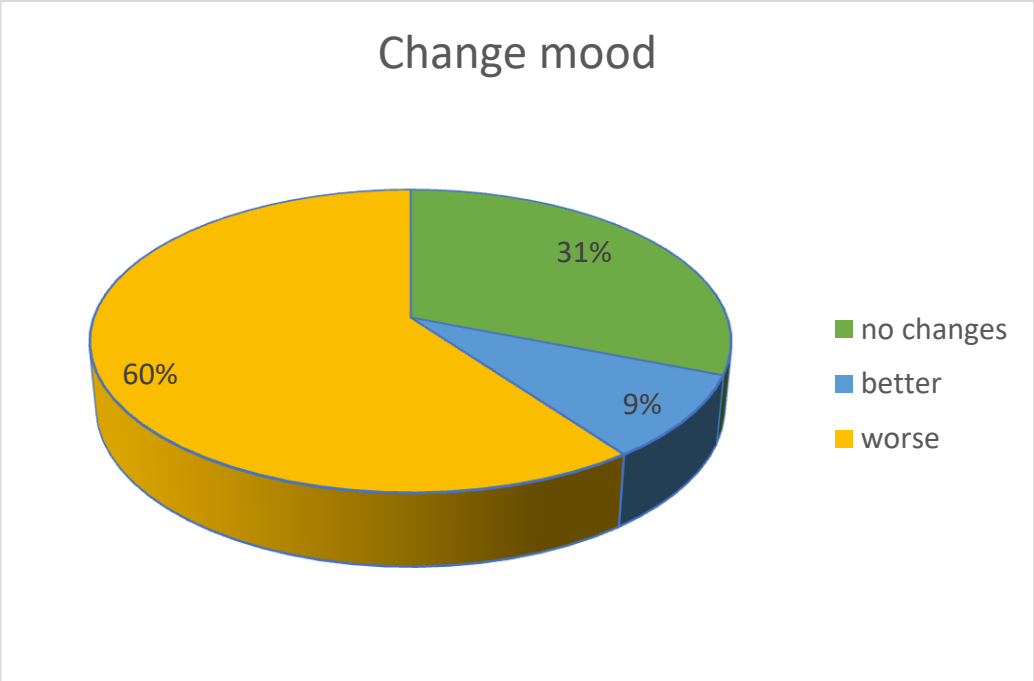

Figure 4 Change in mood during lockdown among adults participating in the survey.

Most respondents consume milk and dairy products and meat and meat products once a day. Legumes, sweets are most commonly consumed several times a week. Fast food and alcohol are consumed once a month or less frequently by most of the respondents (Table I).

Table I Frequency of consumption of different groups of products among adults

Frequency of consumption	Several times a day	Once a day	A few times a we	Once a week	Several times a month	Once a month or less	Never
Milk and dairy products	43	85	66	13	15	8	7
Meat and meat products	32	65	91	7	11	6	25
Legumes	11	19	73	60	44	27	3
Fruit	49	87	66	18	12	4	1
Vegetables	94	79	50	9	4	0	1
Sweets	25	58	81	27	29	12	5
Fast foods	1	2	22	51	61	72	28
Alcohol	2	4	26	32	62	69	42

Discussion

In the study conducted, as many as 36% of people noticed an increase in body weight. It is very important to pay attention to ensure that the body weight is not too high. Care should be taken not to lead to overweight obesity. The recent months marked by the COVID-19 pandemic have shown that special attention should be given to those facing such problems (Olszanecka-Glinianowicz, Dudek, Filipiak, Krzystanek, Markuszewski, Ruchała, Tomiak, 2020). It was noted that overweight and obesity in patients with SARS-CoV-2 incidence increased the risk of severe pneumonia up to 142% (Tamara, Tahapary, 2020). In the lockdown versus overweight and obesity study, the vast majority of respondents were women, which may suggest a greater interest in this topic among women than men.

Most of the respondents in the study changed their work mode to remote, most likely due to the fact that many companies located in Poland had to adapt to new restrictions to ensure the safety of their employees. As a result, some people who work stationary have switched to working remotely to reduce the possibility of contracting COVID-19.

According to many studies, it can be concluded that nutrition is of great importance to the health of any individual. Improper nutrition is a major risk factor for the development of many diseases of civilization, including obesity, which impairs the functions of the immune system in many different mechanisms. Obesity, among others, is a source of many inflammatory markers through increased body fat (Jankowska, Suszczewicz, 2020). In addition, proper nutrition affects the function of the gut microbiome. The effect of nutrition on the immune system plays a significant role to reduce or mitigate the course of infection. The antigens of the intestinal microflora model the immune mechanisms accordingly (Besedovsky, Lange, Born, 2012).

It is also worth noting the change in the level of physical activity in the respondents, which decreased. This is probably due to the closure of gyms, swimming pools, aqua parks, and group sports activities such as aerobics, zumba or yoga are also cancelled. According to available studies, it can be concluded that regular physical activity may mitigate the risk of mental problems among people during the pandemic (Rajkumar, 2020). In the study of Mazur et al. it is concluded that the physical activity of the studied group of people during the pandemic was sufficient. They also reported an increase in physical activity and time spent on it compared to what it was before the pandemic quite the opposite of the above study when most of the respondents reported a decrease in their physical activity during that time (Mazur, Saran, Adamek, 2020). According to Nieman's work, any series of moderate physical activity results in a better immune response and with regularity provides many health benefits (Nieman, 2000).

Also important is the worsening of mood during lockdown among the respondents, which may have been influenced by many factors such as: change in work mode, closure of many sports facilities, fear related to getting sick or loss of a loved one. All these factors generate strong and chronic stress and may be a consequence of increased risk of many problems related to mental functioning, and may even contribute to depression (Bohlken, Schömig, Lemke, Pumberger, Riedel-Heller, 2020).

It is also worth noting that the consumption of fruits and vegetables in the diet is very important. In Jankowska's paper on natural methods of immune support in the fight against coronavirus, we can read about the fact that they are really important because they show anti-inflammatory effect and are also attributed to high content of vitamins, carotenoids and others. The results of the above study seem to be alarming in this regard, as one can observe a too low intake of mainly fruits as well as vegetables, which according to the rules should make up to 2/3 of what we eat (Jankowska, Suszczewicz, 2020). Vegetables and fruits contain large amounts of vitamins that affect the modulation of immune responses and transcription factors that affect the production of cytokines and prostaglandins (Besedovsky, Lange, Born, 2012).

The author's study shows that a large proportion of respondents under-consume dry pulses. The protein in these products is very important in a diet that stimulates immunity, including resistance to coronavirus (Jankowska, Suszczewicz, 2020).

Conclusions:

1. The COVID-19 pandemic affected the way of working among the study participants.
2. Physical activity decreased in more than half of the respondents during lockdown.
3. Pandemic COVID-19 negatively affected mood in more than half of the respondents.

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