

The Impact of Mindfulness-Based Cognitive Therapy on Self-Concept in Infertile Women

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Abstract

Background: Infertility is a significant psychosocial stressor associated with adverse mental health outcomes. Given the intricate link between mental health and self-concept, enhancing self-concept may be crucial for improving overall well-being among infertile women.

Objectives: The present study aimed to enhance self-concept in infertile women through Mindfulness-Based Cognitive Therapy (MBCT).

Methods: This study employed a quasi-experimental design with a three-wave (pre-test, post-test, 45-day follow-up) assessment and two groups: experimental and control. To conduct the research, 40 infertile women referring to the Isfahan Infertility and Infertility Center in 2023 were selected conveniently based on inclusion and exclusion criteria and were randomly assigned to the experimental (n = 20) and control (n = 20) groups. The participants completed the Beck Self-Concept Test in three stages of pre-test, post-test, and follow-up. The experimental group participated in an eight-week MBCT intervention, consisting of one 90-minute session per week. The control group received no intervention during this period. Data were subjected to repeated-measures analysis of variance (ANOVA) using SPSS-24.

Results: The findings indicated that MBCT significantly improved self-concept in infertile women in the social skills dimension ($P < 0.01$). The significant improvement in self-concept, particularly in the social skills dimension, suggests that MBCT can be a helpful intervention for this population.

Conclusion: Infertility-related social isolation and diminished self-concept may be ameliorated through MBCT. This study demonstrates that MBCT can enhance social interaction skills in infertile women, thereby positively influencing their overall self-concept. These results support MBCT as a beneficial approach for enhancing the mental health of women facing infertility.

Keywords: Mindfulness, Cognitive Therapy, Self-Concept, Infertility, Women

1. Background

Marriage has been recognized as a beneficial and structuring factor in societies and in fulfilling individuals' personal needs. A healthy marital relationship is an important factor in promoting mental health and flourishing.¹ Over time, the initial passion and joy of the early days of marriage diminishes, and marital relationships are affected by various factors, some of which may lead couples to conflict, emotional separation, and even divorce.² Infertility, defined as the inability to conceive after one year of regular unprotected intercourse, can negatively impact marital relationships. Having children is the strongest desire and need in the world, and one of the factors that strengthens married life is having children.³ Infertility affects approximately 10-15% of couples globally⁴ and 13.9% of Iranian women.^{5,6} underscoring its significant impact on individuals and families. In Iran, as in many other countries, having children is an important and valuable factor in the survival of marriage and a vital factor in stabilizing the

family structure and creating a positive self-image.⁷

Researchers have reported the emergence of impulsive behaviors and scattered anger, feelings of helplessness, worthlessness, and inadequacy, anxiety, and worry, especially with long-term and sometimes unsuccessful treatments, and negative self-beliefs in infertile individuals.⁸ Individuals' responses to infertility are influenced by their cognitive interpretation of this phenomenon and their emotional regulation styles in coping with the negative emotions experienced as a result of the awareness of their inability to conceive.⁹ In general, the use of modern assisted reproductive technologies is associated with numerous physical, psychological, and financial challenges, such as difficult and expensive tests, disclosing personal details to physicians, frequent medical appointments, long waiting times in doctors' offices, scheduled sexual intercourse, an uncertain future, and the monthly expectation of pregnancy.¹⁰ As a result, infertility is a stress-inducing factor for couples and is associated with a wide range of psychosocial impairments, including

decreased self-esteem and marital problems.^{11,12} Additionally, the more individuals' self-evaluations focus on negative aspects such as worthlessness and inadequacy and internalize this state as self-criticism, the more likely they are to be self-critical and experience more self-esteem problems and negative self-image due to infertility issues.¹³ This prevents individuals from achieving a realistic self-concept.¹⁴

Self-concept, as a fundamental aspect of the psyche, plays a crucial role in an individual's self-confidence and hope. In the context of physical and psychological illnesses, self-concept is significantly impacted.¹⁵ Studies have shown that infertility is one of the factors that hinders self-efficacy and prevents the healthy formation of identity and the flourishing of talents.¹⁶ Given the high levels of stress and psychological pressure experienced by infertile women, psychological interventions, alongside medical treatments, are among the most essential components of infertility treatment and addressing the resulting psychological trauma.^{17,18}

Mindfulness-Based Cognitive Therapy (MBCT) has emerged as an effective intervention for women experiencing infertility.¹⁹ Mindfulness entails a specific combination of behavioral, cognitive, and metacognitive strategies designed to focus attention, thereby preventing the escalation of negative moods, thoughts, and anxiety.²⁰ A substantial body of research has established a robust link between mindfulness and both theoretical and empirical measures of well-being and psychological health.^{21,22} Core mindfulness components, including non-judgmental awareness and acceptance of present-moment experiences, have demonstrated efficacy in treating a range of psychological distress, such as rumination, fear, anxiety, anger, and negative self-belief.²³ Furthermore, mindfulness fosters the development of adaptive coping strategies and facilitates the management of aversive stimuli. Individuals exhibiting higher levels of mindfulness tend to report enhanced emotional and behavioral self-regulation.²⁴ By cultivating a non-judgmental observer stance towards one's thoughts, this approach enables individuals to disengage from negative thought patterns, consequently reducing anxiety.^{25,26}

2. Objectives

Given the significant psychological distress experienced by infertile women, this study aims to address the gap in knowledge regarding the potential benefits of MBCT on self-concept. By investigating this relationship, the research seeks to contribute to the development of effective interventions for improving the psychological well-being of infertile women. The present study aims to investigate the potential impact of MBCT on the self-concept of infertile women.

3. Methods

This study is a three-stage quasi-experimental study with

two groups (experimental and control). The statistical population of this study comprised all infertile women residing in Isfahan, Iran, who sought treatment at the Mehr-e-Madar Infertility Treatment Centers, Hazrat-e-Maryam Infertility Clinic (Shahid Beheshti Hospital), and Isfahan Infertility and Fertility Center during the calendar year 2023. In the present study, 40 people who were willing to participate in the research project were selected as a sample based on a convenience method based on inclusion and exclusion criteria and were randomly assigned to two experimental and control groups of 20 people each. Participants were randomly allocated to either the control or intervention group using a random number generation method. A sample size of 20 participants per group was determined through an a priori power analysis conducted with G*Power software (effect size = 0.96, alpha = 0.05, power = 0.90). After obtaining informed consent, a pre-test was administered to the experimental and control groups simultaneously using the Beck Self-Concept Test. Ethical approval for this study was obtained from the Ethical Committee of the University of Mohaghegh Ardabili, Ardabil, Iran (approval code: IR.UMA.REC.1402.065). The confidentiality of participants was maintained throughout the study, and all data were anonymized before analysis. No adverse events were reported during the study. Inclusion criteria: age range: 25 to 45 years old, literacy for reading and writing, documented infertility after medical intervention and confirmation by a primary infertility specialist, physical stability, informed consent to participate in the study, and no use of psychiatric medications due to serious mental disorders. Exclusion criteria: individuals still in the infertility evaluation and testing phase, pregnancy during the study, absence of more than two sessions for any reason, including unwillingness to continue participation in the study.

3.1. Measures

3.1.1. Beck Self-Concept Test

This 25-item questionnaire was developed by Beck et al.²⁷ based on Beck's cognitive theory. According to Beck et al.,²⁷ the scale measures five aspects of self-concept: intellectual ability, occupational competence, physical attractiveness, social skills, and faults and virtues. Items are rated on a Likert scale from 1 to 5 based on their relevance to the respondent's self-concept. Thus, the minimum score on the scale is 25 and the maximum is 125. The subscales of this questionnaire are as follows: Intellectual ability: Items 21, 18, 6, 4, 2; Occupational competence: Items 23, 22, 20, 16, 10; Physical attractiveness: Items 15, 12, 8, 7, 1; Social skills: Items 24, 19, 14, 9, 5; Morality: Items 25, 17, 13, 11. In this study, only four aspects of the questionnaire were administered, as the assessment of occupational competence was not required. Since all participants were housewives,

the occupational competence subscale was deemed irrelevant to the study objectives. Items related to this subscale (10, 16, 20, 23, and 22) were not given to the sample. Therefore, the minimum score on the scale was 20 and the maximum was 120. Beck et al.²⁷ reported a test-retest reliability coefficient of 0.88 and 0.65 after one week and three months, respectively. The internal consistency of the Beck Self-Concept Test has been established in previous research, with a reported Cronbach's alpha coefficient of 0.83.²⁸

3.2. Procedure

The experimental group received an eight-week MBCT intervention adapted from Segal et al.,²⁶ comprising weekly 90-minute sessions. The control group served as a

waiting list control, receiving no intervention. Post-intervention assessments were conducted for both groups. To evaluate the long-term effects of the MBCT intervention, a 45-day follow-up assessment was implemented for the experimental group. Following a detailed explanation of the study aims and procedures, participants completed a pre-intervention assessment. Table 1 outlines the MBCT treatment sessions based on the Segal et al.²⁶ model.

3.3. Statistical Analysis

Data were analyzed using repeated-measures analysis of variance (ANOVA) with SPSS version 24. The Bonferroni post hoc test assessed significant pairwise differences between the pre-test, post-test, and follow-up means.

Table 1. A Summary of MBCT Sessions

Sessions	Content
1	Objectives: Establish ground rules for confidentiality and respect for personal privacy Welcome and introductions; Introduction to mindfulness; Discussion of how participants typically respond psychologically to infertility Topics: Definition of mindfulness; Members share their experiences of infertility and related thoughts and feelings Assignments: Mindful eating (raisin exercise); Body scan
2	Objectives: Identify and address barriers and challenges; Practice mindfulness of thoughts and feelings; Understand and challenge negative core beliefs and cognitive distortions; Learn to bring mindful attention to daily activities in a different way Topics: Body scan meditation; Thoughts and feelings exercise; Negative core beliefs and cognitive distortions; Bringing mindful attention to daily activities Assignments: 10 minutes of mindfulness practice throughout the day; Keep a daily journal of experiences and reactions to unpleasant events
3	Objectives: Develop mindfulness of breath; Understand the behavioral consequences of beliefs Topics: Mindful movement; Breath and stretching exercises; Three-minute breathing space Assignments: Practice mindful breathing, stretching, and movement; Perform three-minute breathing exercises three times a day; Record daily thoughts
4	Objectives: Cultivate present-moment awareness; Learn to respond to both pleasant and unpleasant experiences using thought challenge; Practice five-minute visual or auditory mindfulness; Engage in mindful walking Topics: Responding to pleasant and unpleasant experiences; Thought challenge; Five-minute visual or auditory mindfulness; Mindful walking Assignments: Meditation; Practice three-minute breathing exercises as a coping strategy (when experiencing unpleasant emotions); Thought challenge
5	Objectives: Cultivate acceptance; Enhance awareness of breath and bodily experiences; Emphasize awareness of how to respond to thoughts and feelings; Practice redirecting and expanding attention; Utilize a scale for rating emotional discomfort Topics: Meditation; Awareness of breath and bodily experiences; Awareness of how to respond to thoughts and feelings; Redirecting and expanding attention; Using a scale for rating emotional discomfort Assignments: Continue rating emotional discomfort at home; Practice body scans during unpleasant thoughts and feelings
6	Objectives: Recognize that thoughts are not necessarily true; Practice attention to the mind; Analyze beliefs; Recognize that thoughts can be pleasant or unpleasant; Allow negative and positive thoughts to enter the mind and easily exit without judgment; Deeply attend to thoughts Topics: Attention to the mind; Belief analysis; Pleasant and unpleasant thoughts; Allowing thoughts to enter and exit the mind; Nonjudgmental and deep attention to thoughts Assignments: Express gratitude for others throughout the day; Mindfulness meditations
7	Objectives: Practice self-care; Choose functional behaviors; Act in an active rather than automatic way; Identify triggers Topics: Choosing functional behaviors; Acting in an active rather than automatic way; Identifying triggers Assignments: Respond to triggers in a new way; Meditate; Continue expressing gratitude and appreciation
8	Objectives: Apply learned skills to various life situations; Summarize and review past sessions; Gather feedback from participants; Plan for the future Topics: Summary and review of past sessions; Participant feedback; Future planning Assignments: Review and summarize at home; Use flashcards

4. Results

Forty infertile women participated in this study. Participants in the experimental group had a mean age of 33.70 years (± 6.39), whereas those in the control group had a mean age of 35.42 years (± 5.58). No significant differences were observed between the experimental and control groups with respect to demographic characteristics. Descriptive statistics, including means and standard deviations (SDs), for self-concept scores at pre-test, post-

test, and follow-up assessments have been presented in Table 2, separately for the MBCT and the control groups. According to the results, the MBCT group demonstrated average self-concept scores of 54.06 (± 7.44), 60.87 (± 5.81), and 58.24 (± 5.10) at the pre-test, post-test, and follow-up stages, respectively. The control group displayed average self-concept scores of 56.53 (± 8.93), 55.97 (± 7.04), and 55.50 (± 7.06) at the corresponding measurement points.

Table 2. Means and SD of Self-Concept Scores by Group (MBCT and Control Groups)

Variable	Phase	MBCT group		Control group	
		Mean	SD	Mean	SD
Self-concept (total)	Pre-test	54.06	7.44	56.53	8.93
	Post-test	60.87	5.81	56.40	7.04
	Follow-up	58.24	5.10	55.50	7.06
Intellectual ability	Pre-test	16.95	1.77	15.70	1.74
	Post-test	16.07	1.58	15.47	1.41
	Follow-up	16.17	1.60	15.40	1.27
Physical attractiveness	Pre-test	16.77	2.38	14.53	1.81
	Post-test	15.67	1.68	14.73	1.36
	Follow-up	14.54	1.21	14.53	1.25
Social skills	Pre-test	17.83	1.53	15.60	2.69
	Post-test	17.13	1.19	15.27	2.31
	Follow-up	16.25	1.05	15.02	2.01
Morality	Pre-test	12.51	1.76	10.60	2.69
	Post-test	12.00	1.36	10.93	2.02
	Follow-up	11.28	1.24	10.50	2.52

Levene's test indicated homogeneity of variances among the study groups for all research variables. Furthermore, the data were found to be normally distributed based on the Shapiro-Wilk test. The repeated-measures ANOVA revealed a significant main effect of time on self-concept scores, indicating that there were significant differences in self-concept scores across the three assessment points (pre-test, post-test, and follow-up) ($P < 0.01$). This suggests that the MBCT intervention had a positive impact on self-concept over time (Table 3). The significant main effect of the group revealed significant differences between the MBCT and control groups on both physical attractiveness and social skill scores ($P < 0.05$). Overall, the results suggest that the MBCT intervention was effective in improving social skills, with significant effects observed at both intra-group (within-subjects) and inter-group (between-subjects)

levels. However, the impact of MBCT on other dimensions, such as intellectual ability, physical attractiveness, and morality, was not confirmed. The eta squared (η^2) for the intra-group effect on social skills was 0.22, indicating that 22% of the variance in social skill scores within the MBCT group can be attributed to the intervention. Similarly, the eta squared for the between-groups effect on social skills was 0.21, suggesting that 21% of the variance in social skill scores between the MBCT and control groups can be explained by the intervention (Table 3).

Post hoc tests using Bonferroni corrections revealed significant pairwise differences between the pre-test and post-test and between the pre-test and follow-up ($P < 0.05$), but not between post-test and follow-up (Table 4). These findings suggest that the MBCT intervention led to initial improvements in social skills, which were partially sustained at follow-up.

Table 3. Repeated-Measures ANOVA of Self-Concept Scores across Three Assessments (pre-test, post-test, follow-up)

Variable	Source	SS	df	MS	F	P	η_p^2	Power	
Intellectual ability	Within-subjects	Phase	3.20	1	3.20	3.83	0.06	0.12	0.47
		Group × Phase	0.09	1	0.09	0.11	0.75	0.00	0.06
		Error	23.38	28	0.83				
	Between-subjects	Group	9.34	1	9.34	1.39	0.25	0.05	0.21
		Error	188.09	28	6.72				
Physical attractiveness	Within-subjects	Phase	2.22	1	2.22	4.38	0.06	0.14	0.52
		Group × Phase	2.22	1	2.22	4.38	0.05	0.14	0.52
		Error	14.22	28	0.561				
	Between-subjects	Group	41.34	1	41.34	4.80	0.04	0.15	0.56
		Error	240.98	28	8.61				
Social skills	Within-subjects	Phase	4.36	1	4.36	7.98	0.01	0.22	0.78
		Group × Phase	0.36	1	0.36	0.65	0.43	0.02	0.12
		Error	15.29	28	0.55				
	Between-subjects	Group	86.04	1	86.04	7.81	0.01	0.21	0.77
		Error	308.58	28	11.02				
Morality	Within-subjects	Phase	0.00	1	0.00	0.00	0.99	0.00	0.05
		Group × Phase	2.22	1	2.22	1.54	0.23	0.05	0.22
		Error	40.44	28	1.44				
	Between-subjects	Group	37.38	1	37.38	3.87	0.06	0.12	0.48
		Error	270.36	28	9.66				
Self-concept	Within-subjects	Phase	640.95	1	640.95	113.89	0.001	0.73	1.00
		Group × Phase	674.69	2	337.35	59.95	0.001	0.74	1.00
		Error	236.36	42	5.63				
	Between-subjects	Group	850.55	2	425.27	9.72	0.001	0.32	0.98
		Error	1836.98	42	43.74				

Table 4. Bonferroni Post Hoc Tests for the Effect of MBCT on Social Skill

Variable	Phase A	Phase B	Mean difference (A-B)	SE	P
Social skills	Pre-test	Post-test	0.46	0.16	0.03
		Follow-up	0.48	0.18	0.03
	Post-test	Follow-up	0.02	0.01	0.99

5. Discussion

The aim of this study was to investigate the effect of MBCT on self-concept in infertile women. Accordingly, this study investigated the influence of MBCT on self-concept in infertile women. Findings revealed that MBCT specifically improved self-concept within the social skills dimension. These results are consistent with previous research by Fard et al.²⁰ entitled "the impact of mindfulness-based cognitive therapy on psychological well-being of infertile women," as well as Ebrahimifar et al.²⁹ who compared the effects of interventions on self-efficacy, relationship quality, and meaning in life for infertile women. Additionally, our findings align with the broader body of literature on infertile women, including Ebrahimi et al.¹⁹ and Tavousi et al.³⁰

To explain the impact of MBCT on self-concept, it can be broadly stated that this therapeutic approach helps individuals confront negative thoughts by focusing on challenging them. MBCT first identifies irrational and automatic thoughts and beliefs related to self and social relationships.³⁰ These thoughts and beliefs are then modified to foster a positive outlook on personal and social life. In the context of social skills, MBCT's impact can be attributed to the significant loss of hope and reduced resilience in the face of challenges experienced by infertile women. This can lead to uncertainty in their social skills to navigate daily stressors. MBCT, specifically in the realm of social skills, empowers individuals to develop a positive self-image in their thoughts and behaviors, consequently enhancing their perceived social competence.²² This non-judgmental observation can mitigate emotional responses triggered by infertility-related anxiety, which, in long run, diminishes positive self-concept in infertile women. Furthermore, as infertility often disrupts family roles and responsibilities, these women face immense psychological pressure and perceive themselves as inadequate in their interactions with others. MBCT addresses these challenges by cultivating self-compassion and acceptance, enabling infertile women to recognize their inherent worth and value beyond their reproductive capacity. This, in turn, fosters a more positive self-image and enhances their perceived social skills.

Infertility can induce distorted social comparisons, wherein individuals perceive those who have successfully conceived as possessing superior qualities and experiences.⁸ This perception of others as possessing an ideal life can engender feelings of inadequacy and self-criticism, negatively influencing self-concept, particularly in social interactions.⁸ MBCT addresses these challenges by cultivating bodily awareness and mindfulness practices. Through focused attention on respiration and bodily sensations, individuals become attuned to the physiological manifestations of their emotions.¹⁹ They learn to identify the physical correlates of anger, such as increased body

temperature, and fear, such as elevated heart rate and altered breathing patterns. This heightened bodily awareness serves as a tool to challenge negative cognitive distortions arising from social comparisons. By recognizing the physiological underpinnings of their emotions, individuals can objectively evaluate their social skills and abilities rather than relying on distorted perceptions driven by emotional reactivity. MBCT further promotes self-regulation by fostering tolerance for distress and encouraging proactive coping strategies.²¹ Individuals learn to accept and manage unpleasant emotions rather than suppressing or avoiding them. This skill enhances their capacity to navigate challenging social situations effectively. MBCT's impact on self-concept extends beyond social skills, encompassing psychological, social, and physical dimensions. By addressing cognitive distortions, promoting bodily awareness, and cultivating self-regulation, MBCT empowers infertile women to develop a more positive and realistic self-image.

Given the substantial positive impact of MBCT on self-concept in infertile women, this study proposes a two-pronged approach. Firstly, psychologists and counselors should regularly conduct MBCT workshops specifically tailored for infertile women within infertility centers. This would directly address self-image concerns and promote a more positive outlook. Secondly, the study recommends implementing MBCT interventions among other vulnerable populations, such as juvenile delinquents and women with addicted spouses. This broader application has the potential to enhance the quality of life for a wider range of individuals.²²

Nevertheless, this study possesses limitations that necessitate further investigation. The reliance on self-reported data may have introduced bias, and subsequent research should endeavor to control extraneous demographic variables such as socioeconomic status. Furthermore, the sample's exclusive female composition and the circumscribed cultural context restrict the generalizability of the findings. Replications with more diverse participant pools are imperative.

6. Conclusion

In conclusion, this study demonstrated the effectiveness of MBCT in improving self-concept among infertile women, particularly in the social skills dimension. These findings highlight the potential of MBCT as a valuable tool for clinicians working with infertile women experiencing social isolation or difficulty navigating social interactions. Fertility clinics could further support their patients by partnering with mindfulness practitioners to offer MBCT programs or workshops. Infertile women themselves are encouraged to explore the possibility of participating in MBCT programs to enhance their well-being and social confidence throughout the fertility journey. Future research should investigate the impact of MBCT on other

aspects of self-concept in this population, explore its long-term effects, and examine potential benefits for partners as well.

Research Highlights

What Is Already Known?

Infertility can have far-reaching effects on a person's mental health and self-concept, especially when it comes to their social interactions. The sense of isolation and inadequacy that often accompanies infertility can lead to feelings of shame, depression, and anxiety.

What Does This Study Add?

This study shows that Mindfulness-Based Cognitive Therapy (MBCT) can improve self-concept, especially social skills, in infertile women. This suggests that MBCT could be a helpful tool for managing these challenges.

Author Contributions

Authors contributed equally to this work.

Conflict of Interest Disclosures

All authors declared that they have no conflict of interest.

Ethical Approval

The study was approved by the Ethical Committee of University of Mohaghegh Ardabili, Ardabil, Iran (code: IR.UMA.REC.1402.065).

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References

- Tavaloli T, Kimiaee SA, Agha Mohammadian H. The Effectiveness of Marriage Enrichment Training of TIME Plan on Improving Marital Intimacy and Women's Psychological Security. *Pract Clin Psychol.* 2022; 10(3):259-74. doi:10.32598/jpcp.10.3.857.1
- Saberi N, Akbari SA, Mahmoodi Z, Nasiri M. The relationship between psychological status (Depression and Anxiety) and social support and sexual function. *Adv Nurs Midwifery.* 2018;27(2):1-8. doi:10.29252/ANM-027021
- Legese N, Tura AK, Roba KT, Demeke H. The prevalence of infertility and factors associated with infertility in Ethiopia: Analysis of Ethiopian Demographic and Health Survey (EDHS). *Plos One.* 2023;18(10):e0291912. doi:10.1371/journal.pone.0291912
- Hazlina NH, Norhayati MN, Bahari IS, Arif NA. Worldwide prevalence, risk factors and psychological impact of infertility among women: a systematic review and meta-analysis. *BMJ Open.* 2022;12(3):e057132. doi:10.1136/bmjopen-2021-057132
- Vahidi S, Ardalan A, Mohammad K. Prevalence of primary infertility in the Islamic Republic of Iran in 2004-2005. *Asia Pac J Public Health.* 2009;21(3):287-93. doi:10.1177/1010539509336009
- Mohammad K, Ardalan A. An overview of the epidemiology of primary infertility in Iran. *J Reprod Infertil.* 2009;10(3):213.
- Jahanbakhshi A, Niknami M, Pakseresht S, Atrkar Roushan Z, Shirzad Chenari S. Childbearing Tendency and Related Factors Among Married Women in Rasht City, north of Iran. *J Holist Nurs Midwifery.* 2023; 33(3):230-7. doi:10.32598/jhnm.33.3.2496
- Mosalanejad L, Parandavar N, Abdollahifard S. Barriers to infertility treatment: an integrated study. *Glob J Health Sci.* 2014;6(1):181. doi:10.5539/gjhs.v6n1p181
- Renzi A, Mariani R, Fedele F, Maniaci VG, Petrovska E, D'Amelio R, et al. Women's narratives on infertility as a traumatic event: An Exploration of emotional processing through the referential activity linguistic program. *Healthcare* 2023;11(22):2919. doi:10.3390/healthcare11222919
- Graham ME, Jelin A, Hoon Jr AH, Wilms Floet AM, Levey E, Graham EM. Assisted reproductive technology: Short-and long-term outcomes. *Dev Med Child Neurol.* 2023;65(1):38-49. doi:10.1111/dmcn.15332
- Simionescu G, Doroftei B, Maftai R, Obreja BE, Anton E, Grab D, et al. The complex relationship between infertility and psychological distress. *Exp Ther Med.* 2021;21(4):306. doi:10.3892/etm.2021.9737
- Rooney KL, Domar AD. The relationship between stress and infertility. *Dialogues Clin Neurosci.* 2018; 20(1):41-7. doi:10.31887/DCNS.2018.20.1/klrooney
- Xie Y, Ren Y, Niu C, Zheng Y, Yu P, Li L. The impact of stigma on mental health and quality of life of infertile women: A systematic review. *Front Psychol.* 2023;13:1093459. doi:10.3389/fpsyg.2022.1093459
- Alamin S, Allahyari T, Ghorbani B, Sadeghitabar A, Karami MT. Failure in identity building as the main challenge of infertility: a qualitative study. *J Reprod Infertil.* 2020;21(1):49.
- Chu C, Lowery BS. Perceiving a stable self-concept enables the experience of meaning in life. *Pers Soc Psychol Bull.* 2024;50(5):780-92. doi:10.1177/01461672221150234
- Jafari H, Shirvan FS, Roudsari RL. The Relationship between Self-Efficacy and Psychological Distress among Infertile Women. *J Midwifery Reprod Health.* 2023;11(2):p3744. doi:10.22038/JMRH.2023.63739.1848
- Kremer F, Ditzen B, Wischmann T. Effectiveness of psychosocial interventions for infertile women: A systematic review and meta-analysis with a focus on a method-critical evaluation. *Plos One.* 2023;18(2):e0282065. doi:10.1371/journal.pone.0282065
- Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The emotional-psychological consequences of infertility among infertile women seeking treatment: Results of a qualitative study. *Iran J Reprod Med.* 2014;12(2):131.
- Ebrahimi S, Fakhri M, Hasanzadeh R. Effect of mindfulness-based cognitive therapy on hope, dysfunctional attitudes and meta-worry in infertile women. *IJPN.* 2019;7(4):32-40.
- Fard TR, Kalantarkousheh M, Faramarzi M. Effect of mindfulness-based cognitive infertility stress therapy on psychological well-being of women with infertility. *Middle East Fertil Soc J.* 2018;23(4):476-81. doi:10.1016/j.mefs.2018.06.001
- Kundarti FI, Titisari I, Rahayu DE, Kiswati, Jamhariyah. Mindfulness improves the mental health of infertile women: A systematic review. *J Public Health Res.* 2023;12(3):1-8. doi:10.1177/22799036231196693
- Heidari F, Ahadi H, Tajeri B. Comparing the Effectiveness of Compassion Focused Therapy and Mindfulness-Based Cognitive Therapy on the Anxiety of Infertile Women. *Appl Fam Ther J.* 2023;4(2):227-40. doi:10.61838/kman.aftj.4.2.14
- Dhawan A, Patil V, Gupta S, Chugh G. Mindfulness and Mental Health. In: Okpaku SO, editor. *Innovations in Global Mental Health.* Cham: Springer International Publishing; 2021. p. 1517-33.
- Zandi H, Amirinejad A, Azizifard A, Aibod S, Veisani Y, Mohammadian F. The effectiveness of mindfulness

- training on coping with stress, exam anxiety, and happiness to promote health. *J Educ Health Promot.* 2021;10(1):177. doi:10.4103/jehp.jehp_616_20
25. Ramasubramanian S. Mindfulness, stress coping and everyday resilience among emerging youth in a university setting: a mixed methods approach. *Int J Adolesc Youth.* 2017;22(3):308-21. doi:10.1080/02673843.2016.1175361
26. Segal ZV, Williams JMG, Teasdale JD. Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse. Guilford Press. 2002.
27. Beck AT, Steer RA, Epstein N, Brown G. Beck self-concept test. *J Consult Clin Psychol.* 1990;2(2):191-7. doi:10.1037/1040-3590.2.2.191
28. Abbasi G, Mirzaian B. The effectiveness of Compassion-Focused Therapy on Psychological Distress, Self-Concept, and Social Support for People with Binge Eating Disorder. *IJPN.* 2021;9(3):50-62.
29. Ebrahimifar M, Hosseinian S, Saffariyan Tosi MR, Abedi MR. To compare of the effectiveness of training based on "Acceptance and Commitment Therapy" and "Compassion Focused Therapy" on self-efficacy, quality of relations and meaning in life in infertile women. *JHPM.* 2019;8(3):10-8.
30. Tavousi SA, Zanjani Z, Mohammadi N, Omid A. The effects of mindfulness-based stress reduction on psychological symptoms, quality of life, and marital satisfaction in infertile women undergoing IVF: A randomized clinical trial. *Nurs Midwifery Stud.* 2024; 13(1):33-9. doi:10.48307/nms.2024.435062.1332