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## Mindfulness based interventions in the treatment of obesity

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## Abstract

**Introduction:** Obesity is a chronic, multifactorial disease that leads to many complications. Many methods of treating obesity are available, but they are often not effective enough. Due to the strong connection between

psychological factors and the development of obesity, it can be useful to include mindfulness training in treatment.

**The aim of this study:** Summarize current knowledge on the effectiveness of mindfulness training in the treatment of obesity and evaluate the effect of mindfulness on weight loss.

**Material and method:** The review includes publications published in 2012-2022. The search of publications in the Pubmed database was carried out using the following keywords: mindful eating, mindfulness, weight loss, obesity.

**Description of the stage of the knowledge:** The use of mindfulness techniques in the treatment of eating disorders is becoming more popular. A growing number of studies evaluating the effects of mindfulness on weight loss are emerging, but the results are inconclusive. Mindfulness training is effective in improving eating habits and promoting lifestyle changes. Mindfulness training combined with behavioral treatments for obesity has positive effects on weight loss.

**Summary:** Research shows that mindfulness training may be a promising intervention in obesity treatment because it increases self-awareness and promotes lifestyle changes. However, more research is needed to assess the long-term effectiveness of mindfulness for weight control.

**Keywords:** mindful eating, mindfulness, weight loss, obesity.

## Introduction

Obesity is a chronic disease that is affecting more and more people around the world. In 2016 39% of the population over the age of 18 was overweight, 13% of whom were obese. Between 1975 and 2016, the number of obesity cases worldwide tripled. [1] Obesity is associated with an increased risk of cardiovascular disease, diabetes and even some types of cancers. [2] In addition, it is a serious economic problem due to its global prevalence and high medical costs. [3,4] Existing treatments are inadequate, as obesity rates continue to rise despite their implementation.[4] A growing number of studies are emerging to evaluate the effects of mindfulness training interventions on weight loss in people struggling with overweight or obesity. [5]

## Obesity

Overweight and obesity are abnormal or excessive accumulations of body fat that can impair health. BMI is the most commonly used body mass index that classifies overweight and obesity. It is calculated as a person's weight in kilograms divided by the square of his height in meters. In adults, overweight is defined as a BMI higher than or equal to 25 and obesity as a BMI higher than or equal to 30. The fundamental mechanism of obesity is an energy imbalance between calories consumed and calories expended. [1] The etiology of obesity is multifactorial. Its development is influenced by environmental factors such as the industrialization of food production, easy access to processed products high in sugar and fat, sedentary work styles, the ubiquity of transportation, and increasing urbanization. [1,3] With the development of technology, there is the possibility of mindless eating while watching TV or working on the computer, which is becoming increasingly common and results in eating beyond homeostatic need. [6] Other important determinants that predispose to obesity include cultural, genetic, and psychological factors. [3] It is believed that certain psychological conditions, such as mood disorders, stress, and anxiety disorders, for example, can affect eating behavior and cause significant weight gain. Emotional eating is the tendency to eat in response to negative feelings or events; external eating is eating under the influence of external food-related stimuli. These behaviors lead to uncontrolled eating regardless of feelings of hunger and satiety, which leads to weight gain and the formation of unhealthy eating habits. [7]

Obesity leads to many adverse health consequences. First and foremost, it is associated with type 2 diabetes, cardiovascular disease, hypertension, and osteoarthritis. Obesity increases the risk of cancers of the colon, rectum, breast, endometrium, pancreas, esophagus, kidney, and gallbladder. [3,8] There are several methods of treating obesity. The most important are lifestyle changes, such as increasing physical activity and changing diet, which are recommended at the beginning of treatment. These methods are effective but fail at long-term weight control. The next methods are pharmacological medications, the use of which is limited by contraindications and side effects. Another way is bariatric surgery, which is an invasive and expensive procedure. [9] Therefore, it is important to find a method that will maintain adequate weight in the long term. Considering the factors that contribute to obesity and the large contribution of psychological aspects, it may be beneficial to use mindfulness techniques to improve the motivation and self-control of obese patients. [7]

## Mindfulness meditation

For many years, mindfulness has been practiced in culture as part of religious traditions such as Hinduism and Buddhism.[7]

Mindfulness meditation involves paying attention to external and internal stimuli occurring in the moment without becoming immersed in thoughts and emotions. In this way, automatic, inadequate responses can be replaced with conscious, healthier ones. [4] The definition of mindfulness is frequently described as "a state of nonjudgmental attention to the immediate experience and an acceptance of moment-to-moment experience." [10] Generally, mindfulness practice reduces mental stress, improves overall mental health, and has been shown to be effective in reducing anxiety and alleviating depressive symptoms. [7] In modern psychology, there are two types of practicing mindfulness: the first is through formal meditation practice in programs such as mindfulness-based stress reduction (MBSR) or mindfulness-based cognitive therapy (MBCT). The second possibility is informal, spontaneous mindfulness training during daily routines. People are urged to pay close attention to their sensations while performing these tasks, including walking, taking a shower, and eating. Both methods lead to increased awareness of sensations such as hunger and satiety, which can be crucial to ending bad eating habits. [11] Mindfulness-Based Eating Awareness Training (MB-EAT) is a mindful eating training program that combines elements of MBSR and MBCT. It was created to help overcome binge eating but is also implemented to reduce weight. It aims to enhance eating habits by developing a healthier, more rational approach to the subject of food. Training, as well, can support psychological treatment in patients with emotional eating or external eating problems. [7] Practicing mindfulness brings about improved self-compassion, self-control, and emotional regulation. [12]

#### Mindfulness meditation in obesity-related behaviors

Mindfulness meditation is growing in popularity as an intervention for weight loss and obesity-related eating behaviors. [10,11] Mindfulness practice can be used to reduce feelings of hunger and control food intake and body weight. Mindfulness causes greater attention to the body's physiological responses, such as hunger and satiety, as well as to the pace of eating, the environment, and the characteristics of the food. Receiving these signals is key to achieving self-regulation. [12] Distracted and unconscious eating disrupts the memory of the meal and causes further food intake, indicating that attentive and conscious eating is essential to appropriate control mechanisms. [7] In addition, mindfulness promotes the formation of de-automatization, which can be effective in treating impulsive eating. Impulsive eating often stems from difficulties in managing mental stress, and mindfulness is associated with the reduction of stress and depressed mood. Therefore, mindfulness can be used to treat eating disorders by reducing psychological distress. Mindfulness training has also been shown to increase physical activity levels in people with sedentary lifestyles, with beneficial effects on energy balance and weight control. [5] Participants can reduce calorie intake and eat less stress-driven by eating more mindfully, with a greater focus on physical sensations. These methods can help to fight the negative effects of modern life (time pressure, multitasking, low-quality food, fast food) by making mealtime a relaxing, conscious experience. [9]

#### Mindfulness and weight loss

A growing amount of research is evaluating the impact of mindfulness-based interventions (MBIs) for weight loss, but the results are inconsistent. One analyzed publication indicates that MBIs are moderately effective in weight loss and largely effective in improving eating behavior. Better weight loss results were obtained by combining informal and formal meditation techniques. In addition, participants in mindfulness-based interventions (MBIs) showed consistent weight loss compared to participants in diet and physical activity programs. These weight reductions are due to changes in eating habits and are a promising indicator that mindfulness techniques will be more effective long-term than existing standard treatments. [11] Through mindfulness, an internal, autonomous motivation develops that is strongly associated with long-term behavioral change. [10]

A study by Spadaro et al. reveals that after a 6-month SBWP (standard behavioral weight loss program), people who had mindfulness meditation attached achieved significantly greater weight loss than those who only used SBWP. Attaching mindfulness meditation to SBWP may result in higher weight loss and better health outcomes. [4]

In a publication by Katterman et al., evidence suggests no effect of the standard Mindfulness-Based Stress Reduction program alone on weight change but notes a positive effect on weight loss when mindfulness training and standard behavioral treatments for obesity are combined. [10]

Dunn et al. discovered weight loss in all of the studies examined. In 4 out of the 5 trials, follow-up assessments showed continued weight loss. The authors emphasize that the sustainability of this method is the most promising aspect of this strategy. It has also been shown that increasing mindful eating helps improve awareness of one's body, recognize hunger and satiety signals, reduce food cravings, and lower reward-driven eating. [12]

In contrast, weight loss was not statistically significant in the study by Daubenmier et al. However, they found that the mindfulness intervention could lead to long-term maintenance of fasting glucose levels and improvement in the atherogenic lipid profile. [13]

A publication by Paltoglou et al. confirmed that a mindfulness-based therapeutic program might lead to a decrease in parameters of obesity (BMI and/or waist-to-hip ratio). In addition, it was found that mindfulness interventions could be a method of helping to enhance the emotional well-being of parents, children, and adolescents, as well as a way to control stress and thus improve the quality and quantity of food intake. [14]

The subject of mindfulness in the treatment of obesity is a fairly new area of research, limited by small sample sizes. [10] There are many types of mindfulness training that contain different elements and have different durations, which causes discrepancies in studies. [11] Future research should focus primarily on examining the long-term effects of mindfulness and include a more heterogeneous population. [2] Further studies should also evaluate the specific amount of mindfulness compared to other treatment components. [10]

## Summary

Despite these limitations, it can be concluded that the use of mindfulness meditation has positive effects in promoting good eating habits and changing lifestyles. Their use is a low-cost, non-invasive, and easily adaptable strategy. Being attentive, listening to oneself, and being aware of one's decisions, combined with standard behavioral treatments for obesity, can help one adhere to an appropriate program and maintain a healthy weight. Further research needs to be conducted in this direction because the results of studies to date are promising but inconclusive. More research is needed to examine the long-term effectiveness of mindfulness on weight loss maintenance. In addition, future research should focus on establishing an effective "dose" and method of mindfulness training.

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