



# Effectiveness of Mindfulness-Based Cognitive Therapy on Infertility-Related Stigma and Sexual Self-Esteem in Infertile Women



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## ABSTRACT

**Aims** Infertility can cause social stigma and erode sexual self-esteem in women, highlighting the need to explore interventions like mindfulness-based cognitive therapy to address these challenges. The present study aimed to investigate the effectiveness of mindfulness-based cognitive therapy on infertility-related stigma and sexual self-esteem in infertile women.

**Materials & Methods** This was a three-stage (pre-test, post-test, and follow-up) two-group (experimental and control) quasi-experimental study. To conduct the study, all infertile women referred to infertility treatment centers in Isfahan City in early 2023 were recruited using a convenience sampling method based on inclusion and exclusion criteria. A total of 40 participants were randomly assigned to either the experimental group (n=20) or the control group (n=20). The sample group completed the Infertility-Related Stigma Questionnaire and the Sexual Self-Esteem Scale in three stages: Pre-test, post-test, and follow-up. The experimental group received an 8-session MBCT (one 90-minute session per week). Repeated measures ANOVA was used to analyze the results.

**Findings** Mindfulness-based cognitive therapy significantly improved infertility-related stigma in the social withdrawal, family stigma, and public stigma dimensions (p<0.01). However, the intervention was not significantly effective in enhancing sexual self-esteem in infertile women.

**Conclusion** Mindfulness-based cognitive therapy significantly reduces infertility-related stigma, specifically in the social withdrawal dimension.

**Keywords** Mindfulness; Cognitive Therapy; Social Stigma; Self-Esteem; Infertility; Women

## CITATION LINKS

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## Introduction

Marriage has been widely recognized as a beneficial and structuring element in societies, fulfilling the personal needs of individuals [1]. It provides a sense of attachment and security that surpasses any other human relationship. Understanding the quality and value of marriage is crucial for comprehending its impact on all processes within and outside the family [2]. As marital relationships develop, various factors can intertwine and contribute to a multitude of challenges for couples [3]. Infertility is one such factor that affects individuals, families, marriages, and societies across cultures, causing significant stress [4]. Infertility is defined by Vander Borgh & Wyns [5] as the failure to achieve a clinical pregnancy after at least 12 months or more of regular sexual intercourse. Researchers have reported feelings of helplessness in these individuals, especially with prolonged and sometimes unsuccessful treatments [6]. Infertility can also lead to disrupted marital quality, intimacy, fear of relationship dissolution, and other psychological disorders [7]. Individuals' responses to the infertility crisis vary depending on their cognitive interpretation of the phenomenon and the emotional regulation styles they employ to cope with the negative emotions experienced as a result of the awareness of their inability to have children [8].

When an individual's traits and actions are deemed non-normative by society, they may experience feelings of stigma and pressure, leading to feelings of inadequacy [9]. Yang *et al.* [10] emphasized that stigma is not an individual problem or a component of an illness but rather a social issue. Social stigma refers to prejudiced judgments and discrimination against individuals in a particular group [11]. In our society, the issue of infertility takes on a deeper dimension due to our unique cultural structure. The emotional consequences of experiencing infertility stigma for families generally include feelings of disrespect and discrimination in society. Families often choose isolation and withdrawal from social interactions to cope with these feelings, believing it prevents disclosing their situation [12].

The most detrimental consequences of stigma arise when families internalize societal stigma and adopt negative societal views towards themselves, leading to internal or emotional stigma [13]. Given the negative impacts of stigma on the mental health of families and the importance of family in the care, follow-up, and continuation of infertility treatment, stigma is considered a fundamental and crucial issue that demands attention in the field of mental health [14]. Studies by Yu *et al.* [15] have shown that individualistic cultures exhibit lower stigmatizing attitudes than collectivistic cultures. In Iran, a collectivistic society, family members are naturally more concerned about the negative impacts of infertility on their family's reputation and others'

perceptions rather than the negative impact on themselves [16,17].

Beyond the physical challenges, infertility can significantly impact a woman's sense of self, particularly her sexual self-esteem [18]. Sexual self-esteem refers to a woman's feelings and beliefs about herself as a sexual being. It encompasses aspects like desirability, attractiveness, and confidence in her sexual abilities [19]. Examining sexual self-esteem in infertile women is crucial for several reasons. Firstly, infertility can lead to a distorted view of femininity and womanhood. Societal pressures often link motherhood to a woman's worth, and the inability to conceive can trigger feelings of inadequacy. Secondly, the stress and emotional strain associated with infertility can negatively impact sexual desire, arousal, and satisfaction. This creates a vicious cycle where low sexual self-esteem further hinders intimacy [20]. Riaz *et al.* [21] consider negative perceptions as an important factor in sexual disorders and suggest focusing on psychological/cognitive factors and using cognitive restructuring methods for treating sexual disorders. When a person experiencing infertility develops a stigma of infertility, they may also develop negative thoughts about themselves and their sexual relationships, affecting their sexual self-esteem. Understanding how infertility shapes a woman's sexual self-esteem empowers healthcare professionals to provide holistic care. By addressing these concerns, they can help women navigate this challenging experience and maintain a healthy, fulfilling sex life [18].

Mindfulness-based cognitive therapy (MBCT) is one of the effective interventions for the population of infertile women [22]. This therapy is a type of cognitive therapy that utilizes mindfulness. Mindfulness is defined as paying attention in a specific, purposeful way in the present moment without judgment or prejudice [23]. Mindfulness leads to awareness and understanding of emotions, acceptance of emotions, and the ability to control impulsive behaviors and goal-oriented behaviors when experiencing negative emotions in a way that achieves goals for the individual [24]. Clinical psychology and psychiatry have offered several mindfulness-based therapy programs since the 1970s to help people who experience various psychological conditions [25]. Mindfulness also involves regulating cognitive evaluations and objectively observing experiences [26]. Additionally, mindfulness allows for more adaptive coping strategies and management of unwanted stimuli [27]. This method helps individuals observe their thoughts without judgment, reducing anxiety [28]. Based on the research background, the present study aimed to investigate the effectiveness of MBCT on infertility-related stigma and sexual self-esteem in infertile women.

## Materials and Methods

The present study was a three-stage semi-experimental research study with two groups (experimental and control). The statistical population included all infertile women referred to infertility treatment centers in Isfahan City, Iran, in 2023. In the present study, 40 people who were willing to participate in the research project were selected as a sample and randomly assigned to two groups of 20; experimental and control.

The sample size was determined using a power analysis with a desired power of 0.80, an alpha level of 0.05, an anticipated large effect size of 0.85, and a projected attrition rate of 10%. After obtaining informed consent, the pre-test was administered simultaneously to both intervention and control groups using the infertility stigma and sexual self-esteem questionnaires under the same conditions. The inclusion criteria were an age range of 25-45 years, at least secondary education, and infertility after medical intervention and confirmation by a specialist.

The exclusion criteria were individuals who were still in the evaluation and infertility testing stage, pregnancy during the study, use of psychiatric medications due to serious mental disorders, and absence from more than two therapy sessions. After the last session, the post-test was administered to both groups (experimental and control). After the intervention on the experimental group, a 45-day follow-up was conducted to determine the long-term effectiveness of this approach.

### Instrument

**Infertility Stigma Scale (ISS):** The Infertility Stigma Scale (ISS) is a psychometric instrument designed to assess perceived stigma among infertile women [29]. The 27-item scale utilizes a 5-point Likert scoring system to capture four distinct dimensions of infertility stigma: Self-devaluation, social withdrawal, public stigma, and family stigma. Scores range from 27 (lowest) to 135 (highest), reflecting the degree of perceived stigma. Fu et al. [29] demonstrated the scale's high internal consistency (Cronbach's alpha > 0.94).

**Sexual Self-Esteem Inventory (SSEI):** The Sexual Self-Esteem Inventory (SSEI) is a well-established 35-item self-report measure developed by Doyle Zeanah & Schwarz [30] to assess women's sexual self-esteem. Respondents use a 5-point Likert scale (1=strongly disagree, 5=strongly agree) to answer questions across five subscales: Skill and experience, control, attractiveness, moral judgment, and adaptiveness. These subscales capture various aspects of sexual self-esteem, with higher total scores indicating greater positive self-regard in the sexual domain. The SSEI demonstrates acceptable internal consistency, with Cronbach's alpha coefficients reported by Farokhi & Shareh [31] ranging from 0.68 to 0.82 for the subscales and 0.82 for the total scale.

## Intervention

The intervention group received eight MBCT sessions [32] (one 90-minute weekly session). The control group did not receive this intervention and was placed on a waiting list (Table 1).

**Table 1.** A summary of the mindfulness-based cognitive therapy sessions

Sessions	Content
1	Initial introductions; Orientation to the principles of mindfulness; Examination of common psychological reactions in individuals facing infertility challenges. Definition and exploration of mindfulness: Participants exchange personal narratives involving infertility experiences and associated emotions.
2	Body scan meditation, contemplation on thoughts and feelings, identification of negative core beliefs and cognitive distortions, and cultivation of mindful presence in everyday routines. Engagement in ten-minute mindfulness sessions interspersed throughout the day, alongside maintenance of a daily journal documenting responses to adverse occurrences.
3	Incorporating mindful physical activities, breathing exercises, and a brief breathing space practice. Engage in mindful movements, stretching, and breathing exercises; Implement three-minute breathing exercises thrice daily; Document daily reflections.
4	Address responses to both positive and negative encounters, cognitive restructuring, short mindfulness practices, and mindful walking. Meditate; employ three-minute breathing exercises for emotional regulation; practice cognitive restructuring.
5	Meditation focuses on breath awareness, bodily sensations, thought responses, and attention expansion. Continue emotional discomfort assessments; Conduct body scans during challenging moments.
6	Attending to mental processes, analyzing beliefs, observing thoughts without judgment, and expressing gratitude. Practice mindfulness throughout the day; Engage in gratitude exercises.
7	Choosing intentional actions over automatic responses, recognizing triggers, and adjusting reactions. Respond differently to triggers; Maintain meditation practice and gratitude expressions.
8	Summarizing sessions, gathering participant feedback, and planning for future activities. Review and summarize independently; Utilize flashcards for reinforcement.

Questionnaires were filled out with the participants' satisfaction information, and written informed consent was obtained from the participants in this study.

### Data analysis

Data were analyzed using repeated-measures ANOVA with SPSS 24. The data supporting this study's findings are available from the corresponding author upon reasonable request.

## Findings

The study involved 40 infertile women. The mean age of the women in the experimental and control groups was  $33.70 \pm 6.39$  and  $35.42 \pm 5.58$  years, respectively. The means and standard deviations of infertility-related stigma and sexual self-esteem scores, disaggregated by experimental and control groups, were all calculated (Table 2).

**Table 2.** Mean and standard deviations of infertility-related stigma and sexual self-esteem

Parameter	Phase	MBCT group	Control group
Infertility-related stigma (total)	Pre-test	89.53±15.21	95.00±14.16
	Post-test	82.73±12.08	95.53±11.45
	Follow-up	77.18±10.80	96.18±11.11
Self-devaluation	Pre-test	25.40±4.92	24.73±6.08
	Post-test	22.13±3.52	25.13±4.03
	Follow-up	20.13±3.12	25.47±4.15
Social withdrawal	Pre-test	18.21±2.02	20.33±3.02
	Post-test	17.68±1.99	19.93±2.66
	Follow-up	15.68±1.50	20.93±2.60
Public stigma	Pre-test	28.35±4.15	30.13±4.07
	Post-test	26.20±3.49	32.07±3.67
	Follow-up	25.18±3.17	31.11±3.87
Family stigma	Pre-test	17.57±4.12	19.80±4.07
	Post-test	16.73±3.08	18.40±3.92
	Follow-up	16.20±3.01	18.67±3.33
Sexual self-esteem (total)	Pre-test	92.93±9.05	92.27±13.22
	Post-test	94.80±7.47	91.93±11.40
	Follow-up	93.81±7.40	94.74±17.12
Skill and experience	Pre-test	19.70±2.10	21.27±2.40
	Post-test	19.87±1.68	20.93±2.28
	Follow-up	19.56±1.65	20.91±2.26
Adaptiveness	Pre-test	20.73±2.69	18.53±2.67
	Post-test	21.00±2.07	18.60±5.87
	Follow-up	20.90±2.14	18.51±2.65
Moral judgment	Pre-test	17.47±1.88	17.27±4.43
	Post-test	17.67±1.99	16.80±3.51
	Follow-up	17.18±1.92	19.40±1.71
Control	Pre-test	17.87±2.85	18.07±3.15
	Post-test	18.60±2.53	17.40±2.75
	Follow-up	18.47±2.50	18.65±2.80
Attractiveness	Pre-test	17.13±2.17	17.13±2.17
	Post-test	17.67±2.13	17.20±2.01
	Follow-up	17.70±2.15	17.25±2.02

Prior to conducting the repeated-measures ANOVA, the assumptions of homogeneity of variances and normality of distribution were assessed. Levene's

test for equality of variances indicated no significant differences between the groups regarding the variances of the research variables ( $p>0.05$ ). Furthermore, the Shapiro-Wilk test for normality revealed that the distribution of the scores did not deviate significantly from a normal distribution ( $p>0.05$ ). As the assumption of sphericity was violated for all the components under investigation, the Greenhouse-Geisser correction was employed.

The results of the repeated-measures ANOVA examined the between-subjects and within-subjects effects at the pre-test, post-test, and follow-up stages (Table 3). Significant within-subject effects were observed for the dimensions of social withdrawal ( $p=0.009$ ) and family stigma ( $p=0.001$ ) across the pre-test, post-test, and follow-up time points, indicating that these dimensions changed significantly over time. Additionally, a significant between-subjects effect was found for the source group, suggesting that there was a significant difference between the experimental and control groups in terms of the dimensions of social withdrawal ( $p=0.028$ ) and public stigma ( $p=0.004$ ). However, the effectiveness of MBCT on the dimensions of personal worthlessness and family stigma was not confirmed. No significant within-subject effects were observed for the dimension of sexual self-esteem across the three-time points of pre-test, post-test, and follow-up. Furthermore, the between-subjects effect for the source group was not significant, indicating that there was no significant difference between the experimental and control groups in terms of sexual self-esteem, and the effectiveness of the intervention was not confirmed.

**Table 3.** Results of the repeated-measures ANOVA

Parameter	Source	SS	df	MS	F	P	$\eta_p^2$	Power
Self-devaluation	Phase	3.27	1.02	3.22	0.84	0.368	0.03	0.16
	Group×Phase	15.09	1.02	14.86	3.90	0.057	0.12	0.48
	Group	139.38	1	139.38	2.61	0.118	0.09	0.34
Social withdrawal	Phase	15.02	1	15.20	7.99	0.009	0.22	0.78
	Group×Phase	4.36	1	4.36	2.32	0.139	0.08	0.31
	Group	86.04	1	86.04	5.34	0.028	0.16	0.61
Public stigma	Phase	7.20	1	7.20	1.60	0.214	0.06	0.23
	Group×Phase	128.36	1	128.36	28.88	0.001	0.51	0.99
	Group	392.71	1	392.71	10.17	0.004	0.27	0.87
Family stigma	Phase	51.47	1.13	45.69	11.56	0.001	0.29	0.93
	Group×Phase	2.49	1.13	2.21	0.56	0.480	0.02	0.12
	Group	56.01	1	56.01	1.54	0.225	0.05	0.22
Skill and experience	Phase	0.20	1	0.20	0.23	0.640	0.01	0.07
	Group×Phase	0.09	1	1.09	1.23	0.280	0.04	0.19
	Group	33.61	1	33.61	2.73	0.110	0.09	0.36
Adaptiveness	Phase	0.56	1	0.56	0.73	0.401	0.03	0.13
	Group×Phase	0.20	1	0.20	0.26	0.612	0.011	0.08
	Group	2.50	1	2.50	0.13	0.721	0.01	0.06
Moral judgment	Phase	30.69	1.05	29.25	0.89	0.360	0.03	0.15
	Group×Phase	27.36	1.05	26.08	0.80	0.391	0.03	0.14
	Group	111.11	1	111.11	1.99	0.171	0.07	0.28
Control	Phase	5.69	1	5.69	4.25	0.051	0.13	0.51
	Group×Phase	0.80	1	0.80	0.60	0.452	0.02	0.12
	Group	74.10	1	84.10	3.89	0.062	0.12	0.48
Attractiveness	Phase	1.80	1	1.80	1.77	0.194	0.06	0.25
	Group×Phase	1.09	1	1.09	1.07	0.312	0.04	0.17
	Group	64.18	1	64.18	5.25	0.051	0.16	0.60

## Discussion

The present study examined the efficacy of MBCT in mitigating the multifaceted dimensions of infertility-related stigma while also evaluating its impact on sexual self-esteem among infertile women. Results indicated that MBCT was efficacious in reducing the psychological burden associated with social withdrawal, familial stigma, and public scrutiny often experienced by individuals struggling with infertility. However, the intervention did not yield significant improvements in sexual self-esteem within the study parameters. These findings align with previous research highlighting the potential benefits of MBCT in addressing the emotional and social challenges inherent to infertility [22, 26].

Mindfulness can be conceptualized as an emotion regulation strategy that fosters present-moment awareness [24]. By encouraging acceptance rather than avoidance of distressing experiences, mindfulness may have facilitated greater emotional flexibility among participants [26]. This increased flexibility can contribute to reductions in infertility-related stigma. Cultivating curiosity toward thoughts and feelings through mindfulness can mitigate the automatic negative responses often triggered by emotional distress [27]. This process may have enabled participants to approach infertility-related challenges with greater openness, reducing feelings of isolation and shame. Moreover, mindfulness can foster self-compassion, a crucial factor in coping with infertility [29]. By treating oneself with kindness and understanding, individuals may be better equipped to manage the emotional toll of infertility and reduce associated stigma. The structured nature of the MBCT intervention likely equips participants with the skills to integrate mindfulness into daily life, promoting sustained benefits in emotional regulation and resilience [30]. The potential role of perceived social support in mitigating the impact of stigma should also be considered [28]. By fostering a sense of connection and understanding, mindfulness may have enhanced participants' social support networks, thereby reducing the negative effects of stigma.

Mindfulness, by reflecting acceptance of experiences without judgment and avoiding suppression attempts, can reduce individuals' reactive behaviors when faced with stigma, thereby decreasing their social withdrawal. It allows them to interrupt negative infertility-related cognitions that arise from perceptions of others and establish positive relationships with those around them [25]. By fostering a non-judgmental awareness of their feelings and thoughts, individuals practicing mindfulness can transform their relationship with both internal and external stimuli. Instead of succumbing to the automatic, often negative reactions typically associated with stigma, they become equipped to respond more thoughtfully and constructively. Mindfulness and its training promote

emotion regulation without judgment and enhance awareness of psychological and physical sensations, facilitating a clear observation and acceptance of emotions and physical phenomena as they occur. This acceptance is crucial, as it allows individuals to confront the emotional turmoil often associated with infertility rather than avoid it. Research indicates that avoidance behaviors can exacerbate feelings of sadness, anxiety, and frustration, creating a cycle of emotional distress [26]. Mindfulness interrupts this cycle by encouraging individuals to acknowledge their feelings without the added layer of judgment, thus breaking the patterns that lead to emotional distress and disengagement. Moreover, mindfulness can play a significant role in modifying negative infertility-related beliefs [22]. By recognizing and observing these beliefs as passing thoughts rather than absolutes, individuals can begin to challenge the validity of stigmatizing narratives. Mindfulness facilitates cognitive restructuring, allowing individuals to replace harmful beliefs associated with infertility (such as feelings of inadequacy or shame) with more compassionate and realistic perspectives. This cognitive shift can reduce stigma, as individuals no longer internalize negative societal beliefs but instead foster a self-accepting attitude. Recognizing these challenges and providing interventions such as mindfulness-based therapies is a crucial component of treatment for improving psychological well-being. Mindfulness-based approaches, including MBCT, specifically cater to individuals dealing with stigma by equipping them with tools to face their emotional experiences head-on rather than retreating into avoidance. In MBCT, infertile women engage in repeated practices of intentionally directing attention to a neutral object (e.g., breath flow) and observing their thoughts, emotions, or bodily sensations [28]. This practice allows them to develop a deeper awareness of their internal experiences and fosters a sense of autonomy over how they respond to stressors. Additionally, participation in such mindfulness practices may promote a sense of community among individuals undergoing similar experiences. Group settings often associated with mindfulness training can provide social support, reducing feelings of isolation that are common among those facing infertility. Sharing experiences in a safe, structured environment can help break down walls of stigma, allowing individuals to connect with others who understand their struggles [29]. This sense of connection is vital, as it alleviates feelings of loneliness and encourages communal resilience against shared experiences of stigma. Importantly, the implications of mindfulness extend beyond immediate emotional relief; They may also foster long-term psychological health. Regular mindfulness practice can lead to lasting changes in brain function and structure, enhancing emotion regulation capacities. Studies suggest that mindfulness training positively impacts neural pathways associated with

emotional reactivity and regulation, potentially leading to sustained improvements in mental health outcomes [30]. This suggests that mindfulness isn't merely a temporary coping mechanism but rather a foundational skill that empowers individuals to navigate their emotional landscapes more effectively over time.

Continuous mindfulness fosters heightened awareness of bodily sensations, emotions, and thoughts. By cultivating a non-judgmental stance towards these experiences, individuals can observe them without being overwhelmed or compelled to react impulsively. This metacognitive shift cultivates emotional intelligence, enabling individuals to discern and understand the nuances of their internal states [32]. Moreover, mindfulness enhances interoceptive sensitivity, facilitating a deeper connection between mind and body. This heightened awareness can lead to more adaptive responses to emotional challenges, as individuals can accurately assess their emotional states and engage in appropriate coping strategies. Mindfulness practitioners develop a greater capacity for emotional regulation by detaching from automatic thought patterns. This ability to observe thoughts without judgment reduces the likelihood of rumination and emotional reactivity, fostering a sense of calm and centeredness [24]. Consequently, individuals become more resilient in the face of adversity, including the stressors associated with infertility. Crucially, mindfulness training empowers individuals to respond to their experiences rather than simply reacting to them. This proactive approach can significantly improve overall well-being and coping mechanisms.

The present study has some limitations that should be considered when interpreting the findings. Firstly, the use of self-report measures may have introduced bias into the results, as participants may have consciously or unconsciously attempted to present themselves in a more favorable light. Secondly, the demographic characteristics of the participants, such as socioeconomic status, were not controlled by the researchers and may have influenced the study's outcomes. These limitations highlight the need for future research to employ more objective measures and to consider a broader range of participant characteristics.

## Conclusion

MBCT effectively reduces social, family, and public stigma associated with infertility but does not significantly impact sexual self-esteem. MBCT is a beneficial intervention for managing the psychological distress of infertility by targeting negative thought patterns and fostering acceptance.

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