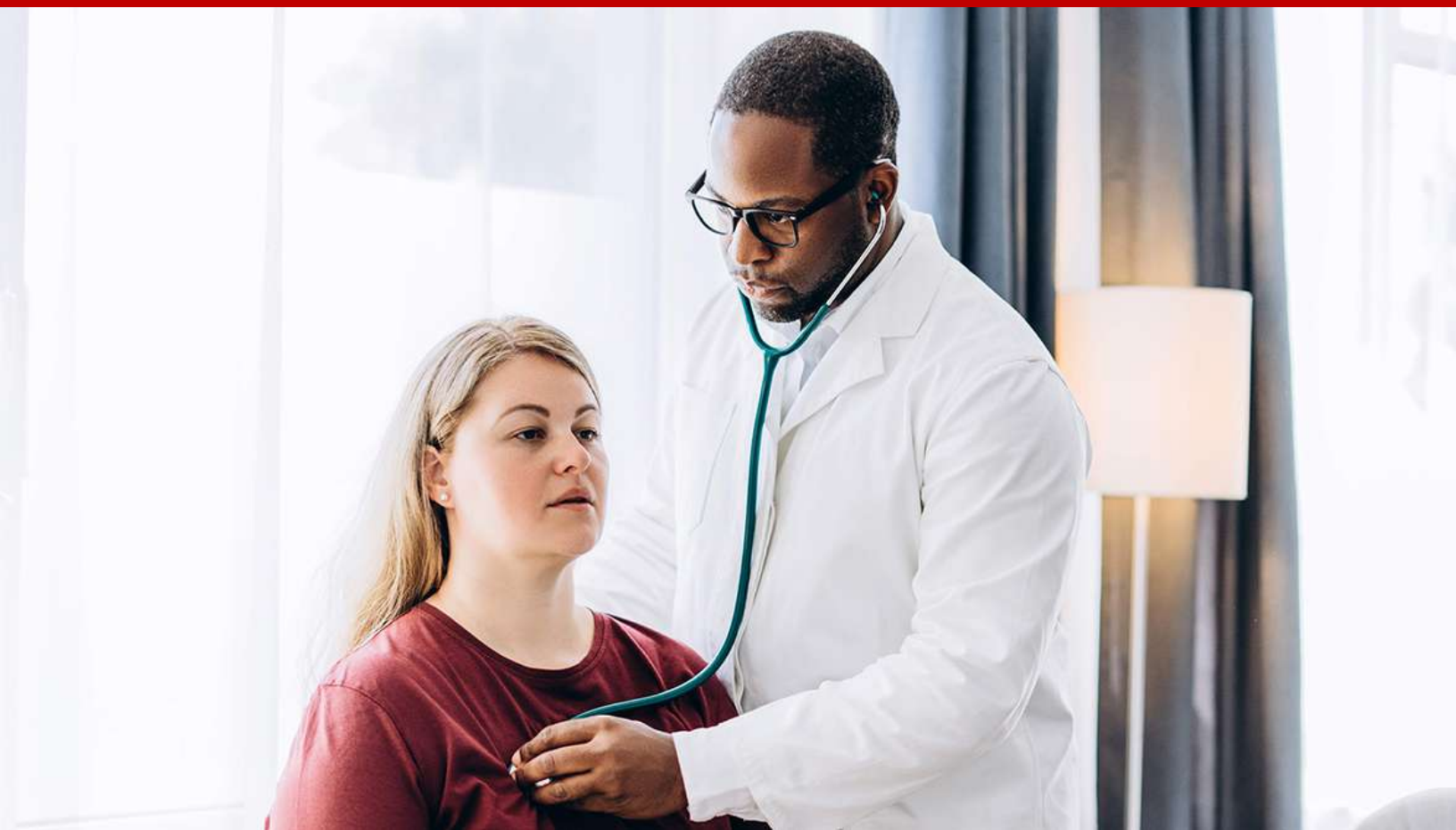
Care CEUs

Continuing Education for Nursing Home Administrators

Obesity



Section 1: Introduction

According to the World Health Organization (WHO), it is estimated that 1 in 8 people worldwide are living with obesity. This global statistic has doubled since 1990, and the rate of adolescents experiencing obesity has quadrupled in that time (WHO, 2024). In the United States, the number of people living with obesity is much higher. The Centers for Disease Control and Prevention report that 2 in 5 adults and 1 in 5 children in the United States are living with obesity (CDC, 2024a). Based on the statistics, 100 million adults in the US experience obesity, and more than 22 million adults are categorized as being severely obese. The high prevalence of obesity has multiple implications. Obesity contributes to various health complications, decreases life quality and longevity, and increases healthcare spending. In 2019, obesity was the cause of almost $173 billion in medical expenditures in the United States (CDC, 2024b). While smoking is the most common cause of preventable death, obesity is the second leading cause (Panuganti et al., 2023). Understanding comorbid health conditions often seen in patients diagnosed with obesity can help nurses provide more comprehensive care and also navigate the complicated health status of many of their patients. Some populations are at higher risk than others to be diagnosed with obesity. Reduced physical activity, decreased metabolic demands, and increased consumption of high-sugar foods are also causes of obesity (Panuganti et al., 2023). People are affected differently by alterations in the various factors contributing to obesity, altering their appetite or metabolism. This results in an imbalance of calorie intake and expenditure, leading to weight gain and, for some, obesity (WHO, 2024).

The rate of obesity varies according to race, ethnicity, age, education level, and other factors. Exploring the disparities among different populations can help healthcare workers understand who is at higher risk for obesity and what barriers those populations may experience that make living a healthier lifestyle more

difficult. Obesity impacts many facets of an individual's life, including work and education. Nurses must recognize that the barriers that can lead to obesity can also make seeking healthcare to treat obesity more difficult.

As the population living with obesity has increased, nurses must stay up to date on new developments in the treatment, care, and public health interventions related to the high rate of obesity in the United States. We will discuss new medication treatments for obesity, as well as new research that is working to improve the health of Americans by decreasing rates of obesity.

Section 1 Personal Reflection

What is your experience of working with patients living with obesity? What is your current understanding of how obesity affects people's lives?

Section 2: What is obesity?

In the most simple terms, obesity is defined as "having too much body fat," and in the past, obesity was seen as a result of a lack of willpower (Gilden et al., 2024). Actually, obesity is much more complex than just that. Obesity is a multifactorial health condition that involves physiologic, behavioral, and environmental factors. These factors contribute to increased fat deposits throughout the body, which has many interrelated and complex health implications (Fuller et al., 2024).

Obesity is diagnosed using a calculation called body mass index (BMI). This calculation uses height and weight in the mathematical formula: weight in kg divided by height in meters squared . Adults living with a BMI greater than or equal to 25 are categorized as being overweight, and patients with a BMI greater than or equal to 30 are considered obese (WHO, 2024). Obesity is further separated into three classes. Class I obesity includes patients with a BMI of 30-34,

Class II consists of those with a BMI of 35-39, and Class III includes those with a BMI equal to or greater than 40. The classes are also used for pediatrics, though a percentage increase over the 95th percentile on the pediatric growth chart is used rather than BMI alone. Other diagnostic criteria are used for obesity, including waist circumference, body fat percentage, Edmonton obesity staging system, and the American Association of Clinical Endocrinologists obesity staging system; however, BMI is currently most commonly used for diagnosis (Fuller et al., 2024).

There is a current shift to consider more than just BMI when evaluating weight, as different types of body-fat distribution have different health risk factors. For example, those with more central body fat are at higher risk for cardiac disease. For this reason, waist circumference is often measured in addition to calculating BMI to determine health risk. While BMI can be a helpful tool for screening patients, a more individualized approach is beneficial to the patient's health (Yanovski & Yanovski, 2024). It has also been found that BMI is not as accurate an indicator of body mass for the Asian population and older adults, as they can have a normal BMI but still have excess body fat (Panuganti et al., 2023).

Section 2 Personal Reflection

Think about different body types you may see in your practice. What are some diagnoses that you see more often in certain body types? Before we progress to the next section, what do you think are the physiologic, behavioral, and environmental factors contributing to obesity?

Section 2 Key Words

Obesity - A condition categorized as having excessive adipose tissue in the body

Body Mass Index (BMI) - a mathematical number calculated using height and weight that helps to screen individuals for obesity

Section 3: What causes obesity?

As previously mentioned, there are many contributing issues to obesity, and some individuals may have more than one, or even several, risk factors. In recent years, more has been understood about the various elements that increase the risk of obesity. This section will identify the physiologic, behavioral, and environmental factors contributing to obesity.

Physiologic Risk Factors

Physiologic risk factors are very often a result of genetics. Genetics plays a significant role in impacting the predisposition of obesity. Forty to seventy percent of variations in BMI are due to genetics (Gilden et al., 2024). Sometimes, a single variation in a gene produces a genetic condition that causes obesity, like Prader-Willi syndrome or Bardet-Beidl syndrome. In most circumstances, however, it is a combination of various genes that affect the sensations of hunger, satiety, and metabolism (CDC, 2024d). It is believed that some genetic variations that now cause obesity were advantageous to human ancestors because they could store more fat for energy use when food was scarce. However, in modern times, for most people, delicious, ultra-processed, calorie-dense food is readily available, which causes this once advantageous genetic variation to lead to excessive calorie consumption and weight gain (Gilden et al., 2024).

Variations within the endocrine system can contribute to obesity. An imbalance of the hormones, ghrelin and glucagon-like peptide 1, as well as other hormones, can contribute to alterations in the feelings of hunger and satiety (Fuller et al.,

2024). Adipokines and free fatty acids are secreted by adipose tissue, which causes inflammation. This systemic inflammation increases insulin resistance and triglyceride levels, further contributing to obesity. Cellular resistance of leptin, a hormone that reduces hunger, can also contribute to obesity (Panuganti et al., 2023). Diseases that affect the endocrine system, such as polycystic ovary syndrome, Cushing syndrome, and underactive thyroid, can increase the risk for weight gain in patients and also make decreasing their BMI more difficult (CDC, 2024d).

Many factors regulate appetite, including interactions between the hypothalamus, vagal nerve, frontal cortex, and limbic system (Fuller et al., 2024). The frontal and prefrontal cortex of the brain regulate food choices and appetite control. Injuries to these areas, especially the right prefrontal cortex, can cause individuals to make poor food choices and have difficulty adhering to a healthy lifestyle. Stress signals released from this area also trigger the hypothalamus-pituitary-adrenal axis, which increases cortisol levels and contributes to weight gain. The hypothalamus receives input from the gastrointestinal tract, liver, pancreas, adipocytes (fat cells), leptin, and the vagal nerve and secretes neuropeptides which stimulate appetite. Irregularities with the hypothalamus can lead to increased appetite. The pituitary gland secretes hormones that affect the feeling of satiety. If this is affected by a gene mutation, individuals have difficulty feeling satisfied after a meal. Due to interactions of the cortico-limbic system and dopamine, stimulation of the reward centers in the brain when a highly palatable food is consumed is similar to the effect caused by psychoactive drugs, such as cocaine and amphetamines (Parmar & Can, 2023).

Several hormones regulate the feelings of hunger and satiety. The pancreas produces insulin, which helps suppress appetite; pancreatic polypeptide, which slows gastric emptying and communicates with the hypothalamus; and amylin, which increases leptin and insulin sensitivity and slows gastric emptying. Leptin is

a peptide hormone released by adipocytes, the mucosa of the GI tract, and cells in the lining of the small and large intestines. Leptin tells the brain that an individual is no longer hungry. It has been found that individuals with obesity can have leptin resistance. They have high levels of leptin, which should cause them to have a suppressed appetite, but the leptin is unable to “deliver the message” to the brain that they are not hungry. Low estrogen levels in the body can lead to issues with weight regulation. Ghrelin stimulates the food reward pathway and increases insulin secretion. When the stomach is full, ghrelin secretion is suppressed. Elevated ghrelin levels can lead to obesity. Cholecystokinin is released by the small intestine and affects gastric emptying and gallbladder function. It also communicates with the hypothalamus to suppress hunger. Incretins are secreted by the large and small intestines. One in particular, glucagon-like peptide 1 (GLP-1), affects both the central and peripheral systems by slowing gastric emptying, promoting satiety through effects on the hypothalamus and vagal nerve fibers, and inhibiting the formation of glucose in the body (Parmar & Can, 2023). Even after losing a significant amount of weight, physiological changes in calorie expenditure and hormones that contribute to hunger make it more challenging to maintain weight loss (Gilden et al., 2024). For example, leptin levels decrease during weight loss, which increases appetite (Parmar & Can, 2023).

The nervous system is also involved in appetite regulation. The sympathetic nervous system is responsible for expending energy in response to eating and increased insulin levels. This system communicates to the brain that it does not need to create fat stores when the body is fed and that it does need to create fat stores when the body is in a starvation state. Leptin stimulates the sympathetic nervous system, so when leptin levels are high, as it often is for individuals with obesity, the sympathetic nervous system is chronically stimulated, leading to hypertension. When a person consumes a meal, the central nervous system

receives signals from the vagal nerve and various hormones, affecting the brain's food reward center (Parmar & Can, 2023).

The gut microbiome can also contribute to obesity. This is the microflora population in the gut that can impact weight regulation. The microflora in the gut consumes carbohydrates, protein, and fatty acids (Parmar & Can, 2023). An imbalance of these can contribute to insulin resistance, leading to obesity. Diet affects the gut microflora population, with high-fat intake associated with an increase in certain gram-negative bacteria in the gut, which can cause systemic inflammation and obesity-related problems (Lone et al., 2018). Altered microflora diversity in the gut has been associated with obesity (Parmar & Can, 2023).

Certain medications can cause obesity due to their effects on the physiologic processes that regulate appetite and energy consumption. Antipsychotics, antidepressants, steroids, hormonal birth control, anti-seizure, mood-stabilizing medications, and some blood pressure and diabetes medications can increase the risk for obesity (CDC, 2024d).

Behavioral Risk Factors

Behavioral risk factors can increase calorie consumption, reduce calorie expenditure, or affect the physiologic processes that help regulate weight. Sleep difficulties decrease leptin levels and increase ghrelin levels, contributing to weight gain (Parmar & Can, 2023). According to the Cleveland Clinic, individuals need at least seven hours of sleep per night to maintain healthy levels of the hormones that affect appetite (Cleveland Clinic, 2024). Sleep apnea can also affect leptin levels.

Food consumption behaviors can lead to obesity. Consuming calorie-dense, high-sugar, and ultra-processed foods and drinks, as well as foods with high saturated fat content, can lead to obesity (Cleveland Clinic, 2024). An insufficient diet of

fiber, fruits, and vegetables also contributes to obesity (CDC, 2024d). Excessive alcohol consumption is associated with health complications and weight gain, which contribute to obesity (Gilden et al., 2024).

A lack of adequate physical activity has been associated with obesity. Individuals who spend excessive amounts of time watching TV, using mobile phones, or playing video games are at increased risk for obesity (Cleveland Clinic, 2024). Not only does physical activity expend caloric energy, but it also helps to control stress and improve sleep, mood, and cognitive function. Earlier, we learned that problems in these areas can contribute to obesity. Therefore, improvement due to exercise can decrease the risk of weight gain, leading to obesity. Recent research has found that individuals who spend more time watching TV, sitting, and riding in cars have a shorter life expectancy than those who are more active. It is believed by some that long periods of sitting affect the metabolism. In contrast, others argue that sitting for long periods indicates a generally sedentary lifestyle. One study found that individuals who exercised regularly but experienced long periods of daily sitting were still at higher risk for obesity than those who did not spend long periods sitting (The Nutrition Source, 2024).

Behavior patterns affect the way the body uses energy. Certain types of food use a higher caloric expenditure to digest. Fats require very little energy to digest, followed by carbohydrates, which are associated with a 5-10% increase in thermic energy use. Proteins require a 20-30% increase in thermic energy needed to digest. Physical energy expenditure varies quite a bit among individuals. Those with a more sedentary lifestyle use far less thermal energy to function than those who are very active. Voluntary exercise requires the largest amount of thermal energy increase; however, even activities such as writing, fidgeting, and lifting increase thermal energy use. These activities are called non-exercise activity thermogenesis (NEAT), and individuals with higher NEAT are at less risk for obesity (Parmar & Can, 2023).

Environmental Risk Factors

Psychosocial stress contributes to obesity by affecting the physiologic factors influencing hunger and satiety. When stressed, people are more likely to eat high-fat and high-sugar foods, which are stored in the body as fat (Cleveland Clinic, 2024). Long-term stress increases cortisol levels, which increases feelings of hunger and disrupts energy balance (CDC, 2024d).

There are socio-economic risk factors related to obesity. Nutritious foods are often more expensive than less healthy options (WHO, 2024). Due to the cost, individuals with a minimal income may have difficulty buying more nutritious foods. Physical activity can be challenging for individuals living in an unsafe neighborhood, complicating their ability to exercise outdoors. Individuals with limited access to high-quality health services may lack the guidance necessary to achieve optimal weight (CDC, 2024d). Women who experience poverty and less education are at higher risk for obesity than other groups of women. Men with middle incomes and moderate levels of education are at higher risk than men in other groups (Fuller et al., 2024). Barriers to access to transportation can make seeking a healthcare provider challenging, as well as access to medications and treatments that help reduce weight (Washington et al., 2023). Other socioeconomic-related factors, like access to childcare, community design, and chemicals that may be used in the environment where individuals live, also impact the obesity rate (CDC, 2024d).

Different racial and ethnic groups experience obesity at differing rates. Non-Hispanic Asian adults have the lowest rate of obesity at 17.5% (Washington et al., 2023). However, it is suggested that this rate may be higher in Asian Americans when a lower threshold for BMI is considered for this population (Gilden et al., 2024). A suggested threshold for Asians and South Asians is a BMI of 23-24.9, which is considered overweight, and a BMI of 25 or greater, which is considered

obese (Lim & Boster, 2024). Non-Hispanic Black individuals experience obesity at a rate of 49.6%, closely followed by Hispanic individuals at a rate of 44.8% and non-Hispanic White adults at a rate of 42.2%. Areas of the country that experience more racial tension have higher rates of obesity, likely due to chronic stress. Communities with a more significant portion of racial and ethnic minority populations typically have more food environments conducive to weight gain than communities with lower individuals of a racial or ethnic minority (Washington et al., 2023).

Geographical location impacts obesity rates. Individuals who live in rural areas experience higher rates of obesity than those in urban areas (National Institute of Diabetes and Digestive and Kidney Diseases, 2023). There are higher rates of obesity in the Southern US compared to other regions (Panuganti et al., 2023). Globally, there are higher obesity rates in the Americas compared to Asia and Africa (WHO, 2024).

Individuals who experience obesity are consequently more likely to struggle with weight gain long-term, even after significant weight loss. Physiologic changes in the body related to hormones and metabolism make weight gain occur at higher rates for people who have been diagnosed with obesity in the past compared to those who have never been diagnosed with obesity. These individuals experience more feelings of hunger after weight loss compared to those who have always experienced a healthy weight (Gilden et al., 2024). Stigma and shame associated with obesity can also be a barrier to seeking healthcare. By not accessing care and guidance from their provider, patients are at higher risk for continued weight gain and complications. They may also be discouraged if they have experienced repeated cycles of weight loss followed by weight regain (Yanovski & Yanovski, 2024).

Section 3 Personal Reflection

Why is it important to understand the different factors that contribute to obesity? Why do you think different racial and ethnic groups experience obesity at differing rates? How do genetics, culture, and community contribute to these differences? Can you recall a personal or professional experience of knowing someone with cycles of weight loss and weight gain? Knowing that obesity continues to affect individuals' ability to maintain a healthy weight even after they achieve a healthy BMI, how do you think that individual may feel seeking healthcare after they have regained weight?

Section 3 Key Words

Adipose tissue - body tissue composed of adipocytes, or fat cells, which provides insulation and energy storage

Hypothalamus - the part of the brain that produces hormones that control hunger, mood, temperature regulation, and heart rate

Hypothalamus-pituitary-adrenal axis - describes interrelated mechanisms between the brain, glands that produce hormones, and metabolism

Cortico-limbic system - comprised of the frontal and prefrontal cortices, hippocampus and amygdala, this system combines physiological and emotional input and results in behaviors

Sympathetic nervous system - responsible for physiologic changes when danger or stress is perceived

Gut microbiome - the interdependent ecosystem of microbes that exist in the GI tract

Thermal energy - energy which produces heat

Section 4: Consequences of Obesity

Obesity is one of the most common chronic conditions in the United States, and there are over 200 obesity-related disorders that affect all areas of health (Fuller et al., 2024). Obesity can directly impact health due to physiologic changes and indirectly influence health in other ways, like access to healthcare. The metabolic effects of obesity can cause stress and changes in the body that produce many complications and comorbid conditions (Cleveland Clinic, 2024). Overall, obesity comorbidities can be categorized into three groups: metabolic, biomechanical, and psychosocial conditions (Gilden et al., 2024). These groups are interrelated and affect each other as biomechanical conditions influence metabolism, and metabolic conditions affect biomechanics. Through various complications, obesity can cause chronic health conditions and premature death (CDC, 2022). Obesity also has external effects on communities and the larger society.

Metabolic Conditions

Increased storage of lipids causes increased production of hormones and chemicals that contribute to inflammation. This can contribute to insulin resistance, creating higher glucose levels and lipids in the circulatory system. This increases blood pressure, resulting in hypertension, and can lead to metabolic syndrome, a group of interrelated conditions that increase an individual's risk for cardiovascular disease, stroke, and type 2 diabetes (Cleveland Clinic, 2024).

Type 2 diabetes is a chronic health condition that affects glucose levels in the circulatory system. Due to the higher amount of glucose in the blood, patients with Type 2 diabetes are at significantly increased risk for heart disease, stroke, kidney disease, vision problems, and peripheral nerve damage. About 90% of patients with type 2 diabetes are considered overweight or obese (NIDDKD, 2023). The primary cause of type 2 diabetes is believed to be insulin resistance, likely due

to inflammation caused by non-esterified fatty acids released by adipose tissue, especially excess abdominal adipose tissue (Lim & Boster, 2024).

Metabolic changes increase the patient's risk for cancer. Meningioma, thyroid cancer, adenocarcinoma of the esophagus, breast cancer, multiple myeloma, liver cancer, kidney cancer, gallbladder cancer, stomach cancer, endometrial cancer, pancreatic cancer, ovarian cancer, and colorectal cancer can all be caused due to changes that occur because of obesity (NIDDKD, 2023).

Metabolic syndrome is the co-occurrence of abdominal fat deposits, dyslipidemia, hypertension, and impaired fasting glucose (Lim & Boster, 2024). It is believed that insulin resistance is the main cause of metabolic syndrome. It is also caused by obesity, especially increased abdominal fat, lack of physical activity, medications, and genetics. The complications related to metabolic syndrome are the same as those related to obesity (Cleveland Clinic, 2023). It is estimated that 30% of patients who are obese do not suffer from these metabolic complications. Still, those with metabolic syndrome are at significantly higher risk for stroke and cardiovascular disease (Lim & Boster, 2024).

Obesity can impact fertility, pregnancy, and infants. Pregnant women who have obesity are at increased risk for developing gestational diabetes and preeclampsia. They require cesarean sections at a higher rate and are more likely to have complications from anesthesia. These women are also at higher risk for weight gain during the postpartum period. When the mother experiences obesity during pregnancy, the baby can be born larger than expected and is more likely to eventually develop type 2 diabetes, obesity, heart disease, and asthma as an adult. Men who experience obesity may have lower sperm count or sperm quality, leading to infertility. They are also at increased risk for erectile dysfunction. Metabolic and hormonal effects can impact a woman's ability to become pregnant (NIDDKD, 2023). Obesity is a factor in 88% of women with polycystic ovarian

syndrome (PCOS). PCOS causes hyperandrogenism, irregular periods, and polycystic ovaries. Obesity is known as an independent risk factor for PCOS, but the hormonal effects of PCOS also contribute to weight gain (Lim & Boster, 2024).

Biomechanical Conditions

Since obesity is characterized by excess fat tissue, it is understood that this tissue takes up space in the body, overcrowding other organs and structures. This can affect the normal function of those structures and result in conditions such as arthritis, asthma, back pain, sleep apnea, and obesity hypoventilation syndrome (Cleveland Clinic, 2024). Obesity hypoventilation syndrome occurs when the lungs cannot fully expand due to the crowding of adipose tissue. This results in the inability to fully exchange oxygen and carbon dioxide. Individuals have increased levels of carbon dioxide in their blood because of this. Obesity hypoventilation syndrome also contributes to disordered sleep and sleep apnea, resulting in shortness of breath, fatigue, headaches, dizziness, and depression (Cleveland Clinic, 2022). Asthma can occur in patients with obesity due to inflammation of the airway. This causes the smaller airways to narrow, which leads to tightness, wheezing, and coughing. Sleep apnea, part of obesity hypoventilation syndrome, is a common sleep disorder. It occurs when the upper airway becomes obstructed, and the air is unable to pass through. Increased fat stores around the neck impact the size of a person's airway, causing it to become blocked more easily, contributing to apnea and snoring (NIDDKD, 2023). Patients who have obstructive sleep apnea have an increased risk of coronary artery disease (Lim & Boster, 2024).

Hypertension occurs as a result of obesity because the heart must exert more pressure to perfuse all the cells of the body. This causes the heart to have to work harder, which damages blood vessels and increases the patient's risk of heart

attack, stroke, and kidney disease. The kidneys can become crowded by excess fat, which also causes increased blood pressure. Individuals who are obese are also at risk for other types of heart disease. They may experience angina, heart failure, or abnormal heart rhythms. This can be due to hypertension, hyperglycemia, and dyslipidemia. These are the same factors that increase the risk of stroke for individuals with obesity (NIDDKD, 2023). It is unclear if coronary artery disease is directly caused by obesity because it so often occurs with diabetes, hypertension, dyslipidemia, and sleep apnea that it is difficult to determine causality. It is known, however, that as BMI increases, so does the risk for coronary artery disease (Lim & Boster, 2024).

Kidney disease is most commonly caused by complications of diabetes and hypertension, which both frequently occur because of obesity. Individuals who do not have diabetes or hypertension but are obese are still at increased risk for kidney disease (NIDDKD, 2023).

Fat deposits in the liver, also known as non-alcoholic fatty liver, can cause severe liver damage, cirrhosis, and liver failure (NIDDKD, 2023). This is the leading cause of chronic liver disease in the United States (Lim & Boster, 2024). Increased cholesterol in the bile can lead to gallstones, resulting in gallbladder disease. The pancreas is also affected by obesity. It can become inflamed, and high levels of fat in the blood can cause pancreatitis. This impacts the metabolic processes in the body and can result in further complications related to insulin and enzymes (NIDDKD, 2023).

Individuals with obesity often experience GERD (gastroesophageal reflux disease). This is due to reduced tone in the esophagus, increased abdominal pressure, and the common occurrence of hiatal hernias in those who have obesity. Non-specific motility issues within the esophagus are related to obesity (Lim & Boster, 2024).

Obesity increases the pressure on joints, especially the knees, hips, and ankles. This, combined with systemic inflammation common in patients with obesity, can lead to osteoarthritis. Osteoarthritis is a chronic health condition that can cause pain, swelling, and joint stiffness, reducing range of motion and mobility. Gout, a type of arthritis, can also occur when uric acid crystals accumulate in the joints. Individuals who experience obesity are at increased risk for this condition. Extra pressure on the joints also alters the ability of the joint to function. The pain and immobility caused by osteoarthritis further exacerbate the problem of obesity because it makes physical activity painful and difficult. When joint surgery is needed, patients who are obese undergo more complications than those with a normal BMI. Individuals who are obese are also more likely to experience falls (Lim & Boster, 2024).

Movement is difficult for individuals experiencing obesity. This decreased mobility places individuals at higher risk for venous thromboembolism. Increased adipose tissue also contributes to compression, reduced blood flow, and chronic venous insufficiency of the iliac veins. This is further complicated by the hormonal effects that cause those with extra adipose tissue to be in a hypercoagulable state. Patients with obesity are six times more likely to have a thromboembolism (Lim & Boster, 2024).

Obesity causes problems with the integumentary system as the skin becomes more dry, and collagen is less concentrated in the surface of the skin, leading to increased sweat and sebum production. Pressure sores and skin infections are more common for individuals with obesity. They also experience more challenges with wound healing, further contributing to the risk of infection. Increased androgens can cause unwanted hair growth, and insulin resistance can cause acanthosis nigricans (Lim & Boster, 2024).

Psychosocial Conditions

Obesity increases the risk for several mental health conditions. Long-term stress, body image problems, low self-esteem, depression, and eating disorders are more likely to affect individuals with obesity (NIDDKD, 2023). This is observed more frequently in women, and adolescent girls who experience obesity are four times as likely as their peers to experience depression. Dementia has also been linked to obesity, though it is not yet understood if obesity is an independent cause of dementia or if it happens to co-occur (Lim & Boster, 2024).

Weight-related bias occurs when individuals in society knowingly or unknowingly discriminate against individuals with obesity. This is common in Western culture and due to several misperceptions, including that people who are overweight have poor hygiene, are lazy, lack self-discipline, are unattractive, are less intelligent, and are less capable of success. Media commonly reinforces these beliefs with little representation of people who are overweight in commercials, movies, and TV shows. Characters who are overweight are often the sidekick but rarely the main character (Vafiadis, 2024). Weight-related bias can occur in any setting. Individuals may experience this in the workplace or at school. This can impact the quality of their life (NIDDKD, 2023). Sometimes, weight-related bias occurs in ways many do not expect. Exam gowns in a doctor's office may not be large enough for some patients. Exam tables may not be able to hold the weight of the patient. In order to fly on commercial airplanes, individuals with obesity may have to buy two seats. These factors all contribute to poor self-esteem, depression, anxiety, and eating disorders. Weight stigma can affect an individual's career opportunities, resulting in fewer opportunities for promotions. People who experience obesity are also more likely to struggle with interpersonal relationships (Vafiadis, 2024).

Obesity can affect how a person receives healthcare. Some healthcare providers may assume a patient who is obese is non-compliant, spending less time with them during visits. This impacts the health guidance given to these individuals and may make people with obesity less likely to seek medical care (Vafiadis, 2024). Nurses and other healthcare professionals should not make assumptions about a patient's lifestyle based solely on their weight (Gilden et al., 2024). Weight stigma can cause patients not to be treated for conditions that may not be related to their excessive weight (Yanovski & Yanovski, 2024). Mobility challenges can also impact a patient's ability to access healthcare.

Childhood and adolescent obesity have lifelong impacts. Children who struggle with obesity are more likely to have academic difficulties at school and low self-esteem. They can experience discrimination and bullying from peers. Children who are obese are more likely to experience obesity in adulthood (WHO, 2024). The same factors that influence obesity in adults also impact children, and disparities among racial, ethnic, and socioeconomic groups are consistent with rates found in adults (Fuller et al., 2024).

Obesity has impacts on society as well as individuals. Due to obesity, there are fewer men and women who meet the physical fitness requirements to serve in the military. Thirty percent of Americans ages 17-24 are ineligible for military service due to their weight. There has also been an increase in recent years of obesity within the military. A study found that individuals serving in the military who experience obesity were 33% more likely to suffer musculoskeletal injuries. Annual medical costs related to obesity exceed $170 billion, and workplace productivity costs are also impacted. The individual economic impact of obesity can also further burden individuals who have difficulty affording healthier food options (CDC, 2022). Obesity was once considered a problem in "developed" countries, but it is quickly becoming a problem for lower and middle-income countries (WHO, 2024).

Section 4 Personal Reflection

How are the consequences of obesity interrelated? Do you think the complications caused by obesity create more barriers for those patients to achieve a healthier BMI? Have you observed any of these consequences in patients that you care for?

Section 4 Key Words

Metabolism - the chemical processes that occur in the body that enable life

Biomechanical - related to the structure, function, and movement of parts of the body

Non-esterified fatty acids - the major contributor to fat stores in the body

Weight-related bias - conscious or unconscious thought that assumes people with excessive weight are inferior to those of healthy weight

Section 5: Current Treatments

The primary goal concerning obesity treatment is prevention. It is recommended that all adults be screened for obesity. Nurses can identify patients who have an increased risk for excessive weight gain based on the medications they take, changes in their health, or psychosocial barriers to maintaining a healthy lifestyle. Some medications, like steroids and many medications used in psychiatry, can contribute to weight gain. When possible, providers may be able to change medications that contribute to weight gain for medications that have less or no effect on weight (Gilden et al., 2024). Nurses can also ask about family history when they interview patients. Since obesity has many genetically related factors, it is essential to know if there is a close family member who has type 2 diabetes,

high cholesterol, or hypertension (Cleveland Clinic, 2023). Healthcare workers can use person first language when discussing weight issues with patients. Rather than saying “obese patient” to refer to an individual, healthcare workers can say “patient with obesity.” This may seem like a minor adjustment, but it helps to destigmatize the issue of obesity and contribute to better healthcare (CDC, 2024c).

The first treatment for obesity usually includes guidance on lifestyle changes that can produce weight loss and setting a weight loss goal for a time period that feels realistic for the patient. Even a 5% weight loss can improve obesity-related complications like blood glucose levels and hypertension. Guidance typically includes reducing calorie intake, consuming nutrient-dense foods more likely to satisfy hunger, and reducing or eliminating high-calorie beverages (CDC, 2023). Multiple diets have been shown to help reduce weight, including low-calorie diets, the Mediterranean diet (increased consumption of olive oil, certain nuts, and vegetables and decreased consumption of red meats and processed carbohydrates), intermittent fasting, and others. It is essential to discuss options with the patient to find what they feel most comfortable with (Fuller et al., 2024). Increasing physical activity and discussing the importance of adequate sleep are also recommended (CDC, 2023), and these are most effective when combined with dietary changes (Fuller et al., 2024). It is recommended that patients participate in moderate to vigorous activity at least 150 minutes per week (Gilden et al., 2024).

Sometimes, weight loss can be difficult, even with adherence to lifestyle changes. Weight loss medications can be used for patients with a BMI equal to or greater than 30 or as low as 27 if they have an obesity-related health condition, like hypertension. Short-term anti-obesity medications typically help reduce caloric intake by decreasing hunger, but individuals must also implement lifestyle changes to maintain weight loss after medications are discontinued. The most commonly

used short-term weight loss medication is phentermine (Gilden et al., 2024). However, it is contraindicated for individuals with cardiovascular disease and hyperthyroidism, so it is not appropriate for everyone. Orlistat can be used to treat obesity long-term by inhibiting fat absorption (Fuller et al., 2024). However, it is less commonly used because of gastrointestinal side effects like oily stools. Bupropion-naltrexone works to help control appetite (Gilden et al., 2024).

Anti-obesity medications that target the endocrine system have been recently introduced and approved by the FDA. Liraglutide and semaglutide are glucagon-like peptide-1 (GLP-1) receptor agonists that work by both slowing gastric emptying and affecting the central nervous system. Tirzepatide is a GLP-1 receptor agonist and gastric inhibitory peptide receptor agonist. It works very similarly to liraglutide and semaglutide but also helps with appetite control. All three of these medications are injected subcutaneously weekly and demonstrate more significant amounts of weight loss than the oral anti-obesity medications. Nausea, vomiting, diarrhea or constipation, and dyspepsia are all common side effects of these medications. These medications should be used cautiously for patients with gastric motility issues and chronic kidney disease (Gilden et al., 2024). Dosages for these medications must be titrated slowly to avoid side effects, and patients should be monitored regularly to determine if dosing remains appropriate. The price of weight loss medications varies greatly, so this should be part of the discussion when patients consider options. If a medication is prescribed that a patient cannot afford, it will not help them (Yanovski & Yanovski, 2024). Some insurance companies do not cover anti-obesity medications, though, in April of 2024, Medicare began covering semaglutide for patients diagnosed with obesity and cardiovascular disease (Gilden et al., 2024).

Weight loss surgery may be recommended for patients with a BMI greater than 35 or if they have serious health problems due to their weight (NIDDKD, 2023). The most commonly used procedures for bariatric surgery are the Roux-en-Y gastric

bypass (also more simply known as gastric bypass) and vertical sleeve gastrectomy (Fuller et al., 2024). Both methods have similar effectiveness in short-term weight loss, but weight regain is more common for vertical sleeve gastrectomy (Yanovski & Yanovski, 2024). Post-operative complications can include leaking, infection, postoperative bleeding, thrombosis, cardiac events, malabsorption, vitamin and mineral deficiencies, refeeding syndrome, and dumping syndrome (Panuganti et al., 2023). Gastric surgery is used in combination with lifestyle changes, psychotherapy, and antiobesity medications (Fuller et al., 2024).

Weight loss devices have recently been approved by the Food & Drug Administration (FDA). These are typically used short-term and often as a precursor to weight loss surgery. One device places an inflatable balloon in the stomach via endoscopy. The balloon is then filled with saline, which helps the stomach feel fuller with less food consumption. The device is subsequently removed after six months to a year. Another device places a smaller balloon in the stomach near the pyloric sphincter, which leads to the small intestine. This slows gastric emptying to reduce hunger. It also must be removed after a year. A gastric emptying device is surgically placed, creating a stoma from the stomach. A tube is attached to the stomach, which can be emptied 20-30 minutes after eating so that the body does not absorb much of what is consumed (NIDDKD, 2023). Weight loss surgery can also reduce the communication of hunger from the gut to the brain (Cleveland Clinic, 2024).

Cognitive Behavioral Therapy (CBT) can be a helpful tool for weight loss. CBT can help patients learn coping techniques to deal with stress and the challenges related to improving their health (Clinic, 2024). CBT helps patients learn techniques related to self-monitoring, goal setting, stimulus control, problem-solving, creating non-food rewards, social support, and relapse prevention (Gilden et al., 2024). Self-monitoring, in particular, emphasizes mindfulness, which benefits weight management. (Fuller et al., 2024)

Community health programs can impact the rate of obesity. There has been a public health focus on improving nutrition and physical activity. Communities with plenty of sidewalks and bicycle routes are being designed to encourage physical activity. Voucher and vegetable prescription programs are being modified to allow more access to healthy foods. Nutrition guidelines are being promoted in food pantries, workplaces, and faith-based organizations to help people make informed food choices (CDC, 2024c). Obesity is a chronic health condition. Even after success with weight loss, patients need to maintain their lifestyle changes and monitor their weight to ensure they do not regain the weight they have lost (Cleveland Clinic, 2024).

Section 5 Personal Reflection

From what you have learned, why is prevention of obesity essential? Since obesity is a chronic condition and a person is more likely to gain weight if they have previously been diagnosed with obesity, how can you educate patients who have reached their goal weight? More invasive treatment options, like surgery, are not the primary treatment for obesity. Why do you think this is?

Section 5 Key Words

Anti-obesity drugs - medications which prevent or treat the causes of obesity

Cognitive behavioral therapy - Talk therapy that focuses on learning new strategies to manage behaviors

Glucagon-like peptide-1 - a peptide hormone responsible for stimulating the release of insulin after a meal is consumed

Person first language - speech that focuses on the person having a condition rather than the condition being a descriptor for the person, for example, “man with obesity” rather than “obese man”

Section 6: Conclusion

Research on obesity continues. Scientists are studying why maintaining weight loss long-term is more difficult for some individuals, new pharmaceutical treatments, treatments to prevent weight gain after bariatric surgery, why abdominal weight gain results in more health complications than weight gain in other areas of the body, and the financial implications of weight loss (NIDDKD, 2023). Pharmaceutical research has been focused on nutrient-stimulated hormone-based therapeutics, oral GLP-1 receptor agonists, and more dual and triple receptor agonists (Gilden et al., 2024).

The World Health Organization recommends preventing obesity by targeting marketing, manufacturing, and pricing of foods to make healthier foods more affordable and to develop communities that are more conducive to physical activity. They are also focusing on halting the increase in childhood obesity and stopping the upward trend of type 2 diabetes and obesity (WHO, 2024).

Obesity is often referred to as a global pandemic, affecting a large portion of the worldwide population. Nurses in all areas of healthcare will interact with patients living with obesity or who are at risk for obesity. Nurses can play a vital role in the prevention and treatment of obesity through screening, education, assessment, communication with the healthcare team, and decreasing the stigmas associated with overweight and obesity. Once obesity is diagnosed, nurses can assist in screening for common medical complications associated with obesity (WHO, 2024).

The future of obesity management will be focused on individualized evaluation, not solely relying on BMI for diagnosis but also considering waist circumference, lab results, and radiographic diagnostic tools. The approach to treatment will also be more individualized, as different treatments are more successful for some than others. There will also be more focus on preventing weight regain after significant weight loss. Communication with the interdisciplinary team will become increasingly crucial as nurses become knowledgeable about assessment tools for screening and provide up-to-date education to their patients (Fuller et al., 2024).

Section 6 Personal Reflection

How can new research potentially improve the prevention and treatment of obesity? Why is it necessary for food manufacturers to contribute to making healthy food more affordable? How can you use the information you have learned to improve your practice?

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