

Psychological correlates of obesity

Karolina Krupa-Kotara¹, Dominik Gorzawski^{2,3}, Beata Nowak³, Katarzyna Barylska⁴, Pawel Juraszek⁴, Mateusz Grajek^{4,*}

¹ Department of Epidemiology, Faculty of Health Sciences in Bytom, Medical University of Silesia in Katowice, 41-902 Bytom, Poland

² Silesian College of Medicine in Katowice, 40-085 Katowice, Poland

³ Student Scientific Society, Department of Epidemiology, Faculty of Public Health in Bytom, Medical University of Silesia in Katowice, 41-902 Bytom, Poland

⁴ Department of Public Health, Department of Public Health Policy, Faculty of Health Sciences in Bytom, Medical University of Silesia in Katowice, 41-902 Bytom, Poland

* **Corresponding author:** Mateusz Grajek, mgrajek@sum.edu.pl

CITATION

Krupa-Kotara K, Gorzawski D, Nowak B, et al. (2024). Psychological correlates of obesity. *Applied Psychology Research*. 3(1): 1233.
<https://doi.org/10.59400/apr.v3i1.1233>
3

ARTICLE INFO

Received: 22 March 2024

Accepted: 16 April 2024

Available online: 28 May 2024

COPYRIGHT



Copyright © 2024 by author(s).
Applied Psychology Research is published by Academic Publishing Pte. Ltd. This work is licensed under the Creative Commons Attribution (CC BY) license.
<https://creativecommons.org/licenses/by/4.0/>

Abstract: Obesity is not only a medical problem, but also a psychological one. People with obesity often experience stigma, discrimination, and prejudice, which can lead to low self-esteem, depression, and anxiety. In addition, unhealthy eating habits are often linked to emotions such as stress, sadness, or boredom, which can lead to eating in excess. For this reason, understanding the psychological aspects of obesity is important for effective intervention in this area. Many factors influence the development of obesity, including genetic, hormonal, environmental, and behavioral factors. One of the most important factors is lifestyle, particularly eating habits. People with obesity are often characterized by unhealthy eating habits, such as high-calorie and processed foods, a lack of meal regularity, and excessive consumption of sweets and sweetened beverages. This article focuses on the relationship between psychological factors and eating behavior in people with obesity. Gathering this information is important for understanding what factors may influence the development and persistence of obesity and what psycho-dietetic strategies may be effective in changing eating habits and reducing weight.

Keywords: obesity; psychological correlates; psychosocial determinants; overweight

1. Introduction

Obesity is one of the biggest health problems of the 21st century and is affecting an increasing number of people around the world. According to the World Health Organization (WHO) (n.d.), obesity is a chronic, non-communicable disease characterized by excessive accumulation of body fat. It is estimated that in 2016, there were more than 1.9 billion overweight adults worldwide, and more than 650 million obese people (Bray et al., 2017; WHO, n.d.).

According to the World Health Organization (WHO), the percentage of people with giant obesity (BMI \geq 40) in the general population is 2%–4%. However, this percentage is increasing in some countries, including the United States, Mexico, Egypt, and Saudi Arabia, where it is 5%–7% or more. In Europe, the percentage is about 1.5%–2%, and in Poland, it is estimated to affect about 200,000 people (Malnick and Knobler, 2016; Stepaniak et al., 2015; WHO, n.d.).

The causes of obesity are complex and related to many factors, such as genetics, lifestyle, diet, physical activity, mental health, and social determinants. Age is also an important risk factor, as many people gain weight as they age. It is worth noting that obesity is of particular importance because it is associated with serious health

consequences, such as cardiovascular disease, diabetes, respiratory disease, and cancer (Afshin et al., 2017; Ogden et al., 2012).

Obesity is the result of complex interactions between genetic, environmental, and behavioral factors. There is no single cause for this type of obesity, but many risk factors have been identified that contribute to its development (**Table 1**). Among the etiological factors of obesity are:

Table 1. Etiological factors of obesity [own elaboration based on Bray et al. (2017), Bessesen (2018), Kahan and Manson (2018), WHO (n.d.)].

Etiological factor	Description
Genetics	Heritability accounts for about 40%–70% of the variation in body weight. Many genes associated with obesity have been identified, including genes related to appetite regulation and metabolism.
Excessive calorie supply and lack of physical activity	Consuming more calories than the body needs and lack of regular physical activity are major risk factors for obesity.
Stress	Stress can lead to emotional eating and excessive calorie consumption.
Sleep disorders	Improper sleep is linked to the risk of obesity and metabolic diseases.
Socio-economic factors	poverty, lack of education, lack of access to healthy food and physical activity, and poor quality of life associated with obesity.
Diseases and drugs	Certain diseases, such as Cushing’s syndrome, thyroid disease, and medications such as antidepressants and corticosteroids, can contribute to overweight and obesity

2. Consequences of obesity

The consequences of obesity affect many aspects of patients’ lives, both health, psychological, social, and economic. Among the health consequences, the most common are cardiovascular disease, diabetes, respiratory disease, osteoarticular disease, and some types of cancer. Obesity can also lead to a reduction in life expectancy and quality of life, due to limitations in physical activity, difficulty performing daily activities, and physical complaints and pain (Centers for Disease Control and Prevention, n.d.; National Institute of Diabetes and Digestive and Kidney Diseases, n.d.; WHO, n.d.).

3. Health effects

Obesity has particularly serious health and social consequences. Examples include:

- A. Cardiovascular diseases: obesity is one of the most important risk factors for cardiovascular diseases such as coronary heart disease, heart attack, and stroke. According to studies, people with obesity have up to 12 times the risk of coronary heart disease compared to people of normal weight (Yusuf et al., 2005).
- B. Diabetes: obesity increases the risk of type 2 diabetes, which is one of the most common chronic diseases worldwide (Hu, 2011).
- C. Respiratory diseases: obesity increases the risk of respiratory diseases such as obstructive pulmonary disease, sleep apnea, and asthma (Camargo et al., 1999).
- D. Osteoarthritis: obesity increases the risk of osteoarthritis, such as osteoarthritis and osteoarthritis (Felson et al., 1988).

- E. Cancer: obesity increases the risk of certain cancers, including colorectal cancer, pancreatic cancer, breast cancer in postmenopausal women, or prostate cancer in men (Krupa-Kotara and Dakowska, 2019; Renehan et al., 2008).

4. Social and economic impact

Discrimination and stigmatization, in many cases, affect people with weight problems. People with obesity often face these phenomena in society, which can lead to social isolation and emotional problems. Also, difficulty finding a job or advancing to higher positions can result in lower income and financial problems. Higher health or medical costs, as well as lower quality of life, limits on physical activity, difficulty in performing daily activities, and physical ailments and pain, cause overweight and obese people to withdraw from many sectors of public life (Cawley and Meyerhoefer, 2012; Fontaine and Barofsky, 2001; Puhl and Heuer, 2009; Roehling et al., 2007).

Psychological factors such as stress, depression, eating disorders, and personality disorders play an important role in the onset and development of obesity. People with psychological disorders are more likely to be obese and have difficulty maintaining a healthy weight. Psychological factors influence emotional eating, which is one of the main mechanisms leading to overweight and obesity (Czajkowska et al., 2017; Konttinen, 2018; Puhl and Heuer, 2009; Sánchez-Villegas et al., 2015).

The psychological factors of obesity are complex and include both genetic, biological, and environmental factors. Among them are:

- a) Depression and stress: Studies have shown that people with obesity are more likely to experience symptoms of depression and stress than people of normal weight, which may lead to overconsumption of food as a way of coping with emotional difficulties.
- b) Lack of impulse control: People with obesity may have difficulty controlling their impulses, leading them to eat unhealthy foods, snack frequently between meals, and eat more than they need.
- c) Lack of self-acceptance and low self-esteem: People with obesity often experience negative feedback from other people, which leads to a lack of self-acceptance and low self-esteem. This in turn can lead to a poor diet, a lack of physical activity, and other behaviors that promote weight gain.
- d) Food addiction: Some people with obesity may experience food addiction, which is like drug or alcohol addiction. This behavior can lead to excessive food consumption, even when the person is not hungry.
- e) Poor eating habits: People with obesity may have bad eating habits, such as eating in a hurry, eating while watching TV, and eating more than needed, leading to excessive calorie consumption and weight gain.
- f) Low levels of physical activity: Lack of physical activity can lead to excess body weight and obesity, as well as affect mental health, which in turn affects eating behavior (Luppino et al., 2010; Singh et al., 2008; Volkow et al., 2008).

5. Individual factors

Individual factors are referred to as an individual's personality traits, preferences, and habits that influence their behavior and decision-making. These can play a key

role in unhealthy dietary choices.

6. Temperament

Temperament is a term used to characterize biological, individual differences in emotionality, reactivity, and regulation, particularly during childhood. It has been defined as the biological “core” of personality, which is stable over time, and refers to an individual’s level of activity, rhythms, moods, and related cognitive functions (Chetcuti et al., 2021; Luciano et al., 2020).

Temperament refers to early differences in emotional reactivity. Both temperamental tendencies to experience negative emotions and low inhibitory control are associated with many psychiatric disorders, while other dimensions, such as levels of extraversion, vary between, and possibly even within, disorders.

There are many methods for assessing temperament. By far the most widely used method of temperament assessment is the questionnaire, in which either parents assess their children or individuals assess themselves. Another assessment system uses standardized observation or laboratory measures, in which children are put through various procedures and their behavior is coded by trained observers (Rettew and McKee, 2005).

A study on the influence of temperament by Cierpialkowska et al. (2014) found that people with obesity are more likely to exhibit traits such as lower self-esteem, timidity, shyness, a lack of assertiveness, high levels of anxiety, and difficulty regulating emotions. As a result, they may have difficulty coping with stress, which often leads to emotional overeating and increased susceptibility to weight gain (Al-Kandari and Crews, 2012; Cierpialkowska et al., 2014).

7. Personality

Personality is a description of an individual’s tendencies when acting or reacting to others. It describes an enduring pattern of experience and behavior in the interpersonal and social spheres. Defined as a creature of relationships, which consists of a unique way of relating to oneself, others, and the world. Several aspects of personality, such as defense mechanisms, relationship dynamics, and reactions, are often emphasized during medical care; therefore, understanding a patient’s personality allows the clinician to make informed predictions about how a particular patient may respond to illness and how care interactions can be modified to optimize engagement and care outcomes (Oldham, 2020; Redelmeier et al., 2021).

It has been shown that personality can influence eating behavior and lifestyle, which in turn can affect the development of obesity (**Table 2**). There are various personality traits that can affect the risk of obesity, such as:

Table 2. Personality traits that may affect the risk of obesity [own compilation based on Chamorro and Flores-Ortiz (2010), Konttinen et al. (2010), Terracciano et al. (2009), Luppino et al. (2010)].

Factor	Level	Effect
Neuroticism	higher level of neuroticism	Excessive consumption in response to stress or difficult emotions
Extroversion	lower levels of extraversion	Less physical activity and a tendency to engage in risky eating behaviors
Conscientiousness	lower level of conscientiousness	less self-control and discipline
Openness to experience	higher level of openness to experience	A greater tendency to experiment with different types of food

8. Self-awareness

Self-awareness is defined as the ability to become the subject of one's attention. It includes processing both public and private information about oneself. It is a complex and multidimensional phenomenon that affects various areas of our lives and has a variety of effects. In a state of self-awareness, the body actively identifies, processes, and stores information about itself. At the same time, it gives a sense of continuity as a person over time and a sense of distinctiveness from the rest of the environment. This allows one to better understand one's needs, goals, values, and relationships with other people. Self-awareness is not a static process. It can change depending on life experiences, stress levels, or other external factors. Developing self-awareness is an important part of the process of personal development and enables people to better understand themselves and make more informed decisions in life (Morin, 2011).

Self-awareness can affect people with obesity in several ways. First, high levels of self-awareness can prompt individuals to better monitor their lifestyle and eating habits, which can help maintain a healthy weight. On the other hand, low self-esteem and a lack of self-confidence associated with obesity can lead to a lack of motivation to change their lifestyle. Obese people often feel social pressure related to their appearance and weight, which can worsen their self-esteem and increase their risk of depression and other emotional disorders.

Research shows that high self-awareness can promote weight loss and improved health. For example, a study of people with obesity indicated that higher levels of self-awareness were associated with greater effectiveness in changing eating habits and increasing physical activity (Teixeira et al., 2012). Another study found that high levels of self-esteem and positive thinking in people with obesity positively influenced the effectiveness of obesity treatment and improved health (Carels, 2005).

9. Self-regulation

Self-regulation is a key aspect of human functioning that facilitates the successful pursuit of personal goals. It is a broad term that refers to the dynamic process of determining a desired end state and taking action to achieve it, monitoring progress on an ongoing basis. Self-regulation involves directing one's behavior toward a desired end state. Goals can be defined as specific desired behaviors, thoughts, attitudes, or emotional states. Examples include exercise, being compassionate, or contentment (Inzlicht et al., 2021).

Self-regulation involves regulating not only behavior but also thoughts and emotions. It can be seen as a term that encompasses a wide range of goal-related activities, such as deciding which goal to pursue, planning how to achieve it, and implementing plans. Self-regulation encompasses the various ways in which people modify their thoughts, feelings, and behaviors in the service of a personal goal, including making efforts to control themselves. Self-control represents one form of self-regulation, but not all forms of self-regulation include self-control (Inzlicht et al., 2021).

In the case of obesity, self-regulation can make a difference in controlling caloric intake and maintaining healthy eating habits.

Studies have shown that people with obesity may have difficulties with self-regulation, leading to unhealthy eating habits and physical inactivity. One reason may be a disruption of executive functions, which are responsible for controlling behavior and making decisions.

According to a study by Van den Berg et al. (2011), people with obesity have difficulty making decisions about eating and physical activity, suggesting problems with self-regulation. In other words, these individuals may have difficulty controlling their behavior and making decisions that are beneficial to their health (O'Neil and Jarrell, 2013).

10. Stress

Stress is a complex phenomenon that can be divided into several types: physical, psychological, and organizational. Another division is between negative stress (distress) and positive stress (eustress). Nowadays, stress is described using three concepts: process, strategy, and coping style.

Prolonged experience of stress significantly affects the functioning of the body, contributing to diseases of the musculoskeletal, digestive, and circulatory systems, as well as lowered immunity. Stressful situations also contribute to sleep disorders, the incidence of depression and neurosis, and cancer, and are common causes of substance abuse (Gajda, 2020).

In response to emotional or physical stress, the human body elicits a complex physiological response that is known but still not fully understood. The biology of stress is discussed using the terms allostasis (the normal response to stress and the reason why stress exists), allostatic load (when the stress response becomes dysfunctional and leads to disease), and allostatic load index (a study of stress in humans). Stress triggers a response via the autonomic nervous system and the hypothalamic-pituitary-adrenal axis to activate different areas of the brain via mediators such as dopamine, serotonin, and many others (Cool and Zappetti, 2019).

The general adaptation syndrome, which is also known in the literature as "Selye's syndrome," divides the total stress response into three phases:

- alarm phase
- resistance phase
- exhaustion phase

The sudden release of neurotransmitters from the sympathetic and central nervous systems, as well as hormones from the adrenal cortex and medulla, pituitary,

and other endocrine glands, plays a role in the acute stress response (Tan and Yip, 2018).

One way to combat stress is to sleep, because during sleep, the body regenerates and recovers. However, sleep must be of good quality and the right length. In addition to sleep, an important aspect is taking care of a healthy, balanced diet. During stressful situations, excessive consumption of alcohol, coffee, and sweets should be avoided. The diet must be rich in vegetables, fruits, and products that contain a lot of magnesium and iron. It is also advisable to consume herbal infusions, such as lemon balm or chamomile, and drink plenty of water, which has a positive effect on the condition of the body. Regular exercise, such as cycling, swimming, gymnastics, and walking, not only improves overall physical condition but also helps relax and reduce stress (Suliga et al., 2022).

People with obesity often eat in excess in response to stress or difficult emotions, leading to so-called emotional overeating. In addition, stress can also reduce motivation to take weight loss measures and increase the risk of obesity recurrence after weight loss. In turn, coping with stress is an important factor in maintaining a healthy lifestyle and maintaining a healthy body weight. Individuals who positively cope with stress are more likely to engage in stress-reducing activities, such as physical activity and meditation. In addition, people who effectively cope with stress are less likely to turn to food as a form of stress management (Gibson, 2012; Quick et al., 2013; Torres and Nowson, 2007).

11. Locating the sense of control

Locus of control is referred to as the primary individual difference variable that reflects individuals' beliefs about the degree of control they have over events in their lives. This phenomenon represents the degree to which an individual believes that life events are the result of his or her actions (Galvin et al., 2018; Kesavayuth et al., 2018).

According to a study by Langelaan et al. (2017), people with obesity tend to exhibit localized external control, which can lead to lower effectiveness in changing their eating habits and leading a more active lifestyle.

Similar results were obtained in a study by Boggiano et al. (2015), who found that obese individuals were more likely to exhibit localized external control than normal-weight individuals.

12. A sense of self-efficacy

Self-efficacy is part of the Social Cognitive Theory developed by psychologist Albert Bandura. He argues that learning takes place in a social context with a reciprocal interaction between personal (or cognitive), environmental, and behavioral factors. Personal (or cognitive) factors include knowledge, expectations, and attitudes. Environmental factors include social norms and the influence of others in the environment on the individual. Self-efficacy refers to the belief in one's ability or competence to complete a goal or task or influence an outcome. Measurement of self-efficacy can be general, task-related (e.g., physical activity), or related to control in a specific area (e.g., health, work, finances). Self-efficacy is a theoretically and empirically robust motivational belief that plays an important role in learning and

developing new skills and knowledge (Bourne et al., 2021; Farmer et al., 2022; Klassen and Klassen, 2018).

Self-efficacy plays an important role in health behaviors, including weight loss efforts in people with obesity. People who believe in their ability to make positive changes in their lives are more likely to make efforts to change their lifestyles, which can contribute to weight loss. On the other hand, people with low self-efficacy may more easily give in to food temptations and avoid physical activity, making the weight loss process more difficult (Bandura, 2004; Schwarzer and Renner, 2000; Womble et al., 2009).

13. Systemic factors

Systemic factors in psychology are external factors that influence an individual's behavior and decision-making, such as family and environment, behavioral modeling, critical events, and traumatic life experiences.

Systemic factors can affect people with obesity in a variety of ways, including:

Availability of healthy foods—Individuals with obesity may have limited access to healthy food options due to geographic location, lack of choice in grocery stores, or lack of affordability. This can lead them to choose high-calorie, processed, or fast foods that promote weight gain (Powell-Wiley, 2014).

Health care system—People with obesity may face unfavorable treatment from medical personnel or a lack of support around weight management, which may affect their ability to manage their obesity (Puhl and Heuer, 2009).

Health policies—Health policies, such as programs that promote healthy eating or exercise programs, can influence the behavior of people with obesity. One example is the introduction of taxes on sweetened beverages, which can raise awareness of the negative effects of consuming large amounts of sugar and discourage sugar abuse (Brownell, 2009).

Work environment—Long working hours and a lack of physical activity on the job can affect the risk of obesity. Employers who promote healthy eating habits and physical activity among their employees can help reduce the risk of obesity (Pronk and Kottke, 2009).

Education system—The education system can influence people's knowledge and attitudes toward healthy lifestyles and nutrition. Educational programs aimed at children and adolescents can help form healthy eating habits that contribute to reducing the risk of obesity in later life (Story et al., 2008).

14. Influence of family and environment

There are many research methods aimed at understanding the etiology of disorders such as psychopathy and antisocial behavior, as well as related traits. Behavior genetics research projects are useful in elucidating the influence of genetic and environmental factors (i.e., nature and nurture) and determining their relative magnitudes. They are an important first step in understanding etiology and identifying specific candidate genes and environmental risk factors. Family studies do not allow the separation of genetic and environmental influences, as these factors are intertwined in two-generation families. In contrast, twin and adoption studies make it possible to

separate genetic and environmental influences and estimate their relative magnitudes simultaneously (Waldman et al., 2018).

Recent research confirms that many of the key risk and protective factors for the development of aggression and violence have their roots in the family system. Family risks begin before birth and include genetic and epigenetic processes. Stress factors in the environment (such as poverty or conflict) can affect development directly or indirectly through disrupted parental behavior, including high levels of negative emotions, low levels of warmth, harshness, and exposure to violence. At the same time, the family can be a powerful adaptive system against threats of aggression and violence. Parents can support a child's healthy behavioral development by showing warmth, providing structure and pro-social values, and supporting the child's adaptive resources and community. Effective interventions often lead to a reduction in aggression and violence by supporting parents and families (Labella and Masten, 2018).

The family and immediate environment can have a significant impact on the development and maintenance of obesity in affected individuals, among them:

Obesity can have a genetic basis, so people who have a family history of obesity have a higher risk of developing the problem. In addition, there are studies suggesting that genes may influence the tendency to choose unhealthy foods and the difficulty of maintaining a healthy lifestyle.

Parents can influence the development of obesity in their children by introducing unhealthy eating habits, failing to encourage physical activity, or overly controlling eating. It is also worth paying attention to how parents relate to their bodies and appearance, as this can affect self-esteem and increase the risk of eating disorders.

On the other hand, family can be an important support for a person with obesity if they set a goal to introduce healthy eating habits and physical activity. The family can help prepare meals, motivate them to exercise, and provide emotional support.

Home environment—The home environment can influence the dietary choices and physical activity of a person with obesity. The availability of healthy foods, the presence of exercise equipment, or the presence of a TV in the bedroom can all influence eating and physical activity behaviors.

Friends—Friends can also influence the dietary choices and physical activity of a person with obesity. Research suggests that people with obesity are more likely to maintain friendships with other people with obesity, which may contribute to each other's unhealthy eating habits.

On the other hand, people who surround themselves with friends with healthy lifestyles are more likely to maintain healthy eating habits and physical activity.

15. Modeling behavior

Social learning theory posits that people learn behavior by observing others and imitating them. This process is called modeling, which includes both imitation, or direct imitation, and identification, or imitation based on the similarity between the model and the imitator. People's behavior is shaped by their interactions with the environment, especially with other people. People who act as models can have a strong influence on what behavior is imitated, to what extent, and under what circumstances.

In doing so, the emotions that accompany the modeling process are also an important factor. Pleasant or unpleasant affective experiences can influence what behaviors will be remembered and imitated in the future. Social learning and modeling theory posits that people learn by observing and imitating others and that this process is shaped by interactions with the environment and by the emotions that accompany the process (Bandura, 2021). Modeling behavior, or imitating the attitudes and actions of others, can have a major impact on people with obesity (Ogden, 2003; Robinson et al., 2013).

16. Critical events and traumatic life experiences

Critical events and traumatic life experiences can influence the development of obesity in some people. First of all, the stress that accompanies such experiences can lead to excessive consumption of high-calorie foods, which can in turn lead to weight gain. In addition, people who have experienced traumatic events often struggle with emotional disorders, such as depression or anxiety disorders, which can also lead to eating disorders.

Studies show that people who have experienced trauma in childhood have a higher risk of obesity later in life. In contrast, in adults with obesity, childhood trauma experiences are often associated with more emotional disturbances, which in turn can affect their eating habits (Danese and Tan, 2014; Mason et al., 2014).

Research suggests that many people with eating disorders experience an inner “voice” that may play a role in eating pathology. Research on the inner voice in people with eating disorders has highlighted a link between voice appraisal and eating psychopathology in mental anorexia nervosa. However, this experience can occur in different subtypes of eating disorders and may be related to childhood traumatic experiences. A study of a group of people with eating disorders found that a strong inner voice regarding eating disorders was positively correlated with childhood experiences of emotional abuse and dissociation. In addition, strong and sympathetic voice evaluations about eating disorders were associated with more negative attitudes toward eating across diagnostic groups but were not related to eating behavior or weight. These findings suggest that eating disorder voice may be an important factor in eating pathology, regardless of the eating disorder diagnosis. The therapeutic implications of this research may be to bring attention to this experience and integrate its assessment and treatment into therapy for people with eating disorders. This may require understanding the mechanisms of trauma and dissociation and working on processing these experiences (Pugh et al., 2018).

Eating disorder models should also consider developmental aspects related to affect regulation, interpersonal style, self-concept, and mentalization, which are well described within attachment theory. Research indicates that higher levels of insecure attachment are associated with greater eating disorder symptoms and that poor parental care and early trauma can lead to insecure attachment and increased eating disorder symptoms. It is worth noting that the relationship between insecure attachment and eating disorder severity is likely mediated by dysregulation and perfectionism.

Treatment of eating disorders should address both the cognitive and behavioral aspects of the disorder, as well as developmental factors related to affect regulation,

interpersonal style, self-concept, and mentalization, and refer to attachment theory and reflexive functioning (Tasca, 2019).

17. Eating disorders

Eating disorders affect 13% of girls and women and are characterized by chronicity, relapse, distress, functional impairment, and an increased risk of obesity, depression, suicide, substance abuse, and future mortality. Since 80% of people with eating disorders do not receive treatment, a public health priority is the widespread implementation of eating disorder prevention programs that have proven effective in reducing their future incidence or symptoms.

Over the past 10 years, the concept of eating disorders has expanded significantly to include binge eating disorder (BED).

18. Paroxysmal overeating syndrome

Paroxysmal overeating syndrome (BED) is a mental disorder characterized by recurrent episodes of overeating without compensatory measures.

According to DSM-5 criteria, paroxysmal overeating disorder (BED), like bulimia nervosa (BN), is characterized by recurrent episodes of overeating (i.e., episodes of increased food intake with loss of control) at least once a week for the past three months. However, unlike BN, BED disorder is characterized by the absence of inappropriate compensatory behaviors (such as vomiting, fasting, or excessive physical activity). Because of excessive caloric consumption, BED is strongly associated with obesity. It is a much more serious disorder than simple overeating, as it is associated with greater feelings of subjective discomfort related to eating behavior. The disorder often negatively affects the quality of life, is associated with psychopathological features (mainly stress, negative emotions, depression, or anxiety), and increases the risk of medical comorbidities (e.g., metabolic syndrome: mainly type 2 diabetes, hypercholesterolemia, and hypertension).

The epidemiology of BED in people with obesity has been widely reported in the literature. According to a study conducted in the United States, about 30% of obese people have symptoms of BED (Udo and Grilo, 2018).

In studies conducted on obese populations in Europe, the percentage of people with BED symptoms ranged from 17% to 28%. In Poland, according to studies conducted on an obese population, the percentage of people with BED symptoms is about 26.4% (Juczyński and Ogińska-Bulik, 2017; Kessler et al., 2013).

The epidemiology of BED in obese individuals has also shown that this eating disorder is more common in women than in men. Studies have shown that the percentage of women with obesity and BED symptoms is about 40%, while the percentage in men is about 15%–20% (Vancampfort et al., 2013).

For eating disorders, the main recommended treatment according to current national and international guidelines is a form of psycho-behavioral therapy, which can most often be provided in an outpatient setting. Individuals with more severe symptoms, or who do not improve with less restrictive care, may be treated in a partial (day) or full hospital program. Therapies that are evidence-based and delivered by clinic-based eating disorder care providers are considered most effective and are

preferred by people with eating disorders. This approach can also be more cost-effective and reduce hospitalizations.

In addition to specific psychological therapy, treatment must address important coexisting nutritional, physical, and health problems and should be carried out by a multidisciplinary team. Such a team should minimally include a psychological therapist as well as a family physician, dietitian, internal medicine/pediatric specialist, psychiatrist, nurses, exercise therapist, activity/occupational therapist, and a social worker or family therapist.

Most patients with BED have multiple psychiatric disorders. As many as 67.0% of patients with BED have had at least one additional mental disorder during their lifetime, and 37.0% have at least one current mental disorder, with mood and anxiety disorders being the most common comorbidities. About 30.0%–80.0% of people with BED have comorbid mood and anxiety disorders during their lives, but also other pathologies, such as bipolar disorder. In addition, there is evidence of impulse control disorders in patients with BED.

In addition, most patients with BED present abnormalities in their psychological well-being, including aspects such as autonomy, environmental control, self-acceptance, and emotional regulation. Another common feature of BED is an overestimation of body shape and weight, which correlates strongly with greater eating-related psychopathology, greater experiences of psychological distress, and a poorer prognosis of the disease. Psychological distress can also have direct consequences in the form of suicidal behavior, especially in those with depressive symptoms within BED.

From a holistic point of view, to understand the complexity of paroxysmal overeating disorder, many factors need to be considered, such as environmental factors (cultural-social and family patterns) and individual factors (biological, genetic, and psychological), as well as the interactions between them.

Epidemiological studies indicate that BED is the most common eating disorder and shows little gender difference. Despite the existing literature on the prevalence and health impact of BED, the disorder is still often overlooked in large-scale research initiatives that use such data to determine the disease burden associated with various health conditions (Erskine and Whiteford, 2018).

19. Conclusions

The research provides important information on psychological factors and eating behaviors associated with obesity. This information can help design prevention and education programs targeting people with obesity or those at risk of obesity. It can help identify people at high risk of obesity due to psychological factors, such as low self-esteem or problems with emotion regulation. On this basis, psychological interventions and support can be tailored to better meet individual needs.

Information from research can serve as an educational tool, helping people with obesity and society in general to understand how psychological factors and eating behaviors affect obesity. This can help raise awareness of the issue. Areas where people with obesity need psychological support, such as coping with stress and improving self-esteem, have been shown. This could be useful in designing treatment

programs. This information may provide a starting point for further research into the psychological mechanisms associated with obesity.

They may also suggest the need to develop therapeutic strategies that consider psychological aspects. Information from the study may influence the development of health policies and approaches to combating obesity. And it also provides evidence for the need to invest in psychological aspects of health within health programs.

Author contributions: Conceptualization, KKK and DG; methodology, DG; resources, KB and PJ; writing—original draft preparation, DG; writing—review & editing, KKK; visualization, PJ and BN; supervision, MG; project administration, MG. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflicts of interest.

References

- Al-Kandari, Y. Y., & Crews, D. E. (2012). College obesity: emotional distress, body image disturbance, and binge eating among males and females. *Journal of American College Health*, 60(1), 43-50.
- Bandura, A. (2004). Health Promotion by Social Cognitive Means. *Health Education & Behavior*, 31(2), 143–164. <https://doi.org/10.1177/1090198104263660>
- Bandura, A. (2021). *Psychological Modeling*. Routledge. <https://doi.org/10.4324/9781003110156>
- Bessesen, D. H. (2018). Obesity assessment and management. *Med Clin North Am*, 102(1), 1.
- Boggiano, M. M., Wenger, L. E., Turan, B., et al. (2015). Investigating the role of emotional eating in weight management: Challenges and opportunities. *Frontiers in Psychology*, 6, 1-14.
- Bourne, M. J., Smeltzer, S. C., & Kelly, M. M. (2021). Clinical teacher self-efficacy: A concept analysis. *Nurse Education in Practice*, 52, 103029. <https://doi.org/10.1016/j.nepr.2021.103029>
- Bray, G.A., Kim, K.K., Wilding, J. P. H., et al. (2017). Obesity: a chronic relapsing progressive disease process. A position statement of the World Obesity Federation. *Obes Rev*, 18(7), 715-723. <https://doi.org/10.1111/obes.12551>
- Brownell, K. D., Farley, T., Willett, W. C., et al. (2009). The Public Health and Economic Benefits of Taxing Sugar-Sweetened Beverages. *New England Journal of Medicine*, 361(16), 1599–1605. <https://doi.org/10.1056/nejmhpr0905723>
- Camargo, C. A., Weiss, S. T., Zhang, S., et al. (1999). Prospective Study of Body Mass Index, Weight Change, and Risk of Adult-onset Asthma in Women. *Archives of Internal Medicine*, 159(21), 2582. <https://doi.org/10.1001/archinte.159.21.2582>
- Carels, R. A., Darby, L., Cacciapaglia, H. M., et al. (2005). Applying a stepped-care approach to the treatment of obesity. *J Psychosom Res*, 59(6), 375–83. <https://doi.org/10.1016/j.jpsychores.2005.04.006>
- Cawley, J., & Meyerhoefer, C. (2012). The medical care costs of obesity: An instrumental variables approach. *Journal of Health Economics*, 31(1), 219–230. <https://doi.org/10.1016/j.jhealeco.2011.10.003>
- Centers for Disease Control and Prevention. (n.d.). Adult Obesity Causes & Consequences. Available online: <https://www.cdc.gov/obesity/adult/causes.html> (accessed on 1 March 2024).
- Chamorro, R., Flores-Ortiz, R. (2010). Personality traits and eating behavior in the general population. *Revista de Psicología y Salud*, 21(3), 293-299.
- Chetcuti, L., Uljarević, M., Ellis-Davies, K., et al. (2021). Temperament in individuals with Autism Spectrum Disorder: A systematic review. *Clinical Psychology Review*, 85, 101984. <https://doi.org/10.1016/j.cpr.2021.101984>
- Cierpialkowska, R., Siwek M., Wolak, M., et al. (2014). Temperament and character traits of obese subjects. *Psychiatria Polska*, 48(4), 673-686.
- Czajkowska, A., Oblacińska, A., Jodkowska, M. (2017). Psychological Determinants of Obesity in Children and Adolescents - a Systematic Review. *Annals of Agricultural and Environmental Medicine*, 24(4), 595-602. <https://doi.org/10.26444/aaem/79627>
- Danese, A., & Tan, M. (2013). Childhood maltreatment and obesity: systematic review and meta-analysis. *Molecular Psychiatry*, 19(5), 544–554. <https://doi.org/10.1038/mp.2013.54>

- Erskine, H. E., & Whiteford, H. A. (2018). Epidemiology of binge eating disorder. *Current Opinion in Psychiatry*, 31(6), 462–470. <https://doi.org/10.1097/ycp.0000000000000449>
- Felson, D. T. (1988). Obesity and Knee Osteoarthritis. *Annals of Internal Medicine*, 109(1), 18. <https://doi.org/10.7326/0003-4819-109-1-18>
- Fontaine, K. R., & Barofsky, I. (2001). Obesity and health-related quality of life. *Obesity Reviews*, 2(3), 173–182. <https://doi.org/10.1046/j.1467-789x.2001.00032.x>
- Gajda, E., Biskupek-Wanot, A. (2020). Stress and its effects. In: Biskupek-Wanot, A., Wanot, B., Kasprowska-Nowak, K. (editors). *Physical activity and stress issues*. Wydawnictwo Naukowe Uniwersytetu Humanistyczno-Przyrodniczego im. Jana Długosza w Częstochowie.
- Galvin, B. M., Randel, A. E., Collins, B. J., et al. (2018). Changing the focus of locus (of control): A targeted review of the locus of control literature and agenda for future research. *Journal of Organizational Behavior*, 39(7), 820–833. <https://doi.org/10.1002/job.2275>
- Gibson, E. L. (2012). Emotional influences on food choice: sensory, physiological and psychological pathways. *Physiology & behavior*, 107(4), 643-651.
- Gu, D., & Dupre, M. E. (2021). *Encyclopedia of Gerontology and Population Aging*. Springer Nature. <https://doi.org/10.1007/978-3-030-22009-9>
- Hu, F. B. (2011). Globalization of Diabetes. *Diabetes Care*, 34(6), 1249–1257. <https://doi.org/10.2337/dc11-0442>
- Inzlicht, M., Werner, K. M., Briskin, J. L., et al. (2021). Integrating Models of Self-Regulation. *Annual Review of Psychology*, 72(1), 319–345. <https://doi.org/10.1146/annurev-psych-061020-105721>
- Kahan, S., Manson, J. E. (2018). Obesity management: Update on lifestyle therapy and bariatric surgery. *Circulation*, 137(10), e201-203.
- Kesavayuth, D., Ko, K. M., & Zikos, V. (2018). Locus of control and financial risk attitudes. *Economic Modelling*, 72, 122–131. <https://doi.org/10.1016/j.econmod.2018.01.010>
- Kessler, R. C., Berglund, P. A., Chiu, W. T., et al. (2013). The Prevalence and Correlates of Binge Eating Disorder in the World Health Organization World Mental Health Surveys. *Biological Psychiatry*, 73(9), 904–914. <https://doi.org/10.1016/j.biopsych.2012.11.020>
- Klassen, R. M., & Klassen, J. R. L. (2018). Self-efficacy beliefs of medical students: a critical review. *Perspectives on Medical Education*, 7(2), 76–82. <https://doi.org/10.1007/s40037-018-0411-3>
- Konttinen, H., Haukkala, A., Sarlio-Lähteenkorva, S., et al. (2010). Emotional eating, depressive symptoms and self-reported food consumption. A population-based study. *Appetite*, 14(8), 1045-1054.
- Konttinen, H., Sarlio-Lähteenkorva, S., Silventoinen, K., et al. (2018). Emotional Eating, Depression and Overweight Among Finnish Adults: A Population-Based Study. *Appetite*, 1(2), 347-354. doi: 10.1016/j.appet.2004.05.007
- Krupa-Kotara, K., Dakowska D. (2019). The impact of obesity on cancer: a review of the literature. *Journal of Educational, Health and Sport*, 9(7), 263-277.
- Labella, M. H., & Masten, A. S. (2018). Family influences on the development of aggression and violence. *Current Opinion in Psychology*, 19, 11–16. <https://doi.org/10.1016/j.copsyc.2017.03.028>
- Luciano, M., Janiri, D., Fiorillo, A., et al. (2020). Clinical Picture, Temperament, and Personality of Patients with Mixed States. *Psychiatric Clinics of North America*, 43(1), 15–26. <https://doi.org/10.1016/j.psc.2019.10.002>
- Luppino, F. S., de Wit, L. M., Bouvy, P. F., et al. (2010). Overweight, Obesity, and Depression. *Archives of General Psychiatry*, 67(3), 220. <https://doi.org/10.1001/archgenpsychiatry.2010.2>
- Malnick, S. D., Knobler, H. (2016). The medical complications of obesity. *QJM: An International Journal of Medicine*, 109(7), 423-440.
- Mason, S. M., Flint, A. J., Roberts, A. L., et al. (2014). Posttraumatic Stress Disorder Symptoms and Food Addiction in Women by Timing and Type of Trauma Exposure. *JAMA Psychiatry*, 71(11), 1271. <https://doi.org/10.1001/jamapsychiatry.2014.1208>
- Morin, A. (2011). Self-Awareness Part 1: Definition, Measures, Effects, Functions, and Antecedents. *Social and Personality Psychology Compass*, 5(10), 807–823. <https://doi.org/10.1111/j.1751-9004.2011.00387.x>
- National Institute of Diabetes and Digestive and Kidney Diseases. (n.d.). Health Risks of Being Overweight. Access protocol: Available online: <https://www.niddk.nih.gov/health-information/weight-management/health-risks-overweight> (accessed on 1 March 2024).

- Ogden, J. (2003). The role of peer models in the development of weight-related behaviors. *Obesity research*, 11(2), 5-11.
- Ogden, C. L., Carroll, M. D., Kit, B. K., et al. (2012). Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010. *JAMA*, 307(5), 483. <https://doi.org/10.1001/jama.2012.40>
- Oldham, M. A. (2020). Personality-Informed Care: Speaking the Language of Personality. *Psychosomatics*, 61(3), 220–230. <https://doi.org/10.1016/j.psych.2020.01.005>
- O'Neil, P. M., Jarrell, M. P. (2013). Psychological aspects of obesity. *Medsurg Nursing*, 22(4), 238-242.
- Powell-Wiley, T. M., Ayers, C. R., de Lemos, J. A., et al. (2014). Disparities in physical activity and sedentary behaviors among US children and adolescents: prevalence, correlates, and intervention implications. *Journal of public health policy*, 35(1), 67-90.
- Pronk, N. P., & Kottke, T. E. (2009). Physical activity promotion as a strategic corporate priority to improve worker health and business performance. *Preventive Medicine*, 49(4), 316–321. <https://doi.org/10.1016/j.ypmed.2009.06.025>
- Pugh, M., Waller, G., & Esposito, M. (2018). Childhood trauma, dissociation, and the internal eating disorder 'voice.' *Child Abuse & Neglect*, 86, 197–205. <https://doi.org/10.1016/j.chiabu.2018.10.005>
- Puhl, R. M., & Heuer, C. A. (2009). The Stigma of Obesity: A Review and Update. *Obesity*, 17(5), 941–964. <https://doi.org/10.1038/oby.2008.636>
- Quick, V. M., Byrd-Bredbenner, C., & White, A. A. (2013). Overweight, obesity, and collegiate academic performance. *Journal of American college health*, 61(5), 280-287.
- Redelmeier, D. A., Najeeb, U., & Etchells, E. E. (2021). Understanding Patient Personality in Medical Care: Five-Factor Model. *Journal of General Internal Medicine*, 36(7), 2111–2114. <https://doi.org/10.1007/s11606-021-06598-8>
- Renehan, A. G., Tyson, M., Egger, M., et al. (2008). Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies. *Lancet*, 371(9612): 569-578. doi:10.1016/S0140-6736(08)60269-X
- Rettew, D. C., & McKee, L. (2005). Temperament and Its Role in Developmental Psychopathology. *Harvard Review of Psychiatry*, 13(1), 14–27. <https://doi.org/10.1080/10673220590923146>
- Robinson, E., Blissett, J., & Higgs, S. (2013). Social influences on eating: implications for nutritional interventions. *Nutrition Research Reviews*, 26(2), 166–176. <https://doi.org/10.1017/s0954422413000127>
- Roehling, M. V., Roehling, P. V., Pichler, S. (2007). The relationship between body weight and perceived weight-related employment discrimination: the role of sex and race. *J Vocat Behav*, 71(2), 300-318. doi:10.1016/j.jvb.2007.05.002
- Sánchez-Villegas, A., Martínez-González, M. Á., Toledo E., et al. (2015). Psychological Factors and Food Habits in Spanish Adults. *Journal of the American Dietetic Association*, 105(11), 1712-1719. doi: 10.1016/j.jand.2005.08.027
- Schwarzer, R., & Renner, B. (2000). Social-cognitive predictors of health behavior: Action self-efficacy and coping self-efficacy. *Health Psychology*, 19(5), 487–495. <https://doi.org/10.1037/0278-6133.19.5.487>
- Singh, A. S., Mulder, C., Twisk, J. W. R., et al. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews*, 9(5), 474–488. <https://doi.org/10.1111/j.1467-789x.2008.00475.x>
- Stepaniak, U., Micek, A., Waśkiewicz, A., et al. (2016). Prevalence of general and abdominal obesity and overweight among adults in Poland. Results of the WOBASZ II study (2013–2014) and comparison with the WOBASZ study (2003–2005). *Polish Archives of Internal Medicine*. <https://doi.org/10.20452/pamw.3499>
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., et al. (2008). Creating Healthy Food and Eating Environments: Policy and Environmental Approaches. *Annual Review of Public Health*, 29(1), 253–272. <https://doi.org/10.1146/annurev.publhealth.29.020907.090926>
- Suliga, A., Dolińska, M., & Kędra, E. (2022). Methods and techniques of coping with stress in the work of a nurse. *Investing in Nursing and Respecting Nurses' Rights-Controversies and Challenge*, 73.
- Tan, S., & Yip, A. (2018). Hans Selye (1907–1982): Founder of the stress theory. *Singapore Medical Journal*, 59(4), 170–171. <https://doi.org/10.11622/smedj.2018043>
- Tasca, G. A. (2019). Attachment and eating disorders: a research update. *Current Opinion in Psychology*, 25, 59–64. <https://doi.org/10.1016/j.copsyc.2018.03.003>
- Teixeira, P. J., Silva, M. N., Mata, J., et al. (2012). Motivation, self-determination, and long-term weight control. *International Journal of Behavioral Nutrition and Physical Activity*, 9(1), 22. <https://doi.org/10.1186/1479-5868-9-22>
- Terracciano, A., Sutin, A. R., Sanna, S., et al. (2009). Major personality traits and adiposity in 6, 821 middle-aged and older adults: the Sardinia Study. *Obesity*, 17(12), 2283-2288.

- The GBD 2015 Obesity Collaborators. (2017). Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *New England Journal of Medicine*, 377(1), 13–27. <https://doi.org/10.1056/nejmoa1614362>
- Torres, S. J., & Nowson, C. A. (2007). Relationship between stress, eating behavior, and obesity. *Nutrition*, 23(11–12), 887–894. <https://doi.org/10.1016/j.nut.2007.08.008>
- Udo, T., & Grilo, C. M. (2018). Prevalence and Correlates of DSM-5–Defined Eating Disorders in a Nationally Representative Sample of U.S. Adults. *Biological Psychiatry*, 84(5), 345–354. <https://doi.org/10.1016/j.biopsych.2018.03.014>
- Van den Berg, L., Pieterse, K., Malik, J. A., et al. (2011). Cognitive control and eating behavior in obesity. *Journal of behavioral medicine*, 34(6), 423–431.
- Vancampfort, D., Vanderlinden, J., De Hert, M., et al. (2013). A systematic review of physical therapy interventions for patients with anorexia and bulimia nervosa. *Disability and Rehabilitation*, 36(8), 628–634. <https://doi.org/10.3109/09638288.2013.808271>
- Volkow, N. D., Wang, G. J., Fowler J. S., et al. (2008). Overlapping neuronal circuits in addiction and obesity: evidence of systems pathology. *Philos Trans R Soc Lond B Biol Sci*, 363(1507):3191–200. <https://doi.org/10.1098/rstb.2008.0107>
- Waldman, I. D., Rhee, S. H., LoParo, D., et al. (2018). Genetic and environmental influences on psychopathy and antisocial behavior. The Guilford Press.
- Womble, L. G., Williamson, D. A., Martin, C. K., et al. (2009). Psychosocial variables associated with binge eating in obese males and females. *International Journal of Eating Disorders*, 42(6), 505–510.
- World Health Organization. (n.d.). Obesity and overweight. Available online: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> (accessed on 1 March 2024).
- Yusuf, S., Hawken, S., & Ounpuu, S. (2005). Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. *Lancet*, 366(9497), 1640–1649. [https://doi.org/10.1016/S0140-6736\(05\)67663-5](https://doi.org/10.1016/S0140-6736(05)67663-5)
- Zappetti, D., & Avery, J. D. (2019). *Medical Student Well-Being*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-16558-1>