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The Effect of Mindfulness-Based Cognitive Therapy on Anticipatory Grief in NICU Mothers

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ABSTRACT

Anticipatory grief is an important psychological challenge affecting both maternal health and infant care quality. This study explored the impact of mindfulness-based cognitive therapy (MBCT) on anticipatory grief in mothers with infants in the neonatal intensive care unit (NICU). Conducted as a semi-experimental study in 2023, 70 mothers of chronically ill infants hospitalized for at least 2 weeks were selected via convenience sampling. Participants were randomly assigned to either an intervention or control group. Both groups completed demographic and grief assessments using the Benfield anticipatory grief scale. The intervention group received eight 90-minute MBCT sessions over 4 weeks. Postintervention analysis showed no significant demographic differences between groups, ensuring group comparability. Statistical tests (independent *t*-test, chi-square, Mann-Whitney *U*, and repeated measures ANOVA) confirmed that MBCT significantly reduced anticipatory grief among the intervention group compared to the control group. The findings support the effectiveness of MBCT in reducing anticipatory grief and suggest its broader implementation in NICUs to support maternal mental health and improve infant care outcomes.

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Mindfulness-based cognitive therapy; anticipatory grief; neonatal intensive care unit; mothers; infants

Introduction

The birth of an infant is considered a significant and stressful event in a mother's life (Hajarian Abhari et al., 2022; Safari et al., 2022). In this regard, parents, particularly mothers, experience a crisis when their infant requires hospitalization in the neonatal intensive care unit (NICU) (Grosik et al., 2013). Studies have demonstrated that compared to mothers of

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healthy infants, mothers with infants admitted to the NICU have a higher likelihood of developing anxiety and depression (Bonacquisti et al., 2020; Surmeli Onay et al., 2021). These mothers feel helpless due to early and long-term separation and the special care needs of the neonates and lose their confidence in playing motherly roles (Ahmadinezhad et al., 2024; Eriso et al., 2024). Additionally, due to the high involvement of these mothers in caregiving tasks and their emotional closeness to the infants, this group of mothers is susceptible to psychological distress and anticipatory grief (Coelho et al., 2020).

The description of the parents since the hospitalization of their newborn in this department has been accompanied by words such as overwhelming stress, mental pressure, separation, disappointment, depression, unhappiness, lack of mastery and control over the situation, doubt, and grief (Hendy et al., 2024). Indeed, one of the most common psychological reactions among mothers with infants hospitalized in the NICU is anticipatory grief (Grosik et al., 2013). Considering that these mothers are constantly worried about potential adverse health outcomes for their infants, anticipatory grief is a common reaction among this group of mothers (Reuvers, 2018). Anticipatory grief refers to experiencing grief before the actual death of the patient (Kingston et al., 2007). A review of the literature shows that anticipatory grief is associated with poor sexual relationships (Pote & Wright, 2018), psychological maladjustment (Nielsen et al., 2016), anxiety (Aoun et al., 2020), post-traumatic stress (Lenferink et al., 2020), and depression (Eersel et al., 2020).

One less explored approach in managing anticipatory grief is mindfulness-based cognitive therapy (Allard et al., 2020). Mindfulness-based cognitive therapy, developed from Kabat-Zinn's stress reduction model (2003) combined with cognitive therapy principles, aims to cultivate a different attitude or relationship with thoughts, emotions, and feelings. It involves maintaining complete attention and moment-to-moment awareness, along with an attitude of acceptance and non-judgment (Banks et al., 2015).

However, research reviews indicate contradictory results regarding the impact of mindfulness-based cognitive therapy. Some studies suggest its positive effects on individuals experiencing grief (Aoun et al., 2020), complicated grief (Lenferink et al., 2020), post-traumatic symptoms (Eersel et al., 2020), and depressive episodes (Anālayo, 2022). Conversely, other research results indicate its lack of impact on treating depression, anxiety, and stress (Cairncross & Miller, 2020; Gutierrez, 2024), reducing depressive symptoms, particularly rumination (Carpenter et al., 2019), psychological well-being, spiritual health, pregnancy experience, and childbirth (Arasteh et al., 2025; Turner, 2009).

Therefore, considering the insufficient attention given to anticipatory grief in mothers with infants hospitalized in the NICU and the inconsistent

outcomes regarding the effectiveness of mindfulness-based cognitive therapy as an intervention for grief, widely anticipatory grief, this current research aims to investigate the effect of mindfulness-based cognitive therapy on the level of anticipatory grief in infant mothers hospitalized in the neonatal intensive care unit.

Methods

Participants and procedures

The present study was a quantitative semi-experimental study. The study population included all mothers with infants hospitalized in the neonatal intensive care unit (NICU) for at least 2 weeks with a diagnosis of chronic illness in the year 2023. As seen in [Figure 1](#), 70 mothers were selected through convenience sampling and randomly divided into

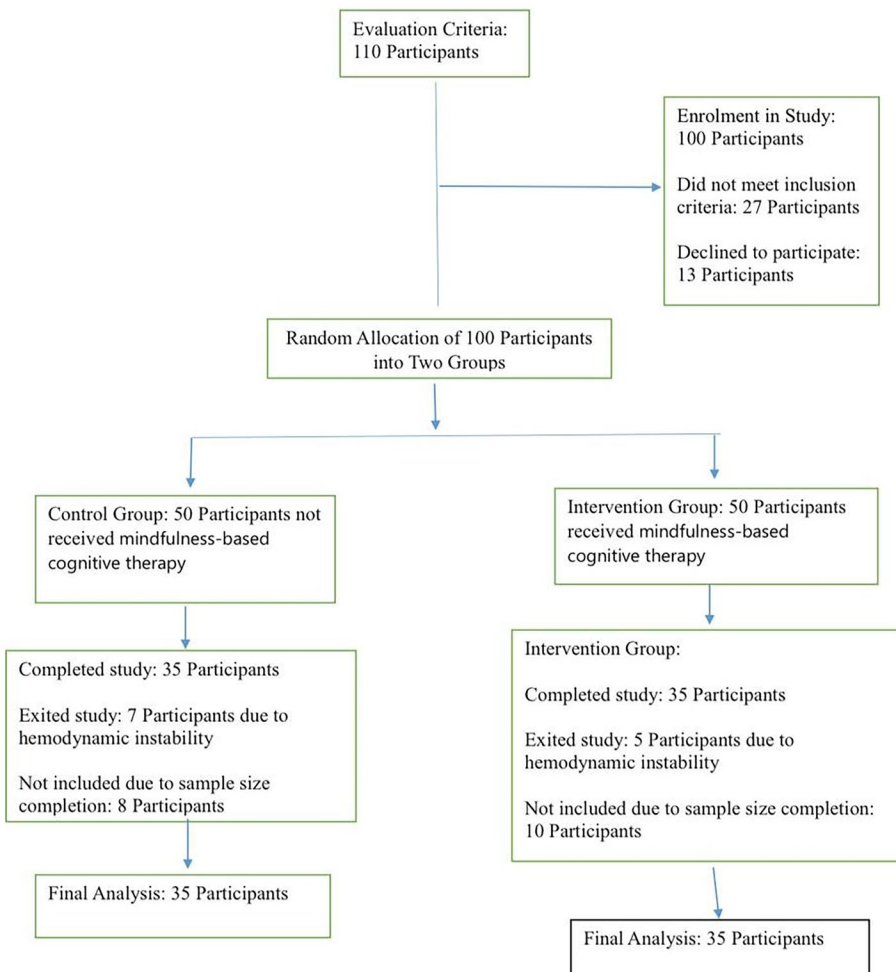


Figure 1. Sampling process chart.

intervention and control groups. Sampling was done based on the entry criteria and availability, and then the allocation of samples in two groups was based on random sampling and lottery. For this purpose, it was determined by lot that the first group of mothers would be the intervention group, all eligible mothers were placed in the intervention group in the first week, and the intervention was carried out for 2 weeks, and then after a week of spacing to prevent the contact of the control group, and in the third week of the intervention, all eligible mothers entered the control group, and this sampling method continued for 2 months until the completion of the sample size. To determine the sample size based on the study of Valizadeh et al. (2013). To reach a confidence level of 95%, accuracy of 0.05, and test power of 85%, 32 neonates were determined in each group.

$$n \geq 2 \frac{(z_{\alpha/2} + z_{\beta})^2 (S_1^2 + S_2^2)}{(\mu_1 - \mu_2)^2}$$

The present study was conducted at the Mahdiah Hospital in Tehran, a maternal and infant hospital with two units and 60 neonatal care beds. Inclusion criteria were infants hospitalized in the NICU for a minimum of 2 weeks, mothers had no history of psychiatric disorders by self-reporting, reading and writing literacy, access to the internet and smartphones, not being of the caregiving or medical staff, and having no previous history of infant hospitalization in NICU. Exclusion criteria included incomplete questionnaire responses, noncompliance with educational sessions, absence for more than two sessions, infant improvement and discharge from the NICU before completing the sessions, and infant death or transfer.

Measures

To assess the mothers' anticipatory grief, the Benfield anticipatory grief scale was utilized. This scale consists of 7 items (Feelings of sadness, Feelings of anger, Difficulty in sleeping, Change in appetite, Preoccupation thinking or dreaming about my infant, my own irritability, Thinking I have done something to cause my infant's problems (guilt)) and is scored with a 4-point Likert scale ranging from "0" (no problem) to "3" (severe problem). Participating mothers expressed their current feelings resulting from their infant's condition, according to the questions and items of the scale. Everyone's score on this questionnaire ranged from 0 to 21, where a higher score indicated higher levels of anticipatory grief (the full scale is provided in the [Appendix](#)).

Table 1. Structure of the sessions and the content of the mindfulness-based cognitive therapy program.

Session	Content of the session
One	Introduction, explanation of rules, and completion of research questionnaires for both intervention and control groups. Session
Two	Teaching attention and awareness focused on thoughts related to anticipatory grief, practicing thoughts and emotions, recording pleasant events, and sitting meditation.
Three	Exploring the wandering mind, teaching body scan techniques, controlling the wandering mind through body scan practice, and reviewing negative future thoughts.
Four	Mindfulness of breathing and mindfulness meditation practice, seated meditation, mindfulness of breathing and body, mindfulness meditation practice along meditation.
Five	3-minute breathing (unified mindfulness, expanding), staying in the present moment, comfortable contact, discovery of experience, restricting and expanding attention (using sitting meditation).
Six	Creating a different relationship with experiences, how to create and use acceptance, 40-minute seated meditation, awareness of breath, body, and then thoughts, reviewing exercises, assigning homework. Session
Seven	Reviewing the topic of “thoughts are not facts” and methods to view thoughts differently. Session
Eight	Reviewing self-care, choosing self-care options, linking activity and creativity, activating behavior in education, activity planning, reviewing past sessions, and reCompleting the questionnaire for both intervention and control groups.

In the study by Valizadeh et al., after translating this scale into Persian, six experts in the field of psychiatry and pediatric nursing and two psychiatrists evaluated the face and content validity of this tool, and their results showed that the questionnaire had a good validity. The Iranian Anticipatory Grief Scale is similar to its original version, except that in one of the items, the term “increased or decreased appetite” was used instead of “appetite” based on the experts’ opinion. The internal consistency of the questionnaire items was calculated using Cronbach’s alpha coefficient for fathers and mothers of infants hospitalized in the intensive care unit as 0.83 and 0.72, respectively (Valizadeh et al., 2013). In the present study, the Cronbach’s alpha coefficient of the questionnaire was calculated as 0.76.

Initially, all participants completed a demographic questionnaire and the Benfield Anticipatory Grief Scale. Subsequently, the intervention group received eight 90-minute sessions of mindfulness-based cognitive therapy, twice a week (Table 1). The control group received routine care. After 1 month (completion of the intervention), both groups again completed the Benfield Anticipatory Grief Scale.

Data analysis

Activating behavior in education, activity planning, reviewing past sessions, and reCompleting the questionnaire for both intervention and control groups. Finally, data were analyzed using the SPSS software (version 20) and statistical tests, including independent *t*-tests, chi-square, Mann-Whitney U, and repeated measures analysis of variance.

Session one

After the introduction of the program, a brief report of the objectives of the program was presented to the participants. The rules of the group and the method of implementing the intervention and presenting assignments were explained. In this meeting, the participants were asked to complete the questionnaires related to the research.

Session two

In this meeting, the thoughts and symptoms of grief are explained. In sitting meditation, participants were asked to look around and listen non-judgmentally for 2 minutes. This exercise was followed by focusing on body sensations. Afterwards, the participants' responses to thoughts arising from difficult situations, alternative beliefs, and behaviors were discussed.

Session three

The tasks of the previous session and body scanning were discussed with them to control unpleasant thoughts and feelings. The body scan meditation practice was done for 30 minutes (focusing on different parts of the body while breathing deeply). Mothers were asked to engage in an unpleasant event in addition to sitting meditation and body scanning.

Session four

In this meeting, in addition to reviewing the previous assignments, the 3-minute breathing meditation was discussed. The 3-minute breathing technique consists of a series of successive inhalations and exhalations. Mothers were asked to inhale and exhale through the nose or mouth, whichever was more comfortable. Do not hold your breath. Count inhaling and exhaling at the same time. Do this exercise for at least three complete cycles. Badr feels the movement of his diaphragm while breathing, then with a deep breath, the exercise ends after three minutes.

Session five

In this session, by reviewing sitting meditation, body scanning, and breathing for 3 minutes, positive thoughts and feelings were reviewed, along with recounting negative events without judgment and being present in the moment.

Session six

In this session, in addition to reviewing the previous assignments and presenting the emotion review task, the participants were asked to describe

what they felt about the feeling of a raisin on their teeth, washing the dishes, or any other activity unrelated to their child. At home or in the hospital, they have learned to repeat and focus only on what they are doing.

Session seven

The participants were asked to think about a pleasant event and an unpleasant event, then write down their thoughts, attitudes, and emotions about these events separately and discuss them, in this regard, by thinking and expressing. They conclude that “thoughts are not facts.” Hence, they will have a different perspective on events.

Session eight

In the last session, the participants discussed their perspective on self-care, the relationship of a different perspective to the event with effective coping with negative events. They are asked to write and discuss the effects of previous assignments and the present intervention in general on creating and integrating their behavior. At the end of the questionnaire, mourning was predicted, so the intervention was completed in this meeting.

Results

The results of the independent *t*-test showed that there was no statistically significant difference between the mean ages of mothers in the control group (26.89 ± 6.23) and intervention group (25.89 ± 5.33) ($t = 0.721$; $p = 0.474$). The results of the chi-square test showed that there was no statistically significant difference in the mothers education level ($T = 5.010$; $p = 0.286$), Mothers job ($T = 0.254$; $p = 0.615$) Mothers' delivery type in control group (19 ± 54.3) and Intervention group (16 ± 45.7) ($F = 0.514$; $p = 0.473$) Economic status of the family ($F = 0.079$; $p = 0.961$), neonatals Gender ($F = 1.052$; $p = 0.293$), Neonatal birth order ($p = 0.961$; $X^2 = 0.079$), between the two groups. The results of the Mann-Whitney U-test indicated that there was no statistically significant difference in the mean postnatal ages of the infants ($Z = 1.052$, $p = 0.293$) and neonatal hospitalization days ($Z = 0.963$, $p = 0.336$) between the two groups (Table 2).

The results of the independent *t*-test did not show a significant difference between the intervention (22.94 ± 2.55) and control groups (21.91 ± 3.98) in anticipatory grief before the intervention ($t = 1.287$, $p = 0.203$). However, immediately after the intervention, the result of anticipatory grief was in the intervention (19.17 ± 2.01) and control groups (21.74 ± 3.07) ($t = 3.496$, $p = 0.001$) and 4 weeks postintervention ($t = 4.081$, $p = 0.001$), this difference was significant. The results of repeated measures analysis of variance between groups indicated a statistically significant decrease in the

Table 2. Maternal and neonatal demographic variables.

Variable		Mean (Standard Deviation)		Statistical test	
		Intervention group	Control group	<i>t</i> -test(<i>df</i>)	<i>p</i> -value
Mother's age (Years)		25.89(5.33)	26.89(6.23)	0.721(68)	0.474
Neonatal age (Days)		18.63(3.51)	19.51(3.69)	1.052(68)	0.253
Neonatal hospitalization days		16.14(1.71)	16.69(2.21)	0.963(68)	0.336
Mother's education		Frequency (Percentage)		χ^2 (<i>df</i>)	<i>p</i> -value
	Under Diploma	6 (17.1)	5 (14.3)	5.010(4)	0.286
	Diploma	12 (34.3)	18 (51.4)		
	Advanced Diploma	5 (14.3)	1 (2.9)		
	Bachelor's degree	9 (25.7)	10 (28.5)		
	Master's degree	3 (8.6)	1 (2.9)		
Mother's job		11 (31.4)	13 (37.1)	0.254(1)	0.615
Mother's delivery type	Housewife	25 (66.6)	22 (62.9)	0.514(1)	0.473
	Cesarean delivery	19 (54.3)	16 (45.7)		
	Normal Vaginal Delivery	16 (45.7)	19 (54.3)		
Economic status of the family	Good	2 (5.7)	2 (5.7)	0.079(2)	0.961
	Medium	25 (71.4)	24 (68.6)		
	Weak	8 (22.9)	9 (25.7)		
Neonatal sex	Boy	20 (57.1)	18 (51.4)	0.230(1)	0.631
	Girl	15 (42.9)	17 (48.6)		
Neonatal birth order	First child	20 (57.1)	19 (54.3)	0.168(2)	0.919
	Second child	12 (34.3)	12 (34.3)		
	Third child	3 (8.6)	4 (11.4)		

Table 3. Anticipatory grief scores before, immediately, and 4 weeks after intervention.

Variable	Intervention group		Control group		Results	
	Mean	Standard Deviation	Mean	Standard Deviation	<i>t</i> -test(<i>df</i>)	<i>p</i> -value (effect size)
Before intervention	22.94	2.55	21.91	3.98	1.287 (68)	0.203(0.29)
Immediately after intervention	19.17	2.01	21.74	3.86	3.496 (68)	0.001(0.84)
4 weeks after the intervention	18.03	1.81	20.69	3.40	4.081 (68)	0.001(0.98)
Results	$F = 122.43(34)$ $p_value = 0.001^{**}(1.65)$		$F = 21.34(34)$ $p_value = 0.01^{**}(0.33)$		$F = 3445.53(1,68)$ $p_value = 0.001^{***}(0.91)$	

*Independent *t*-test.

** Repeated measures ANOVA (within-group).

*** Repeated measures ANOVA (between group).

intervention group anticipatory grief score (18.03 ± 1.81) and control group anticipatory grief score (20.69 ± 3.4), which suggests the influence of mindfulness-based cognitive therapy on anticipatory grief in mothers with infants hospitalized in the neonatal intensive care unit ($F = 34.535$, $p = 0.001$) (Table 3).

Discussion

The results of the present study showed that there was no significant difference between the expected bereavement of the intervention and control groups in the pre-intervention phase, but this difference became significant in the immediate postintervention phase and 4 weeks after the

intervention. Considering that the scores of mothers' bereavement expectations decreased more in the intervention group, it indicates the effect of cognitive therapy intervention based on mindfulness on the bereavement expectations of mothers with premature babies hospitalized in the neonatal intensive care unit.

In alignment with the results of the present study, a study conducted by Huang et al. aimed to evaluate the effectiveness of mindfulness-based cognitive therapy (MBCT) on grief using a quasi-experimental method in a treatment clinic in Taiwan. The therapeutic protocol implemented was based on Segal's Mindfulness-Based Cognitive Therapy program. The results indicated that the MBCT sessions led to an improvement in grief (Huang et al., 2021). Although this study was similar to the present study in terms of the intervention, the outcome in the present study was anticipatory grief, whereas in the referenced study, it was actual grief. Additionally, the cognitive therapy program used differed from the present study. Nevertheless, the positive results demonstrate the impact of MBCT.

Similar to the results of the present study, it showed that MBCT sessions improved the spiritual health of mothers. The intervention implemented in this study is the same as the present study, but the implementation of the intervention is different in terms of the number of sessions and its duration. However, the positive results indicate the effect of MBCT (Arasteh et al., 2025).

Aslani et al. conducted a study aimed at evaluating the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on symptoms of complicated grief. The results showed that MBCT significantly reduced complicated grief (Aslani et al., 2019), which also supports the findings of the present study. However, it should be noted that the sample size in the study was very small, consisting of only three participants, and complicated grief, which is influenced by numerous factors affecting its severity and reduction, was chosen as the outcome.

Additionally, Roberts et al. investigated the effectiveness of a mindfulness-based intervention on perinatal grief. This quasi-experimental study employed a pretest and posttest design. Participants in the experimental group attended a five-session mindfulness program, which was adapted from Kabat-Zinn's eight-session program (2009). The results demonstrated that the mindfulness-based intervention led to a reduction in perinatal grief (Roberts & Montgomery, 2015). These findings are consistent with the results of the present study and indicate a significant positive impact of Mindfulness-Based Cognitive Therapy. Moreover, the target population was very similar to that of the present study, and the intervention program was also similar. The only difference is that the mothers in the referenced study experienced grief due to loss, and the mothers in the present study are experiencing anticipatory grief.

Contrary to the findings of the present study, Van der Melon et al. conducted a study in 2023 aimed at comparing the effects of a mindfulness-based intervention with usual care on psychological well-being, pregnancy, and childbirth experiences. The results of this study indicated no significant difference between the mindfulness-based intervention and usual care (Van der Meulen et al., 2023). In this study, the outcome was the psychological well-being of pregnant women, which makes it comparable to the present study, as pregnant and postpartum women were selected as the target group. Given that psychological well-being could potentially reduce symptoms of anticipatory grief, it was expected that the results would align; however, this was not the case.

Another study that contrasts with the findings of the present research is the one conducted by Kingston et al. in Ireland. This study aimed to evaluate the impact of a mindfulness-based cognitive intervention on reducing depressive symptoms in outpatients with depression who were attending a psychiatric department. The results showed a significant reduction in depressive symptoms by the end of the mindfulness-based cognitive intervention, but it did not significantly reduce rumination symptoms (a core symptom of depression) (Kingston et al., 2007).

The discrepancy between the findings of the present study and the study can be attributed to differences in the target groups. In Kingston's study, the target group consisted of patients with a confirmed diagnosis of depression, whereas in the present study, the participants were mothers who reported no psychological disorders and were unaware that they were experiencing anticipatory grief. This suggests that Mindfulness-Based Cognitive Therapy (MBCT) may be more effective in addressing early-stage psychological issues but may not be as effective when dealing with more entrenched conditions like long-term depression, where a prolonged disease process has occurred.

In conclusion, it can be noted that mothers with newborns admitted to neonatal intensive care units (NICUs) experience significant distress due to their infants' conditions. This distress often leads to the development of maladaptive responses, including negative self-criticism and a decline in the psychological and social dimensions of their quality of life. Participation in Mindfulness-Based Cognitive Therapy (MBCT) programs helps increase self-awareness and emotional experience, which in turn facilitates a balance between positive and negative emotions, enhances coping strategies for life's challenges, and aids in mood and stress management. These changes contribute to improving the emotional and social dimensions of their mental health (Lomas et al., 2019).

Furthermore, mindfulness reduces rumination in individuals experiencing grief symptoms through emotional regulation. MBCT offers a different

approach to dealing with emotions and distress. By not engaging with or becoming entangled in negative thoughts—essentially letting go of these thoughts—individuals can avoid rumination. Mindfulness practices help participants recognize the connection between thoughts, emotions, and bodily sensations in each moment (Newton & Ohrt, 2018). As a result of this awareness, depressive thoughts and states are identified, and through the practice of letting go and accepting these thoughts, anticipatory grief gradually decreases. The mechanisms through which mindfulness exerts its effects, such as exposure, cognitive change, self-management, relaxation, and acceptance, also contribute to the reduction of anticipatory grief symptoms (Hajarian Abhari et al., 2022; Roberts & Montgomery, 2016).

The findings of this study demonstrate that mindfulness-based cognitive therapy has a significantly positive effect on anticipatory grief in mothers of infants hospitalized in the neonatal intensive care unit. Therefore, it is recommended that the implementation and expansion of mindfulness-based cognitive therapy in neonatal intensive care units be considered. The strengths of the present study include the precise implementation of all stages of the program mindfulness-based cognitive therapy. The weaknesses of the study include the inability to conduct the study experimentally and the limited sample size reduction over time because 8 mothers were unable to participate in all sessions, so the sampling time was long to compensate for the loss of samples and replace them with new samples.

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Ethics approval

This study was performed by the principles of the Declaration of Helsinki. The study was reviewed and approved by the ethics committee of the Shahid Beheshti University of Medical Sciences, Tehran, Iran (IR.SBMU.RETE.CH.REC.1400.220). Written informed consent was obtained from all the mothers who participated (mothers) from June to November 2023 in the research. The purpose of the research was explained to all participants, and they were assured that they could withdraw from the study at any stage of the research. The authors were also assured that the results would be published anonymously.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research, supporting data is not available.

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Appendix

Anticipatory Grief Scale Benfield (1995)

Anticipatory Grief Scale (AGS) made by Benfield (1995) was filled as the second part. AGS consisted of seven items: Feeling of sadness, anger, loss of appetite, difficulty in sleeping, preoccupation thinking, irritability and guilt. It was a 4-point Likert scale, which was categorized from 0 (No problem) to 3 (Big problem). Therefore, the mean of total scores also ranged from 0 to 3. The reliability and validity of this scale have been confirmed.

	Items	No problem	Mild problem	Moderate problem	Big problem
1	Feelings of sadness	0	1	2	3
2	Feelings of anger	0	1	2	3
3	Difficulty in sleeping	0	1	2	3
4	Change in appetite	0	1	2	3
5	Preoccupation thinking or dreaming about my infant	0	1	2	3
6	My own irritability	0	1	2	3
7	Thinking I have done something to cause my infant's problems (guilt)	0	1	2	3