

The effects of mindfulness-based stress reduction program on pregnant women

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ABSTRACT

In recent years, the mindfulness-based stress reduction program has been implemented in pregnant women to cope with mental problems such as anxiety and depression, reduce fear of childbirth, alleviate physical symptoms, strengthen the bond between mother and baby, increase self-compassion and self-efficacy levels, and reduce the risk of postpartum depression. Mindfulness involves paying attention to what is happening in the present moment, noticing the quality of that attention, and accepting all that is noticed without hasty judgment. It consists of three components: intention, attention, and attitude. The mindfulness-based stress reduction program reduces anxiety by increasing awareness, improving emotional regulation, using body awareness and relaxation techniques, providing a supportive group environment, and providing cognitive restructuring. However, systematic reviews and meta-analyses show that these programs have some limitations, such as inconsistent effectiveness, methodological limitations, and cultural and practical barriers. Therefore, in this review article, we have tried to draw a roadmap for health professionals who will work in the field.

Keywords: Mindfulness, stress, pregnancy, women, anxiety, health professionals

INTRODUCTION

Pregnancy is a period of intense physical and emotional changes, and for some women, stress, anxiety, and mood fluctuations increase. The implementation of mindfulness-based stress reduction program (MBSR) increases during this period. Mindfulness is reported to lead to various positive psychological effects, including increased subjective well-being, reduced psychological symptoms and emotional reactivity, and improved behavioral regulation (Aldbyani, 2025). It has been said that mindfulness-based interventions consistently work better than non-evidence-based treatments like health education, relaxation training, and supportive psychotherapy at easing the severity of anxiety and depression symptoms. They also work about as well as cognitive-behavioral therapy (Hofmann & Gómez, 2017).

The aim of this study was to provide information about the use and outcomes of a MBSR program in pregnant women. First, the definition of mindfulness was made, and information about its components was given. Afterwards, the main benefits of using Mindfulness-Based Stress Reduction programs in pregnant women were grouped under six headings, and each of them was explained separately: 1) Reducing stress and anxiety, 2) Promotion of physical health, 3) Reducing the fear of childbirth, 4) Strengthening the mother-baby bond,

5) Increased self-compassion and self-care, 6) Reduced risk of postpartum depression (Güney et al., 2022; Şiir-Dağlar & Hotun-Şahin, 2021; Wang et al., 2023). Finally, information on the anxiety-reducing mechanisms of mindfulness is provided.

DEFINITION OF MINDFULNESS

Mindfulness involves paying attention to what is happening in the present moment, noticing the quality of that attention, and accepting all that is noticed without hasty judgment. Mindfulness is not just about living in the present moment and noticing the present moment; it has two dimensions that need to be understood. The first dimension is noticing what is happening in the present moment, and the second dimension is the way we welcome what we notice with an open, loving, and compassionate heart (Atalay, 2019).

As we practice mindfulness exercises, we notice changes on autopilot, from being distracted, anxious, and worried about the past or the future to being alert, open, and channeled in the present; from being reactive in challenging moments to being able to take a breath and respond with dignity and kindness; and from getting lost in thoughts and judging situations and people to seeing things as they are with an open and clear warmth (Cameron, 2021).

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COMPONENTS OF MINDFULNESS

Mindfulness has three main components: intention, attention, and attitude.

Intention

This is the core element of mindfulness, which involves a conscious decision to cultivate awareness and be present in the moment. Setting an intention helps individuals focus their mindfulness practice and guides their actions throughout the day (Cameron, 2021; Gülden & Yalçın, 2024).

Attention

Attention refers to the ability to focus on the present moment, including sensations, thoughts, and feelings. This component emphasizes non-detailed observation, where one observes experiences without judging or over-analyzing them. It requires both fixing attention on current experiences and the ability to shift focus when necessary (Hofmann & Gómez, 2017).

Attitude

The attitude component involves taking a non-judgmental, curious, and accepting stance towards one's experiences. This includes embracing both positive and negative thoughts and feelings without labeling them as good or bad. A mindful attitude fosters a sense of openness and acceptance that is crucial for effective mindfulness practice (Gülden & Yalçın, 2024).

THE EFFECTS OF MINDFULNESS-BASED STRESS REDUCTION (MBSR) PROGRAM ON PREGNANT WOMEN

The effects of MBSR program on pregnant women are given in [Figure](#).

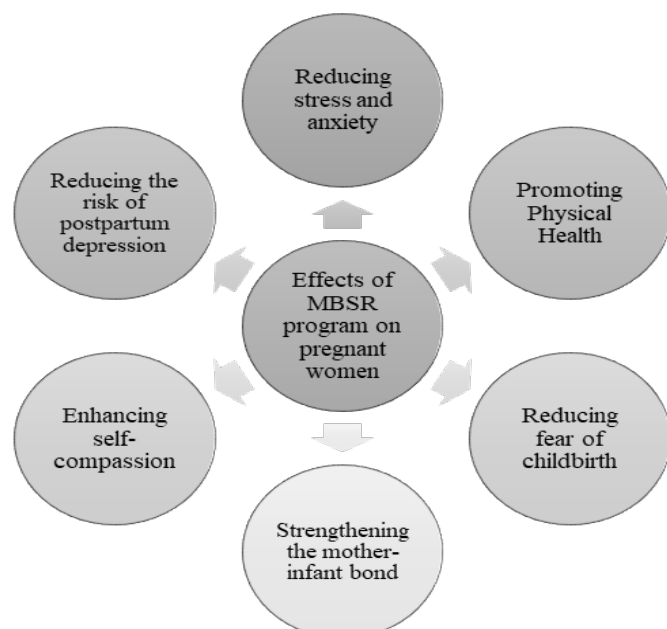


Figure. Effects of MBSR program on pregnant women
MBSR: Mindfulness-based stress reduction

Reducing Stress and Anxiety

Scientific studies have shown that MBSR program implemented during pregnancy have positive effects on the stress and anxiety levels of expectant mothers. For example, eight-week

MBSR program have been found to reduce perceived stress, anxiety, and depressive symptoms in pregnant women, as well as increase mindfulness and self-compassion levels (Şiir-Dağlar & Hotun-Şahin, 2021). In a study examining the relationship between mindfulness levels and depression, anxiety, and stress levels in pregnant women, it was found that as mindfulness levels increased, depression, anxiety, and stress levels decreased (Yüksel et al., 2020). In another study, MBSR program applied to pregnant women with COVID-19 reduced women's stress and anxiety levels (Güney et al., 2022). In another study conducted with high-risk pregnant women, MBSR program reduced stress and anxiety levels of pregnant women (İbici-Akca et al., 2023). These findings suggest that mindfulness-based interventions are an effective method to reduce stress and anxiety during pregnancy.

Promoting Physical Health

High stress levels during pregnancy can lead to an increase in stress hormones such as cortisol, which can lead to risks such as preterm delivery or low birth weight. MBSR program practices can reduce these risks by stabilizing cortisol levels (Wang et al., 2023). Mindfulness-based interventions, such as mindfulness-based yoga, have been effective in reducing pregnancy-related lower back and pelvic pain. Studies have shown that engaging in mindfulness practices can help pregnant women cope with discomfort and improve their overall physical health (Beddoe et al., 2009).

It has shown that mindfulness training can alleviate the negative effects of poor sleep by reducing the cognitive and emotional response to stressors. An 8-week mindfulness program showed significant improvements in sleep quality among participants and led to reductions in perceived stress and depressive symptoms (Felder et al., 2018). Additionally, mindfulness yoga has been associated with better sleep quality and lower levels of anxiety and depression (Shamabadi et al., 2023).

Mindfulness practices promote relaxation and stress reduction, which can alleviate feeling of fatigue (Dhillon et al., 2017). By encouraging acceptance of physical sensations and emotional states, mindfulness helps pregnant women develop resilience to the fatigue often experienced during pregnancy (Van der Meulen et al., 2023).

Another study focusing on pregnant Indian women found that mindfulness meditation significantly reduced perceived stress scores and improved autonomic functions, which are linked to sympathetic nervous system regulation. Results showed a marked reduction in blood pressure responses and an increase in heart rate variability, suggesting increased parasympathetic activity due to mindfulness practices (Muthukrishnan et al., 2016).

Reducing Fear of Childbirth

Mindfulness techniques help to reduce fears and anxieties about the birth process. It allows expectant mothers to approach the moment of birth with a more prepared and calmer mind. In the MBSR program study applied to pregnant women with COVID-19, women's stress and anxiety levels decreased, and their fear of childbirth decreased (Güney et al., 2022). Another study found a significant decrease in fear of childbirth scores among participants who received MBSR program training compared to those who did not participate

in such programs (Pour-Edalati et al., 2017). This reduction is crucial to encourage women who are hesitant to consider future pregnancies due to fear. In another study, it was also mentioned that MBSR program can reduce anxiety in pregnant women and increase their self-efficacy in coping with childbirth (Zarenejad et al., 2020). The education provided through MBSR program helps participants develop better coping strategies to deal with the stresses of childbirth. Women learn to recognize and accept their fears without judgment, which can prevent negative thoughts from turning into overwhelming anxiety (Ibici-Akca et al., 2023).

Strengthening the Mother-Infant Bond

Being aware of the moment helps the expectant mother to establish a stronger emotional bond with her baby and allows her to experience baby movements and pregnancy experiences more consciously. MBSR program applied to high-risk pregnant women decreased stress and anxiety and increased prenatal attachment (Ibici-Akca et al., 2023). One study suggested that mindfulness may positively influence a mother's emotional connection with her fetus, noting that higher levels of mindfulness are associated with stronger mother-fetus bonding (Tsao et al., 2019).

Pregnancy stress has emerged as a critical factor affecting mother-fetus attachment. The same study found that while mindfulness enhanced mother-fetus attachment, stress during pregnancy had a strong negative effect on attachment (Tsao et al., 2019). Mindfulness practices can help reduce stress, thus indirectly promoting a stronger bond between mother and baby. A randomized controlled trial showed that pregnant women who received mindfulness training in combination with routine antenatal care exhibited improved attachment scores compared to those who received standard care alone (Gheibi et al., 2020).

Enhancing Self-Compassion and Self-Care

Mindfulness encourages individuals to be kinder and more understanding towards themselves (Atalay, 2019). Self-compassion is defined as showing compassion to oneself in situations of perceived inadequacy, failure, or suffering; it involves treating oneself with kindness and understanding instead of criticizing oneself (Neff, 2009). In a study, it was reported that self-compassion has an indirect effect on physical health and that taking a kind, accepting, and mindful stance towards one's flaws and failures may have benefits in reducing stress and promoting health behaviors (Homan & Sirois, 2017). We can say that mindfulness-based practices increase self-compassion and self-care.

Mindfulness-based practices significantly impacted women's mental health, reducing fear of childbirth, depression, anxiety, and stress levels while increasing psychological well-being, self-efficacy, self-compassion, and mindfulness (Özer & Dişsiz, 2025). An online self-directed mindfulness-based intervention program was reported to show improvements in mindfulness skills and self-compassion, although it did not significantly reduce pregnancy distress (Hulsbosch et al., 2023). Another study showed that the three dimensions of mindfulness (describing, acting with awareness, and non-judgment) and self-compassion were significantly associated with depression in pregnant women as a whole (Fourianalistyawati et al., 2018).

Reduced Risk of Postpartum Depression

The MBSR program offers a promising alternative or complementary treatment for postpartum depression. Its effectiveness in reducing symptoms has been supported by several studies suggesting that integrating mindfulness practices into postnatal care can significantly benefit maternal mental health (Worku et al., 2025; Yang et al., 2023). It has been emphasized that mindfulness-based interventions can alleviate maternal depressive and anxiety symptoms, especially for the prevention of postpartum depression in healthy pregnant women, but they may not work the same for everyone, so caution is needed (Min et al., 2023).

A quasi-experimental study of four hundred and ten new mothers showed that mindfulness training significantly reduced symptoms of postpartum depression. Beck Depression Inventory scores in the experimental group decreased from 24.75 before the test to 18.5 after the intervention (Sheydaei et al., 2017). Another study emphasized that adapting mindfulness techniques during pregnancy led to clinically significant reductions in depression and anxiety, with benefits extending into the postpartum period (Badker & Misri, 2017). Given the difficulties many mothers face in accessing traditional therapy, mobile health (mHealth) mindfulness programs have been proposed as a viable alternative. A study evaluating a self-paced mHealth mindfulness intervention found it to be acceptable and potentially effective for postpartum women with moderate depressive symptoms (Avalos et al., 2020).

ANXIETY REDUCTION MECHANISMS OF MINDFULNESS

The MBSR program reduces anxiety by increasing mindfulness, improving emotional regulation, using body awareness and relaxation techniques, providing a supportive group environment, and cognitive restructuring.

Increased Awareness

MBSR program teaches individuals to focus on the present moment, which helps to reduce thinking and worrying about future uncertainties related to pregnancy and childbirth (Güney et al., 2022; Ibici-Akca et al., 2023).

Enhanced Emotional Regulation

Mindfulness practice promotes better emotional regulation. Pregnant women learn to observe their thoughts and feelings without judgment, which can reduce the intensity of their emotional responses to stressors. This enhanced emotional awareness allows for healthier coping strategies when faced with anxiety-provoking situations (Goodman et al., 2014).

Body Awareness and Relaxation Techniques

MBSR program includes various techniques such as body scans and mindful breathing that promote relaxation and reduce the physiological symptoms of anxiety. These practices help pregnant women become more attuned to their bodies, which can lead to a reduction in the physical tension associated with anxiety (Güney et al., 2022; Ibici-Akca et al., 2023).

Supportive Group Environment

Many MBSR program are conducted in group settings, providing social support and shared experiences among participants. This communal aspect can increase feelings of

safety and belonging and further reduce anxiety levels during a period that can be isolating for some women (Ibici-Akca et al., 2023).

Cognitive Restructuring

MBSR program promotes a change in perspective regarding stressors. By developing a non-judgmental awareness of thoughts, women can challenge negative thought patterns that contribute to anxiety, leading to a more positive outlook towards their pregnancy experience (Goodman et al., 2014).

LIMITATIONS OF MINDFULNESS-BASED INTERVENTIONS IN PREGNANT WOMEN

Although mindfulness-based interventions have been shown to have benefits in pregnant women, systematic reviews and meta-analyses have reported some limitations and disadvantages.

Inconsistent Activity

The efficacy of these interventions has not been consistent. While some studies reported improvements in anxiety and depression, others reported insufficient efficacy in people with severe depressive symptoms before delivery (Min et al., 2023; Sarı et al., 2023). Notably, studies have shown limited efficacy for high-risk pregnant women suffering from severe depressive symptoms (Min et al., 2023), suggesting that these interventions may not be appropriate for all demographics in the pregnant population.

Methodological Limitations

Many studies included in meta-analyses have demonstrated considerable heterogeneity in terms of intervention duration, timing, and content, complicating the ability to draw firm conclusions about the effectiveness of interventions (Abdolalipour et al., 2023; Sarı et al., 2023). This variability can lead to difficulties in standardizing treatment protocols. Some reviews have also highlighted that many studies suffer from small sample sizes and lack robust randomized controlled trials, which limits the reliability of their findings (Min et al., 2023; Özer & Dişsiz, 2025).

Cultural and Practical Barriers

The implementation of mindfulness-based interventions can be influenced by cultural beliefs and practices related to pregnancy and mental health. This can affect participants' engagement in mindfulness practices and potentially limit their effectiveness (Sarı et al., 2023). Barriers such as cost, availability of trained practitioners, and social stigma against mental health treatment may prevent pregnant women who could benefit from them from accessing mindfulness-based interventions (Özer & Dişsiz, 2025; Reangsing et al., 2021).

CONCLUSION

The MBSR interventions applied during pregnancy have positive effects on the mental and physical health of pregnant women, as well as on reducing fear of childbirth, strengthening mother-infant bonding, and reducing the risk of postpartum depression. However, some systematic review and meta-analysis studies have revealed some limitations regarding the effectiveness of these practices. Therefore, the following recommendations were made in line with these studies;

- MBSR interventions should be implemented by people trained in this field.
- In those with high-risk pregnancies in terms of mental illnesses, the intervention should be implemented by mental health professionals trained in this field.
- The intervention should be applied in larger samples in terms of the reliability of the results.
- Randomized controlled studies on the subject should be focused on.
- Before interventions are applied, the culture of the pregnant woman and her perspective on such practices should be evaluated, and people with negative attitudes should not be rushed to intervene, and the attitudes of the person should be worked on first.

ETHICAL DECLARATIONS

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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