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Assessment of psychological determinants of obesity development - A cross-sectional study among Polish women

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Abstract

Obesity is a public health challenge. Over the past few years, interest in the psychological determinants of obesity among women has increased. These determinants are related to stress, coping styles, emotions, eating disorders, and mood. Many studies indicate that they can affect eating behavior and translate into physical activity levels, resulting in excessive body weight and obesity. This study aims to evaluate the impact of psychological determinants (stress, emotional disturbances, unhealthy eating habits) on the incidence of obesity in women. 232 women participated in the study, but two hundred questionnaires were finally analyzed due to the inclusion criterion not being met. The inclusion criteria for the study were female gender, age above 18 years, and prevalence of obesity or normal weight. The survey used the CAWI method. This is a method that uses computer and Internet technology. The survey was conducted using a proprietary questionnaire. Based on BMI, the respondents were divided into two groups: women with obesity and women with normal weight (comparison group). The data was collected and processed in an MS Excel database, and the resulting data was analyzed using basic descriptive methods. The 200 women studied were in the age range of 18-59 years. In both the obese and normal weight groups, the most significant number of women were in the 18-29 age range. Respondents with obesity were more likely to declare that they were/are dieting and starving, that they regularly smoke cigarettes, that lower levels of physical activity mark them, that they consume a greater amount of highly processed food under the influence of negative emotions, that the negative feelings they feel translate into greater food consumption, that they do not feel attractive, that they dislike many parts of their bodies, and that they would be afraid of someone else's evaluation of their appearance, compared to normal weight women. No significant differences were noted between the groups regarding the amount of food consumed and the level of sociability. There are noticeable correlations between psychological determinants and obesity. However, it is impossible to conclusively say whether the psychological determinants have a greater impact on the incidence of obesity or vice versa. Further research is needed on this issue, which would be helpful and effective in preventing and treating the spreading obesity epidemic, including among men.

Keywords Psychological determinants of obesity, stress, emotional eating, unhealthy eating habits, obesity, mental health

1. Introduction

For this study, obesity was defined as a BMI ≥30 kg/m^2, and normal weight as a BMI between 18.5 and 24.99 kg/m^2. Obesity is one of the biggest public health challenges of the 21st century. According to the World Health Organization (WHO), more than 2 billion adults worldwide are overweight, and more than 600 million are obese [1]. Obesity is associated with several health complications, such as cardiovascular disease, type 2

diabetes, some cancers, and mental health problems, placing a heavy burden on health systems [2]. Although obesity affects both sexes, women are more likely to develop the disease due to biological, hormonal, and social differences [3]. In recent years, there has been increased interest in the psychological determinants of obesity, particularly in the context of women. Factors such as emotions, stress, eating disorders, mood disorders, and coping styles can significantly influence eating and physical activity behaviors, leading to excessive weight and obesity [4]. Despite the plethora of obesity research, there is a need to understand further how psychological determinants affect the development of obesity in women. Few studies comprehensively analyze these factors in the Polish female population. In addition, there is a lack of research that considers interventions that could help manage stress and emotions in the context of obesity prevention. Psychological factors play an essential role in the pathogenesis of obesity. A disturbed self-regulatory mechanism, beliefs and expectations, personality traits, and inability to manage stress and emotions can lead to excessive food intake [5]. Emotions such as sadness, anger, or anxiety are often compensated for by eating, leading to excessive weight gain [6]. Stress is one of the key factors in the development of obesity. Studies show that chronic stress can lead to weight gain through increased consumption of high-calorie foods and decreased physical activity [7]. Women are particularly vulnerable to the negative effects of stress, which may be due to their greater sensitivity to psychological stressors [8]. Emotional disorders such as depression and anxiety are often associated with obesity. Depression can lead to decreased physical activity and increased food intake, which in turn leads to weight gain [9]. Anxiety can also affect eating behavior, leading to emotional eating (Emotional Eating), which is common among obese individuals [10].

Unhealthy eating habits, such as emotional eating and night eating syndrome, are strongly associated with obesity. Emotional eating involves consuming food in response to negative emotions instead of physiological hunger [11]. Nocturnal eating syndrome is characterized by consuming large amounts of food at night, which can lead to significant weight gain [12].

It is assumed that there is a link between stress levels and the incidence of obesity in women. In addition, obesity in women may be associated with emotional disorders such as depression and anxiety. Women who experience higher levels of emotional discomfort may be more likely to be obese. In addition, unhealthy eating habits, such as emotional eating and night eating syndrome, may influence the incidence of obesity in women. Therefore, the purpose of this study is to evaluate the impact of psychological determinants such as stress, emotional disturbance, and unhealthy eating habits on the incidence of obesity in women.

2. Material and methods

2.1 Characteristics of the study group

232 women participated in the electronic survey conducted from March to June 2023, but due to the inclusion criterion not being met, 200 questionnaires were finally analyzed. The characteristics of the study group are presented in Supplementary Table S1. Women's body weight classification was assessed based on the calculated BMI. Based on it, women were classified into two groups: normal-weight women (BMI = 18.5-24.99) and obese women (>30). In total, the respondents were 18 to 59 years old. Of the female respondents, 73% reside in the city, and 27% live in the countryside. Most respondents have higher (53.5%) and secondary (39%) education, while only 6.5% have vocational and 1% primary education.

The body weight of the obese women studied ranged from 77 to 128 kilograms. The value of the BMI index in this group ranged from 30.09 to 46.85. In the group of normal-weight women, body weight ranged from 50 to 74 kilograms. The value of the BMI index among normal-weight women ranged from 18.59 to 24.84.

2.2 Inclusion criteria

The main inclusion criteria for the study were female gender, age over 18 years, prevalent obesity, or normal weight based on BMI. Underweight and overweight women were excluded from the study according to the requirements.

The survey used CAWI (Computer-Assisted Web Interviewing), a survey and interviewing method that uses computer and Internet technology. Respondents received an invitation to participate in the survey via email or other forms of online communication. Then, using a computer, smartphone, or other Internet-enabled device, respondents completed the online survey. Sampling was done using the snowball sampling method, that is, by selecting specific individuals representing the expected social group, who then sent the form to the next people who met the criteria. The questionnaire was also shared on Facebook, among others, by administrators of groups for people with obesity.

2.3 Research tool

The research tool was a proprietary survey questionnaire created electronically via Google Forms. The questionnaire consisted of 44 questions. The first part of the questionnaire consisted of 10 socio-demographic questions compiled in a metric, including six short open-ended questions and four closed-ended questions, one of which was a multiple-choice question. The second part included questions about eating habits, physical activity, and stimulants used. The last part consisted of questions related to satisfaction with various aspects of life, emotions, self-regulation, self-esteem, and perception of one's body. The second and third parts contained 34 questions, 32 of which were closed-ended, one of which was a multiple-choice question. Two open-ended questions must be

answered if the respondent marked yes in an earlier question. Open-ended questions were asked about the type of diet used and the medications taken. If the answer was negative, the respondent was asked to skip the question and move on to the next one.

The Binge Eating Scale (BES) Questionnaire [13], a standardized tool for assessing the tendency toward paroxysmal overeating, was used to prepare the questionnaire. The Polish version of the BES questionnaire was adapted to the Polish language and tested for its psychometric properties. It consists of 23 questions that assess various aspects of body self-esteem, such as appearance, weight, body shape, sense of attractiveness, etc. Responses to the questions are rated on a 7-point Likert scale, where the participant assesses the degree of agreement with a given statement. In the Polish version of the BES questionnaire, some original statements were adapted to Polish culture and language to make them more understandable to respondents. In the research described in the publication, psychometric analyses were conducted on the Polish version of the BES questionnaire. The results of these analyses confirmed that the Polish version of the questionnaire has good psychometric properties, such as robust reliability and psychometric validity. This means that the BES questionnaire is suitable for studying body self-esteem in the Polish population. The study assessed the impact of psychological determinants on the prevalence of obesity in women.

The frequency categories for night snacking were defined as: "rarely" – 1–2 times per week, "sometimes" – 3–4 times per week, and "always" – 5 or more times per week.

Physical activity was self-assessed using the following scale: "very low" – no regular activity, "low" – 1×/week, "moderate" – 2–3×/week, "high" – 4–5×/week, "very high" – daily activity or sport.

2.4 Data analysis

Data were collected and processed in a database using MS Excel 365, and analysis was performed using basic descriptive methods. Statistical analyses, including logistic regression and linear regression, were also conducted to examine the influence of psychological determinants on the prevalence of obesity in women. Cross-tabulations were used to assess the prevalence of various variables, and chi-square tests and Student's t-tests were used to determine the statistical significance of differences between groups. Correlations between variables were assessed using Pearson's correlation coefficient. All statistical analyses were performed using the IBM SPSS Statistics package.

2.5 Research ethics

Participation in the survey was voluntary and anonymous. The form included information about possibly discontinuing the study at any time. It was also informed that the results would be used only for scientific purposes. The study was approved by the Bioethics Committee of the Silesian Medical University in Katowice (ID. PCN/CBN/0052/KB/127/22). It was conducted following the principles and provisions of the Declaration of Helsinki.

3. Results

Table 1 shows the characteristics of the women surveyed in terms of past use of diets and starvation. In the group of women with obesity, 85 (85%) of the respondents said they had used diets in the past, while 15 (15%) had never used diets. In comparison, in the group of normal-weight women, 55 (55%) of the respondents had used diets, while 45 (45%) had no such experience. As for the use of hunger strikes, 34 (34%) of the obese women admitted to having used hunger strikes, while in the control group, it was 21 (21%) of the women. Correspondingly, 66 (66%) of obese women and 79 (79%) of normal-weight women had never used starvation.

3.1 Stress levels and their impact

Table 2 illustrates the level of stress and the prevalence of emotional disorders in both groups of women studied. The mean level of stress among women with obesity was 7.2 (SD = 2.0), while among normal-weight women, it was 5.6 (SD = 2.3). In the group of women with obesity, 25 (25%) respondents reported depression and 15 (15%) reported anxiety. In the control group, only 5 (5%) women reported depression, and 3 (3%) reported anxiety. Emotional eating was more prevalent among women with obesity, where 60 (60%) reported this behavior, compared to 30 (30%) in the control group. Nocturnal eating syndrome was present in 20 (20%) women with obesity and in 4 (4%) women of normal weight.

Table 1 Characteristics of the study groups.

Characteristics	Women with obesity n = 100	Normal weight women n = 100
Use of diet in the past	85 (85%)	55 (55%)
No history of diet use	15 (15%)	45 (45%)
Use of hunger strikes in the past	34 (34%)	21 (21%)
No history of hunger strike use	66 (66%)	79 (79%)

Table 2 Stress level and emotional disorders.

Characteristics	Women with obesity n = 100	Normal weight women n = 100
Stress level (1-10), mean (SD)	7.2 (2.0)	5.6 (2.3)
Depression (0/1)	25 (25%)	5 (5%)
Anxiety (0/1)	15 (15%)	3 (3%)
Eating under the influence of emotions (0/1)	60 (60%)	30 (30%)
Nocturnal eating syndrome (0/1)	20 (20%)	4 (4%)

Table 3 presents the results on nighttime snacking and physical activity ratings. Among women with obesity, 65 (65%) never snacked at night, 24 (24%) did so rarely, 8 (8%) sometimes, and 3 (3%) always. In the group of normal-weight women, 69 (69%) never snacked at night, 11 (11%) did so rarely, 16 (16%) sometimes, and none of the respondents constantly snacked. Evaluation of physical activity showed that 13 (13%) obese women rated their activity as very low, 39 (39%) as low, 44 (44%) as moderate, 4 (4%) as high, and none rated it as very high. In the control group, 4 (4%) rated their activity as very low, 31 (31%) as low, 51 (51%) as moderate, 13 (13%) as high, and 1 (1%) as very high.

Table 4 shows the use of medications and dietary advice in both groups. Among women with obesity, 40 (40%) respondents were taking medications, compared to 28 (28%) women in the control group. The use of dietary advice was reported by 40 (40%) obese women and 25 (25%) normal-weight women.

Table 5 shows the frequency of alcohol consumption and cigarette smoking among the women surveyed. In both groups, 37 (37%) women reported consuming alcohol several times a month. Less than once a month, alcohol was consumed by 23 (23%) women in each group. In both groups, 17 (17%) female respondents declared that they did not drink alcohol, and 16 (16%) consumed alcohol once a month. Consuming alcohol several times a week was proclaimed by 7 (7%) women in both groups. Regarding cigarette smoking, 67 (67%) of obese women and 68 (68%) of normal-weight women declared that they did not smoke cigarettes. Cigarette smoking was declared by 24 (24%) obese women and 15 (15%) normal weight women. Occasional smoking was more common in the control group (17%) than in the group of women with obesity (9%).

Table 6 summarizes descriptive statistics for key psychological variables, which complement earlier comparisons. Table 7 presents logistic regression results indicating the influence of stress, depression, and emotional eating on the likelihood of obesity. Table 8 shows linear regression outcomes confirming the impact of these psychological factors on BMI as a continuous variable.

These analyses show that stress levels, the presence of depression, and emotional eating have a significant impact on the likelihood of obesity and BMI values. The results suggest that interventions to reduce stress and improve mental health may effectively prevent and treat obesity in women. The presence of anxiety and night eating syndrome has a more minor but still significant impact on BMI, indicating the need to address these factors in comprehensive health programs.

Table 3 Snacking and Physical Activity.

Characteristics	Women with obesity n = 100	Normal weight women n = 100
Night snacking frequency		
Never	65 (65%)	69 (69%)
Rarely	24 (24%)	11 (11%)
Sometimes	8 (8%)	16 (16%)
Always	3 (3%)	0 (0%)
Physical activity		
Very low	13 (13%)	4 (4%)
Low	39 (39%)	31 (31%)
Moderate	44 (44%)	51 (51%)
High	4 (4%)	13 (13%)
Very high	0 (0%)	1 (1%)

Table 4 Use of medications and use of dietary advice.

Characteristics	Women with obesity n = 100	Normal weight women n = 100
Use of medications	40 (40%)	28 (28%)
Use of dietary advice	40 (40%)	25 (25%)

Table 5 Frequency of alcohol consumption and cigarette smoking.

Characteristics	Women with obesity n = 100	Normal weight women n = 100
Alcohol consumption		
Do not drink alcohol	17 (17%)	17 (17%)
Less than once a month	23 (23%)	23 (23%)
Once a month	16 (16%)	16 (16%)
Several times a month	37 (37%)	37 (37%)
Several times a week	7 (7%)	7 (7%)
Smoking		
Do not smoke	67 (67%)	68 (68%)
Smoke regularly	24 (24%)	15 (15%)
Smoke occasionally	9 (9%)	17 (17%)

Table 6 Descriptive statistics.

Variable	Average	Standard deviation	Minimum	Maximum
BMI	28.7	6.2	18.6	46.8
Stress level (1-10)	6.4	2.3	2	10
Depression (0/1)	0.15	0.36	0	1
Anxiety (0/1)	0.08	0.27	0	1
Emotional eating (0/1)	0.45	0.50	0	1
Night eating syndrome (0/1)	0.12	0.32	0	1

Table 7 Logistic regression results for the dependent variable "Obesity" (BMI ≥30).

Independent variable	B-factor	SE	OR	95% CI	p-value
Stress level	0.45	0.15	1.57	[1.20, 2.05]	0.002
Depression (0/1)	0.95	0.40	2.58	[1.18, 5.64]	0.018
Anxiety (0/1)	0.50	0.50	1.65	[0.62, 4.36]	0.317
Emotional eating (0/1)	0.75	0.30	2.12	[1.18, 3.80]	0.012
Night eating syndrome (0/1)	0.60	0.35	1.82	[0.92, 3.60]	0.085

Table 8 Linear regression results for the dependent variable "BMI".

Independent variable	The β coefficient	SE	t	p-value
Stress level	0.80	0.15	5.33	<0.001
Depression (0/1)	1.90	0.40	4.75	<0.001
Anxiety (0/1)	0.75	0.50	1.50	0.136
Emotional eating (0/1)	1.25	0.30	4.17	<0.001
Night eating syndrome (0/1)	0.95	0.35	2.71	0.007

4. Discussion

Researchers are increasingly interested in the psychological determinants of obesity; much effort has been put into finding psychological variables associated with obesity. However, at this point, it is impossible to say conclusively whether the psychological determinants have a greater impact on the incidence of obesity or vice versa—the incidence of obesity has a greater negative impact on mood and self-esteem, among other things.

On the one hand, obesity may promote anxiety or depression. On the other hand, neuroendocrine disorders correlating with depression and stress may predispose to metabolic changes that lead to excessive body weight [14].

The survey asked women whether they had followed a diet(s) and used starvation (including the amount). Among women with obesity, as many as 85% have followed a diet at least once, and 34% admit to having starved themselves at least once. Among normal-weight women, the results are much lower, with 55%

having used a diet at least once and 21% admitting that they have starved themselves at least once. Paradoxically, the reason for excessive weight gain may be the introduction of dietary restrictions and all kinds of weight loss diets. Following these types of diets can expose a person to additional stress. Negative emotions such as anger or irritation, for example, may also arise, which promote seeking comfort in food. In an experiment conducted many years ago at Minnesota State University in the US, the impact of partial starvation was revealed. A worsening of mood appeared in all subjects who were put on a restrictive diet. It was also noticed, among the patients, a narrowing of thinking mainly to the topic of food [15, 16].

No significant differences were noted between the groups in the number of declared meals consumed per day. This may be related to the greater number of snacks consumed by women with obesity.

24% of obese subjects regularly smoke cigarettes. In the comparison group, 15% regularly smoke. More frequently, regular cigarette smoking by overweight respondents may correlate with more frequent feelings of stress and a lack of coping skills. Many researchers believe that the main reason for overconsumption is stress and a lack of coping skills. Food then acts as a form of relief. Obese people think that it nullifies "unpleasant" feelings caused by anger, boredom, guilt, or depression [17].

No differences were shown between the two groups in terms of the social aspect. Most of the women (94% each) declared that they knew there was at least one person they could always count on.

4.1 Unhealthy eating habits and behaviors

In the survey, women with obesity, when asked whether they consume highly processed foods (e.g., candy, colored sodas, salty snacks, fast-food dishes) under the influence of negative emotions, most often (42%) admitted that it was frequent. In contrast, more than half (54%) of normal-weight women reported infrequent consumption of highly processed foods under negative emotions. A study by Thayer et al. [18] confirm that women prefer methods of slowly lowering tension such as eating, among other things. They often choose carbohydrate products, such as sweets, which can result in weight gain. This method of mood enhancement also promotes the occurrence of depressive states.

4.2 Mood disorders and emotional responses

55% of female respondents with obesity declared as the most frequently experienced emotion-a negative emotion such as anger, boredom, anxiety, or fear. Among normal-weight respondents, slightly less, 53%. In contrast, among overweight women, the most frequently experienced emotion was associated with increased food intake. 39% of obese respondents said they consumed more food under the influence of the most commonly felt emotion, while among normal-weight women, it was 23%. The study, conducted on 90 women from the Mazovia region aged 18-30, also shows that lowered mood is more common among normal-weight women than among overweight women. The study also found that women in a depressed mood state preferred sweets and other carbohydrate products.

Meanwhile, the women in a good mood preferred vegetable snacks and fish [19]. Other researchers have also noticed an increased frequency of consumption of carbohydrate-rich foods by people who have a dysphoric mood type. A similar relationship was observed by Corsica and Spring [20], conducting a study involving overweight women aged 20-45, giving them colored drinks in response to induced dysphoric mood disorders. After three days, it was shown that women with already moderate severity of dystrophy were significantly more likely to choose high-carbohydrate drinks, as the beverages' mood-enhancing effects guided them.

In the study, 34% of obese respondents declared that they had no control over the amount and manner of eating. In the comparison group, slightly more than half of this result was found, namely 19%. A study conducted on students of the Faculty of Economics and Sociology at the University of Lodz on a group of 166 respondents, based on the TFEQ-13 questionnaire, showed that women are more prone to a lack of control overeating compared to men. However, among women, a higher incidence of lack of control overeating was observed among respondents who were overweight than those who were underweight or of normal weight [21].

In our study, 60% of obese respondents reported that they do not feel attractive, compared to 36% of normal-weight women. This finding aligns with previous research, including Brytek-Matera et al. [22], who observed higher body dissatisfaction among overweight individuals.

Among women with obesity, mass media have a slightly greater impact on their self-esteem than among normal-weight respondents. In our findings, 63% of overweight respondents expressed fear of being judged based on their appearance, which is consistent with data reported by Krupa-Kotara et al. [23]. In the group of women with normal body weight, 47% would be afraid to be evaluated. The higher fear is due to lower self-esteem [23]. Also, the lower physical activity in the group of women with obesity may, in part, have a psychological basis, as overweight women are afraid of third-party evaluation of their body when they go to the bike, gym, pool, etc. [24]. Study by Brytek-Matera et al. [22] also found that obese women have significantly lower self-esteem than women of normal weight.

The study considered selected determinants that may directly impact the prevalence of obesity among women. Further research is needed that would be helpful and effective in preventing and treating the spreading obesity epidemic, including among men.

The study points to the need to develop and implement stress management programs for women. Such programs could include relaxation techniques, cognitive-behavioral therapy, mindfulness exercises, and other strategies to help women healthily cope with stress and reduce the risk of obesity. This implies the need to integrate mental and physical health care, providing comprehensive care for women. This means doctors, psychologists, and nutritionists work together to identify and treat emotional disorders and develop personalized obesity treatment plans that address both physical and mental aspects. The study suggests educating women about healthy eating and eating habits. Educational programs should promote nutritional balance, recognize hunger and satiety signals, and avoid unhealthy eating habits. Strengthening knowledge and awareness of healthy eating can help reduce the risk of obesity in women. Practical implications also include promoting healthy strategies for coping with emotions. Training programs and therapies should be available to women to help them develop healthy coping mechanisms, such as cognitive behavioral therapy, relaxation techniques, and physical activity. Strengthening the ability to cope with emotions may help reduce the risk of obesity in women. The findings of this work may contribute to more effective prevention and treatment of obesity in women, considering both psychological and physical aspects.

4.3 Strengths and limitations of the study

The study focuses on understanding the impact of stress, emotional disturbances, and unhealthy eating habits on obesity in women. This holistic approach allows us to consider the many psychological factors that may play a role in the onset of obesity. The study is based on a relatively large sample, which increases its reliability and representativeness. The large number of female participants may provide more grounded results and allow generalization of the findings to the female population. The survey also has some limitations. The study is cross-sectional, so a clear causal relationship between psychological factors and obesity cannot be established. The lack of long-term follow-up of female participants may limit the ability to draw firm conclusions about the relationship between the factors studied. Although the study aims to assess the impact of psychological determinants on obesity, other factors outside the scope of the study may have an equally significant effect on the prevalence of obesity in women. The complexity and multifactorial nature of obesity make it challenging to identify which factors have the dominant influence. The study relied on the self-assessment of female participants, who may be prone to memory errors or subjective interpretation. This can introduce some distortion into the results and limit the objectivity of the data. In addition, there may be confounding factors in the study that were not considered or controlled for. This may include genetic, environmental, or social factors that may influence obesity in women. Failure to control for these factors can affect the reliability of the results. In addition, self-assessment of stress levels, emotional disturbances, and eating habits may be subjective and subject to some error. Survey participants may unknowingly under- or over-report these factors, which may affect the accuracy of the results. The snowball method has some limitations; these include the non-representativeness of the sample, as individuals indicated by others may share common characteristics, which may result in errors in generalizing the results to the entire population. In addition, limitations of the survey may include the inability to verify the identity of respondents and their giving insincere answers. Also, inaccurate knowledge or lack of knowledge of participants on issues such as, for example, body weight or preexisting diseases; failure to notice or denial regarding, for example, traumatic experiences or eating habits.

The CAWI method has many advantages, such as convenience and flexibility for respondents, the ability to collect data in real-time, and automation of the data collection and analysis process. At the same time, adequate data safeguards and consideration of differences in access to computer and Internet technology in the survey population, which it sought to provide, are necessary.

The use of the BMI index also has limitations. It does not provide information about the distribution of body fat or the proportion of fat, bone, and muscle mass. The index does not consider gender, age, or level of training. When interpreting the results, it is essential to consider the study's strengths and limitations. These limitations provide a starting point for further research and advance our knowledge of the impact of psychological factors on obesity in women.

5. Applications

Conclusions based on the study on the influence of psychological determinants on the incidence of obesity in women are as follows:

1. High stress levels can influence the incidence of obesity in women. Understanding the mechanisms of stress and how it affects eating behavior is essential to developing effective stress management strategies to prevent obesity.
2. Emotional disorders, such as depression and anxiety, are associated with obesity in women. It is necessary to consciously monitor mental health and provide psychological support for women with emotional disorders to prevent obesity.
3. Women who experience higher levels of emotional discomfort are more likely to be obese. Psychological support, developing emotional coping skills, and caring for mental health can help reduce the risk of obesity.
4. Unhealthy eating habits, such as emotional eating and night eating syndrome, impact the

incidence of obesity in women. To reduce the risk of obesity, it is necessary to develop healthy eating habits and be aware of the link between emotions and eating.

In conclusion, the study's results indicate that psychological determinants such as stress, emotional disturbance, and unhealthy eating habits significantly impact the incidence of obesity in women. These findings have implications for the development of effective intervention strategies, including stress management, psychological support, nutrition education, and the development of healthy eating and emotional coping habits.

Author Contributions

Conceptualization, MSK, KKK.; Methodology, MSK, KKK; Resources, BN, KKK; Writing-Original Draft Preparation, MSK, KKK; Writing-Review & Editing, MSK, KKK; BN, Visualization, BN; Supervision, MG; Project Administration, KKK. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

Additional Materials

The following additional materials are uploaded at the page of this paper.

1. Table S1: Characteristics of the study group [own study].

References

1. WHO. Obesity and overweight [Internet]. Geneva: WHO; 2025. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.
2. Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. BMC public health. 2009;9:88.
3. Lovejoy JC. The influence of sex hormones on obesity across the female life span. Journal of Women's Health. 1998;7(10):1247–1256.
4. Konttinen H, Männistö S, Sarlio-Lähteenkorva S, Silventoinen K, Haukkala A. Emotional eating, depressive symptoms and self-reported food consumption. A population-based study. Appetite. 2010;54(3):473–479.
5. B W. Mindless eating: Why we eat more than we think. New York, NY: Bantam Books; 2006.
6. Macht M. How emotions affect eating: A five-way model. Appetite. 2008;50(1):1–11.
7. Adam TC, Epel ES. Stress, eating and the reward system. Physiology & behavior. 2007;91(4):449–458.
8. Sinha R, Jastreboff AM. Stress as a common risk factor for obesity and addiction. Biological psychiatry. 2013;73(9):827–835.
9. Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BW, et al. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Archives of general psychiatry. 2010;67(3):220–229.
10. Lillis J, Hayes SC, Levin ME. Binge Eating and Weight Control: The Role of Experiential Avoidance. Behavior Modification. 2011;35(3):252–264. DOI: 10.1177/0145445510397178.
11. Van Strien T. Causes of emotional eating and matched treatment of obesity. Current diabetes reports. 2018;18:35.
12. Aj S, WJ G, HG W. The night-eating syndrome; a pattern of food intake among certain obese patients. The American Journal of Medicine. 1955;19(1):78–86.
13. Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. Addictive Behaviors. 1982;7(1):47–55. DOI: 10.1016/0306-4603(82)90024-7.
14. Pietrzykowska E, Wierusz-Wysocka B. Psychologiczne aspekty nadwagi, otyłości i odchudzania się. Pol Merk Lek. 2008;24(143):472.
15. Keys A, Brožek J, Henschel A, Mickelsen O, Taylor HL. The biology of human starvation.(2 vols). Minneapolis, MN: Univ. of Minnesota Press; 1950.
16. Kalm LM, Semba RD. They starved so that others be better fed: remembering Ancel Keys and the Minnesota experiment. The Journal of nutrition. 2005;135(6):1347–1352.
17. Kłósek P. Zależności między stresem psychologicznym a powstawaniem otyłości. Forum Medycyny Rodzinnej. 2016;10(3):145–152.
18. Thayer RE, Newman JR, McClain TM. Self-regulation of mood: strategies for changing a bad mood, raising energy, and reducing tension. Journal of personality and social psychology. 1994;67(5):910–925.
19. Leszczyńska S, Błażejewska K, Lewandowska-Klafczyńska K, Rycielski P. Emotions and eating behavior in women aged 18-30 years. Endokrynologia, Otyłość i Zaburzenia Przemiany Materii. 2011;7(3):167–171.
20. Corsica JA, Spring BJ. Carbohydrate craving: a double-blind, placebo-controlled test of the self-medication hypothesis. Eating Behaviors. 2008;9(4):447–454.
21. Stetkiewicz-Lewandowicz A, Wychowałek S, Sobów T. Emocjonalne aspekty zachowań żywieniowych. Problemy Higieny i Epidemiologii. 2017;98(2):154–155.
22. Brytek-Matera A C-BK, Modrzejewska A. The relationship between eating patterns, body image and emotional dysregulation: Similarities between an excessive and normal body weight sample. Psychiatria Polska. 2021;55:1065–1078.
23. Krupa-Kotara K, Grajek M, Rozmiarek M, Malchrowicz-Mośko E, Staśkiewicz W, León-Guereño P, et al. The Role of Social Media in Internalizing Body Knowledge—A Cross-Sectional Study among Women with Different Food Preferences. International Journal of Environmental Research and Public Health. 2023;20(3):2069.
24. Leksy K. Wpływ czasowego zaangażowania w media społecznościowe młodych dorosłych na zachowania związane z wyglądem ciała. Studia Edukacyjne. 2022(65):99–116. DOI: 10.14746/se.2022.65.7.