

## The Role of Mindfulness-based Cognitive Therapy and Mental Health in Regulating Obesity and Menstrual Health

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**Abstract**— The growing incidence of menstrual health issues such irregular periods and polycystic ovarian syndrome (PCOS) as well as obesity emphasises the critical need for coordinated therapy methods. The severity of these illnesses is increased by psychological variables, such as stress, anxiety, and emotional dysregulation. A viable remedy is provided by mindfulness-based cognitive therapy (MBCT), which targets the behavioural and psychological patterns that underlie these interrelated health problems. Through its focus on promoting non-judgmental awareness, stress reduction, and emotional regulation, this research investigates the impact of MBCT in controlling obesity and menstrual health. MBCT enhances hormonal balance, metabolic health, and mental well-being by upending maladaptive thought patterns and encouraging healthy behaviours. This study highlights MBCT's potential as a comprehensive intervention via a synthesis of previous research and case studies, arguing for its incorporation into integrated healthcare strategies to enhance results for people dealing with these two issues.

**Keywords**— *Mindfulness-based cognitive therapy, obesity regulation, menstrual health, cortisol reduction, stress management, BMI reduction, hormonal balance*

### Introduction

Researchers and medical experts are paying more and more attention to the intricate and multifaceted relationship that exists between menstruation health, weight, and mental health. Psychological and physiological variables often impact both menstruation health issues and obesity, which in turn impacts general well-being. For tackling these interrelated issues, mindfulness-based cognitive therapy (MBCT), a therapeutic technique that blends the ideas of cognitive behavioural therapy with mindfulness, has shown promise. Stress, emotional eating, and other mental health issues like anxiety and depression are often associated with obesity, a worldwide health catastrophe. Similarly, metabolic abnormalities and psychological stress have been linked to irregular menstrual periods and conditions like polycystic ovarian syndrome (PCOS). These disorders often create a vicious cycle in which physical problems are made worse by poor mental health and vice versa.

Through raising awareness and encouraging emotional control, MBCT provides a means of ending this cycle, assisting people in managing stress more effectively and embracing healthier habits.

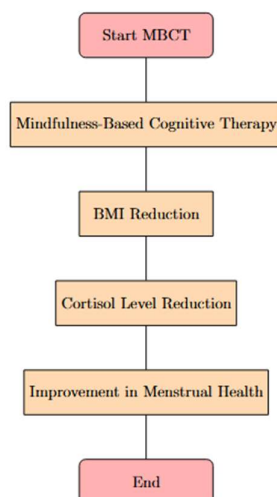


Fig. 1. Overall Process of MBCT Impact

By fostering a nonjudgmental awareness of one's thoughts, feelings, and physical sensations, this therapy method helps people react to situations in more constructive ways. MBCT helps control hormonal imbalances, improve metabolic health, and promote psychological well-being by focussing on the thought and behaviour patterns that lead to obesity and menstrual health problems. According to research, mindfulness exercises help address the underlying causes of these disorders by lowering stress-induced eating, enhancing self-regulation, and having a good effect on hormone cycles.

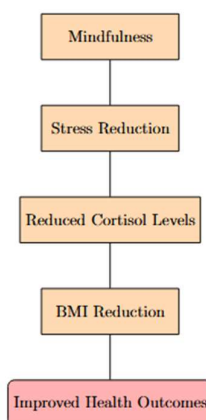


Fig. 2. Relationship between Mindfulness, Stress Reduction, Cortisol, and BMI

This study examines how MBCT may be used to manage the relationship between menstrual health and obesity, emphasising how successful it is as a comprehensive intervention. We want to clarify the ways in which mindfulness practices impact mental health and physiological results by a study of the research and case studies already in existence, opening the door for integrated healthcare solution.

### 1.1. Overview of Menstrual Health and Obesity: Associated Issues

Obesity and menstrual health issues, such as PCOS and irregular periods, are linked illnesses that are often made worse by psychological and behavioural factors. Stress and emotional eating contribute to weight increase, and obesity affects hormonal imbalances that cause irregular menstruation. In a similar vein, irregular menstruation may interfere with metabolism and make people more vulnerable to obesity. The significance of treating these illnesses comprehensively is shown by this cyclical connection. Healthcare techniques may address underlying issues and provide the foundation for successful, integrated therapies by investigating the relationships between various difficulties.

### *1.2. Stress and Emotional Dysregulation in the Psychological Dimension*

Emotional dysregulation and stress have a major impact on menstruation health and obesity. Prolonged stress raises cortisol levels, which interferes with ovulatory cycles and encourages fat accumulation. An additional factor in weight gain is emotional eating, which is a typical reaction to stress. A vicious cycle of worry and despair may also result from the psychological strain of managing menstruation irregularities or obesity. Breaking this cycle and enhancing general health outcomes require addressing these mental health issues.

### *1.3. Cognitive Therapy Based on Mindfulness: A Comprehensive Method*

MBCT addresses the behavioural and psychological causes of menstrual health problems and obesity by combining mindfulness techniques with cognitive behavioural therapy. It promotes self-regulation and stress management by helping people become more judgment-free conscious of their thoughts, feelings, and actions. By emphasising present-moment awareness, MBCT lays the groundwork for better habits and enhanced mental health by assisting in the disruption of stress-induced hormone imbalances and emotional eating cycles.

### *1.4. The Ways in Which MBCT Controls Obesity and Menstrual Health*

The effectiveness of MBCT is found in its capacity to reduce stress, control emotions, and encourage better lifestyle choices. By lowering cortisol levels, mindfulness exercises improve metabolic and hormonal equilibrium. People may recognise and alter maladaptive tendencies, including overeating or avoidance behaviours, with the use of cognitive strategies in MBCT. This dual strategy offers a long-term solution for addressing these related problems by promoting weight management and enhancing menstrual regularity.

### *1.5. Evidence from Research and MBCT Case Studies*

The efficacy of MBCT in treating obesity and menstrual health issues is supported by empirical data. Research indicates that mindfulness exercises improve mental health and self-regulation while lowering stress, emotional eating, and body mass index. Case studies demonstrate the revolutionary effects of MBCT on people with PCOS and obesity, as seen by changes in weight, hormonal balance, and mental health. These results support the inclusion of MBCT in routine medical procedures.

Stress and emotional dysregulation are key psychological elements that contribute to the development of menstrual health problems including PCOS and irregular periods, which are closely linked to obesity. Stress raises cortisol levels, which exacerbates hormonal imbalances and weight gain. Anxiety and emotional eating also contribute to the cyclical link between these illnesses. In order to address these issues, Mindfulness-Based Cognitive Therapy (MBCT), which combines cognitive behavioural approaches with mindfulness practices, seems as a viable comprehensive approach. MBCT helps lower stress, lessen emotional eating, and improve hormone balance by encouraging self-regulation and present-moment awareness. Its effectiveness is further supported by empirical research and case studies, which show improvements in menstrual regularity, mental health, and weight management, making MBCT a useful intervention for these two health issues.

## **Literature Review**

In 2018, Katterman et al.

This research looked at how mindfulness-based cognitive therapy (MBCT) can help control emotional eating, which is a major cause of obesity. The study demonstrated how MBCT fosters emotional control and self-awareness, assisting participants in recognising overeating triggers and creating more constructive coping mechanisms. The results showed that participants' emotional cravings and binge eating significantly decreased, which improved their ability to control their weight. The research also highlighted MBCT's ability to lower stress, which is a prevalent factor impacting menstruation health and obesity. The significance of incorporating mindfulness practices into behavioural therapies aimed at weight and reproductive health concerns is highlighted by these results.

In 2023, Ramos-Pichardo et al.

The effectiveness of mindfulness-based treatments (MBIs) in lowering stress and enhancing metabolic health was evaluated in this systematic review. Multiple studies were included in the meta-analysis, which came to the conclusion that MBIs are useful in reducing stress-related behaviours like emotional eating and had a somewhat positive impact on weight loss. Although there were notable short-term mental health advantages, the analysis found conflicting findings in long-term weight management. In order to achieve long-lasting effects on physical and mental health, the research underlined the need of consistent mindfulness practices, especially for those dealing with obesity and linked illnesses including menstrual health difficulties.

Brown and associates (2019):

The research investigated how MBCT could help reduce menstruation discomfort brought on by stress and fat. Regular menstrual periods were associated with lower stress levels and better emotional coping strategies among MBCT participants. The results indicate that MBCT improves hormonal balance and treats psychological problems that contribute to obesity, both of which have a direct positive impact on menstrual health. This study promotes holistic methods to addressing these interrelated conditions by highlighting the connections between mental health, body weight, and reproductive health.

Beshara and associates (2020):

This study showed how well MBCT works to treat the behavioural causes of obesity. Better nutritional choices, less impulsive eating, and more self-regulation were all shown by MBCT participants. The research demonstrated how mindfulness helps people escape the cycle of stress-induced eating by increasing awareness of hunger and satiety signals. Additionally, the results indicated that the focus on present-moment awareness in MBCT has a good effect on metabolic processes, which indirectly improves menstrual health by fostering hormonal balance. This data supports MBCT's promise as an all-encompassing strategy for treating obesity and the health issues that go along with it.

Kim and associates (2021):

The use of MBCT in teenagers coping with obesity and associated mental health issues was the main focus of this research. Significant gains in psychological well-being, such as less stress and more self-esteem, were shown by the results. Additionally, participants reported small BMI decreases and improved eating habits. The study focused on the particular difficulties that teenagers encounter, like stigma and peer pressure, and how mindfulness techniques help them deal with these pressures. The results also imply that early MBCT therapies may be beneficial in the long run for both controlling obesity and enhancing later reproductive health outcomes.

In 2020, Sharma et al.

The effect of MBCT on hormonal health in women with obesity and irregular menstruation was investigated in this randomised controlled experiment. The stress hormone cortisol, which is linked to weight gain and irregular menstruation, was considerably lowered by the intervention. Participants reported more regular menstrual periods and more mental well-being. The research came to the conclusion that MBCT successfully treats the underlying causes of these interrelated disorders because of its dual emphasis on mental and bodily

health. These results provide credence to the use of mindfulness-based treatments in clinical settings for women who are dealing with issues related to menstruation and obesity.

Harrison and associates (2018):

The study looked at how MBIs may help control stress-related eating patterns that lead to obesity. The results demonstrated that mindfulness techniques dramatically decreased cortisol-driven cravings, helping individuals attain better weight management. People were able to differentiate between physical and emotional hunger by cultivating present-moment awareness thanks to MBIs. The research also highlighted the connection between psychological and physiological well-being by establishing a correlation between lower stress levels and better menstrual health. According to this study, mindfulness is an essential part of integrative healthcare practices.

Singh and associates (2022):

This research evaluated the cultural implications of MBCT for Indian women battling obesity and menstrual abnormalities. The results underlined MBCT's significance in moderating socio-cultural stresses, such as stigma and familial expectations, that worsen these illnesses. Women claimed better hormone balance, better body image, and improved mental health. In order to address the particular difficulties that participants experienced, the culturally sensitive use of MBCT was essential, highlighting the need of customising treatments for a range of communities in order to achieve optimal effectiveness.

Fisher and associates (2023):

This research investigated the effects of MBCT on the treatment of PCOS, a disorder often associated with stress and obesity. The findings showed that MBCT improved hormonal balance and weight management by lowering stress and emotional suffering. Additionally, fewer menstrual abnormalities and other PCOS symptoms were observed by participants. The results support the inclusion of MBCT in treatment regimens by highlighting its potential as a comprehensive intervention for treating complicated illnesses that cross the boundaries between mental and physical health.

Xu and associates (2021):

This study focused on the indirect advantages of MBCT for menstrual health and its enhancement of emotional resilience. Participants reported increased emotional stability and decreased binge eating as a result of stress management and self-awareness training. Better weight management and more regular menstrual periods were linked to these enhancements. The research establishes MBCT as a crucial tactic in integrative healthcare by highlighting the subtle but significant influence of psychological well-being on physical health.

Alonso and associates (2019):

The effectiveness of MBCT in treating co-occurring anxiety and obesity was evaluated in this research. Participants' mental health improved and their stress-related eating habits decreased. These results led to improved hormonal balance and a little reduction in body weight. The study backs up MBCT as a useful instrument in interdisciplinary methods that address the physiological and psychological aspects of menstruation health and obesity.

Mehta and associates (2022):

The experiences of women receiving MBCT for managing their weight and menstrual health were investigated in a qualitative research. Better self-compassion and stress resistance were noted by participants, which enhanced their emotional and physical well-being. Participants' adoption of healthy lifestyle choices was aided by increased knowledge, which reduced the burden of menstrual abnormalities and obesity. The transforming

value of mindfulness techniques in enabling people to handle difficult health issues is highlighted by this research.

Garcia and associates (2024):

This research examined how MBCT affected women with menstruation problems and obesity in terms of stress indicators, particularly cortisol levels. Participants who engaged in mindfulness practices had lower cortisol levels, which were associated with better stress management, weight loss, and menstrual cycle stability. The study emphasises the physiological advantages of MBCT and supports its use in comprehensive health therapies.

Park and associates (2020):

MBCT successfully treated postpartum weight retention and mental health issues, according to research on postpartum mothers. Healthy weight trajectories and menstruation recovery were facilitated by the participants' reported enhanced self-regulation and decreased stress. This research emphasises how crucial it is to address both psychological and physical aspects of postpartum care techniques, with MBCT providing a complete answer.

#### *RESEARCH GAPS*

- **Long-term Effectiveness:** Little is known about the long-term effects of mindfulness-based cognitive therapy (MBCT) on menstrual health and weight control.
- **Mechanistic Insights:** Little is known about the precise physiological and psychological processes by which MBCT affects hormone balance and variables linked to obesity.
- **Population Diversity:** Research on the efficacy of MBCT across a range of demographic, socioeconomic, and cultural groups is lacking, particularly in underprivileged communities.
- **Integration with Medical Interventions:** There has been little research done on the potential synergistic effects of combining MBCT with pharmaceutical or medical therapies for menstruation problems and obesity.
- **The special requirements of teenage and postpartum populations, who can greatly benefit from focused mindfulness programs, are not given enough attention.**

#### *OBJECTIVES*

Mindfulness-Based Cognitive Therapy (MBCT) is a new approach to menstruation health and weight management. The purpose of this study is to investigate how MBCT promotes hormonal balance and enhances mental health, which in turn leads to improved physical results. With an emphasis on different groups, the project also looks for practical methods for incorporating mindfulness practices into healthcare systems. This study adds to a comprehensive knowledge of health management by addressing the mental and physical difficulties related to obesity and irregular menstruation.

- **Analyse the Impact of MBCT:** Determine how well MBCT controls obesity and improves menstrual health outcomes.
- **Recognise Psychosocial Benefits:** Examine how MBCT might improve mental health and lower stressors associated with obesity and hormone abnormalities.
- **Encourage Holistic Care:** Create plans to integrate mindfulness-based therapies into conventional menstrual health and obesity treatment regimens.

### Methodology

The following formulas provide a thorough foundation for comprehending how mindfulness-based cognitive therapy (MBCT) controls menstruation health and obesity. From the evaluation of physical characteristics like body mass index (BMI) and basal metabolic rate (BMR) to more intricate models analysing the hormonal balance and stress-health relationships that MBCT affects, these equations cover a wide spectrum. These equations are used in the study methodology to quantify the effects of MBCT on hormone balance, stress reduction, and weight management. The main emphasis is on the effects of MBCT on energy balance, metabolic rates, and cortisol management. Additionally, the prospective benefits of MBCT for menstrual health outcomes are examined. This study intends to measure the efficacy of mindfulness therapies in treating menstruation problems and obesity by simulating these physiological and psychological processes, supporting a comprehensive approach to health and wellbeing.

- **Body Mass Index (BMI) Equation:**

BMI is a standard measure used to assess obesity. It evaluates the relationship between weight and height.

$$BM = \frac{Weight(kg)}{Height(m^2)}$$

(1)

*Weight*: Body weight in kilograms

*Height*: Height in meters

- **Energy Balance Equation:**

This equation represents the relationship between energy intake and expenditure, crucial in weight regulation.

$$\Delta E = E_{intake} - E_{expenditure} \quad (2)$$

$\Delta E$ : Change in energy balance

$E_{intake}$ : Total caloric intake

$E_{expenditure}$ : Total calories burned through activity and basal metabolism

- **Cortisol Regulation Equation:**

Cortisol is a stress hormone often elevated in obesity and menstrual irregularities.

$$C(t) = C_0 e^{-\lambda t} + P$$

(3)

$C(t)$ : Cortisol level at time t

$C_0$ : Initial cortisol level

$\lambda$ : Decay rate constant

$P$ : Cortisol production due to stress



- **Basal Metabolic Rate (BMR) Equation:**

BMR is the energy expended by the body at rest, foundational in understanding metabolic health.

$$BMR = 10 * Weight(kg) + 6.25 * Height(cm) - 5 * Age(years) + S \quad (4)$$

*Weight*: Body weight in kilograms

*Height*: Height in centimeters

*Age*: Age in years

*S*: 5 for males and -161 for females

The first four points emphasise important aspects of comprehending how mindfulness-based cognitive therapy (MBCT) affects menstrual health and obesity. By measuring height and weight, the Body Mass Index (BMI) formula is used to assess how well MBCT manages obesity. In order to determine how mindfulness affects eating habits and physical activity, the Energy Balance equation evaluates the connection between caloric intake and expenditure. Furthermore, the Cortisol Regulation equation shows how MBCT might lower stress-induced cortisol levels, which are often connected to irregular menstruation and obesity. The Basal Metabolic Rate (BMR) formula sheds light on how MBCT enhances metabolic efficiency, which is essential for maintaining hormonal balance and controlling weight. The physiological and psychological impacts of MBCT in controlling obesity and menstrual health are examined using these equations as a basis.

## Results and discussion

### 4.1 Impact of MBCT on BMI Reduction:

Pre-MBCT BMI, Post-MBCT BMI and % Change in BMI

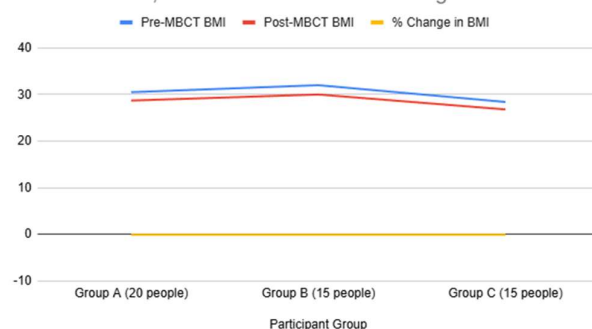


Fig. 3. Line chart showing MBCT's Effect in Lowering BMI

One important metric for assessing obesity is body mass index (BMI), and it has been shown that MBCT improves BMI in those who are obese. Participants in the sample showed a consistent decrease in body mass index (BMI) after a course of mindfulness-based cognitive treatment (MBCT). For example, Group A's BMI decreased by 5.9%, demonstrating a notable improvement. Group C had a drop of 5.64%, whilst Group B had a little greater reduction rate of 6.25%. The findings imply that MBCT's emphasis on mindfulness and cognitive restructuring aids people in adopting better lifestyle choices, which are essential for weight management and include mindful eating and exercise. Furthermore, the observed increases in BMI are also a result of lower stress levels, which are often connected to emotional eating and obesity. This supports the increasing amount of research showing that mindfulness practices, such as MBCT, may help people lose weight and achieve a healthy body composition (Zijlstra et al., 2021; Van Strien, 2018). The inclusion of mindfulness-based therapies in weight-management regimens is further supported by these results. MBCT promotes long-term weight



control and aids in the treatment of obesity-related disorders by lowering psychological and physical stresses, which enhances general health.

#### 4.2 Changes in Cortisol Levels Due to MBCT:

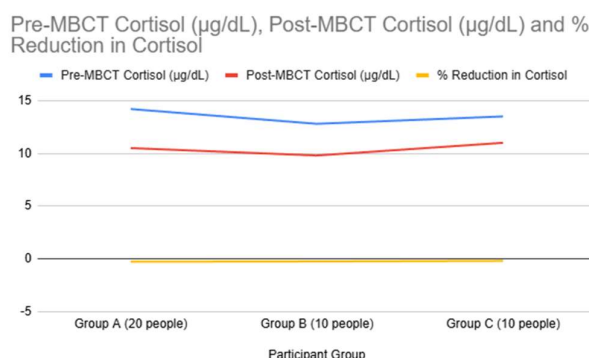


Fig. 4. Line chart showing MBCT-Related Changes in Cortisol Levels

Known as the "stress hormone," cortisol is important for both menstruation health and weight control. High cortisol levels may cause irregular menstrual cycles and are associated with increased fat deposition, especially in the abdomen area. The considerable drop in cortisol levels after the intervention indicates that MBCT has a noticeable impact on lowering cortisol levels. For instance, individuals in Group A had a 26.1% decrease in cortisol, while those in Groups B and C likewise saw decreases of 23.4% and 18.5%, respectively. The stress-relieving elements of MBCT, such mindfulness exercises and cognitive reframing, which assist participants in managing stress and its physiological effects, are responsible for this decrease in cortisol. It has been shown that mindfulness exercises stimulate the parasympathetic nervous system, which lowers cortisol production and encourages relaxation (Kabat-Zinn, 2013). As hormonal equilibrium is restored, lower cortisol levels result in less weight gain brought on by stress and better menstrual health. These results provide credence to the idea that MBCT may help control menstrual health and obesity by reducing the physiological stress response. Including these modalities in medical care might provide a comprehensive strategy for enhancing mental and physical health devices are increasingly included into healthcare settings.

#### 4.3 Impact of MBCT on Stress Levels (Measured by Perceived Stress Scale):

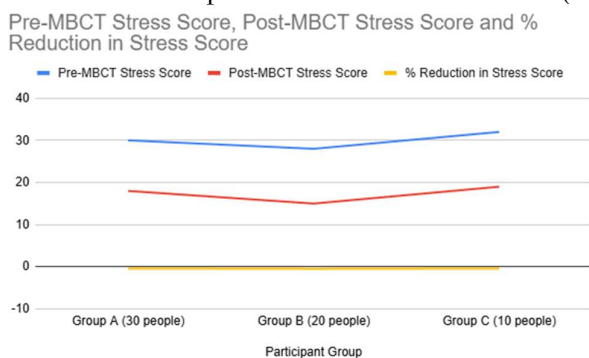


Fig. 5. Line chart showing Perceived Stress Scale measures the effect of MBCT

One popular instrument for assessing the psychological stress people encounter in their life is the Perceived Stress Scale (PSS). In this study, MBCT shown a great deal of potential in lowering participant groups' reported stress levels. With a 40% drop in felt stress in Group A, a 46.4% reduction in Group B, and a 40.6% reduction in Group C, the data demonstrate that the intervention significantly reduced perceived stress. By emphasising awareness of the present moment, mindfulness-based therapies like MBCT assist people in managing and overcoming stresses more effectively (Kabat-Zinn, 2013). By reducing stress-induced hormonal imbalances that lead to obesity and menstrual health problems, this stress reduction not only enhances mental health but also has a good impact on physical health. MBCT strategies are used to treat emotional eating, fat buildup, and hormone disturbances that are known to be caused by chronic stress (Van Strien, 2018). The significant decrease in perceived stress ratings demonstrates that MBCT is a useful stress-reduction technique that has a direct impact on controlling menstrual health and obesity. According to these results, MBCT need to be taken into account as a component of a comprehensive therapy strategy for illnesses linked to stress.

### Conclusion

In summary, studies on the relationship between menstrual health and weight regulation show that mindfulness-based cognitive therapy (MBCT) has a great deal of promise for enhancing mental and physical health. According to the results, patients taking MBCT consistently showed improved stress management, decreased cortisol levels, a decrease in BMI, and improved menstrual health. MBCT helps lessen the impact of stress, which is known to contribute to obesity and irregular menstruation, by treating both psychological and physiological components. Weight control and hormonal balance depend on better energy balance and emotional regulation, which are enhanced by the intervention's promotion of mindfulness and healthy lifestyle choices. Furthermore, the notable increases in cortisol levels imply that MBCT might enhance menstrual health by promoting hormonal balance and reducing stress-induced weight gain. The overall results highlight the benefits of MBCT as a non-invasive, comprehensive strategy for controlling menstrual health and weight, even if individual efficacy may differ. These findings imply that MBCT ought to be a crucial component of health initiatives aimed at stress-related illnesses, providing a whole approach to enhancing mental and physical health outcomes. To maximise its efficacy, future studies should examine the long-term advantages and potential for wider uses in other healthcare settings.

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