

Comparative Efficacy of Compassion-Focused Therapy and Mindfulness-Based Cognitive Therapy for Emotion Regulation in Mothers of Pediatric Cancer Patients

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Abstract

Background: Mothers acting as primary caregivers for pediatric cancer patients experience profound psychological strain, which frequently manifests as severe anxiety, fear, guilt, and generalized emotional distress. This study aimed to compare the efficacy of compassion-focused therapy and mindfulness-based cognitive therapy in improving emotion regulation among this vulnerable population.

Methods: A randomized controlled clinical trial was conducted, incorporating pretest, posttest, and three-month follow-up evaluations. The target population comprised mothers of children receiving oncological care at Mofid Children's Hospital in Tehran, Iran during 2025. A total of 45 eligible participants were recruited through convenience sampling and randomly allocated into two experimental groups and one control group (n=15 per group). The Emotion Regulation Questionnaire (ERQ) was administered to assess emotion regulation. Participants in the experimental conditions completed eight weekly, 90-minute sessions of either compassion-focused therapy or mindfulness-based cognitive therapy, whereas the control group received no therapeutic intervention. Statistical analyses were conducted via repeated-measures analysis of variance (ANOVA) using SPSS version 26.

Results: At pretest, mean cognitive reappraisal scores were similar across groups (M=15.55, SD=3.88). At posttest, these scores increased to 24.88 (SD=3.67) for the compassion-focused therapy group and 21.17 (SD=4.01) for the mindfulness-based cognitive therapy group. Regarding expressive suppression, overall pretest scores were 24.46 (SD=4.06), which decreased at posttest to 14.60 (SD=3.06) following compassion-focused therapy and 17.80 (SD=2.98) following mindfulness-based cognitive therapy. Notably, compassion-focused therapy demonstrated a significantly greater reduction in expressive suppression compared to mindfulness-based cognitive therapy (mean change difference=-3.13, P=0.021). All therapeutic effects were sustained at the follow-up assessment.

Conclusions: Both compassion-focused therapy and mindfulness-based cognitive therapy are effective in enhancing emotion regulation among mothers of children with cancer. However, given its superior efficacy in mitigating expressive suppression, compassion-focused therapy emerges as a particularly valuable intervention for addressing emotion regulation difficulties within this population.

Keywords: Neoplasms, Emotions, Self-compassion, Mindfulness, Mothers

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1. Introduction

A childhood cancer diagnosis constitutes an overwhelming stressor that profoundly disrupts family stability. The prolonged and intensive medical treatments inherently generate enduring uncertainty and necessitate frequent clinical visits, fundamentally altering daily family functioning (1). Although clinical attention is predominantly directed toward the pediatric patient's recovery, the psychological well-being of the primary caregiver—most frequently the mother—is severely compromised. Mothers caring for children with cancer bear a disproportionate psychological load,

often manifesting as chronic stress, severe anxiety, depressive symptomatology, and an unrelenting fear of illness recurrence (2). Furthermore, these psychological difficulties frequently encompass complicated emotional reactions, including profound self-blame, guilt regarding the diagnosis, and perceived inadequacy in navigating the medical crisis (3). This persistent emotional strain typically leads to a marked decline in their overall quality of life, impaired social functioning, and significant deficits in emotional processing (4). Consequently, their capacity to provide consistent emotional support to their ill child is diminished, highlighting the critical need for targeted psychological interventions.

Adaptive emotional management is crucial for maintaining psychological health, especially when confronting chronic and uncontrollable adversity. Emotion regulation encompasses the mechanisms through which individuals modulate the occurrence, timing, experience, and expression of their emotions (5). Emotion regulation is commonly assessed with the Emotion Regulation Questionnaire (ERQ), which quantifies the two primary strategies outlined in Gross's process model of emotion regulation: cognitive reappraisal and expressive suppression (6, 7). Cognitive reappraisal constitutes an adaptive, antecedent-focused strategy wherein an individual reframes a potentially evocative situation to alter its emotional trajectory. Conversely, expressive suppression is a typically maladaptive, response-focused strategy characterized by the active inhibition of ongoing emotion-expressive behavior (8). Research indicated that the frequent utilization of cognitive reappraisal correlates with favorable psychological outcomes, whereas a reliance on expressive suppression is predictive of maladjustment and elevated psychopathology (9, 10). Deficits in emotion regulation serve as a transdiagnostic mechanism underlying various psychological disorders, such as anxiety and depression, which are highly prevalent among mothers of pediatric oncology patients (6). Consequently, therapeutic approaches designed to enhance cognitive reappraisal and diminish expressive suppression are highly pertinent for this clinical demographic.

Compassion-focused therapy, pioneered by Gilbert, is a prominent third-wave cognitive-behavioral intervention grounded in evolutionary and social psychology principles (11). The theoretical foundation of this approach emphasizes the activation and enhancement of the affiliative and soothing affective system, distinguishing it from the threat and drive systems. The fundamental objective of compassion-focused therapy is to nurture an internal environment characterized by warmth, safety, and self-kindness. This process serves to attenuate threat-based affective states, such as shame and self-criticism, which frequently afflict mothers who may harbor unwarranted feelings of responsibility for their child's illness (12). By promoting self-compassion, the therapy enables mothers to cultivate a supportive, non-judgmental perspective regarding their own psychological distress (13). Empirical research focusing on populations experiencing

chronic stress and substantial caregiving burdens demonstrated that compassion-focused therapy markedly improves emotional stability, mitigates feelings of guilt and shame, and bolsters adaptive coping by facilitating a transition from pervasive self-criticism to adaptive self-soothing (14, 15). Because compassion-focused therapy specifically targets the regulation of emotions through the cultivation of interpersonal connection and internal safeness, it represents a highly viable intervention for addressing the emotion regulation deficits observed in this vulnerable population (16).

Mindfulness-based cognitive therapy is another established third-wave psychological intervention that seamlessly integrates traditional cognitive therapy principles with core mindfulness practices (17). The primary therapeutic mechanism of mindfulness-based cognitive therapy involves fostering a non-judgmental, present-focused awareness of internal phenomena, encompassing physiological sensations, emotions, and cognitions. This methodology is explicitly structured to disrupt maladaptive, automatic cognitive cycles, particularly the depressive rumination that frequently consumes mothers preoccupied with their child's medical prognosis (18). Through the cultivation of "decentering"—the cognitive capacity to observe thoughts as transient mental events rather than objective facts—mindfulness-based cognitive therapy promotes enhanced psychological flexibility (19). Extensive empirical data substantiate the efficacy of mindfulness-based cognitive therapy in heightening emotional awareness, attenuating psychiatric symptom severity, and fostering adaptive emotion regulation strategies by minimizing experiential avoidance and facilitating the acceptance of distressing affective states (20, 21). Consequently, this intervention delivers a systematic approach to mitigating the chronic stress and emotional dysregulation associated with intensive caregiving, assisting mothers in shifting from a problem-solving "doing mode" to an acceptance-based "being mode" (22).

Although compassion-focused therapy and mindfulness-based cognitive therapy have independently exhibited robust efficacy in alleviating psychological distress and optimizing emotion-related variables across diverse clinical groups, a critical gap remains in the literature regarding their comparative effectiveness, particularly among

the highly vulnerable demographic of mothers caring for pediatric oncology patients. From a clinical perspective, identifying which therapeutic framework demonstrates superior efficacy in modulating specific emotion regulation strategies—namely, cognitive reappraisal and expressive suppression—is imperative for customizing clinical interventions and optimizing healthcare resource utilization. Bridging this empirical gap is essential for advancing evidence-based psychological care within pediatric oncology contexts. Therefore, the primary objective of the current study was to investigate and compare the relative efficacy of compassion-focused therapy and mindfulness-based cognitive therapy in modifying the emotion regulation strategies of mothers of children with cancer.

2. Methods

2.1. Design

This study employed a three-arm, parallel-group, randomized controlled trial design featuring pretest, posttest, and three-month follow-up evaluations (IRCT: IRCT20250506065619N1). The trial comprised two intervention groups (compassion-focused therapy and mindfulness-based cognitive therapy) and one waitlist control group. Participants were randomly assigned to these three groups to evaluate the comparative efficacy of the active interventions against the control condition. The control group did not receive any psychological intervention during the active treatment phase.

2.2. Selection and Description of Participants

The target population consisted of all mothers of children diagnosed with cancer who were referred to Mofid Children's Hospital in Tehran, Iran during the 2025 academic year. A total sample of 45 eligible mothers was recruited via convenience sampling, guided by predetermined inclusion and exclusion criteria. Participants were subsequently allocated into three equal groups ($n=15$ per group) using a computer-generated random allocation sequence (simple randomization) developed by an independent statistician (Figure 1). Key inclusion criteria required participants to be the primary maternal caregiver of a child actively undergoing cancer treatment, possess basic literacy skills, and not be concurrently engaged in other forms of

psychotherapy. Exclusion criteria comprised the death of the child or cancer recurrence during the intervention phase, significant alterations in the child's medical status, or missing more than three treatment sessions. All procedures strictly adhered to the university's ethical guidelines. Informed consent was obtained from all participants prior to enrollment, with explicit assurances regarding data confidentiality and their right to withdraw from the study at any time.

2.3. Sample Size Determination

The sample size was determined a priori using G*Power 3.1 software for a repeated-measures analysis of variance (within-between interaction), specifying an alpha level of $\alpha=0.05$ and statistical power of $1-\beta=0.90$. This calculation was predicated on the expected posttest means and standard deviations for cognitive reappraisal in the mindfulness-based cognitive therapy group ($M=21.17$, $SD=4.01$) compared with the control group ($M=15.77$, $SD=4.72$), utilizing parameters derived from prior research on similar third-wave interventions in caregiving populations (23).

2.4. Data Collection and Measurements

Emotion Regulation Questionnaire (ERQ): Developed by Gross and John (7), the ERQ is a 10-item self-report scale designed to measure individuals' habitual use of two primary emotion regulation strategies: cognitive reappraisal (six items) and expressive suppression (four items). Items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Higher scores on each subscale indicate a greater tendency to employ the respective emotion regulation strategy. Total scores for cognitive reappraisal range from 6 to 42, whereas scores for expressive suppression range from 4 to 28. The scale demonstrated robust reliability in its original validation studies, and its utility has been extensively confirmed in Iranian populations (24). The Persian version of the ERQ has exhibited strong psychometric properties, including high content validity (Content Validity Index [CVI]=0.96; Content Validity Ratio [CVR]=0.92). In the current study, internal consistency was acceptable, yielding a Cronbach's alpha of $\alpha=0.82$ for the cognitive reappraisal subscale and $\alpha=0.75$ for the expressive suppression subscale, thereby confirming its reliability for the present sample.

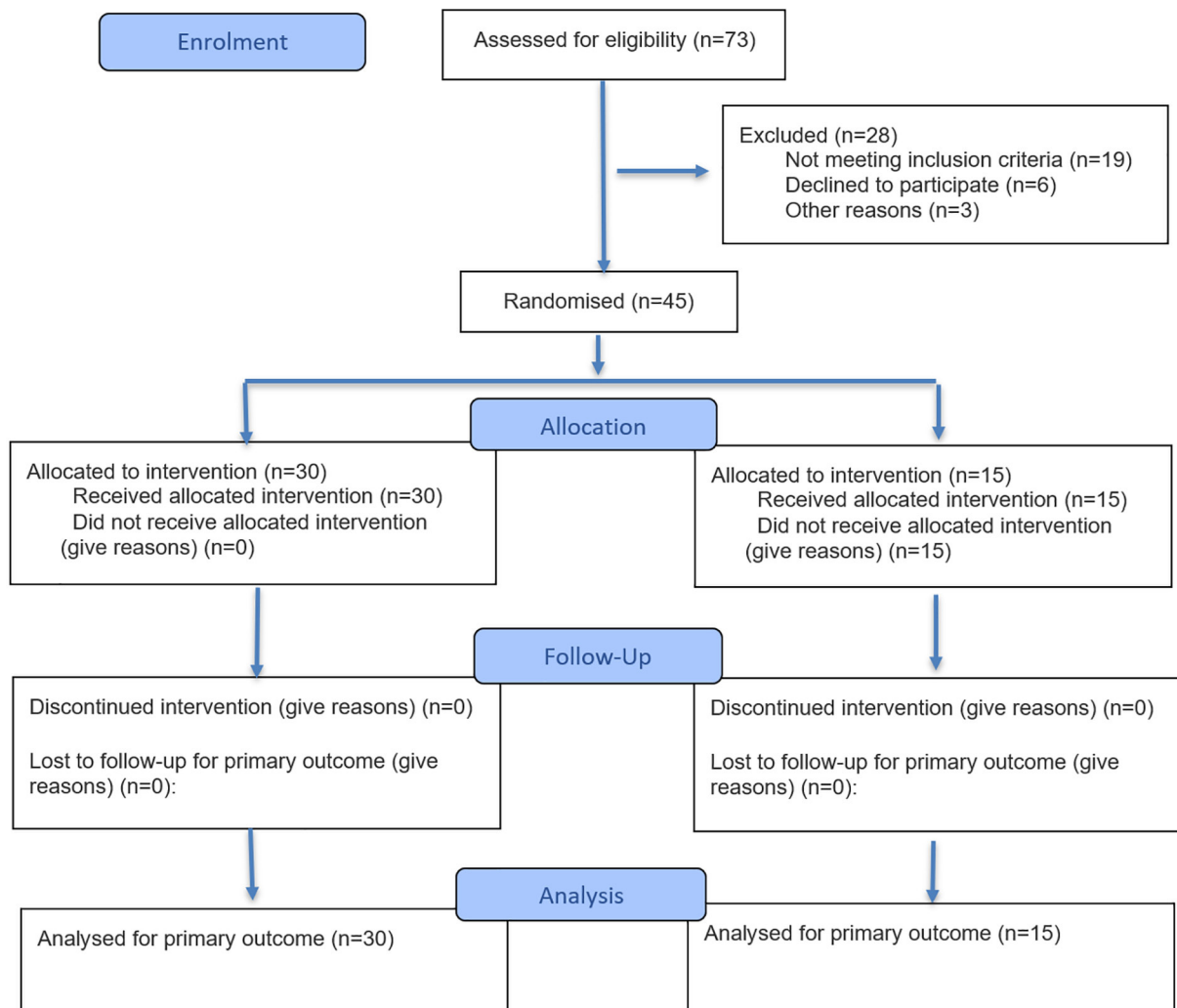


Figure 1: The figure shows the CONSORT flow diagram of the study.

2.5. Procedure

Following the ethical approval, potential participants were identified through the hospital records of the pediatric oncology department at Mofid Children's Hospital in Tehran, Iran between January and March 2025. Eligible mothers were either approached in person by a research assistant during routine hospital visits or contacted by telephone using the hospital database; all were provided with a comprehensive study information sheet. Those meeting the inclusion criteria underwent an initial screening conducted by a research assistant using a standardized eligibility checklist. All 45 enrolled participants subsequently completed a demographic questionnaire alongside the ERQ to establish baseline (pretest) measures.

The two experimental groups then commenced their respective interventions, which consisted of eight weekly 90-minute sessions. Participants

were randomly assigned to one of the three groups (compassion-focused therapy, mindfulness-based cognitive therapy, or waitlist control) using a computer-generated random allocation sequence prepared by an independent statistician. Allocation was concealed using sequentially numbered, opaque envelopes that were opened only after pretest assessments were completed. Both experimental interventions were manualized and delivered by a single trained clinical psychologist. To monitor treatment fidelity and therapist adherence, all sessions were audio-recorded. An independent supervisor reviewed 20% of randomly selected sessions from each intervention using a fidelity checklist derived from the respective treatment manuals. The therapist also received weekly supervision to ensure inter-session consistency. Because the same therapist delivered both interventions, a potential therapist effect is acknowledged as a study limitation. A summary of the key objectives and session content for each intervention is detailed in Table 1 and Table 2.

Table 1: Summary of the eight-session compassion-focused therapy protocol

Session	Focus and Objectives
1	Introducing compassion and the triune brain model: Introducing the evolutionary three-system model (threat, drive, and soothing systems) and providing psychoeducation on the caregiving burden
2	Cultivating compassionate attention and thinking: Focusing attention on suffering (self and child) and identifying cognitive biases, particularly self-criticism and guilt
3	Developing compassionate feeling and imagery: Deepening the experience of compassion through visualizations (e.g., the compassionate self) and integrating compassionate qualities (wisdom, warmth, and strength)
4	Understanding and working with self-criticism: Mapping the origins and functions of the inner critic, and exploring shame and resistance
5	Activating the compassionate self: Practicing self-soothing and self-kindness as an antidote to intense threat-based emotions and stress
6	Managing difficult emotions (fear and anxiety): Using compassionate mind training to accept and process painful emotions related to the child's prognosis
7	Fostering compassion for the caregiving role: Extending compassion to the challenges of mothering a child with cancer and recognizing common humanity
8	Integrating skills and planning for the future: Reviewing progress, consolidating skills, and planning the continued application of compassion-focused therapy principles in daily life (relapse prevention)

Table 2: Summary of the eight-session mindfulness-based cognitive therapy protocol

Session	Focus and Objectives
1	Disengaging from automatic pilot and capturing experience: Introducing the concept of mindfulness and establishing basic awareness of thoughts, feelings, and body sensations (body scan practice)
2	Addressing barriers to practice: Exploring judgments and hindrances to mindfulness practice, and expanding breath and body awareness
3	Gathering the scattered mind: Focusing on the breath and body to ground oneself in the present moment, and cultivating awareness of pleasant and unpleasant events
4	Recognizing aversion and working with difficulty: Using mindfulness approaches to observe difficult feelings without reacting automatically, and introducing the concept of acceptance
5	Letting go and allowing: Differentiating the “doing mode” from the “being mode,” and practicing non-judgmental awareness of emotional experiences
6	Decentering (recognizing thoughts are not facts): Learning to relate differently to distressing thoughts (e.g., concerning the child's illness) and separating thoughts from objective reality
7	Enhancing self-care practices: Integrating mindfulness into daily life and developing individualized self-care strategies
8	Maintaining and consolidating gains: Reviewing learned skills and developing a relapse prevention plan to manage future stress and rumination

The waitlist control group received no active intervention during this eight-week period. To partially mitigate expectancy and repeated measurement effects, control participants were informed that they would receive an intervention following the conclusion of the study's follow-up phase. Immediately upon completion of the eight-week intervention period, all three groups completed the ERQ as a posttest measure. Posttest and follow-up assessments were administered by a research assistant who remained blinded to group allocation. Finally, a three-month follow-up assessment was conducted using the ERQ under conditions comparable to baseline (utilizing the same format and instructions, administered via telephone or in person at the hospital) to evaluate the stability and long-term maintenance of the treatment effects. Participant retention was 100% with no attrition throughout the study, and there

were no missing data on the primary outcome measure.

2.6. Data Analysis

To delineate the foundational characteristics of the sample and the primary psychological variables, descriptive statistics—specifically means and standard deviations—were computed. We assessed the initial comparability of the groups across demographic metrics (i.e., age, educational attainment, household income, and number of children) alongside baseline emotion regulation scores. This was achieved utilizing one-way analyses of variance (ANOVA) and independent t-tests for continuous data, whereas chi-square analyses were implemented for categorical indicators (e.g., marital status, educational bracket). To evaluate the core hypotheses, mixed-

design repeated-measures ANOVAs were executed to determine the main effects of group and time, as well as the group $\times$ time interaction. Following the detection of significant main or interaction effects, Bonferroni-corrected post-hoc pairwise comparisons were conducted to pinpoint precise between-group variations regarding subscale and change scores across the assessment intervals. All analytical procedures were carried out utilizing SPSS version 26.

3. Results

The final sample comprised 45 mothers ($M_{age}=34.2$ years, $SD=4.8$) who served as the primary caregivers for children undergoing oncological treatment at Mofid Children's Hospital in Tehran, Iran. The majority of the cohort was married (91.1%), reported a mean of 2.4 children ($SD=0.9$), and possessed at least a high school education (68.9%). Baseline data analyses via chi-square tests and one-way ANOVAs confirmed structural equivalence among the cohorts prior to the intervention. Specifically, no significant baseline disparities were detected concerning age ($P=0.644$), educational attainment ($P=0.540$), household income ($P=0.462$), number of offspring ($P=0.548$), marital status ($P=0.562$), or pre-intervention scores for both cognitive reappraisal ($P=0.856$) and expressive suppression ($P=0.902$).

Descriptive data (Table 3) illustrate that participants in both active treatment conditions exhibited substantial enhancements in cognitive reappraisal following the interventions, and these improvements persisted through the follow-up phase. Conversely, fluctuations within the waitlist control cohort were negligible. Regarding expressive suppression, pronounced decreases were observed among participants receiving active treatment—most notably within the compassion-focused therapy condition—whereas the control

group displayed static or marginally elevated scores across the same timeframe. The distinct temporal trajectories of these emotion regulation strategies are graphically represented in Figure 2.

Preliminary evaluations were performed to ascertain that the data met the requisite statistical assumptions for repeated-measures ANOVA. Normality of the emotion regulation subscales across all groups and temporal nodes was established using the Shapiro-Wilk test. Furthermore, Levene's test confirmed the homogeneity of variance. Because Mauchly's test indicated that the assumption of sphericity was not violated for either cognitive reappraisal ($P=0.208$) or expressive suppression ($P=0.238$), standard unadjusted degrees of freedom were utilized for the subsequent inferential models.

The mixed-design ANOVA yielded a robust main effect of group for both cognitive reappraisal ($P=0.001$) and expressive suppression ($P=0.001$). Similarly, the main effect of time proved to be highly significant for both emotion regulation facets ($P=0.001$ for both). Most notably, the analyses detected significant group $\times$ time interaction effects for cognitive reappraisal ($P=0.001$) as well as expressive suppression ($P=0.001$). This confirms that the temporal trajectories of these regulatory strategies varied considerably as a function of the assigned experimental condition.

Follow-up analyses utilizing Bonferroni-corrected pairwise comparisons (Table 4) revealed that both therapeutic interventions generated statistically significant pre-to-posttest enhancements across both subscales (all $P<0.001$). Importantly, these positive changes were sustained; no significant variations were found between the posttest and three-month follow-up assessments, underscoring the long-term durability of the treatment effects.

Table 3: Means and standard deviations of emotion regulation scores by group and assessment point

Variable	Groups	Pretest	Posttest	Follow-up	P (within-group)
		Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
Cognitive Reappraisal	Compassion-focused Therapy	15.63 $\pm$ 3.12	24.88 $\pm$ 3.67	24.98 $\pm$ 3.71	0.001
	Mindfulness-based Cognitive Therapy	15.40 $\pm$ 3.73	21.17 $\pm$ 4.01	21.23 $\pm$ 4.14	0.001
	Control	15.63 $\pm$ 4.80	15.77 $\pm$ 4.72	15.90 $\pm$ 4.69	0.877
	P (between-group)	0.856	0.001	0.001	-
Expressive Suppression	Compassion-focused Therapy	24.38 $\pm$ 4.21	14.60 $\pm$ 3.06	14.47 $\pm$ 3.09	0.001
	Mindfulness-based Cognitive Therapy	24.45 $\pm$ 4.72	17.80 $\pm$ 2.98	17.73 $\pm$ 3.39	0.001
	Control	24.55 $\pm$ 3.24	24.32 $\pm$ 2.96	25.32 $\pm$ 2.92	0.500
	P (between-group)	0.902	0.001	0.001	-

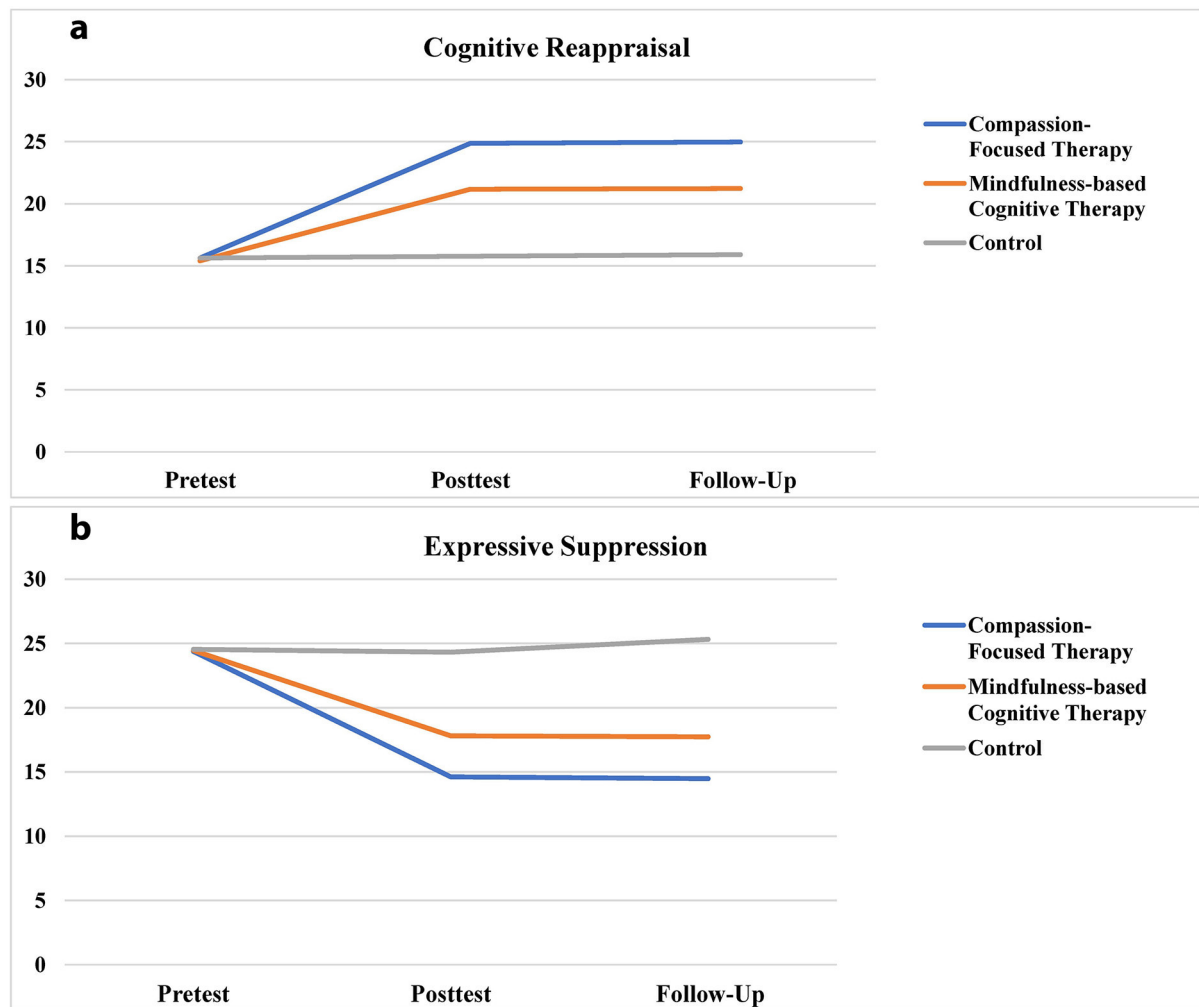


Figure 2: The figure shows the line graph illustrating changes in cognitive reappraisal (a) and expressive suppression (b) scores across pretest, posttest, and follow-up by group.

Table 4: Bonferroni-adjusted pairwise comparisons for time effects on emotion regulation subscales

Variable	Time	Mean Difference	SE	P
Cognitive Reappraisal	Pretest and Posttest	5.05	0.62	0.001
	Pretest and Follow-up	5.15	0.63	0.001
	Posttest and Follow-up	0.10	0.10	0.999
Expressive Suppression	Pretest and Posttest	5.55	1.42	0.001
	Pretest and Follow-up	5.29	1.09	0.001
	Posttest and Follow-up	0.27	0.24	0.999

SE: Standard Error

Further post-hoc probing of the change scores (calculated as posttest minus pretest) via Bonferroni adjustment (Table 5) highlighted critical between-group distinctions. Regarding cognitive reappraisal, both compassion-focused therapy ($M_{\text{diff}}=9.25$, $P<0.001$) and mindfulness-based cognitive therapy ($M_{\text{diff}}=5.54$, $P<0.001$) yielded significantly larger score increases than the waitlist control condition. When comparing the two active treatments, the variance in cognitive

reappraisal change approached the threshold of statistical significance ($M_{\text{diff}}=3.71$, $P=0.060$), indicating a marginal trend that favored the efficacy of compassion-focused therapy.

Regarding expressive suppression, both interventions yielded significantly larger reductions compared to the control group (compassion-focused therapy: $M_{\text{diff}}=-9.78$, $P<0.001$; mindfulness-based cognitive therapy: $M_{\text{diff}}=-6.65$, $P<0.001$).

Table 5: Bonferroni post-hoc comparisons of emotion regulation change scores

Variable	Groups	Mean Difference	SE	P
Cognitive Reappraisal	Compassion-focused Therapy- Control	9.25	1.42	0.001
	Mindfulness-based Cognitive Therapy – Control	5.54	1.45	0.001
	Compassion-focused Therapy - Mindfulness-based Cognitive Therapy	3.71	1.35	0.060
Expressive Suppression	Compassion-focused Therapy- Control	-9.78	1.12	0.001
	Mindfulness-based Cognitive Therapy – Control	-6.65	1.08	0.001
	Compassion-focused Therapy - Mindfulness-based Cognitive Therapy	-3.13	1.06	0.021

SE: Standard Error

Furthermore, compassion-focused therapy demonstrated a statistically significant advantage over mindfulness-based cognitive therapy in reducing expressive suppression ($M_{diff} = -3.13$, $P = 0.021$). These findings indicated that although both therapeutic approaches are effective in enhancing adaptive emotion regulation and diminishing maladaptive suppression relative to a no-treatment condition, compassion-focused therapy exerts a particularly pronounced effect on mitigating expressive suppression among mothers of children with cancer.

4. Discussion

This study evaluated the comparative efficacy of compassion-focused therapy and mindfulness-based cognitive therapy on the habitual deployment of emotion regulation strategies—specifically, cognitive reappraisal and expressive suppression—among mothers of children with cancer. The results demonstrated that both third-wave cognitive-behavioral interventions successfully fostered adaptive emotional processing when contrasted with a control condition.

Relative to the control group, participants in both the compassion-focused therapy and mindfulness-based cognitive therapy groups exhibited significant increases in their use of cognitive reappraisal, with no discernible difference between the two active treatments. This equivalence likely stems from shared underlying mechanisms, such as enhanced cognitive flexibility and metacognitive awareness (11, 25). Specifically, mindfulness-based cognitive therapy cultivates decentering, enabling individuals to view distressing thoughts as transient psychological events rather than objective truths (20). Concurrently, compassion-focused therapy encourages a balanced, compassionate cognitive framework that facilitates the re-evaluation of threatening stimuli (22). Consequently, the comparable improvements in cognitive reappraisal

are consistent with prior research demonstrating that both therapeutic modalities effectively bolster cognitive flexibility and mitigate negative affect (26).

A central and novel finding of this investigation was the superiority of compassion-focused therapy over mindfulness-based cognitive therapy in reducing expressive suppression. This highlights a distinct clinical advantage of compassion-focused therapy in ameliorating maladaptive, response-focused emotion regulation within this highly stressed demographic. Mothers caring for pediatric cancer patients often endure profound guilt, shame, and self-criticism, which are affective states intimately tied to the brain's Threat System (27). Such painful internal experiences typically drive the suppression of emotional expression, as caregivers attempt to project resilience for their child and evade perceived social judgment (4).

Compassion-focused therapy directly targets and dismantles this cycle by activating the Soothing System (11). By guiding mothers to intentionally generate feelings of self-kindness, safeness, and warmth, this intervention effectively neutralizes chronic threat system activation. As caregivers learn to approach their own distress with compassion, the psychological imperative to conceal or suppress emotional pain decreases (16). While mindfulness-based cognitive therapy fosters non-judgmental acceptance and may indirectly curtail avoidance behaviors, its generalized emphasis on present-moment awareness appears less efficacious in reducing expressive suppression than compassion-focused therapy's direct focus on self-soothing and the alleviation of shame. This conclusion is reinforced by Habibi and colleagues (23), who found that mindful self-compassion training significantly reduced experiential avoidance and emotion regulation difficulties in mothers of children with chronic illnesses, thereby highlighting the specific therapeutic action of compassion on maladaptive strategies. Ultimately,

the greater efficacy of compassion-focused therapy in diminishing expressive suppression suggests it is particularly well-suited for caregivers burdened by severe self-criticism.

The broader efficacy of these third-wave approaches is firmly corroborated by the existing literature. For example, these findings parallel those of Mahmoudpour and co-workers (28), who validated the capacity of compassion-focused therapy to increase distress tolerance and alleviate guilt among mothers of children with physical disabilities, illustrating the transdiagnostic utility of this modality across various demanding caregiving contexts. Importantly, the therapeutic improvements observed in both intervention groups were sustained through the three-month follow-up period. This stability underscores the long-term clinical value and enduring nature of the emotion regulation skills acquired through both compassion-focused therapy and mindfulness-based cognitive therapy.

4.1. Limitations

Several methodological limitations must be considered when interpreting these findings. First, the reliance on a relatively small convenience sample restricts the generalizability of the results. Second, the exclusive use of self-report instruments may have introduced social desirability bias. Furthermore, the absence of an active control group, combined with the lack of blinding for both the therapist and the participants, introduces the possibility of expectancy effects. Future research should address these constraints by incorporating larger, more diverse samples, utilizing active comparator conditions, and employing multi-method approaches to assess emotion regulation strategies.

5. Conclusions

In conclusion, this study demonstrated that both compassion-focused therapy and mindfulness-based cognitive therapy are highly effective interventions for improving emotion regulation strategies among mothers of children with cancer, primarily by facilitating increases in cognitive reappraisal. Notably, compassion-focused therapy demonstrated a moderate yet statistically significant advantage in reducing expressive suppression, a result likely attributable to its explicit therapeutic

focus on mitigating shame and self-criticism. These findings strongly support the integration of third-wave psychological interventions into pediatric oncology support services, suggesting that compassion-focused therapy warrants specific prioritization when maladaptive emotional suppression is a primary clinical concern.

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Declaration of AI

The authors acknowledge the use of Grammarly for editing the language. All content was manually reviewed and edited by the authors to ensure its accuracy and academic integrity; the authors take full responsibility for the final content of the manuscript.

Authors' Contribution

Mahya Motiee: Contributions to the acquisition of data; drafting the work. Hossein Ali Ghanadzadegan: Contributions to the conception and design of the work, analysis and interpretation of data; reviewing the work critically for important intellectual content. Bahram Mirzaian: Contributions to the design of the study, interpretation of data; reviewing the work critically for important intellectual content. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such as the questions related to the accuracy or integrity of any part of the work.

Conflict of interests: None declared.

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Ethical Approval

The Ethics Committee of Islamic Azad University, Sari Branch, Iran approved the present study with the code of IR.IAU.SARI.REC.1403.382.

Also, written informed consent was obtained from the participants. Furthermore, the study was registered in the Iranian Registry of Clinical Trials (IRCT) with the code of IRCT20250506065619N1.

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