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Effects of Mindfulness-Based Practices in the Perinatal and Postpartum Period on Women's Health: A Systematic Review

Perinatal ve Postpartum Dönemde Uygulanan Mindfulness Müdahalelerinin Kadın Sağlığına Etkileri: Sistematik Derleme

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ABSTRACT

The aim of this systematic review was to evaluate the effects of mindfulness interventions on women's mental health in the perinatal and postpartum period. In the study, randomized controlled studies published in the last five years, from January 2018 to September 2023, were searched in CINAHL, PubMed, Cochrane Library, Science Direct, and Springer Link databases. The keywords "Pregnancy", "Pregnant", "Prenatal", "Perinatal", "Postpartum", "Mindfulness", "Meditation", "Self-compassion" and "Randomized controlled trial" were used while searching the databases. The assessed articles were subjected to quality assessment using the PRISMA checklist and the Joanna Briggs Institute's Critical Appraisal Checklist for Randomized Controlled Trials. As a result of the search, 26 studies were found. The studies revealed that the most commonly applied mindfulness intervention among intervention groups was self-help programs in an online setting. Mindfulness-based practices significantly impacted women's mental health, reducing fear of childbirth, depression, anxiety, and stress levels, while enhancing psychological well-being, self-efficacy, self-compassion, and mindfulness. Furthermore, these practices also benefited women's physical health, contributing to higher rates of normal vaginal births and increased maternal-fetal attachment. They were found to lessen birth pain, reduce the need for medication or anesthesia, and support the adoption of healthy lifestyle behaviors. These findings suggest that mindfulness interventions, which positively influence the mental health of both mothers and infants, should be widely applied to women, and the results of this study should be disseminated.

Keywords: Perinatal, postnatal, pregnancy, mindfulness

ÖZ

Bu sistematik derlemede perinatal ve postpartum dönemde uygulanan mindfulness müdahalelerinin kadın ruh sağlığına etkilerini değerlendirmek amaçlanmıştır. Çalışmada, PubMed, Cochrane Library, Science Direct ve Springer Link veri tabanları taranarak, Ocak 2018-Eylül 2023'e kadar son beş yılda yayınlanmış randomize kontrollü çalışmalar ele alındı. Veri tabalarında tarama yapılırken "Pregnancy", "Pregnant", "Prenatal", "Perinatal", "Postpartum", "Mindfulness", "Meditation", "Self-compassion" "Randomized controlled trial" anahtar sözcükleri kullanıldı. Makaleler incelenirken, raporlama özelliklerinin değerlendirilmesinde 27 maddeli PRISMA Bildirimi ve Joanna Briggs Enstitüsü'nün Randomize Kontrollü Çalışmalar için Kritik Değerlendirme Kontrol Listesi kullanıldı. Tarama sonucunda 26 çalışmaya ulaşıldı. Çalışmalarda müdahale gruplarına en sık uygulanan mindfulness müdahalesinin online ortamda ve kendi kendine yardım programları şeklinde olduğu belirlendi. Çalışmaların bulgularında mindfulness temelli uygulamaların kadınların doğum korkusu, depresyon, anksiyete, stres düzeylerinde azalma, psikolojik iyi oluş, öz yeterlilik, özşefkat ve bilinçli farkındalık düzeylerinde artış olduğu saptandı. Bununla birlikle mindfulness uygulamalarının normal vajinal doğum oranlarını ve maternal-fetal bağlanma düzeylerini arttırdığı, doğum ağrısını ve buna yönelik ilaç/anestezi gereksinimini azalttığı, sağlıklı yaşam tarzı davranışları geliştirmede etkili olduğu belirlendi. Perinatal ve postnatal dönemdeki kadınlara uygulanan mindfulness çalışmalarının uluslararası alanda yapılmış olduğu ve son yıllarda hız kazandığı gözlenmiştir. Kadın ve bebek ruh sağlığı için olumlu etkileri olan mindfulness müdahalelerinin Türkiye'de kadınlara uygulanması ve bu çalışma sonuçlarının paylaşılması gerektiği söylenebilir.

Anahtar sözcükler: Perinatal, postpartum, hamilelik, mindfulness

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Introduction

Pregnancy and the postpartum period are phases in a woman's life in which great physical, mental and social changes are experienced. Women need to adapt to this process as soon as possible for the health of themselves and their baby (Öztürk & Aydın 2017). While having a baby is welcomed by some women, it can become a significant source of stress and anxiety for others. Accordingly, it is reported that mental disorders may occur during pregnancy or after delivery (Badker & Misri 2017). In recent years, it has been emphasized that the incidence of maternal mental health problems has increased worldwide and has become an important public health problem.

Especially with the COVID-19 pandemic, which has affected the whole world, it has been reported that women experience more mental problems during pregnancy and postpartum period (Liu et al. 2022b, Safi-Keykaleh et al. 2022). In the meta-analysis study by Shorey et al. (2021), which examined the findings of 26 studies conducted in the COVID-19 pandemic, it was reported that women experienced antenatal anxiety symptoms at a rate of 40%, antenatal depressive symptoms at a rate of 27% and postpartum depressive symptoms at a rate of 17%; It was also found that antenatal anxiety symptoms can be up to 56% in women in European countries. In the meta-analysis study by Safi-Keykaleh et al. (2022), in which the findings of 24 studies conducted during the COVID-19 pandemic were analysed, it was reported that the prevalence of postpartum depression experienced by women was between 12-44% and that postpartum depression increased during the pandemic process. Today, with increasing stressors, it is understood that women's pregnancy and postpartum processes are more challenging and related mental problems are experienced more frequently.

While postpartum depression (PPD) is the most common mental disorder seen in mothers after childbirth, it is emphasized that it can also cause chronic or recurrent depression throughout a woman's life (Smith et al. 2019). It has been determined that PPD peaks at approximately 4-12 weeks after birth and can last for more than six months in 50% of women (Liu et al. 2022b). The prevalence of anxiety disorders in the year after birth is estimated to be 20% (Viswasam et al., 2019). Mental problems in the mother also negatively affect mother-infant health. It may cause undesirable conditions such as birth complications, pre-eclampsia, low birth weight baby and inadequate development of the newborn (Jacka et al. 2013). In addition, exposure to stress during pregnancy and postpartum negatively affects the mother-baby attachment levels and indirectly the emotional and cognitive development of the infant (Jacka et al. 2013, Liu et al. 2022b). Therefore, women's mental health in the perinatal and postpartum period is an issue that needs to be addressed carefully.

Although pharmacotherapy is recommended in the treatment of mental disorders seen in the perinatal and postpartum period, it is not preferred by mothers due to the fear that the baby's exposure to drugs may lead to negative consequences (Badker & Misri 2017). Therefore, it is recommended that more mothers benefit from psychosocial interventions during these periods (NICE 2020). Especially in recent years, the effects of mindfulness-based practices (MBPs) on perinatal mental health have become the focus of attention (Hall et al. 2016). Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) are mindfulness-based programs frequently applied in studies. In addition, some therapy schools such as Acceptance and Commitment Therapy (ACT) and Dialectical Behavioral Therapy (DBT) are also based on mindfulness (Hall et al. 2016).

The main idea of mindfulness-based practices is to focus one's attention on the present moment by accepting and accepting one's current feelings and thoughts without being judgmental. Instead of thinking and worrying about the past or the future, it is all about being aware of the “present moment” (Hall et al. 2016, Zhang et al. 2023a). Accordingly, it has been found to have an effect on mental problems such as depression and anxiety (Hall et al. 2016). The UK National Institute of Health and Clinical Excellence (NICE 2020) guideline states that it would be more beneficial to prefer non-pharmacological approaches such as MBCT in the treatment of depression seen in the perinatal and postpartum period. However, studies have reported that these interventions have positive effects on maternal and infant health as well as reducing mental problems in the perinatal and postpartum period (Liu et al. 2022b, Safi-Keykaleh et al. 2022). Especially in recent years, it has been observed that studies on mindfulness-based practices in the perinatal and postpartum periods have increased. It is believed that a comprehensive examination of the results of the studies conducted in this regard will provide significant and up-to-date information to the literature and guide health professionals. Therefore, the aim of this systematic review was to evaluate the effects of mindfulness-based interventions implemented on women in the perinatal and postpartum periods.

Method

Study Design

This study is a systematic review. The PICOS formulation (participants (P), interventions (I), comparison (C), outcomes (O), and study design (S)) was utilized in this systematic review to identify the relevant evidence and ask the right questions (Table 1). We also employed the Preferred Reporting Items for Systematic Investigations and Meta-Analyses (PRISMA) guidelines for all detailed procedures, such as the identification and selection of articles in the research process.

Table 1. PICOS format

Category	Definition
P (Participants)	Women in the perinatal and postpartum period
I (Interventions)	Mindfulness-based practices
C (Comparison)	Other therapeutic intervention or control intervention
O (Outcomes)	Mental health parameters
S (Study design)	Randomized controlled studies

Databases Utilized in the Study

Within the scope of the study, PubMed, CINAHL, Cochrane Library, and Science Direct databases were searched, and randomized controlled trials published in the last five years between January 2018 and September 2023 were included. The keywords used while searching the databases were '((((pregnancy) OR (pregnant)) OR (postpartum)) OR (prenatal)) OR (perinatal)) AND (mindfulness)) OR (meditation)) OR (compassion)) OR (self-compassion)) AND (randomized controlled trial) in last 5 years /Title/Abstract' (Figure 1). Firstly, the titles and abstracts of the studies were independently examined by the researchers for suitability, then the full texts of the eligible studies were downloaded, read and the necessary data were obtained. The last screening was performed on September 05, 2023. Inclusion criteria are randomized controlled trials that fully address key words, publication in English, full text available. Exclusion criteria are studies such as systematic reviews, abstracts, letters to the editor, case reports, non-English language of publication, studies of which full text could not be accessed.

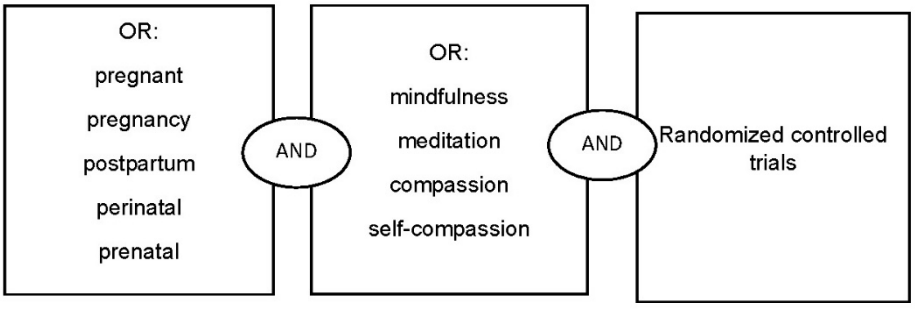

Figure 1. Keywords used in the review process

Study Population and Sample

Studies on the subject between January 2018 and September 2023 were examined retrospectively by searching keywords. In determining the keywords and selecting the databases, it was aimed to include all studies related to the subject. As a result of the search, a total of 7462 studies were reached through PubMed, CINAHL, Science Direct, and Cochrane Library databases. The studies were first analysed according to their titles and then according to their abstracts, repetitive articles were removed, and 7426 studies were excluded. The full text of 10 of the 36 articles whose topics were appropriate for the purpose of the study could not be accessed and 26 studies were evaluated for systematic review (Figure 2).

Quality Appraisal

A The researchers independently evaluated 26 original articles, selected to avoid potential bias. In this regard, articles that met the inclusion criteria were subjected to a critical appraisal checklist for randomized controlled studies published by the Joanna Briggs Institute. This checklist includes 13 criteria to identify Joanna Briggs

Institute. This checklist includes 13 criteria to determine selection bias, perceived bias, performance bias, and attribution deviations. Each criterion was answered by scoring "yes" as one points and, "no", "unclear", "non applicable" are scored as zero scores. In this systematic review, quality assessments A score of 7 to 13 points was included for reviewing high quality RCTs (Table 2).

Data Analysis

The studies were analysed independently by two researchers. With this method, it was intended to prevent overlooking the relevant studies in the databases. A "Data Summarization Form" was designed to ensure consensus between the researchers and the studies included in the systematic review were transferred to the form. The content of the Data Summarization Form included author, year and country of publication, participants, sample, intervention, measurement tools, and results (Table 3).

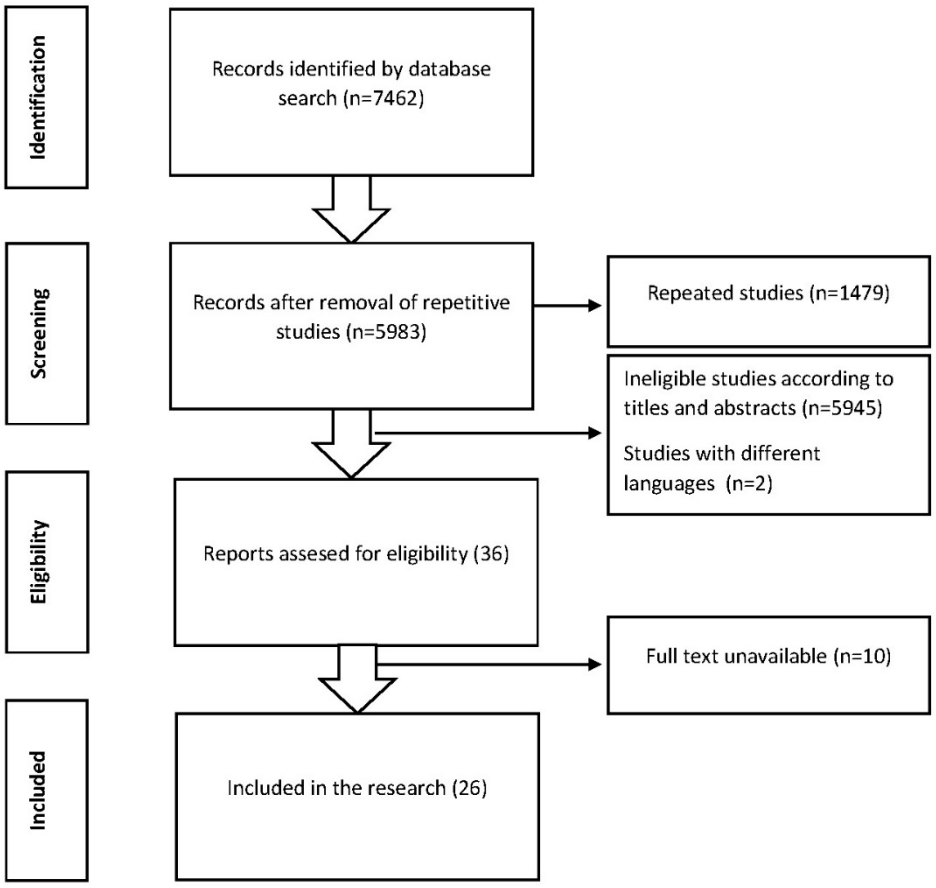

Figure 2. PRISMA flow diagram

Table 2. JBI Critical Appraisal Checklist for Randomized Controlled Trials

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Cengizhan and Uçar 2023 (Türkiye)	Y	N	U	Y	N	N	Y	Y	Y	Y	Y	Y	Y	9
Fernandes et al., 2022 (Portugal)	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	11
Gammer et al., 2020 (U.K:)	Y	Y	Y	U	Y	U	Y	Y	Y	Y	Y	Y	Y	11

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Gheibi et al., 2020 (Iran)	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	11
Guo et al., 2020 (China)	Y	U	Y	U	N	U	Y	Y	Y	Y	Y	Y	Y	9
Güney et al., 2022 (Türkiye)	Y	Y	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	10
Hulsbosch et al., 2023 (Netherlands)	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	10
Jalambadani et al., 2020 (Iran)	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	9
Jensen et al., 2021 (Denmark)	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	9
Liu et al., 2022b (China)	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	11
Lönnberg et al., 2021 (Sweden)	Y	U	Y	U	N	U	U	Y	Y	Y	Y	Y	Y	9
MacKinnon et al., 2021 (Canada)	Y	U	U	U	N	N	Y	Y	Y	Y	Y	Y	Y	8
Nejad et al., 2021 (Iran)	Y	U	Y	U	N	N	Y	Y	Y	Y	Y	Y	Y	9
Oskoui et al., 2023 (Iran)	Y	Y	Y	U	N	Y	Y	Y	Y	Y	Y	Y	Y	11
Pan et al., 2019a (Taiwan)	Y	Y	Y	Y	U	U	Y	Y	Y	Y	Y	Y	Y	11
Pan et al., 2019b (Taiwan)	Y	Y	Y	U	N	U	Y	Y	Y	Y	Y	Y	Y	10
Sbrilli et al., 2020 (Amerika)	Y	U	U	U	N	N	Y	Y	Y	Y	Y	Y	Y	8
Sun et al., 2021 (China)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	12
Van der Meulen et al., 2023 (Netherlands)	Y	Y	Y	U	N	Y	Y	Y	Y	Y	Y	Y	Y	10
Veringa-Skiba et al., 2022a (Netherlands)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	12
Veringa-Skiba et al., 2022b (Netherlands)	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	9

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Yang et al., 2019 (China)	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	9
Zarenejad et al., 2020 (Iran)	Y	U	Y	U	U	U	U	Y	Y	Y	Y	Y	Y	8
Zemestani and Fazeli Nikoo 2020 (Iran)	Y	Y	Y	Y	U	U	Y	Y	Y	Y	Y	Y	Y	11
Zhang et al., 2023a (China)	Y	Y	N	U	U	Y	Y	Y	Y	Y	Y	Y	Y	10
Zhang et al., 2023b (China)	Y	Y	N	U	U	U	Y	Y	Y	Y	Y	Y	Y	9

1. Was true randomization used for assignment of participants to treatment groups?
2. Was allocation to treatment groups concealed?
3. Were treatment groups similar at the baseline?
4. Were participants blind to treatment assignment?
5. Were those delivering treatment blind to treatment assignment?
6. Were outcomes assessors blind to treatment assignment?
7. Were treatment groups treated identically other than the intervention of interest?
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?
9. Were participants analyzed in the groups to which they were randomized?
10. Were outcomes measured in the same way for treatment groups?
11. Were outcomes measured in a reliable way?
12. Was appropriate statistical analysis used?
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?

Y=Yes, N=No, U=Undetermined

Results

Characteristics of Studies

In this systematic review, 26 randomized controlled trials published between 2018 and 2023 that fulfilled the inclusion criteria were examined. In Table 2, the quality of the studies was evaluated, and it was determined that the studies received a minimum score of 8 points and a maximum score of 12 points. The countries where the studies were conducted were China (6), Iran (6), the Netherlands (4), Taiwan (2), Türkiye (2), Portugal (1), Denmark (1), the United States (1), Sweden (1), Canada (1) and the United Kingdom (1). The study sample consisted of pregnant women in 22 studies and women in the postpartum period in 4 studies.

It was determined that the most common mindfulness intervention implemented in the intervention groups was self-help programs conducted online, followed by mindfulness-based psychoeducation programs (Mindfulness-Based Childbirth and Parenting (MBCP)). It was also determined that structured programs such as Mindfulness-Based Stress Reduction programs (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) were implemented in the studies. It was determined that the control groups received routine treatment and care in 21 studies, educational programs in 3 studies, counselling in 1 study, and tender loving care in 1 study (Table 3).

With the findings obtained from the research, the effects of mindfulness interventions were evaluated under the titles of effects on mental health and physical health.

Table 3. Characteristics of RCTs included in a systematic review

Study	Population	Sample Size	Intervention	Measures	Conclusion
Cengizhan and Uçar 2023 (Türkiye)	Experiencing sexual distress (FSDS>12) 10-28 weeks pregnant women	Intervention=67 Control=67	**Intervention group** Mindfulness-Based Sexual Counseling (MBSC)= 8 sessions in total (60 min/session), 2 sessions	Female Sexual Distress Scale-Revised (FSDS-R) Attitude Scale toward Sexuality during Pregnancy	It was found that sexual distress and body image anxiety levels of the intervention group

Study	Population	Sample Size	Intervention	Measures	Conclusion
			per week, applied as group therapy **Control group** Routine treatment and care	Body Image Concern during Pregnancy Scale (BICdPS)	decreased significantly and their positive attitudes towards sexuality increased.
Fernandes et al., 2022 (Portugal)	Postnatal women with an 18-month-old baby	Intervention=146 Control=146	**Intervention group** Mindful Moment Program= 6 sessions (1 hour/session) self-help program with offline videos, including mindfulness and self-compassion practices. **Control group** Routine treatment and care	Mindful Moment's (developed by the researchers) The Parental Stress Scale (PSS) Interpersonal Mindfulness in Parenting Scale (IM-P) Self-Compassion Scale (SCS-SF) Edinburgh Postnatal Depression Scale (EPDS) Hospital Anxiety and Depression Scale (HADS) Mindful Attention and Awareness Scale (MAAS) The Difficult Infant Temperament Questionnaire (DITQ) Postpartum Bonding Questionnaire (PBQ)	It was determined that the parenting stress of the intervention group decreased, mindfulness levels increased, and the mother became more sensitive to the baby's reactions.
Gammer et al., 2020 (UK)	Mothers with babies under 1 year old	Intervention=105 Control=101	**Intervention group** Kindness for Mums Online (KFMO)= 5-session online self-help program to enhance psychological well-being with a focus on self-compassion **Control group** Routine treatment and care	Warwick– Edinburgh Mental Well-being Scale (WEMWBS) Self-Compassion Scale Short Form (SCS-SF) The Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS) Depression, Anxiety and Stress Scales short form (DASS-21)	While the intervention group's psychological well-being and self-compassion levels were found to increase, it was determined that there was no significant effect on depression, anxiety and stress levels.
Gheibi et al., 2020 (Iran)	Pregnant women aged 16-28 weeks with low levels of maternal-fetal attachment (CMFAS<92)	Intervention=20 Control=20	**Intervention group** Mindfulness-based childbirth and parenting (MBCP)= A face-to-face and group therapy program (8 sessions (2 hours/session) + silence day (3 hours)) in which parents are informed about birth and the postpartum period and mindfulness exercises are applied. **Control group** Routine treatment and care	Cranley's Maternal-Fetal Attachment Scale (CMFAS)	It was found that maternal-fetal attachment levels of the intervention group increased.
Guo et al., 2020 (China)	Pregnant women in the 2-3rd trimester before 34	Intervention=157 Control=157	**Intervention Group** Mindful Self-Compassion Program= Internet-based	The Edinburgh Postnatal Depression Scale (EPDS)	While the intervention group had significantly lower

Study	Population	Sample Size	Intervention	Measures	Conclusion
	weeks with depressive symptoms (EPDS>9)		6-week (10 hours in total) self-help program **Control group** Routine treatment and care	The State-Trait Anxiety Inventory I and II, Beck Depression Inventory-II (BDI) Mindful Attention and Awareness Scale (MAAS) Self-Compassion Scale (SCS) Well-Being Index World Health Organization Five (WHO-5) Chinese Parenting Stress Index (PSI) Comprehensive Parenting Behavior Questionnaire Infant Behavior Questionnaire	levels of depression and anxiety, they had significantly higher levels of mindfulness, self-compassion, and psychological well-being at the 3rd month and first-year follow-up after birth.
Güney et al., 2022 (Türkiye)	Pregnant women diagnosed with COVID-19 in the last three months and before 36 weeks	Intervention=42 Control=42	**Intervention group** Mindfulness-based stress reduction program (MBSR)= 8 sessions in total (40-60 min/session), 2 sessions per week as online group therapy **Control group** Routine treatment and care	Revised Prenatal Distress Questionnaire (NuPDQ), Beck Anxiety Inventory (BAI) Childbirth Attitudes Questionnaire (CAQ).	Perceived stress, anxiety and fear of childbirth levels of the intervention group decreased.
Hulsbosch et al., 2023 (Netherlands)	Pregnant women at week 12 with high levels of pregnancy distress (TPDS (≥ 10) and depression (EDS ≥ 8)	Intervention=109 Control=110	**Intervention group** Relaxation in pregnancy= 8 sessions (60 min/session) online self-help program **Control group** Routine treatment and care	Edinburgh Depression Scale (EDS) Tilburg Pregnancy Distress Scale negative affect (TPDS-NA) Three Facet Mindfulness Questionnaire-Short Form Rumination-Reflection Questionnaire Self-Compassion Scale-Short Form	It was determined that mindfulness and self-compassion levels of the intervention group increased significantly, ruminative thoughts decreased significantly, and pregnancy distress levels decreased but this change was not significant.
Jalambadani et al., 2020 (Iran)	Pregnant women	Intervention=42 Control=42	**Intervention group** Mindfulness-based art therapy (MBAT)= A 10-session (90 min/session) face-to-face and group therapy program that includes mindfulness and art therapy interventions **Control group** Routine treatment and care	Health Promoting Lifestyle Profile-II questionnaire	While it was found that the intervention group's healthy lifestyle behaviors increased, this increase was found to be the highest in nutrition and the lowest in physical activity.
Jensen et al., 2021 (Denmark)	Women with ≥3 consecutive pregnancy losses	Intervention=38 Control=38	**Intervention Group** Meditation and mindfulness program= 7-week program in face-to-face and group therapy (11 hours in total)	The Perceived Stress Scale (PSS) Recurrent Pregnancy Loss (RPL) Copenhagen Multi-centre Psychosocial Infertility Fertility Problem	Perceived stress decreased significantly in both the intervention group and the control group, the decrease in perceived

Study	Population	Sample Size	Intervention	Measures	Conclusion
			Control group Standard supportive care ("tender loving care program"= consists of general emotional support, empathy and pregnancy advice)	Stress Scales (COMPI-FPSS) COMPI Marital Benefit Measure	stress levels in the intervention group was significantly greater. At the 12-month follow-up, perceived stress was still significantly lower in both groups compared to baseline.
Liu et al., 2022b (China)	Women who gave birth 2 weeks ago	Intervention=65 Control=65	**Intervention group** 8-week self-help program including mindfulness-based interventions via We'll App **Control group** Routine treatment and care	The Mindful Awareness Scale (MAAS) Perceived maternal parental self-efficacy tool (PMPS) Edinburgh Postnatal Depression Scale (EPDS)	Perceived social support and parental self-efficacy were significantly higher and postpartum depressive symptoms were significantly lower in the intervention group.
Lönnberg et al., 2021 (Sweden)	15-22 weeks pregnant women with high stress levels (PSS>4)	Intervention=96 Control=97	**Intervention Group** Mindfulness-Based Childbirth and Parenting (MBCP)= The program is 8 sessions (2.5 h/session) in the form of group therapy. **Control group** Lamaze Childbirth Program= 3 h/session group psychoeducation program aiming to teach methods of coping with stress and pain during childbirth.	Perceived Stress Scale (PSS) Edinburgh Postnatal Depression Scale (EPDS) Positive States of Mind (PSOM) Five-Facet Mindfulness Questionnaire (FFMQ)	Compared to the control group, perceived stress and depression levels in the intervention group decreased and positive states of mind and mindfulness levels increased.
MacKinnon et al., 2021 (Canada)	Pregnant women in 12-28 weeks with high levels of distress	Intervention=28 Control=32	**Intervention Group** Mindfulness-Based Cognitive Therapy for Perinatal Depression (MBCT-PD)= 8-week (2-h/week) program implemented as face-to face group therapy **Control group** Routine treatment and care	The Distress Thermometer Pregnancy-Related Anxiety (PRA) Generalized Anxiety Disorder scale (GAD-7) Edinburgh Depression Scale (EDS) Perceived Stress Scale (PSS)	It was found that the intervention group only had decreased distress levels but had no significant effect on depression and anxiety symptoms.
Nejad et al., 2021 (Iran)	Women before 32 weeks with an unwanted pregnancy	Intervention=30 Control=30	**Intervention group** Mindfulness-based stress reduction program (MBSR)= Face-to-face and group therapy, one session per week for a total of 8 sessions (2 hours/session) **Control group** Routine treatment and care	Depression, anxiety, and stress scale (DASS-21)	It was determined that depression, anxiety, and stress levels of the intervention group decreased.

Study	Population	Sample Size	Intervention	Measures	Conclusion
Oskoui et al., 2023 (Iran)	Pregnant women in 32-34 week	Intervention=32 Control=32	**Intervention group** 4 weeks of face-to-face, 4 weeks of online mindfulness-based counseling **Control group** 4 weeks face-to-face, 4 weeks online antenatal care training	Childbirth Experience Questionnaire version 2 (CEQ2) Visual Analogue Scale (VAS) for labor pain	It was found that the intervention group had a better birth experience and less birth pain during labor.
Pan et al., 2019a (Taiwan)	Pregnant women in 13-28 weeks	Intervention=51 Control=45	**Intervention Group** Mindfulness-Based Childbirth and Parenting (MBCP)= The program, which is face-to-face and group therapy, consists of 8 sessions in total (3 hours/session) + silence day (7 hours). **Control group** Routine treatment and care	The Perceived Stress Scale (PSS), The Edinburgh Postnatal Depression Scale (EPDS), The short form of the Chinese Childbirth Self-Efficacy Inventory (CBSEI-C32), The Five Facet Mindfulness Questionnaire (FFMQ)	It was found that there was a decrease in stress, depression, and mindfulness levels in the intervention group, but this change was not significant.
Pan et al., 2019b (Taiwan)	Pregnant women in 13-28 weeks	Intervention=39 Control=35	**Intervention Group** Mindfulness-Based Childbirth and Parenting (MBCP)= The program, which is face-to-face and group therapy, consists of 8 sessions in total (3 hours/session) + silence day (7 hours). **Control group** Routine treatment and care	Perceived Stress Scale (PSS-10) Edinburgh Postnatal Depression Scale (EPDS) Five Facet Mindfulness Questionnaire (FFMQ)	Stress and depression levels of the intervention group decreased after the program and at the 3-month follow-up. It was also observed that the mindfulness levels of the intervention group increased, but this increase was not significant.
Sbrilli et al., 2020 (USA)	Pregnant women in the 3rd trimester	Intervention=15 Control=15	**Intervention Group** The Mind in Labor (MIL)= A 2.5-day program (18 hours total) in which parents are informed about the birth and postpartum period and mindfulness exercises are practiced together as face-to-face and group therapy. **Control group** Routine treatment and care	Center for Epidemiologic Studies Depression Scale Spielberger state-trait anxiety inventory – trait Perceived stress scale Five-facet mindfulness questionnaire	It was found that there was a significant decrease in the distress levels of the intervention group, and it was lower than the control group at the 12-month follow-up. There was also a significant decrease in depression levels.
Sun et al., 2021 (China)	Pregnant women 12-20 weeks pregnant with depressive symptoms (EPDS>9)	Intervention=84 Control=84	**Intervention Group** Self-help program based on Mindfulness Behavioral Cognitive Therapy (MBCT) via WeChat application (each session consisted of 25 minutes of weekly training content + 15-25 minutes of mindfulness exercises	The Edinburgh Postnatal Depression Scale (EPDS) Patient Health Questionnaire-9 Generalized Anxiety Disorder scale Perceived Stress Scale Pittsburgh Sleep Quality Index	It was found that there was a moderate decrease in depression and anxiety levels of the individuals in the intervention group and a moderate increase in positive affect levels.

Study	Population	Sample Size	Intervention	Measures	Conclusion
			every day, the program lasted eight weeks in total) **Control group** 8 weeks of health counseling via the WeChat app	Wijma Delivery Expectancy Questionnaire	
Van der Meulen et al., 2023 (Netherlands)	Pregnant women aged 16-26 weeks with a high level of fear of childbirth (W- DEQ-A ≥66)	Intervention=75 Control=66	**Intervention Group** Mindfulness-Based Childbirth and Parenting (MBCP)= The program is implemented as face-to-face and group therapy in 9 sessions (3 h/session). **Control group** Routine treatment and care	Perceived Stress Scale (PSS) Depression, Anxiety, and Stress scale (DASS-21) Edinburgh Postnatal Depression Scale (EPDS) Multidimensional Assessment of Fatigue (MAF) Uplifts Subscale of the Pregnancy Experience Scale (PES-US) Wijma Delivery Expectancy/ Experience Questionnaire (W-DEQ-A/B) Salmon's Item List (SIL)	It was found that the psychological well-being levels of the intervention group increased, and they had a better birth experience.
Veringa-Skiba et al., 2022a (Netherlands)	Pregnant women aged 16-26 weeks with a high level of fear of childbirth (W- DEQ-A ≥66)	Intervention=75 Control=66	**Intervention Group** The Mindfulness-Based Childbirth and Parenting (MBCP) group therapy program consists of 9 sessions (3 h/session). **Control group** Routine treatment and care	Wijma Delivery Expectancy/ Experience Questionnaire (W-DEQ-A/B) DSM-5 Perinatal Anxiety Disorder-Labor (DSM-5 PAD-L) Catastrophizing Labor Pain (CLP) Labor Pain Acceptance Questionnaire (LPAQ) Willingness to Accept Obstetric Interventions (WAOI)	It was determined that the intervention group reduced fear of labor and labor pain. It was also found that the rate of epidural anesthesia in the intervention group was 36% lower, voluntary cesarean delivery was 51% lower, the rate of unmedicated delivery was twice as high, and the 1-minute Apgar scores of the newborn were higher.
Veringa-Skiba et al., 2022b (Netherlands)	Pregnant women aged 16-26 weeks with high fear of childbirth (W-DEQA ≥ 66)	Intervention=75 Control=66	**Intervention group** Mindfulness-Based Childbirth and Parenting (MBCP)= 9 sessions (30 min/session) of mindfulness interventions in face-to-face and group therapy **Control group** Routine treatment and care	Wijma-Delivery Expectation Questionnaire (W-DEQ-A) Catastrophizing Labour Pain (CLP) Five Facet Mindfulness Questionnaire (FFMQ)	It was found that mindfulness levels increased in the intervention group and the rates of normal delivery were also higher in the intervention group.
Yang et al., 2019 (China)	Pregnant women 24-30 weeks pregnant with mild or	Intervention=52 Control=50	**Intervention group** Mindfulness intervention program= 4 sessions (40 min/session) self-	Patient Health Questionnaire (PHQ-9) Generalized Anxiety Disorder Scale (GAD-7)	It was found that mindfulness levels of the intervention group increased,

Study	Population	Sample Size	Intervention	Measures	Conclusion
	moderate depression or anxiety (GAD-7 score>4 or PHQ-9 score>4)		help program with mindfulness interventions via WeChat mobile application **Control group** Routine treatment and care	Five Facets of Mindfulness Questionnaire (FFMQ)	and depression and anxiety levels decreased.
Zarenejad et al., 2020 (Iran)	Pregnant women 24-36 weeks pregnant with their first pregnancy	Intervention=30 Control=30	**Intervention group** Mindfulness-based stress reduction program (MBSR)= A total of 6 sessions of face-to-face and group therapy, two sessions per week (60 min/session) **Control group** Routine treatment and care	Pregnancy-Related Anxiety Questionnaire (PRAQ) Mindfulness Questionnaire Self-efficacy in Coping with Childbirth questionnaire	It was determined that pregnancy-related anxiety levels of the intervention group decreased, however, there was no significant change in birth-related self-efficacy levels.
Zemestani and Fazeli Nikoo 2020 (Iran)	Pregnant women aged 1-6 months with a diagnosis of depression or anxiety disorder according to DSM-5	Intervention=19 Control=19	**Intervention Group** Mindfulness-based cognitive therapy (MBCT)= Face-to-face and group therapy, one session per week for a total of 8 sessions (2 hours/session) **Control group** Routine treatment and care	Beck Depression Inventory-II Beck Anxiety Inventory Emotion Regulation Questionnaire Scales of Psychological Well-being	It was determined that depression and anxiety symptoms of the intervention group decreased, and their emotion regulation skills and psychological well-being levels increased.
Zhang et al., 2023a (China)	12-24 weeks pregnant women	Intervention=54 Control=54	**Intervention group** 4 sessions of self-help program via WeChat application (each session lasted four weeks in total with 30 minutes of weekly training content, in addition to 30/45 minutes of mindfulness exercises every day) **Control group** Daily training on prenatal care via the WeChat app	Edinburgh Postnatal Depression Scale (EPDS) Generalized Anxiety Disorder 7-item Scale (GAD-7) Perceived Stress Scale-4 (PSS-4) The Fatigue Severity Scale (FSS) The Positive and Negative Affect Schedule (PANAS)	Perceived stress, fatigue and negative emotions of the intervention group decreased, while mindfulness and positive emotions increased.
Zhang et al., 2023b (China)	Experiencing symptoms of depression or anxiety (EPDS≥9, GAD-7≥5), 12-20 weeks pregnant women	Intervention=80 Control=80	**Intervention group** 6 sessions of self-help program via WeChat application (each session consisted of 10-20 minutes of weekly educational content + mindfulness exercises applied every day, the program lasted for six weeks in total) **Control group** Routine treatment and care	Edinburgh Postnatal Depression Scale (EPDS) Generalized Anxiety Disorder 7-item (GAD-7)	The intervention group showed a decrease in depression and anxiety levels.

Effects on Mental Health

Depression, Anxiety, Stress, Distress

In the studies, the Edinburgh Postnatal Depression Scale (EPDS), Depression, Anxiety and Stress Scale (DASS-21), Beck Depression Inventory-II scales were frequently utilized to assess the depression levels of the participants, while the Generalized Anxiety Disorder Scale (GAD-7), Beck Anxiety Inventory, Pregnancy-Related Anxiety Questionnaire (PRAQ) were employed to assess anxiety levels. Perceived Stress Scale was conducted to evaluate the stress levels of the participants, Revised Prenatal Distress Questionnaire (NuPDQ) and Distress Thermometer were performed to determine the distress levels.

In the study in which the online self-help program was performed on pregnant women with depressive symptoms for six weeks (Guo et al. 2020), it was determined that depression and anxiety levels decreased. In the study implementing the MBSR program to women with unintended pregnancy (Nejad et al. 2021), depression, anxiety, and stress levels of women decreased, it was reported that the levels of anxiety, stress, and fear of childbirth decreased as a result of the MBSR program conducted online to pregnant women diagnosed with COVID-19 in the last three months (Güney et al. 2022). In studies offering self-help programs through mobile applications (Yang et al. 2019, Liu et al., 2022b, Zhang et al. 2023b), pregnant women were requested to perform mindfulness-based interventions for 6-8 weeks and as a result, it was observed that women's depression and anxiety levels decreased. Again, it was determined that the depression and anxiety levels of pregnant women with depressive symptoms who practiced 8-week MBCT interventions via mobile application (WeChat) decreased after the intervention (Sun et al. 2021). Zemestani and Fazeli Nikoo (2020) revealed that depression and anxiety levels decreased after the 8-week MBCT program delivered as group therapy to pregnant women diagnosed with depression or anxiety. MacKinnon et al. (2021) revealed that the MBCT program provided to pregnant women with high distress levels reduced the distress levels of women, but had no effect on depression and anxiety levels. In studies conducting Mindfulness-Based Childbirth and Parenting (MBCP) programs as group therapy for 9 weeks to pregnant women, it was observed that there was a decrease in distress, stress, anxiety and depression levels (Pan et al. 2019a, 2019b, Lönnberg et al. 2021). In the study by Jensen et al. (2021), women who had more than three consecutive miscarriages were included in the intervention and control groups, a seven-week meditation and mindfulness program was implemented in the intervention group, supportive care (tender loving care program) was offered to the control group, and it was reported that the stress levels of both groups decreased, but the decrease in the intervention group was greater, and the decrease in stress levels persisted in the 12th-month follow-up.

Psychological Well-Being

In the studies, Psychological Well-being Scales and Warwick-Edinburgh Mental Well-being Scale (WEMWBS) scales were utilized to evaluate the psychological well-being levels of the participants. In Zemestani and Fazeli Nikoo's (2020) study, it was determined that the psychological well-being and emotion regulation skills of pregnant women who underwent MBCT increased. In the study of Van der Meulen et al. (2023), it was determined that women's psychological well-being levels increased and they had a significantly improved birth experience as a result of the 9-week MBCP program provided to pregnant women with high levels of fear of childbirth. While it was determined that the psychological well-being and self-compassion levels of women in the postpartum period in which the Kindness for Mums Online (KFMO) program, which is a self-help program, increased, there was no significant change in stress, anxiety and depression levels (Gammer et al. 2020).

Mindfulness, Self-Compassion

In the studies, the Mindful Attention and Awareness Scale (MAAS) and Five Facets of Mindfulness Questionnaire (FFMQ) were frequently employed to assess the mindfulness levels of the participants, while the Self-Compassion Scale (SCS) was employed to assess self-compassion levels. Fernandes et al. (2022) requested mothers with 18-month-old babies to implement a 6-week program called Mindful Moment on a website, and it was determined that the participants' parenting stress decreased, their mindfulness levels increased, and the mother became more sensitive to her baby's reactions. In another study (Yang et al. 2019), it was determined that the mindfulness levels of pregnant women increased as a result of the mindfulness program implemented as a four-session self-help program via WeChat application. In a study that implemented mindfulness programs in the form of online group therapy for 6 weeks to pregnant women (Guo et al. 2020), mindfulness, self-compassion, and psychological well-being levels were determined to be higher. In studies in which Mindfulness-Based Childbirth and Parenting (MBCP) programs were implemented (Lönnberg et al. 2021, Veringa-Skiba et al. 2022b, Zhang et al. 2023b), it was reported that the mindfulness levels of pregnant women increased, Pan et al.

(2019a, 2019b) determined that the MBCP program was not significantly effective in increasing the mindfulness levels of pregnant women. Hulsboch et al. (2023) conducted an 8-session online mindfulness-based program (Relaxation in Pregnancy) conducted on pregnant women with high depression and pregnancy distress symptoms and determined that mindfulness and self-compassion levels increased significantly.

Self-Efficacy

It is observed that the Self-efficacy in Coping with Childbirth questionnaire, Perceived maternal parental self-efficacy tool (PMPS) scales are frequently preferred to evaluate the self-efficacy levels of the participants in the studies. In Liu et al. (2022b) study, pregnant women were invited to participate in mindfulness-based interventions via WeChat application, and as a result, it was determined that parental self-efficacy and perceived social support were significantly higher. In the study conducted by Zarenejad et al. (2020), it was determined that the MBSR program performed on pregnant women with their first pregnancy did not result in a significant change in birth-related self-efficacy levels, similarly, in the study of Pan et al. (2019a), it was determined that there was no significant change in the birth-related self-efficacy levels of pregnant women who underwent MBCP.

Body Image

In the study, the Body Image Concern during Pregnancy Scale was utilized to evaluate the participants' body image distress during the birth process. In a study conducted in Türkiye (Cengizhan & Uçar 2023), it was determined that women's sexual distress and body image concern levels decreased significantly and their positive attitudes toward sexuality increased after the Mindfulness-Based Sexual Counselling program conducted in 8 sessions for pregnant women with sexual distress.

Maternal-Fetal Attachment

In the study, Cranley's Maternal-Fetal Attachment Scale (CMFAS) was utilized to assess the maternal-fetal attachment levels of the participants. In the study of Gheibi et al. (2020), it was observed that the maternal-fetal attachment levels of the intervention group increased as a result of the MBCP program implemented for pregnant women.

Effects on Physical Health

Vaginal Birth Rates, Birth Experience

In the studies, Wijma-Delivery Expectation Questionnaire (W-DEQ-A) and Catastrophizing Labour Pain (CLP) scales were employed to assess the vaginal delivery rates and birth experiences of the participants. In MBCP studies conducted on pregnant women with high levels of fear of childbirth, it was observed that women in the intervention group had a better birth experience (Van der Meulen et al. 2023), vaginal delivery rates increased (Veringa-Skiba et al. 2022a, Veringa-Skiba et al. 2022b), birth pains were less, and related medication intake was also reduced (Veringa-Skiba et al. 2022a). In another study (Oskoui et al. 2023), it was determined that the birth experience of the intervention group with mindfulness-based counselling service provided to pregnant women was improved and birth pain was lower.

Healthy Living Behaviors

In the study, the Health Promoting Lifestyle Profile-II questionnaire scale was employed to assess the healthy lifestyle behaviors of the participants. In the study of (Jalambadani et al. 2020), as a result of the Mindfulness-based art therapy (MBAT) program implemented in 10 sessions to pregnant women, while the healthy lifestyle behaviors of the intervention group improved, It was detected that there was positive difference mostly in the field of nutrition and least in the field of physical activity.

Discussion

In this systematic review, the effects of mindfulness interventions implemented on women in the perinatal and postnatal period were evaluated with 26 RCT studies. It was determined that mindfulness interventions, which have increased in frequency in recent years, are also performed on women in the perinatal and postnatal period. In the studies included in the review, it was determined that mindfulness interventions were mostly practiced on women in the perinatal period (Pan et al. 2019a, 2019b, Lönnberg et al. 2021, MacKinnon et al. 2021, Veringa-Skiba et al. 2022a, 2022b, Cengizhan & Uçar 2023, Van der Meulen et al. 2023). The perinatal period is

a stage in which the female body goes through many physical and psychological changes to adapt to motherhood, and in this stage, the woman endeavours to get used to pregnancy and the emotion of having a baby (Öztürk & Aydın 2017). In this phase, the individual characteristics of the woman (ability to cope with difficulties, adaptability, desirability of pregnancy, etc.) and environmental factors (family support, partner satisfaction, stress factors, etc.) can affect the course of pregnancy and related mother-baby health (Hutchens & Kearney 2020). While psychosocial interventions are in need to protect and improve women's mental health during this period, the postpartum period, which is also a risky phase in terms of mental health, should also be handled carefully. The postpartum period is a process in which many mental problems such as depression, anxiety, psychosis and mood disorders can occur (Safi-Keykaleh et al. 2022). It can be stated that the implementation of mindfulness interventions for women in the postpartum period should be increased and thus, mental disorders that may occur can be prevented or the severity of the problems can be reduced.

In the studies, it is observed that mindfulness interventions are mostly implemented in online environments and in the form of self-help programs (Yang et al. 2019, Sun et al. 2021, Fernandes et al. 2022, Liu et al. 2022b, Zhang et al. 2023a, 2023b). In the studies conducted, it is noted that similar results are obtained from mindfulness interventions implemented online/mobile applications and mindfulness interventions implemented face-to-face. However, it was also reported that participants dropped out more from intervention program studies implemented as self-help programs (Gammer et al. 2020, Sun et al. 2021). This finding indicates that telepsychiatry services are now widely practiced and that even unreachable groups can be easily reached in this way. One reason why online applications were practiced more in the studies in this review may be that the COVID-19 pandemic was experienced in the last five years when the studies were evaluated. Just as every service was provided remotely during the pandemic, health services were also provided remotely with online applications during this period. It can be stated that online mindfulness practices are effective in women in the perinatal and postnatal periods. In addition, it may be recommended that the time limitation of the studies should be longer than five years to evaluate the effectiveness of mindfulness interventions applied with different methods in a wider time interval.

While it is observed that mindfulness-based structured (Mindful Moment Program, Mindfulness-based childbirth and parenting) programs are employed in studies (Pan et al. 2019a, 2019b, Gheibi et al. 2020, Fernandes et al. 2022, Veringa-Skiba et al. 2022b, Van der Meulen et al. 2023), intervention programs based on therapy schools such as MBSR and MBCT were also included (Zarenejad et al. 2020, Zemestani & Fazeli Nikoo 2020, MacKinnon et al. 2021, Nejad et al. 2021, Güney et al. 2022). It was determined that the intervention programs mostly consisted of 6-8 sessions and many interventions such as body scanning, breathing exercises, yoga, meditation techniques, silence day, and psychoeducation were implemented altogether in the program scope. MBSR, one of the first implementations for achieving mindfulness, is a mostly skill-based psychoeducational program consisting of eight-week group sessions, developed as a self-regulation practice for coping with stress and emotion management in chronic pain patients (Creswell 2017, Zarenejad et al. 2020). Afterward, this program was introduced in various groups and many positive effects were reported, mainly mental problems such as stress, anxiety, and depression, as well as behavior regulation (Zarenejad et al. 2020, Güney et al. 2022). In addition, the MBCT program, which combines CBT and mindfulness, is an eight-group session program that was initially designed to reduce relapses in patients with major depression, and it is observed that this program has been implemented in a wide variety of groups (Zemestani & Fazeli Nikoo 2020). MBCT is also recommended by current guidelines in the treatment of postpartum depression (NICE 2020). In this direction, it has been determined that mindfulness-based interventions reduce stress, anxiety and depression levels of women in the perinatal and postnatal period in most studies (Güney et al. 2022, Liu et al. 2022b, Yang et al. 2019, Zhang et al. 2023a, 2023b). Mindfulness-based interventions are implemented with the aim of recognizing dysfunctional and automatically repetitive thoughts that lead to depressive mood in the moment of occurrence (Hall et al. 2016). The exercises in the program enable people who are prone to depression to focus on the emotions, thoughts, and body sensations that they encounter automatically and destructively against stress in an explicit, non-judgmental, and accepting way. By impartially and patiently monitoring the destructive experiences at the moment, it is aimed to make the individual realize that these feelings and thoughts are not compatible with external reality and that they are temporary experiences as a product of their own mind (Hall et al. 2016, Creswell 2017, Segal & Ferguson 2018). In systematic review and meta-analysis studies conducted in this direction, it is emphasized that mindfulness interventions are effective on depression and anxiety (Bulat & Baltacı 2021, Liu et al. 2022a).

While the basis of mindfulness is to provide conscious awareness to the individual, another important outcome is to increase the individual's level of self-compassion (Hall et al. 2016). Mindfulness allows individuals to be supportive and understanding towards themselves in tough times or in times of difficulties, and to treat

themselves with the same love, compassion, and kindness that they treat others. Individuals who recognize their own mistakes and weaknesses and acknowledge these negative aspects with understanding can develop positive emotions through the compassion they have for themselves (Creswell 2017, Atalay 2019). In the literature, mindfulness is reported to be associated with positive emotions such as psychological well-being, happiness, emotional intelligence, forgiveness, optimism, curiosity, social responsibility, and life satisfaction (Gerber et al. 2015, Liss & Erchull 2015, Sirois 2015). In the studies included in this review, it was determined that mindfulness-based interventions implemented on women in the perinatal and postnatal period increased the levels of mindfulness, self-compassion and psychological well-being (Yang et al. 2019, Fernandes et al. 2022, Hulsbosch et al. 2023).

Since there are major transformations in the woman's body during pregnancy, the woman's self-confidence may decrease, she may have problems with body image, and she may have negative thoughts about sexuality (Vannier & Rosen 2017). In the study of Cengizhan and Uçar (2023), it was observed that mindfulness-based counseling provided to women with sexual distress reduced the levels of sexual distress and body image anxiety of pregnant women. Women who judge and criticize themselves can increase their level of awareness and self-compassion and love themselves with mindfulness practices (Atalay 2019). Accordingly, an increase in self-confidence and positive body image can be achieved in pregnant women. It is also reported that mindfulness may have a positive effect on sexual functions with increased physical and internal sensations (Krieger et al. 2022).

Considering all these positive results of mindfulness in the psychological sense, it can be stated that women's fear of childbirth may decrease, and they may have a more pleasant birth experience. In studies, it was detected that mindfulness increased the vaginal delivery rates of women, they experienced less labor pain, and less medication was prescribed accordingly (Veringa-Skiba et al. 2021a, Oskoui et al. 2023). It is reported that factors such as anxiety and fear of childbirth influence the type of delivery, and pregnant women who experience fear of childbirth mostly prefer caesarean delivery (Demšar et al. 2018). In addition, pregnant women who experience fear and anxiety have less self-efficacy during labor, which may lead to complications in the mother-baby, and as a result, they may revert to caesarean delivery (O'Connell et al. 2019). While mindfulness interventions prepare the mother for birth in the perinatal period, they also aim to teach her to cope with difficult situations such as stress, fear, pain, and birth-related complications that may occur during childbirth (Badker & Misri 2017). In this direction, while reducing the fear and anxiety level of the pregnant woman, it also increases the level of self-efficacy during labor (Liu et al. 2022a). This can be an important factor for the individual to prefer vaginal delivery. In addition, mindfulness can also assist the individual in coping with pain by providing non-pharmacologic methods (such as breathing exercises, distraction), which can help to reduce the level of pain during the birth experience (Veringa-Skiba et al. 2022a, Oskoui et al. 2023).

Mindfulness can serve an essential role for individuals to develop conscious and healthy behaviors by abandoning unhealthy behaviors, as it tends to distract individuals from their automatic thoughts and habits (Hall et al. 2016). In fact, the concept of mindful eating has been included in the literature in recent years (Beshara et al. 2013). It has been determined that individuals with eating mindfulness reduce excessive and unnecessary food consumption, ensure portion control and thus play an important role in weight management (Beshara et al. 2013). In the study of Jalambadani et al. (2020), it was determined that mindfulness implemented to pregnant women was effective in developing healthy behaviors and provided the most benefit in the field of nutrition. While situations such as risky/unhealthy behaviors or obesity during pregnancy are undesirable for mother-baby health, it can be stated that mindfulness can assist pregnant women in this regard. In addition, more databases can be reviewed to examine the different effects of mindfulness interventions on the mental and physical health of women in the perinatal and postpartum period.

Conclusion

Perinatal and postpartum periods are an important issue in establishing healthy future generations. Interventions that will protect and improve mother-infant health in this period are of great significance. It has been determined that mindfulness interventions, which have increased in frequency in recent years, have been practiced on women in the perinatal and postnatal period and as a result, they have significant effects on mental and physical health. It was determined that mindfulness interventions decreased women's fear of childbirth, depression, anxiety and stress levels and increased their psychological well-being, self-compassion and mindfulness levels. In addition, it was reported that mindfulness interventions increased vaginal delivery rates and healthy life behaviors, it was revealed that women had a better birth experience and less pain during the birth process. As a result of the findings of this review, it may be recommended to implement mindfulness-based

interventions during these periods for women in the perinatal and postnatal period to have the most favourable pregnancy, birth and motherhood process.

It is also a significant finding that intervention programs were mostly implemented online in the studies. In recent years, it has been observed that the frequency of telepsychiatry services has increased with the COVID-19 pandemic. In this respect, it is also recognized that online interventions can also help pregnant women who cannot attend regular follow-ups or women who are unable to receive postnatal care. In addition, considering that online interventions are more advantageous in terms of cost and feasibility, it can be said that online mindfulness interventions can be applied to women during pregnancy and the postpartum period. It is seen that there are mindfulness programs prepared to protect and improve women's mental health in the international arena. It is very important to develop similar programs in our country and to provide mental support by applying mindfulness interventions in processes such as pregnancy, birth and postpartum, where women need mental support the most. It can be said that mindfulness programs should be made more easily accessible and disseminated by women within the scope of preventive mental health, and in cases such as illness or hospitalization, these programs should be initiated by health professionals, nurses, and their continuity in the community should be ensured.

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