

Comparison of the Effectiveness of Cognitive-Behavioral Couple Therapy and Intensive Solution-Focused Couple Therapy on Intolerance of Uncertainty and Generalized Anxiety in Infertile Women

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ABSTRACT

Objective: The present study aimed to compare the effectiveness of cognitive-behavioral couple therapy and intensive solution-focused couple therapy in reducing intolerance of uncertainty and generalized anxiety among infertile women.

Methods and Materials: This experimental study employed a pretest-posttest-follow-up design with a control group. The study sample consisted of 45 infertile couples attending Milad Center in Mashhad in the spring of 2025. Participants were selected using convenience sampling and were randomly assigned to the experimental and control groups using a lottery method. Cognitive-behavioral couple therapy was administered in ten 2-hour sessions, whereas intensive solution-focused couple therapy was delivered in six 90-minute sessions. The research instruments included the Generalized Anxiety Disorder Scale developed by Spitzer et al. (2006) and the Intolerance of Uncertainty Scale developed by Carleton et al. (2007). Data were analyzed using repeated-measures analysis of variance (ANOVA).

Findings: The results indicated that both cognitive-behavioral couple therapy and intensive solution-focused couple therapy were effective in reducing intolerance of uncertainty; however, no significant difference was found between the two therapeutic approaches. Regarding generalized anxiety, participants in the intensive solution-focused couple therapy group demonstrated a significant improvement at posttest compared with the control group; however, this effect was not maintained at follow-up ($p > .05$). Therefore, the findings indicated that intensive solution-focused couple therapy was effective in reducing generalized anxiety among infertile women, although its effectiveness was not sustained over time. Cognitive-behavioral couple therapy, however, did not demonstrate a significant effect on generalized anxiety.

Conclusion: Based on the findings, both cognitive-behavioral couple therapy and intensive solution-focused couple therapy had positive effects on reducing intolerance of uncertainty. Intensive solution-focused couple therapy was effective in reducing generalized anxiety, whereas cognitive-behavioral couple therapy had no significant effect on generalized anxiety.

Keywords: generalized anxiety, intolerance of uncertainty, solution-focused therapy, cognitive-behavioral therapy, infertile women

1. Introduction

Infertility is a complex reproductive health condition whose consequences extend beyond biological impairment and frequently affect emotional well-being, marital functioning, social relationships, and quality of life. The experience of infertility may expose couples to repeated medical evaluations, uncertain prognoses, invasive procedures, financial burdens, treatment failures, and prolonged waiting periods, all of which can generate considerable psychological strain. The heterogeneity of infertility itself further intensifies this uncertainty because reproductive difficulties may arise from diverse etiological pathways and may require markedly different treatment approaches. For example, research on reproductive outcomes among women with polycystic ovary syndrome has demonstrated that treatment effectiveness can vary according to clinical characteristics and therapeutic strategies (Magzoub et al., 2022), while gynecological factors such as chronic endometritis may also be differently distributed among fertile and infertile women (Volodarsky-Perel et al., 2020). Consequently, infertility treatment often unfolds within a context in which couples cannot readily predict the duration, outcome, or emotional cost of their reproductive journey. Recent qualitative evidence indicates that infertile patients employ a wide range of coping strategies in response to these demands and that their adjustment is influenced by individual, interpersonal, and contextual factors (Zhao et al., 2025). Similarly, qualitative investigation of patients undergoing assisted reproductive technology has emphasized the importance of treatment-related experiences, communication, expectations, and psychosocial support in determining how individuals perceive and tolerate the reproductive care process (Li et al., 2025). These findings highlight the need to conceptualize infertility not merely as a medical condition, but as a multidimensional psychosocial stressor requiring psychological as well as biomedical intervention.

Women may be particularly vulnerable to the psychological consequences of infertility because the diagnosis and treatment process can interact with expectations surrounding motherhood, self-evaluation, perceived social roles, and marital concerns. Studies of infertile women have identified associations between psychological characteristics and diminished quality of life, suggesting that emotional burden represents an important component of the infertility experience (Nho & Kim, 2022). Psychological health among infertile women has also been

linked to perceived social support, loneliness, and spirituality, indicating that adjustment is shaped not only by intrapersonal processes but also by social and relational resources (Shayestehmehr et al., 2021). Clinical investigations in Iran have further demonstrated that psychological distress among infertile women can be reduced through structured psychotherapeutic interventions. For example, religious cognitive-behavioral therapy and positive psychotherapy have both been examined in relation to self-criticism and psychological distress among infertile women (Mashak et al., 2021). More recent systematic evidence also suggests that psychological interventions can yield beneficial outcomes for infertile women across a range of emotional and mental health indicators (Jackson et al., 2025). Nevertheless, the psychological response to infertility varies considerably across individuals, and identifying transdiagnostic cognitive processes that may maintain anxiety during infertility is essential for selecting and refining effective interventions.

One of the most clinically relevant emotional problems in this population is anxiety. Anxiety may develop or intensify when individuals repeatedly confront threats whose likelihood, timing, and consequences cannot be determined with confidence. Although anxiety occurs in many clinical and health contexts, studies consistently demonstrate that elevated anxiety is associated with impaired functioning and poorer subjective well-being. For example, depression and anxiety have been shown to play important roles in explaining quality-of-life impairment among distressed young adults (Greenberg et al., 2021), while health-related and situational forms of anxiety have also been observed in medical populations exposed to heightened uncertainty and perceived threat (Altıntaş & Korkut, 2023). From a broader psychopathological perspective, anxiety-related mechanisms can contribute to the persistence of maladaptive emotional and behavioral responses across diagnostic categories (Schaumberg et al., 2021). In infertility, uncertainty about reproductive outcomes may make anxiety especially persistent because individuals cannot easily resolve the feared situation or obtain definitive reassurance. Thus, generalized anxiety may become intertwined with repetitive worry about treatment success, future parenthood, marital stability, financial demands, and the possibility of permanent childlessness.

A central cognitive construct for understanding such anxiety is intolerance of uncertainty. Intolerance of uncertainty refers to the tendency to experience uncertain situations as unacceptable, threatening, stressful, or difficult

to manage, even when the actual probability of a negative outcome is unknown. Individuals with high intolerance of uncertainty may respond to ambiguity with excessive worry, threat monitoring, avoidance, reassurance seeking, cognitive rigidity, or attempts to gain complete certainty in circumstances where certainty is impossible. The construct has been implicated in a wide range of psychological difficulties. A systematic review has demonstrated its relevance to psychotic experiences and related symptoms, underscoring its transdiagnostic importance beyond traditional anxiety disorders (Morris et al., 2025). During the COVID-19 pandemic, intolerance of uncertainty was also associated with maladaptive psychological responses to unpredictable conditions (Bavolar et al., 2023). Among college students, intolerance of uncertainty predicted anxiety during the re-emergence of COVID-19, with cognitive emotion-regulation strategies and family functioning helping to explain or modify this relationship (Huang et al., 2023). Similarly, in breast cancer survivors, anxiety has been identified as an important mechanism linking intolerance of uncertainty with cognitive functioning (Yang et al., 2023). Together, these studies indicate that intolerance of uncertainty can intensify distress when individuals face prolonged ambiguity, incomplete control, and uncertain future outcomes—features that are highly characteristic of infertility and assisted reproduction.

The relevance of intolerance of uncertainty to infertile women is therefore particularly strong. Reproductive treatment often requires patients to tolerate uncertain diagnoses, uncertain response to medication, uncertain embryo development, uncertain implantation, uncertain pregnancy continuation, and uncertain decisions regarding subsequent treatment attempts. These repeated uncertainties can provide fertile conditions for worry and generalized anxiety. Evidence from infertile populations supports this conceptualization. Emotion-focused couple therapy has been examined as an intervention for intolerance of uncertainty among infertile couples experiencing marital difficulties (Salimi, 2023), suggesting that uncertainty-related distress is not only an individual cognitive phenomenon but also a clinically meaningful relational issue. Moreover, interventions targeting cognitive processes have shown promise in reducing intolerance of uncertainty in other populations. Rational-emotive behavior therapy has been found to influence intolerance of uncertainty and emotion regulation among women with marital problems (Bakhtiarzadeh et al., 2022), while cognitive-behavioral mechanisms have been implicated in changes in intolerance

of uncertainty during treatment for perinatal anxiety (Donegan et al., 2022). More recently, direct comparison of cognitive-behavioral therapy and short-term solution-focused therapy in pregnant women has further indicated that both approaches may be relevant to intolerance of uncertainty (Irvani et al., 2026). These findings provide a strong rationale for examining whether similar interventions can reduce uncertainty-related distress in infertile women.

Because infertility occurs within a couple system, psychological intervention should also consider the reciprocal influences between partners. Stress experienced by one partner may affect communication, emotional responsiveness, conflict resolution, perceived support, and overall dyadic adjustment. Couple-based treatment therefore offers an opportunity to address individual cognitive-emotional difficulties while simultaneously strengthening relational functioning. Cognitive-behavioral couple therapy is one of the major structured approaches used to modify dysfunctional patterns within intimate relationships. It typically focuses on identifying maladaptive cognitions, restructuring unrealistic interpretations, increasing constructive communication, improving problem solving, strengthening behavioral exchange, and developing more adaptive emotion-regulation and conflict-management skills. Empirical studies have shown that cognitive-behavioral couple therapy can improve social well-being among couples experiencing marital conflict (Hajloo et al., 2021) and can reduce marital burnout when compared with other couple-based interventions (Salehi et al., 2021). It has also demonstrated beneficial effects on marital burnout and depressive symptoms in couples when evaluated alongside emotion-focused couple therapy (Bahrami Moghadam et al., 2023). These findings indicate that cognitive-behavioral couple therapy may be particularly appropriate when infertility-related anxiety is maintained by catastrophic thinking, negative interpretations, ineffective coping, and dysfunctional couple interaction patterns.

The potential value of cognitive-behavioral methods is further supported by research conducted specifically among infertile populations. A systematic review and meta-analysis concluded that cognitive-behavioral therapy can reduce stress, anxiety, and depression among infertile couples, providing evidence for its broader psychological effectiveness within reproductive health care (Abdollahpour et al., 2022). Cognitive-behavioral interventions have also been applied to perfectionism and self-focused attention in infertile couples, demonstrating their relevance to cognitive vulnerabilities that may compound infertility-related distress

(Aghili & Tanzadeh, 2022). A randomized controlled trial examining cognitive-behavioral therapy and eye movement desensitization and reprocessing among infertile women similarly supports the use of structured psychological treatments in this population (Bal & Uçar, 2024). Nevertheless, the response to cognitive-behavioral intervention is not uniform. Research on internet-based cognitive-behavioral therapy for women experiencing fertility-related depression or anxiety has identified factors associated with low adherence and nonresponse (Shafierizi et al., 2024). Such findings suggest that although cognitive-behavioral therapy has an established evidence base, alternative or complementary approaches that are briefer, more resource-oriented, and easier to integrate into demanding fertility treatment schedules may also be warranted.

Solution-focused therapy represents one such approach. Rather than concentrating primarily on the origin, pathology, or detailed analysis of problems, solution-focused brief therapy emphasizes clients' strengths, exceptions to difficulties, existing resources, achievable goals, and the construction of preferred futures. Contemporary accounts describe the model as collaborative, pragmatic, goal-oriented, and centered on identifying small changes that can initiate broader improvements (Franklin et al., 2025). Within couple therapy, solution-focused work encourages partners to articulate desired relational outcomes, notice occasions when problems are less severe or absent, recognize behaviors that already contribute to improvement, and translate preferred futures into specific behavioral steps. The negotiation of preferred futures has been described as a central process in solution-focused couple therapy because it helps partners transform vague dissatisfaction into observable and mutually meaningful goals (Zatloukal, 2025). This future-oriented and strengths-based structure may be particularly relevant for couples experiencing infertility, whose psychological distress is often sustained by perceived loss of control and repeated attention to unsuccessful treatment experiences.

A growing evidence base supports the effectiveness of solution-focused interventions. Meta-analytic research on solution-focused brief therapy in community-based services has found beneficial effects across randomized controlled studies (Franklin et al., 2024), while a broader meta-analysis of psychosocial outcomes has provided further support for the effectiveness of solution-focused brief therapy across diverse populations and settings (Vermeulen-Oskam et al., 2024). An umbrella review of systematic reviews and meta-

analyses has likewise concluded that solution-focused brief therapy has accumulated a meaningful body of evidence, while also emphasizing variability across populations, outcomes, and methodological designs (Zak & Pękala, 2025). The approach has additionally been applied in specialized areas such as substance-use treatment, illustrating its adaptability across clinical contexts (Franklin & Hai, 2021). At the couple level, solution-focused couple therapy has shown beneficial effects on cognitive flexibility among couples seeking divorce (Behbahani & Zolfaghari, 2021), marital conflict (Rahsepar Monfared et al., 2021), dysfunctional marital relationship beliefs (Mohammadyari, 2023), and aggression among distressed couples (Langari et al., 2023). Short-term solution-focused couple therapy has also been associated with improvements in marital self-regulation and emotional distress tolerance (Salimi & Sodani, 2023). Collectively, these findings indicate that solution-focused interventions may alter both relational processes and psychological coping capacities that are relevant to couples experiencing reproductive stress.

Recent evidence has begun to extend solution-focused approaches directly into infertility and reproductive care. A systematic review of solution-focused brief therapy for improving dyadic relationships in Iran found support for its application to couple functioning, while also indicating the need for stronger comparative and methodologically rigorous studies (Naseh et al., 2025). In women aged 35 years or older undergoing in vitro fertilization–embryo transfer, a solution-focused approach has also been evaluated in a quasi-experimental trial, demonstrating the increasing integration of strengths-based interventions into assisted reproductive treatment settings (Tang et al., 2025). This is especially important because reproductive treatment can impose demanding schedules and substantial emotional pressure, making brief and intensive therapeutic formats potentially attractive. Solution-focused interventions may help individuals redirect attention from uncontrollable reproductive outcomes toward controllable coping responses, existing competencies, relationship strengths, and incremental progress. At the same time, the empirical literature does not yet establish whether such approaches are superior, equivalent, or complementary to more established cognitive-behavioral interventions for specific mechanisms such as intolerance of uncertainty and generalized anxiety.

Comparison of these two therapeutic models is theoretically important because they may influence distress through partially different pathways. Cognitive-behavioral couple therapy directly targets dysfunctional appraisals,

automatic thoughts, behavioral patterns, communication deficits, and maladaptive coping strategies, whereas solution-focused couple therapy emphasizes exceptions, resources, goal construction, preferred futures, and behaviorally observable signs of progress. Both may therefore reduce intolerance of uncertainty, but they may do so through different mechanisms. Cognitive-behavioral intervention may enhance tolerance of uncertainty by challenging catastrophic interpretations and reducing maladaptive worry, whereas solution-focused intervention may diminish the perceived centrality of uncertainty by strengthening agency and directing attention toward achievable changes. Emotion validation and regulation are also likely to contribute to therapeutic change, as experimental evidence demonstrates that responses to emotional validation and invalidation depend partly on emotion-regulation processes (Kuo et al., 2022). Couple-based formats may additionally improve the interpersonal environment in which anxiety is expressed and managed. Research comparing group mindfulness and group cognitive-behavioral therapy among couples facing sexual dysfunction after prostate cancer further demonstrates the feasibility and potential value of structured couple-oriented psychological interventions in medically stressful contexts (Kemerer et al., 2023).

Despite the accumulating evidence, important gaps remain. First, many studies have evaluated cognitive-behavioral or solution-focused approaches separately rather than directly comparing them within the same experimental design. Second, research in infertile populations has frequently focused on broad outcomes such as depression, stress, marital satisfaction, quality of life, or general psychological distress, whereas intolerance of uncertainty has received comparatively limited attention despite its strong theoretical relevance to infertility. Third, generalized anxiety may require examination as a distinct outcome because reductions in broader distress do not necessarily indicate equivalent changes in persistent and generalized worry. Fourth, a therapy may produce immediate improvement without maintaining its effect over time; therefore, follow-up measurement is necessary to distinguish short-term response from more stable therapeutic change. Finally, the practical realities of fertility treatment create a need to compare interventions of different intensity and duration. Cognitive-behavioral couple therapy typically involves a more extended structured sequence of cognitive and behavioral skill development, whereas intensive solution-focused couple therapy may offer a shorter pathway

emphasizing strengths and rapid goal-directed change. Determining whether these approaches differ in their effects on intolerance of uncertainty and generalized anxiety can therefore contribute both to clinical decision-making and to the development of psychologically informed infertility services.

Accordingly, the present study aimed to compare the effectiveness of cognitive-behavioral couple therapy and intensive solution-focused couple therapy on intolerance of uncertainty and generalized anxiety among infertile women.

2. Methods and Materials

2.1. Study design and Participant

The present study employed an experimental, three-group, pretest–posttest–follow-up design with a control group. The statistical population consisted of all couples experiencing infertility who attended infertility treatment centers in Mashhad, Iran, during the spring of 2025. The study sample comprised 45 infertile couples attending the Milad Infertility Center at Imam Reza Hospital in Mashhad. Participants were recruited using convenience sampling and were subsequently randomly assigned to one of three study groups through a lottery procedure. Accordingly, 15 couples were assigned to the cognitive-behavioral couple therapy group, 15 couples to the intensive solution-focused couple therapy group, and 15 couples to the control group. The inclusion criteria were being female, being married, being older than 18 years, having sufficient literacy to read and complete the study questionnaires, willingness to participate voluntarily in the study, and having a diagnosis of infertility attributable to a female factor. The exclusion criteria included concurrent participation in another psychological or psychotherapeutic intervention during the study period, absence from more than two intervention sessions, the presence of an acute psychological disorder, and the presence of another chronic physical illness that could interfere with participation in the study. Following approval of the research protocol by the Biomedical Research Ethics Committee of Islamic Azad University, Neyshabur Branch, participants were recruited through written announcements and in-person invitations at the Milad Infertility Center of Imam Reza Hospital over a one-month period. Eligible volunteers were provided with information regarding the study objectives, procedures, intervention conditions, confidentiality of their information, and their right to withdraw from the study without any adverse consequences. Written informed consent was obtained from all participants

before enrollment. Participation was entirely voluntary, confidentiality and anonymity were maintained throughout the research process, and the procedures were designed to minimize any potential psychological or physical harm. Before the commencement of the interventions, participants in all three groups completed the study measures under comparable conditions. The cognitive-behavioral couple therapy group then received ten 2-hour intervention sessions, while the intensive solution-focused couple therapy group received six 90-minute sessions. The control group received no psychological intervention during the study period. Immediately after completion of the interventions, all three groups completed the questionnaires again as the posttest assessment. A follow-up assessment using the same measures was conducted two months after completion of the interventions to evaluate the maintenance of therapeutic effects.

2.2. Measures

Generalized Anxiety Disorder Scale. Generalized anxiety symptoms were assessed using the 7-item Generalized Anxiety Disorder Scale developed by Spitzer et al. (2006). The instrument was originally developed as a brief measure for identifying probable cases of generalized anxiety disorder and assessing the severity of associated clinical symptoms. Each of the seven items is rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), resulting in a total score ranging from 0 to 21, with higher scores indicating greater severity of generalized anxiety symptoms. In the original psychometric evaluation, the scale demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of .92, as well as satisfactory test-retest reliability of .83. Evidence of convergent validity was also reported through correlations of .72 with the Beck Anxiety Inventory and .74 with the anxiety subscale of a clinical symptom inventory. Furthermore, Spitzer et al. (2006) reported satisfactory construct, criterion-related, factorial, and procedural validity for the instrument. The Persian version of the scale has also demonstrated favorable psychometric properties. Mansouri et al. (2018) reported an internal consistency coefficient of .89. Cronbach's alpha coefficients for the first and second halves of the scale were .86 and .76, respectively, and the correlation between the two halves was .74. Confirmatory factor analytic indices also supported the construct validity of the Persian version, including CFI = .99, NFI = .99, NNFI = .99, IFI = .99, RFI = .98, GFI = .98, and RMSEA = .062 (Mansouri et al., 2018).

In the present study, the internal consistency of the Generalized Anxiety Disorder Scale was assessed using Cronbach's alpha and was found to be .78, indicating acceptable reliability in the study sample.

Intolerance of Uncertainty Scale. Intolerance of uncertainty was measured using the 12-item Intolerance of Uncertainty Scale developed by Carleton et al. (2007). The scale assesses maladaptive cognitive, emotional, and behavioral responses to uncertain situations and the tendency to perceive uncertainty and its potential consequences as stressful, unacceptable, or threatening. Each item is rated on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me), producing a total score between 12 and 60. Higher scores indicate greater intolerance of uncertainty. The original version demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of .91. Carleton et al. (2007) also provided evidence of convergent validity through significant associations with conceptually related psychological constructs. Specifically, correlations of .56, .57, .54, and .61 were reported with measures of depressive symptoms, anxiety symptoms, pathological worry, and generalized anxiety, respectively. The Persian version of the scale has likewise shown satisfactory psychometric properties. Sedighi et al. (2019) reported a Cronbach's alpha coefficient of .87 for internal consistency. Construct validity was supported by positive correlations between intolerance of uncertainty scores and cognitive avoidance ($r = .57$), psychological inflexibility as measured by the Acceptance and Action Questionnaire-II ($r = .67$), and rumination ($r = .49$) (Sedighi et al., 2019). In the present study, Cronbach's alpha for the Intolerance of Uncertainty Scale was .80, demonstrating satisfactory internal consistency among the participants.

2.3. Interventions

Cognitive-Behavioral Couple Therapy. The cognitive-behavioral couple therapy intervention was implemented according to the protocol proposed by Dattilio (2009) and consisted of ten 2-hour sessions. The intervention was structured to modify maladaptive cognitive patterns, improve communication and problem-solving skills, regulate emotional responses, and strengthen constructive interactions between partners. The first session focused on establishing the therapeutic relationship, introducing the participants, conducting an initial assessment, explaining the structure and duration of the intervention, establishing

session rules, and identifying treatment goals; participants were asked to record interpersonal conflicts occurring during the following week together with the emotions associated with them. The second session introduced the cognitive-behavioral model and the cycle of marital conflict, with particular emphasis on the reciprocal relationships among thoughts, emotions, and behaviors; participants practiced recording situations according to the situation–thought–emotion–behavior framework. The third session focused on communication skills, including active listening, accurate expression of needs and emotions, and the use of “I” statements rather than accusatory communication; couples were encouraged to engage in approximately 15 minutes of constructive conversation each day. The fourth session addressed the identification of automatic thoughts and cognitive restructuring. Participants learned to recognize negative interpretations emerging during marital conflict, examine evidence supporting and contradicting those cognitions, and generate more realistic alternative thoughts. The fifth session combined problem-solving training with anger and emotion-management strategies. Couples learned to define problems clearly, generate alternative solutions, evaluate options, and make joint decisions while also practicing diaphragmatic breathing, relaxation, and time-out strategies for managing escalating conflict. The sixth session was devoted to increasing positive couple interactions through the systematic planning of mutually enjoyable activities, and participants were encouraged to engage in at least two shared pleasurable activities during the week. The seventh session addressed negotiation and conflict resolution and included training in compromise, reciprocal concessions, collaborative decision-making, and constructive discussion of actual disagreements. The eighth session focused on modifying dysfunctional core beliefs, schemas, and relationship-related assumptions, with participants identifying maladaptive beliefs and developing more adaptive alternatives. The ninth session concentrated on consolidation and integration of previously acquired cognitive, emotional, communicative, and behavioral skills and on identifying and overcoming barriers to their use in real-life conflicts. Finally, the tenth session reviewed therapeutic progress, integrated the major skills learned throughout treatment, anticipated possible future difficulties, and developed individualized maintenance and relapse-prevention plans designed to support continued use of adaptive strategies after termination of the intervention.

Intensive Solution-Focused Couple Therapy. The intensive solution-focused couple therapy intervention was

based on the approach described by Elmas, Connie, and Furrer (2023) and was delivered in six 90-minute sessions. The intervention emphasized clients' strengths, existing resources, exceptions to problems, preferred future outcomes, and small achievable behavioral changes rather than extended analysis of the origins of difficulties. The first session focused on establishing rapport, introducing group members through culturally appropriate introductory activities, clarifying the therapeutic framework, and helping participants formulate personally meaningful goals. Core concepts related to self-efficacy, emotional regulation, and dyadic adjustment were introduced, and participants were encouraged to identify aspects of their personal and marital lives that were already functioning effectively and that they wished to preserve. The second session focused on constructing a preferred future. Participants were invited to describe how their lives and relationships would appear if meaningful improvement occurred, and scaling questions ranging from 0 to 10 were used to assess their current position relative to desired outcomes. Previous constructive behaviors and existing signs of progress were identified and reinforced through therapeutic feedback and empathic discussion. The third session focused on identifying differences, exceptions, and improvements since the previous meeting and on examining the participants' own contributions to these changes. Attention was directed toward recognizing personal strengths and understanding how small positive differences could affect emotional functioning and couple relationships. The fourth session emphasized recalling previous successful experiences in coping with emotional or relational challenges. Participants explored the circumstances under which those successes had occurred and identified internal strengths, interpersonal resources, and behavioral strategies that had previously helped them manage difficulties effectively. The fifth session addressed resources for coping with current and anticipated challenges. Common barriers were identified, previous coping skills and supportive individuals were reviewed, and participants were encouraged to reactivate both personal and interpersonal resources that could strengthen self-efficacy, emotional regulation, and dyadic functioning. The sixth and final session focused on consolidating therapeutic gains and developing a future-oriented maintenance plan. Scaling questions were again used to evaluate perceived progress, strategies for preserving positive changes were reviewed, and participants developed individualized plans specifying future goals, available sources of support, methods for maintaining motivation, and

strategies for recognizing and reinforcing continued improvement. Across sessions, homework assignments were used to direct attention toward exceptions to problems, indicators of improvement, past successful coping experiences, available personal and interpersonal resources, and concrete behaviors that could maintain therapeutic gains.

2.4. Data Analysis

The collected data were analyzed using both descriptive and inferential statistical procedures. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were calculated to summarize participants' demographic and study characteristics and to describe generalized anxiety and intolerance of uncertainty scores across the pretest, posttest, and two-month follow-up assessments. To evaluate changes in the dependent variables over time and to compare the effects of cognitive-behavioral couple therapy, intensive solution-focused couple therapy, and the control condition, repeated-measures analysis of variance was employed. This analytic approach allowed examination of the main effect of time, the main effect of group, and the interaction between time and group, thereby determining whether patterns of change across the three measurement occasions differed between the intervention and control groups. Statistical analyses were conducted

using IBM SPSS Statistics, version 27. The level of statistical significance was set at $p < .05$.

3. Findings and Results

The mean age of participants in the intensive solution-focused couple therapy, cognitive-behavioral couple therapy, and control groups was 32.73, 33.87, and 35.93 years, respectively. Regarding housing status, in the cognitive-behavioral couple therapy group, 6 participants lived in rented housing and 9 owned their homes, whereas in the intensive solution-focused couple therapy group, 11 participants lived in rented housing and 4 owned their homes. In the control group, 10 participants lived in rented housing and 5 owned their homes. With respect to perceived income adequacy, 7 participants in the cognitive-behavioral couple therapy group reported that their income was sufficient to meet their needs, 5 reported income below the level required to meet their needs, and 3 reported income above that level. In the intensive solution-focused couple therapy group, 7 participants reported sufficient income, 7 reported income below the level required to meet their needs, and 1 reported income above that level. In the control group, 7 participants reported sufficient income, 5 reported income below the level required to meet their needs, and 3 reported income above that level.

Table 1

Descriptive Statistics for Intolerance of Uncertainty and Generalized Anxiety Across the Three Assessment Stages

Variable	Assessment	Cognitive-Behavioral Therapy M (SD)	Couple Intensive Solution-Focused Couple Control Group M (SD)	Total M (SD)
Intolerance of uncertainty	Pretest	34.95 (7.97)	31.79 (6.68)	35.45 (7.89)
	Posttest	22.29 (4.99)	22.00 (4.53)	35.20 (7.93)
	Follow-up	22.83 (4.31)	22.21 (4.34)	35.30 (8.05)
Generalized anxiety	Pretest	11.62 (4.62)	10.79 (5.07)	10.25 (5.43)
	Posttest	7.04 (2.92)	6.10 (1.20)	10.00 (4.87)
	Follow-up	6.37 (2.75)	6.16 (2.14)	9.75 (5.28)

As shown in Table 1, the two intervention groups exhibited substantial reductions in intolerance of uncertainty from pretest to posttest, whereas scores in the control group remained relatively stable. In the cognitive-behavioral couple therapy group, the mean intolerance of uncertainty score decreased from 34.95 at pretest to 22.29 at posttest and remained relatively stable at 22.83 at the two-month follow-up. Similarly, the mean score in the intensive solution-

focused couple therapy group decreased from 31.79 at pretest to 22.00 at posttest and remained at a comparable level at follow-up ($M = 22.21$). By contrast, the control group showed virtually no change across the three assessment occasions, with mean scores of 35.45, 35.20, and 35.30 at pretest, posttest, and follow-up, respectively. A decrease in generalized anxiety was also observed in both intervention groups. In the cognitive-behavioral couple

therapy group, the mean generalized anxiety score decreased from 11.62 at pretest to 7.04 at posttest and 6.37 at follow-up. In the intensive solution-focused couple therapy group, the corresponding means were 10.79, 6.10, and 6.16. The control group demonstrated comparatively limited change, with mean generalized anxiety scores of 10.25 at pretest, 10.00 at posttest, and 9.75 at follow-up. Inferential analyses were subsequently conducted to determine whether these observed differences were statistically significant.

Before conducting the repeated-measures analysis of variance, the relevant statistical assumptions were examined. The Shapiro–Wilk test indicated that, for intolerance of uncertainty, scores were normally distributed across all three groups at pretest; however, at posttest and follow-up, the distributions in the cognitive-behavioral couple therapy and intensive solution-focused couple therapy groups deviated from normality, whereas the control group satisfied the normality assumption across all

assessment occasions. For generalized anxiety, the pretest distributions in the cognitive-behavioral couple therapy and control groups departed from normality, whereas at posttest, the distributions in the intensive solution-focused couple therapy and control groups were normal. At follow-up, non-normal distributions were observed in both intervention groups, while the distribution in the control group remained normal. Accordingly, a rank-based transformation was applied to variables that violated the normality assumption for the inferential analyses, while the original means and standard deviations were retained for descriptive reporting. Following transformation, the distributions were considered acceptable for parametric analysis. Levene's test indicated homogeneity of variances across the three groups for the dependent variables. Mauchly's test of sphericity indicated that the sphericity assumption was violated; therefore, epsilon-adjusted degrees of freedom were used in the repeated-measures analyses.

Table 2

Repeated-Measures Analysis of Variance for Intolerance of Uncertainty and Generalized Anxiety

Variable	Source	SS	df	MS	F	p	Partial η^2
Intolerance of uncertainty	Group	1653.94	2.00	826.97	5.89	.006	.22
	Time	1410.20	1.35	1045.40	123.81	< .001	.75
	Time $\times$ Group	605.44	2.70	224.41	26.58	< .001	.56
Generalized anxiety	Group	70.12	2.00	35.06	0.86	.432	.04
	Time	232.42	1.51	153.84	31.19	< .001	.43
	Time $\times$ Group	109.51	3.02	36.24	7.35	< .001	.26

As presented in Table 2, the repeated-measures analysis of variance for intolerance of uncertainty revealed a statistically significant main effect of group, $F(2, 42) = 5.89$, $p = .006$, partial $\eta^2 = .22$, indicating that approximately 22% of the variance in intolerance of uncertainty was associated with group membership. The main effect of time was also statistically significant, $F(1.35, 56.70) = 123.81$, $p < .001$, partial $\eta^2 = .75$, demonstrating substantial changes in intolerance of uncertainty across the pretest, posttest, and follow-up assessments. Moreover, the Time $\times$ Group interaction was statistically significant, $F(2.70, 56.70) = 26.58$, $p < .001$, partial $\eta^2 = .56$, indicating that changes over time differed significantly among the three groups. For generalized anxiety, the main effect of group was not

statistically significant, $F(2, 42) = 0.86$, $p = .432$, partial $\eta^2 = .04$. In contrast, the main effect of time was statistically significant, $F(1.51, 63.42) = 31.19$, $p < .001$, partial $\eta^2 = .43$, indicating a significant change in generalized anxiety across the assessment occasions. The Time $\times$ Group interaction was also significant, $F(3.02, 63.42) = 7.35$, $p < .001$, partial $\eta^2 = .26$, demonstrating that the pattern of change in generalized anxiety differed among the cognitive-behavioral couple therapy, intensive solution-focused couple therapy, and control groups. Given the significant interaction effects, Bonferroni-adjusted pairwise comparisons were conducted to identify the specific differences between assessment stages and study groups.

Table 3

Bonferroni Post Hoc Pairwise Comparisons for Intolerance of Uncertainty and Generalized Anxiety

Variable	Comparison	Mean Difference	SE	p
Intolerance of uncertainty	Pretest vs. posttest	6.94	0.60	< .001
	Pretest vs. follow-up	6.76	0.56	< .001
	Posttest vs. follow-up	-0.18	0.28	1.000
	Pretest: CBCT vs. ISFCT	5.87	2.87	.140
	Pretest: CBCT vs. control	2.20	2.87	1.000
	Pretest: ISFCT vs. control	-3.67	2.87	.623
	Posttest: CBCT vs. ISFCT	2.06	2.44	.404
	Posttest: CBCT vs. control	-8.82	2.44	< .001
	Posttest: ISFCT vs. control	-10.88	2.44	< .001
	Follow-up: CBCT vs. ISFCT	2.76	2.46	.806
	Follow-up: CBCT vs. control	-8.29	2.46	.005
	Follow-up: ISFCT vs. control	-11.05	2.46	< .001
Generalized anxiety	Pretest vs. posttest	2.27	0.51	< .001
	Pretest vs. follow-up	2.90	0.39	< .001
	Posttest vs. follow-up	0.17	0.31	1.000
	Pretest: CBCT vs. ISFCT	1.40	1.86	1.000
	Pretest: CBCT vs. control	1.27	1.86	1.000
	Pretest: ISFCT vs. control	-0.13	1.86	1.000
	Posttest: CBCT vs. ISFCT	0.77	1.22	1.000
	Posttest: CBCT vs. control	-2.51	1.25	.153
	Posttest: ISFCT vs. control	-3.28	1.25	.036
	Follow-up: CBCT vs. ISFCT	0.12	1.31	1.000
	Follow-up: CBCT vs. control	-2.55	1.34	.193
	Follow-up: ISFCT vs. control	-2.67	1.34	.159

As shown in Table 3, Bonferroni-adjusted comparisons for intolerance of uncertainty indicated a significant reduction from pretest to posttest (mean difference = 6.94, $p < .001$) and from pretest to follow-up (mean difference = 6.76, $p < .001$), whereas the difference between posttest and follow-up was not statistically significant (mean difference = -0.18, $p = 1.000$). This pattern indicates that the reduction achieved following treatment was maintained during the two-month follow-up period. There were no significant between-group differences at pretest, confirming that the groups were comparable before the interventions. At posttest, both the cognitive-behavioral couple therapy group and the intensive solution-focused couple therapy group had significantly lower intolerance of uncertainty scores than the control group ($p < .001$ for both comparisons), whereas the two intervention groups did not differ significantly from each other ($p = .404$). The same pattern was maintained at follow-up: both cognitive-behavioral couple therapy ($p = .005$) and intensive solution-focused couple therapy ($p < .001$) differed significantly from the control group, while there was no statistically significant difference between the two active treatments ($p = .806$). These findings indicate that both interventions were effective in reducing intolerance of uncertainty and that their effects were maintained at follow-up, with no evidence that one intervention was superior to

the other. For generalized anxiety, significant reductions were found from pretest to posttest (mean difference = 2.27, $p < .001$) and from pretest to follow-up (mean difference = 2.90, $p < .001$), whereas no significant overall difference was found between posttest and follow-up ($p = 1.000$). The three groups did not differ significantly at pretest. At posttest, the intensive solution-focused couple therapy group had significantly lower generalized anxiety scores than the control group (mean difference = -3.28, $p = .036$), whereas the difference between the cognitive-behavioral couple therapy and control groups was not significant ($p = .153$), and the two intervention groups did not differ significantly from one another ($p = 1.000$). At the two-month follow-up, neither the intensive solution-focused couple therapy group ($p = .159$) nor the cognitive-behavioral couple therapy group ($p = .193$) differed significantly from the control group, and no significant difference was observed between the two intervention groups ($p = 1.000$). Thus, intensive solution-focused couple therapy produced a significant short-term reduction in generalized anxiety relative to the control condition, but this between-group effect was not statistically maintained at follow-up. Cognitive-behavioral couple therapy did not demonstrate a statistically significant effect on generalized anxiety relative to the control group at either posttest or follow-up.

4. Discussion

The present study compared the effectiveness of cognitive-behavioral couple therapy and intensive solution-focused couple therapy in reducing intolerance of uncertainty and generalized anxiety among infertile women. The findings showed that both interventions significantly reduced intolerance of uncertainty compared with the control condition, and these reductions were maintained at the two-month follow-up. No statistically significant difference was observed between the two intervention groups, suggesting that both approaches were comparably effective in improving this cognitive vulnerability. In contrast, the findings for generalized anxiety were more differentiated. Intensive solution-focused couple therapy produced a significant reduction in generalized anxiety at posttest compared with the control group, but this advantage was no longer statistically significant at follow-up. Cognitive-behavioral couple therapy did not produce a statistically significant reduction in generalized anxiety relative to the control condition at either posttest or follow-up. These findings indicate that the two interventions may influence infertility-related psychological distress through partly overlapping but not identical mechanisms and that treatment effects may vary depending on whether the outcome concerns a specific cognitive vulnerability, such as intolerance of uncertainty, or a broader and potentially more persistent clinical manifestation, such as generalized anxiety.

The finding that both cognitive-behavioral couple therapy and intensive solution-focused couple therapy significantly reduced intolerance of uncertainty is consistent with previous evidence showing that intolerance of uncertainty is modifiable through structured psychological interventions. Irvani et al. directly compared cognitive-behavioral therapy with short-term solution-focused therapy among pregnant women and reported beneficial effects of both approaches on intolerance of uncertainty (Irvani et al., 2026). Although pregnancy and infertility represent different reproductive experiences, both involve considerable uncertainty regarding health, future outcomes, and perceived control. The consistency between these findings supports the proposition that intolerance of uncertainty may be responsive to different therapeutic pathways as long as the intervention helps individuals reconsider threat appraisals, increase perceived coping ability, and develop a greater sense of agency when faced with ambiguity. Related findings have also been reported in women with marital

difficulties, where rational-emotive behavior therapy reduced intolerance of uncertainty alongside improvements in emotion regulation (Bakhtiarzadeh et al., 2022). In addition, emotion-focused couple therapy has been associated with reductions in intolerance of uncertainty among infertile couples experiencing relational distress (Salimi, 2023). Collectively, these findings suggest that intolerance of uncertainty is not fixed, but rather a dynamic cognitive-emotional process that can be altered through multiple forms of psychotherapy.

The effectiveness of cognitive-behavioral couple therapy in reducing intolerance of uncertainty can be explained in terms of its direct emphasis on identifying maladaptive cognitions, examining evidence for catastrophic interpretations, and replacing rigid or threat-focused beliefs with more balanced alternatives. Infertile women may repeatedly experience thoughts such as uncertainty necessarily meaning failure, the inability to predict treatment outcomes being intolerable, or future childlessness being inevitable. These appraisals can increase worry and heighten vigilance toward uncertain cues. Cognitive-behavioral therapy provides a structured framework for identifying these automatic interpretations and testing their accuracy, while behavioral exercises can reduce avoidance and increase confidence in coping with uncertain circumstances. This explanation is compatible with evidence from perinatal anxiety research showing that intolerance of uncertainty can function as a cognitive mechanism of symptom change during cognitive-behavioral therapy (Donegan et al., 2022). It is also consistent with research demonstrating that cognitive-behavioral interventions may effectively address psychological difficulties in infertile populations. A systematic review and meta-analysis found that cognitive-behavioral therapy reduced stress, anxiety, and depression among infertile couples (Abdollahpour et al., 2022), while cognitive-behavioral interventions have also been shown to modify perfectionism and self-focused attention in infertile couples (Aghili & Tanzadeh, 2022). Therefore, the reduction in intolerance of uncertainty observed in the present study may reflect the capacity of cognitive-behavioral couple therapy to restructure the cognitive processes through which reproductive ambiguity is interpreted as threatening and unmanageable.

The comparable effectiveness of intensive solution-focused couple therapy on intolerance of uncertainty can be explained through a different therapeutic process. Solution-focused approaches do not necessarily challenge irrational cognitions directly. Instead, they seek to increase clients'

awareness of exceptions, existing competencies, previous successful coping, and specific indicators of progress. This shift may be especially relevant for infertile women, whose attention can become dominated by failed treatment attempts, ambiguous prognoses, and feared future scenarios. Solution-focused intervention redirects attention from what cannot be controlled toward what can be influenced in the present. By helping couples construct preferred futures, identify small achievable changes, and recognize existing relational and personal strengths, the intervention may reduce the perceived helplessness associated with uncertainty. Contemporary descriptions of solution-focused brief therapy emphasize the collaborative construction of achievable goals, attention to resources, and development of preferred futures rather than extensive problem analysis (Franklin et al., 2025). Within couple therapy, negotiation of preferred futures has been identified as a central mechanism through which couples formulate shared goals and translate vague concerns into observable relational changes (Zatloukal, 2025). Thus, although solution-focused therapy may not directly dispute uncertainty-related beliefs, it may reduce their emotional impact by strengthening perceived competence and increasing the salience of manageable actions.

The maintenance of improvements in intolerance of uncertainty at follow-up is clinically important. The absence of significant change between posttest and follow-up in both intervention groups suggests that participants retained gains after treatment ended. This may indicate that both interventions provided skills or cognitive frameworks that continued to be used beyond the formal sessions. For cognitive-behavioral couple therapy, relapse-prevention strategies, cognitive restructuring, problem-solving, and communication skills may have helped participants respond more adaptively to continuing reproductive uncertainty. For intensive solution-focused therapy, repeated attention to resources, progress, exceptions, and future-oriented goals may have enabled participants to continue applying a strengths-based perspective after treatment. These results are compatible with broader meta-analytic evidence demonstrating that solution-focused brief therapy can produce meaningful psychosocial benefits across diverse settings (Franklin et al., 2024), and with a more comprehensive meta-analysis supporting the effectiveness of solution-focused brief therapy for a range of psychosocial outcomes (Vermeulen-Oskam et al., 2024). An umbrella review similarly concluded that solution-focused brief therapy has accumulated evidence of effectiveness across

systematic reviews and meta-analyses, although effect sizes and outcomes vary across studies and populations (Zak & Pękala, 2025). The present findings extend this literature by suggesting that a relatively brief, intensive solution-focused couple intervention can produce changes in intolerance of uncertainty that persist for at least two months among infertile women.

The finding that there was no significant difference between cognitive-behavioral couple therapy and intensive solution-focused couple therapy in reducing intolerance of uncertainty also deserves attention. Although these approaches differ theoretically, they may converge on common therapeutic processes. Cognitive-behavioral couple therapy increases cognitive flexibility by questioning dysfunctional interpretations and encouraging alternative responses, whereas solution-focused therapy promotes flexibility by shifting attention from problem-saturated narratives toward exceptions, possibilities, and preferred outcomes. Both approaches can also improve communication, increase perceived control, enhance problem-solving, and reduce emotional reactivity within the couple relationship. Previous studies have shown that solution-focused couple therapy can improve cognitive flexibility among couples experiencing severe relationship difficulties (Behbahani & Zolfaghari, 2021) and modify dysfunctional marital beliefs (Mohammadyari, 2023). Other work has found that short-term solution-focused couple therapy can improve marital self-regulation and emotional distress tolerance (Salimi & Sodani, 2023). Similarly, cognitive-behavioral couple therapy has been associated with improvements in social well-being among couples with marital conflict (Hajloo et al., 2021) and reductions in marital burnout and depressive symptoms (Bahrami Moghadam et al., 2023). Thus, different theoretical techniques may ultimately influence a shared set of self-regulatory and interpersonal processes that are relevant to tolerating uncertainty.

The second major finding was that intensive solution-focused couple therapy significantly reduced generalized anxiety at posttest compared with the control condition, whereas cognitive-behavioral couple therapy did not demonstrate a significant between-group effect. The short-term effectiveness of solution-focused therapy is broadly consistent with evidence supporting solution-focused interventions for psychological distress and relational functioning. Solution-focused couple therapy has been shown to reduce marital conflicts (Rahsepar Monfared et al., 2021), and comparisons with other therapeutic approaches

have indicated beneficial effects on aggression and relational difficulties among distressed couples (Langari et al., 2023). A recent systematic review focusing specifically on Iran concluded that solution-focused brief therapy has potential for improving dyadic couple relationships, although additional rigorous research remains necessary (Naseh et al., 2025). Importantly, solution-focused approaches have also begun to be examined in fertility care. A quasi-experimental study involving women aged 35 years or older undergoing in vitro fertilization–embryo transfer found beneficial effects of a solution-focused approach, supporting its relevance within reproductive treatment settings (Tang et al., 2025). The present finding therefore contributes to a growing body of evidence suggesting that a focused, strengths-oriented intervention may provide immediate psychological benefit during highly stressful reproductive experiences.

One explanation for the short-term reduction in generalized anxiety following intensive solution-focused couple therapy is that the intervention rapidly changes the individual's attentional focus. Generalized anxiety is characterized by persistent anticipation of possible future threats and difficulty disengaging from worry. During infertility treatment, this tendency can be reinforced by repeated questions about whether treatment will succeed, how long the process will continue, and what will happen if pregnancy does not occur. Solution-focused therapy encourages clients to describe what improvement would look like, identify small changes already occurring, and focus on available resources rather than hypothetical future threats. This process may temporarily interrupt the worry cycle and strengthen perceived self-efficacy. Research on coping among infertile patients indicates that the way individuals manage reproductive stress is influenced by a range of internal and external resources (Zhao et al., 2025). Similarly, qualitative evidence from assisted reproductive technology settings highlights the importance of patient experience, communication, and supportive care in shaping psychological responses to treatment (Li et al., 2025). By emphasizing existing capacities and concrete indicators of progress, intensive solution-focused couple therapy may therefore have helped participants reinterpret the infertility experience as more manageable, resulting in lower anxiety immediately after treatment.

The absence of a significant effect of cognitive-behavioral couple therapy on generalized anxiety relative to the control group should be interpreted cautiously. It does not necessarily indicate that cognitive-behavioral methods

are ineffective for anxiety in infertile women. Indeed, previous evidence generally supports cognitive-behavioral therapy for psychological distress in this population. Abdollahpour et al. reported significant effects of cognitive-behavioral therapy on anxiety, stress, and depression in their systematic review and meta-analysis of infertile couples (Abdollahpour et al., 2022). A randomized controlled trial has also supported the use of cognitive-behavioral therapy and other structured psychological interventions among infertile women (Bal & Uçar, 2024). However, treatment response may vary substantially according to delivery format, duration, severity of symptoms, adherence, and individual characteristics. Shafierizi et al. demonstrated that some infertile women with depression or anxiety show low adherence or nonresponse to internet-based cognitive-behavioral therapy, highlighting the importance of individual and contextual moderators (Shafierizi et al., 2024). Therefore, the nonsignificant between-group finding in the present study may reflect sample-specific factors, limited statistical power, or a mismatch between the broader couple-focused CBT protocol and the specific cognitive mechanisms maintaining generalized anxiety.

Another possible explanation is that cognitive-behavioral couple therapy in this study was designed to address relational cognitions, communication, conflict management, emotional regulation, and problem solving rather than to provide a disorder-specific protocol for generalized anxiety. Although these components may indirectly reduce anxiety, generalized anxiety often involves entrenched worry, threat estimation, intolerance of uncertainty, reassurance seeking, and metacognitive processes that may require more targeted intervention. The present findings are particularly informative because intolerance of uncertainty improved substantially in the cognitive-behavioral group even though generalized anxiety did not differ significantly from the control condition. This suggests that modifying one theoretically relevant mechanism may not be sufficient to produce a detectable change in broader anxiety within the treatment period. The distinction is consistent with evidence that intolerance of uncertainty is an important but not exclusive contributor to anxiety. Studies conducted in other populations have demonstrated strong associations between intolerance of uncertainty and anxiety (Huang et al., 2023), and anxiety has been shown to mediate the relationship between intolerance of uncertainty and other psychological outcomes (Yang et al., 2023). However, generalized anxiety is influenced by multiple interacting cognitive, emotional, interpersonal, and contextual processes. Accordingly,

improvement in intolerance of uncertainty may represent one therapeutic gain without necessarily producing an immediate or sufficiently large reduction in overall generalized anxiety.

The lack of sustained statistical significance for the solution-focused intervention at follow-up also warrants consideration. Although the intensive solution-focused group maintained relatively low mean anxiety scores, the difference from the control group was no longer statistically significant after two months. This may indicate that the immediate benefits of the brief intervention weakened when participants continued to encounter ongoing reproductive stressors, treatment uncertainties, or new medical decisions. Infertility differs from many circumscribed stressors because the source of uncertainty frequently persists after psychotherapy ends. Consequently, a short intervention may initially increase hope, agency, and perceived coping but may require booster sessions or continued support to maintain a robust between-group effect. This interpretation is compatible with the broader literature showing that psychological responses to infertility are shaped by ongoing social, relational, and treatment-related experiences. Quality of life among infertile women is influenced by enduring psychological characteristics and fatigue (Nho & Kim, 2022), and psychological health is also related to social support and loneliness (Shayestehmehr et al., 2021). Therefore, sustained reduction in generalized anxiety may require not only individual cognitive or solution-focused change but also continued support across the changing stages of infertility treatment.

5. Conclusion

In conclusion, the findings of the present study indicate that both cognitive-behavioral couple therapy and intensive solution-focused couple therapy can effectively reduce intolerance of uncertainty among infertile women, with these improvements remaining relatively stable at the two-month follow-up. Although intensive solution-focused couple therapy also produced a significant short-term reduction in generalized anxiety compared with the control group, this effect was not maintained at follow-up, whereas cognitive-behavioral couple therapy did not show a statistically significant advantage over the control condition for generalized anxiety. Overall, the results suggest that both therapeutic approaches may be useful for addressing uncertainty-related cognitive distress in infertile women, while intensive solution-focused couple therapy may

provide additional short-term benefits for generalized anxiety. These findings underscore the value of incorporating structured psychological interventions into infertility care and highlight the importance of selecting therapeutic approaches according to the specific psychological needs and symptom profiles of infertile women.

6. Limitations and Suggestions

The present study had several limitations that should be considered when interpreting the findings. Participants were recruited through convenience sampling from a single infertility center in Mashhad, which limits the generalizability of the results to infertile women in other regions, treatment settings, socioeconomic groups, or cultural contexts. The relatively small sample size may also have reduced statistical power, particularly for detecting between-group differences in generalized anxiety. The follow-up period was limited to two months and therefore provides information only about short-term maintenance. In addition, the study relied primarily on self-report measures, which may be affected by response tendencies, social desirability, and participants' immediate emotional states. Differences in the number and duration of sessions between the two interventions may have introduced an additional source of variation, and the absence of an active comparison condition makes it difficult to distinguish intervention-specific effects from nonspecific therapeutic factors such as attention, group participation, expectancy, and therapist support. Finally, infertility is a heterogeneous experience, and factors such as duration of infertility, number of previous treatment failures, reproductive diagnosis, assisted reproductive technology stage, and partner psychological functioning were not examined as moderators of treatment response.

Future research should replicate these findings using larger, multisite samples and stronger randomized controlled designs to improve statistical precision and external validity. Longer follow-up periods, such as six months or one year, would help determine whether changes in intolerance of uncertainty and generalized anxiety persist over time and whether booster sessions are necessary. Future studies should also compare interventions with equivalent treatment contact and include active control conditions to clarify treatment-specific mechanisms. Examining mediators such as cognitive flexibility, worry, emotion regulation, perceived control, dyadic adjustment, self-efficacy, and therapeutic

alliance could help explain why the two approaches produce similar effects on intolerance of uncertainty but different short-term effects on generalized anxiety. It would also be useful to examine whether infertility duration, treatment history, cause of infertility, age, socioeconomic status, baseline symptom severity, and partner characteristics moderate intervention effectiveness. Incorporating clinician-rated assessments, behavioral measures, and data from both partners would provide a more comprehensive evaluation of therapeutic change.

From a clinical perspective, the findings suggest that both cognitive-behavioral couple therapy and intensive solution-focused couple therapy may be useful options for reducing intolerance of uncertainty among infertile women, particularly when persistent ambiguity regarding treatment outcomes contributes to psychological distress. Clinicians working in infertility centers may consider incorporating structured psychological screening and couple-based interventions into routine reproductive care. Intensive solution-focused couple therapy may be especially useful when a brief, resource-oriented intervention is needed to produce rapid reductions in anxiety during demanding treatment periods; however, maintenance sessions or periodic follow-up may be necessary to preserve these benefits. Cognitive-behavioral couple therapy may be particularly appropriate when maladaptive beliefs, communication difficulties, conflict, or rigid interpretations of uncertainty are prominent. In practice, an integrative approach combining cognitive restructuring, emotion regulation, problem solving, identification of personal and relational strengths, preferred-future construction, and relapse-prevention strategies may provide a flexible framework for addressing the multidimensional psychological needs of couples experiencing infertility.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. The study was approved under the ethics code IR.IAU.NEYSHABUR.REC.1403.033.

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