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Strategy for Weight Loss and Weight Management - Review

Adrianna Czyżnikiewicz
Ludwika Błażka Provincial Multi-Specialist Hospital in Inowrocław
https://orcid.org/0009-0007-4541-7175
Natalia Maria Rulewska
Provincial Specialist Hospital in Ciechanów: Ciechanów, PL
https://orcid.org/0009-0008-4515-7403
Jakub Siemko
Ludwika Błażka Provincial Multi-Specialist Hospital in Inowrocław
https://orcid.org/0009-0009-9318-9458
Filip Grabowski
Provincial Specialist Hospital in Ciechanów St. Powstańców Wielkopolskich 2, 06-400 Ciechanów, Poland
https://orcid.org/0009-0007-0466-2764
Dagmara Neska
Ludwika Błażka Provincial Multi-Specialist Hospital in Inowrocław: St. Poznańska 97, 88-100 Inowrocław
https://orcid.org/0009-0003-1900-954X

Dominika Prystacka-Szar
Ludwik Rydygier Memorial Specialized Hospital in Krakow
https://orcid.org/0009-0003-6533-4247
Magdalena Bujak
Krakow University Hospital St. Macieja Jakubowskiego 2, 30-688 Krakow
https://orcid.org/0009-0008-9274-3595
Magdalena Waśniowska
Stefana Żeromskiego Specialist Hospital in Kraków Os. Na Skarpie 66, 31-913 Kraków
https://orcid.org/0009-0006-0614-8307
Wenancjusz Stołowski
Ludwika Błażka Provincial Multi-Specialist Hospital in Inowrocław: Inowroclaw, PL
https://orcid.org/0009-0009-0317-1212
Justyna Stadler-Szajda
Ludwika Błażka Provincial Multi-Specialist Hospital in Inowrocław: Inowroclaw, PL
https://orcid.org/0000-0002-1742-1835

Abstract

Introduction: Obesity is the excessive accumulation of fat tissue in the body, which has broad and serious health consequences. It has also become an increasingly significant issue in today's world.

Aim: The aim of this article is to review the existing weight loss methods, their effectiveness, and the long-term maintenance of a healthy body weight.

Review Methods: A comprehensive analysis of research papers available on PubMed and Google Scholar was conducted using the following search terms: obesity, obesity causes, obesity treatment, weight gain, weight loss, weight loss maintenance.

Conclusion: Weight loss is a complex issue that requires an interdisciplinary and individualized approach for each case. Long-term weight maintenance mainly relies on lifestyle and habit changes.

Keywords
obesity causes, obesity, weight loss maintenance, weight loss

Introduction

Excessive fat accumulation makes one overweight and, if left unchecked, obese. Weight gain is becoming an increasing problem in today's world and can bring significant consequences both individually and for society as a whole [1]. Most of the effects for an individual are related to physical and mental health, but they may also coexist with social rejection and difficulty in functioning properly on a daily basis [1,2]. In 2020, the European Commission classified obesity as a chronic disease. According to the WHO report, about 59% of adults are overweight or obese, and in 49 out of 53 member countries, more than one in five people faces this problem [2].

Methods and Materials

A comprehensive analysis of research papers available on PubMed and Google Scholar was conducted using the following search terms: obesity, obesity causes, obesity treatment, weight gain, weight loss, weight loss maintenance, bariatric surgery.

Possible Causes

The variety of factors predisposed to obesity, as well as the different configurations in which they occur, complicates the fight against excessive fat tissue. An irregular lifestyle, increased

consumption of high-calorie foods, some medications, and lack of physical activity are just a few of the many potential causes that can lead to weight gain [1,3]. Other factors include genetic predispositions, addictions, and co-occurring diseases such as Cushing's syndrome, hypothyroidism, and polycystic ovary syndrome [4]. One of the most commonly used indicators to assess the level of obesity is BMI (Body Mass Index), which takes into account height and body weight. A result in the range of 25 - 29.99 signifies overweight, while a value above 30 indicates obesity. The BMI index allows for a general assessment of the risk of mortality. However, it does not allow for the assessment of the risk of complications [2,4].

Complications

Health consequences of excess weight can manifest in the body in various ways. Sex has a significant impact on the accumulation of body fat and the frequency of various health consequences in women and men. Females are predisposed to higher fat volume in the lower body, around the buttocks and thighs, but the likelihood of fat accumulation in the abdominal area increases with weight gain. In men, however, excessive fat tends to accumulate around the abdomen and upper body. [5]

Obesity increases the risk of type 2 diabetes, hypertension, cancer, and respiratory disorders. It can also have an adverse impact on mental health. [5,6,7]. Persistent elevated levels of inflammatory markers seen in obesity influence an increased number of platelets in the blood, their hyperactivity, impaired fibrinolysis, and endothelial dysfunction [8]. This increases the risk of cardiovascular diseases [9,10]. Excess fat is also significant for women trying to conceive. Infertility, menstrual irregularities, increased risk of perinatal complications, and health problems in the child are just some of the consequences [11,12].

Weight Loss Methods

Returning to a healthy weight and reducing the risk of complications is a difficult and time-consuming process, and maintaining it requires changes in diet, lifestyle, and mindset. Methods for weight loss include diet, physical exercise, medications, and medical interventions. Each of these can be used separately or in various combinations, depending on individual needs [13,14].

Diet

Regardless of the type of diet, the key factor for achieving the desired result is a calorie deficit. Regular meals, increased consumption of vegetables and fruits, and a reduction of highly processed foods positively impact weight loss. However, the plan should be tailored individually, depending on needs and health status [15]. Diet is an effective short-term method for weight loss, but too large a calorie deficit can cause various side effects such as fatigue, headaches, or irregular menstrual cycles in women [13].

Regular Physical Exercise

Physical exercise is an essential part of any weight loss strategy. It is most effective when combined with a proper diet, yielding better results than dietary changes alone [13]. Regular physical activity improves both body composition and reduces fat tissue. Aerobic exercises are more effective than resistance exercises [16]. Studies also indicate the positive cellular-level effects of physical activity (reduction in triglycerides, increased insulin sensitivity), improved cardiovascular and respiratory system performance, and alleviation of depression symptoms [17].

Pharmacotherapy

Medications can be an effective complement to comprehensive obesity treatment and help achieve the desired weight. Substances used in pharmacotherapy include Orlistat, Naltrexone, a combined preparation of Naltrexone and Bupropion, and Liraglutide [13].

Orlistat (tetrahydrolipstatin) is a specific, long-acting inhibitor of lipases produced in the digestive tract. It works by preventing the breakdown of ingested triglycerides, leading to a reduction in fat absorption by about 30%, which decreases the number of calories delivered to the body. [14].

The newest substances gaining increasing popularity are semaglutide and tirzepatide. Semaglutide, as well as Liraglutyde are human glucagon-like peptide-1 (GLP-1) analogs. This group of substances work by binding to the GLP-1 receptor found in the pancreas, brain, and kidneys, regulating pancreatic insulin and glucagon secretion and reducing appetite [14,18].

Tirzepatide acts on both GLP-1 and glucose-dependent insulinotropic polypeptide (GIP) receptors. It works similarly to semaglutide by regulating appetite and increasing feelings of

fullness [19]. A retrospective study by Weintraub et al. showed that pharmacological treatment for obesity statistically allows for long-term weight loss of around 10% [20].

Surgical Interventions

Bariatric surgery is a weight loss method primarily reserved for patients with morbid obesity and comorbid conditions. These individuals have often already undergone multiple unsuccessful attempts to change their weight through exercise, diet, and medications. In such cases, surgical intervention is another attempt to resolve the issue. The main methods currently used are Roux-en-Y Gastric Bypass and Sleeve Gastrectomy [21,22]. The result of bariatric surgery is not only weight loss but also improvements in glucose levels, blood pressure, and lipid levels. However, there is a risk of perioperative complications, such as bowel obstruction, hernia, hypoglycemia, or mineral deficiencies [13,22,23].

Maintaining a Healthy Weight

Another challenge after successful weight loss is maintaining the weight. A return to the pre-weight loss level or even weight gain is a known problem among obese individuals. Increased hunger, decreased motivation, and difficulties maintaining a healthy lifestyle increase the risk of failure [24, 25]. Long-term weight loss maintenance after five years is only achieved by 20% of individuals, with half regaining their weight within two years [26, 27].

Kheniser et al. indicate that the effectiveness of using diet or exercise alone is relatively low, with success increasing when combined with pharmacotherapy [13].

Weintraub et al. suggest a 10% success rate in maintaining healthy body weight over 4.4 years with polypharmacotherapy [20]. Research by Ghusn et al. showed a 10.9% weight loss within six months with the use of semaglutide [28].

As indicated by Wolfe et al., within three years of bariatric surgery, weight loss can reach up to 35% of total body weight with the Roux-en-Y Gastric Bypass technique. The use of Sleeve Gastrectomy results in a 15.9% loss in total body weight over three years [22].

The environment, the approach of those closest to the patient, and the patient's behavior play a significant role in the success of weight loss efforts. Easy access to high-calorie, heavily processed foods, coping with stress through overeating, and the relatively high cost of fresh food products hinder maintaining a healthy lifestyle. Lack of understanding from family and

close friends who do not engage in the weight loss process, offer support, or demonstrate understanding, leads to a decrease in motivation for weight loss and maintenance [24].

Ramage et al. pointed out that the greatest chance of success in maintaining a healthy body weight is the simultaneous use of multiple weight loss methods, such as diet or physical exercise, while also modifying lifestyle [25].

Similarly, Varkevisser et al. emphasized the importance of reducing food calorie content, eliminating sweets and fats, portion control, and regular exercise for weight maintenance. However, they did not observe a significant influence of the environment or socioeconomic status on the success of weight loss and its maintenance [29].

A meta-analysis conducted by Flore et al. highlights the complex nature of the issue of weight loss and maintaining an optimal weight. Factors that facilitate weight loss and maintenace include motivation and awareness of the possible consequences of an unhealthy lifestyle. The authors also emphasize the importance of physical activity and diet. However, they note a difference in the approach to the problem depending on gender [30].

Wadden et al. point out an interesting relationship between individual and collective approaches. They observe that maintaining a healthy body weight depends on both the individual and society, as well as institutions. Their role is to create an environment that facilitates weight loss and a healthy lifestyle. Examples of such actions include improving access to fresh food, places for regular exercise, and easier access to specialists [31].

Conclusion

Obesity is one of the most significant problems facing the modern world, leading to serious and long-term health, social, and financial consequences both for the individual patient and the society in which they live. However, no single method has been found that is equally effective and reliable in every case. Behavioral changes and shifts in attitudes toward weight and health play a significant role in the success of weight loss efforts.

In conclusion, an effective weight loss attempt requires an individualized and multidisciplinary approach. It is the result of long-term, consistent self-work with the possible involvement of specialists such as trainers, diabetologists, doctors, psychologists, psychiatrists, and physiotherapists. Achieving effective and long-term success should focus

not only on weight loss but also on improving health, maintaining a healthy weight, and reducing or eliminating potential long-term health complications.

Author's contribution

Conceptualization: Adrianna Czyżnikiewicz
Methodology: Filip Grabowski, Dagmara Neska, Magdalena Waśniowska
Software: not applicable;
Verification: Jakub Siemko, Wenancjusz Stołowski, Magdalena Bujak
Formal analysis: Dominika Prystacka-Szar, Jakub Chodkowski
Research: Adrianna Czyżnikiewicz, Wenancjusz Stołowski, Magdalena Bujak, Filip Grabowski,
Resources: Natalia Rulewska, Filip Grabowski, Jakub Siemko
Writing- rough preparation: Justyna Stadler-Szajda, Magdalena Waśniowska
Writing- review and editing: Natalia Rulewska, Filip Grabowski, Dagmara Neska
Visualization: Adrianna Czyżnikiewicz, Jakub Chodkowski, Justyna Stadler- Szajda
Supervision: Adrianna Czyżnikiewicz;
Project administration: Adrianna Czyżnikiewicz
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