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Efficacy of Cognitive Restructuring in Reducing Depression in Women with Infertility

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Abstract
The present study aimed to assess the impact of the cognitive restructuring technique on reducing depression levels among infertile women. Research on this topic can encourage mental health professionals to consider integrating cognitive restructuring techniques to address negative thinking patterns and promote psychological well-being. A sample of 20 women was selected using a convenience sampling technique from the Muzaffargarh district. The research design was quantitative in nature. Assessment was conducted using the standardized Beck Depression Inventory. The experimental group received cognitive restructuring sessions facilitated by trained therapists over a specified duration. A quasi-experimental within-group design was used. Descriptive analysis was conducted to examine the characteristics of the respondents, and a paired sample t-test was used to compare pre- and post-test means. The results indicate a significant reduction in depression levels among infertile women following the cognitive restructuring intervention. These findings highlight the potential benefits of this technique in alleviating depression symptoms in this population. Further research is needed to strengthen the evidence base and enhance support for individuals experiencing infertility and depression.

Keywords: Depression, Infertile Women, Cognitive Restructuring Technique

Introduction
Infertility is defined by the World Health Organization (WHO, 2018) as a condition of the male or female reproductive system that is characterized by an inability to conceive after 12 months or more of regular, unprotected sexual intercourse. Failure to establish a clinical pregnancy after at least a year of unprotected sexual activity (Macaluso et al., 2010) and the inability of a sexually active, non-contraceptive couple to conceive within a year is infertility (Vander & Wyns, 2018). This condition affects millions of people globally, and it also has an impact on their families and communities. According to estimates, one in every six persons of reproductive age experience infertility (Shah & Gher, 2023). Among couples, infertility is little more from female factors (50%), male factors (20–30%), or a combination of both (Agarwal et al., 2015). Worldwide, it is believed that 10% to 15% of couples have infertility, making it a widespread issue (Hart, 2002; Oladokun et al., 2010). Additionally, it's projected that 72.4 million couples worldwide are infertile (Boivin, et al, 2009). The psychological ramifications of infertility are significant, often leading to depression, anxiety, frustration, and feelings of inferiority (Faramarzi et al., 2013). Even though

it's rarely spoken, infertility is a prevalent problem. Infertility is not just a medical concern but also a silent psychological battle, with couples experiencing emotional upheaval as they struggle with feelings of loss and isolation (Ahmed et al., 2023). According to an American Psychiatric Association (APA) the psychological impact of not being able to conceive is a profound loss and significant life crisis. Among the numerous emotions and reactions to infertility are anger, despair, embarrassment, and grief. Being around other families with children can be challenging for couples since they may feel ostracized and alone. This is exacerbated by societal stigma, which compounds the distress. Cognitive restructuring, a core component of Cognitive Behavioral Therapy (CBT), has emerged as a promising intervention in addressing various mental health issues by targeting negative thought patterns (Kashikar-Zuck et al., 2013). The cognitive theory of depression (Beck, 1967) holds that depressed symptoms are influenced by negative cognitive biases and distorted thinking habits. Individuals with depression are more likely to interpret things negatively, engage in self-blame, and have dismal attitudes about the future. These cognitive errors lead to the persistence and worsening of depression symptoms (Sansakorn et al., 2024). CBT can help you manage and alter unfavorable thoughts, which are occasionally connected to harmful behaviors. The Cognitive Restructuring Process in 4 Steps: Become conscious of your thoughts. Making our automatic thoughts conscious is the first step in the process. Second is Analyze it. After then, it's time to start thinking more logically. Third is Get Rational. Last one is Replace It. Golshani et al. (2020) found that CBT significantly reduced anxiety and depression in infertile women, demonstrating its potential for psychological relief. Similarly, Mosalanejad et al. (2012) reported significant improvements in psychological distress, anxiety, and depression among women undergoing assisted reproductive therapy following group CBT sessions. According to the research of Golshani et al, (2021) pregnant women with a history of primary infertility may experience less stress, anxiety, and poorer quality of life after receiving CBT counselling (Sarfraz et al., 2022). In order to help pregnant women with a history of infertility, this counselling strategy is advised in addition to other counselling strategies. CBT improved the need for parenthood, rejection of the child-free lifestyle, and social, sexual, and marital issues. Therefore, CBT was more effective in resolving and minimizing infertile stress than pharmaceutical treatment (Faramarzi et al., 2013). The integration of CBT with medical treatments like in vitro fertilization (IVF) has also shown efficacy. Abdolahi et al. (2019) found that CBT, with or without IVF, significantly reduced anxiety and depression. Furthermore, Internet-based CBT (ICBT) has been shown to be as beneficial as in-person therapy in treating infertile women's adjustment disorders and depressive symptoms (Enander et al., 2016). Talaei et al. (2014) underline the long-term benefits of CBT and advocate for its inclusion in medical treatments for infertile couples. Furthermore, CBT has proven to be more effective than pharmaceutical treatments like fluoxetine in treating psychological discomfort associated with infertility (Faramarzi et al., 2013). These data support CBT as a promising strategy for improving the mental health of infertile women. In an experimental group, the pretest and posttest mean scores for psychological distress related to infertility, anxiety, depression, and stress differed significantly (Mushtaque et al., 2021). It suggests that group treatment, particularly cognitive behavioral therapy, may be therapeutic and appropriate for women undergoing Assisted Reproductive treatment (Mosalanejad et al., 2012). For married couples everywhere, infertility is a problem that lasts a lifetime and causes emotional upheaval and distress. It turns into a silent struggle, and significant adjustments are made in terms of experiences and psychological responses. It is more difficult to gauge the couples' level of discomfort. It's typical to feel hopeless and powerless, and developing a therapy strategy before determining how distressed one is might be challenging (Fang & Mushtaque, 2024). Cognitive-behavioral therapy (CBT) reshapes unhelpful behavioral patterns and alters unfavorable ideas and beliefs about infertility. CBT enhances future planning, therapy, and coping mechanisms for

dealing with challenging circumstances (Sawangchai et al., 2022). CBT can be developed with an emphasis on symptoms, making it more effective in enhancing the patient's mental health (Martin et al., 2022). By identifying and challenging maladaptive thoughts, CBT helps individuals develop healthier coping mechanisms and improve psychological well-being. However, research on the application of CBT, particularly cognitive restructuring, in alleviating depression among infertile women remains limited. This study aims to bridge this gap by investigating the impact of cognitive restructuring on depression in infertile women.

Research questions

This study will help to answer these research questions:

- Is there any effect of demographic variables on depression?
- Does cognitive restructuring technique help to reduce depression level among infertile women?

Hypothesis

- There will be significant reduction in depression with the help of cognitive restructuring technique.

Methodology

The study involves a sample of 20 women from Muzaffargarh city. Age range was 18 years to onward and sample was taken from female. Convenient sampling technique was used to select the participants. Research framework was quantitative in nature. Quasi Experimental design (within group-design) was used. Beck Depression Inventory (BDI) was administered to assess depression levels among participants' pre and post-intervention.

Intervention:

The experimental group receives Cognitive Restructuring Technique sessions facilitated by trained therapists over a specific duration. The technique involves identifying and challenging negative thoughts and beliefs related to infertility and depression, aiming to promote more balanced and realistic thinking patterns.

Procedure:

Approval from the psychology department was taken to conduct research. After selecting the participants, they were informed with the nature and purpose of study. Informed consent was taken from participants in written form. Pre-test measures of depression were taken. Then the participants undergo the Cognitive Restructuring Technique intervention, Post-test measures were administered to assess changes in depression symptoms.

Ethical Consideration

Approval from the psychology department was taken to conduct research. A written consent form was taken from all participants before the study begins. Participants were informed of their right to withdraw at any stage of the study without any consequences. Participants were assured that their decision to participate (or not) will not impact their access to services or relationships with the researchers. All participant data was kept confidential and stored securely. Given the sensitive nature of the research (e.g., depression, negative cognitive patterns), efforts were made to minimize the risk of psychological harm. Participants experiencing distress during or after the study should have access to mental health resources (e.g., counseling services, helplines). Debriefing session was offered to clarify the purpose of the study and address any lingering concerns.

Data Analysis

Descriptive and inferential statistics used to analyze the data. Descriptive was used to describe their characteristics and test scores of participants. Inferential statistics was applied for differences and modeling.

Results

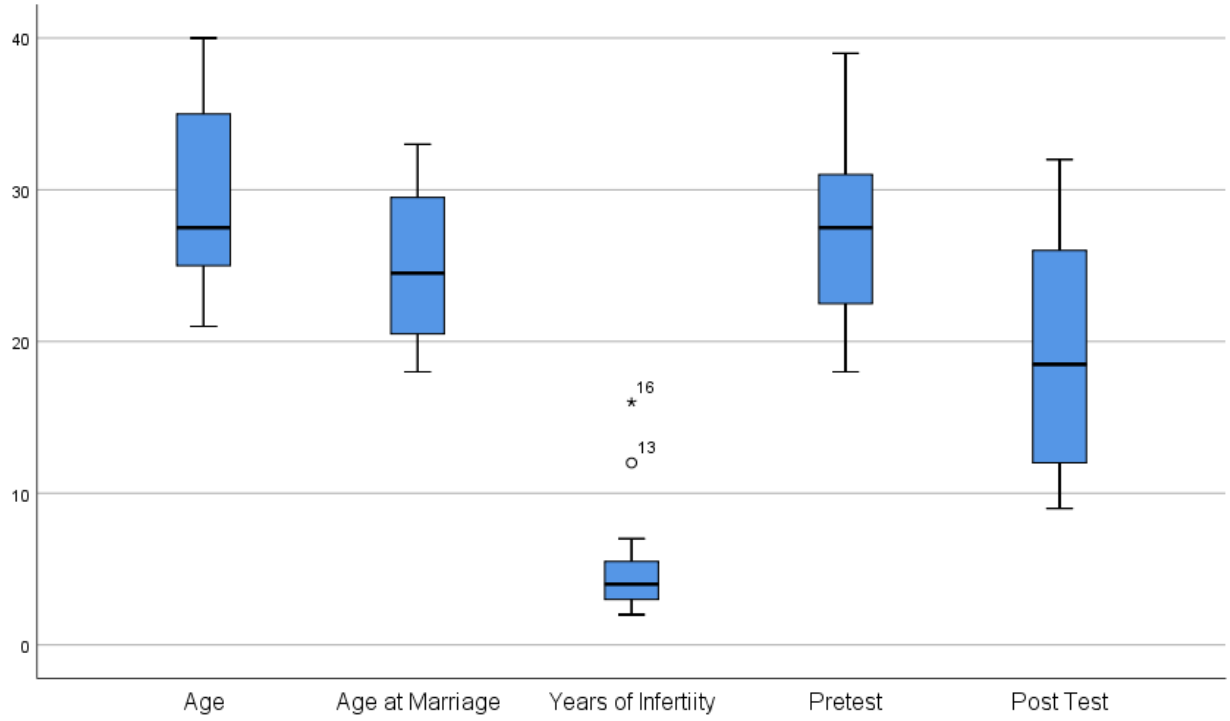
Table 1: Descriptive Analysis

	Age	Age at Marriage	Years of Infertility	Pretest	Post Test
Mean	29.70	24.75	4.85	27.60	19.15
Median	27.50	24.50	4.00	27.50	18.50
Std. Deviation	5.68	4.80	3.48	6.21	7.20
Skewness	.281	.365	2.289	.320	.349
Std. Error of Skewness	.512	.512	.512	.512	.512

N=20

The total sample size was 20 females with mean age 29.70, age at marriage mean 24.75 and mean reduction difference in pre and post-test. The mean and median for years of infertility indicate a slight right skew, as the mean 4.85 is higher than the median 4.00. Pretest and post-test scores show larger variability, particularly for post-test scores 7.20. Most variables have low skewness (close to 0), indicating nearly symmetric distributions. Years of infertility, however, has a highly positive skewness of 2.289, suggesting most participants have fewer years of infertility, with a few reporting significantly higher. The mean post-test score is significantly lower than the pretest score, potentially indicating an improvement which indicates reduced scores in a stress or depression scale after an intervention.

Box Plot Graph



The graph shows the distribution of data that there is a statistical significant difference between pre and post-test. Outliers present only in years of Infertility suggesting that while most participants have a similar experience, a few cases stand out. In Pretest vs. Post-Test the clear drop in the median and the spread of post-test scores indicate a noticeable change, possibly due to an intervention. The distributions appear relatively symmetric or mildly skewed except for Years of Infertility.

Table 2: Paired Samples Correlations

Pair 1	N	Correlation	Sig.
Pretest & Post Test	20	.840	.000

p < .001, r = .840

The paired sample correlation indicates that the results are significant. There is a strong and statistically significant positive correlation between the Pretest and Post-Test scores (r = .840, p = .000), suggesting that participants' scores on the pretest are closely related to their scores on the post-test.

Table 3: Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest - Post Test	8.45	3.91	.87	6.62	10.28	9.65	19	.000

N=20, p < .001

In this paired sample t-test the t-value 9.65 is greater than 1.96 and p-vale .000 is less than 0.05 which is highly significant. The paired samples t-test results show a significant reduction in scores from the Pretest to the Post-Test (mean difference = 8.45, p < 0.001). This suggests that the intervention had a meaningful and statistically significant effect on reducing the outcome being measured. Hypothesis 1 is accepted which indicates that there is a significant reduction in depression of infertile women by using cognitive restructuring technique.

Discussion

Infertility is a pervasive issue that transcends medical challenges, deeply affecting the psychological health of individuals, particularly women. This study underscores the efficacy of cognitive restructuring in reducing depression among infertile women, contributing to a growing body of evidence supporting CBT as a therapeutic intervention. The paired samples t-test indicated a significant mean difference, implying that the intervention resulted in a substantial change. This shows that the intervention, which was presumably designed to reduce a certain outcome, was successful in causing considerable improvements in participants. The significant t-value and tight confidence interval provide additional support for this result, indicating a substantial effect that is unlikely to be attributed to random chance. These findings are consistent with earlier research indicating that structured therapies can result in significant decreases in psychological symptoms (Cohen, 1988; Lazarus and Folkman, 1984). The standard error of the mean difference indicates that the sample mean difference was estimated with a high level of precision. Furthermore, the 95% confidence interval indicates that the true mean difference in the population strengthening the reliability of the findings. The findings are consistent with those of Golshani et al. (2020), who

reported significant decreases in anxiety and depression following CBT sessions. Similarly, Mosalanejad et al. (2012) found significant increases in mental health measures among women having assisted reproductive therapy, highlighting CBT's usefulness in this setting. The intervention's capacity to address negative cognitive processes is critical, as infertility frequently results in self-blame, depression, and stigma. As Martin et al. (2022) stated, CBT not only reshapes maladaptive thought processes, but it also provides individuals with efficient coping methods for future difficulties. Furthermore, the findings are similar with Talaei et al. (2014), who highlighted CBT's long-term benefits for infertile women. The paired sample correlation analysis revealed a significant positive association between pretest and post-test scores. A strong correlation coefficient indicates that the intervention may be consistently affecting participants' results, independent of their starting points. Similar findings have been seen in research looking at the effectiveness of therapies, where a substantial correlation between baseline and follow-up measures shows consistent benefits among participants (Mohr et al., 2009). The correlation is strong, it does not always suggest causation. The observed link may represent the intervention's overall improvement, but future study should look into additional aspects (such as resilience and social support) that could mediate or attenuate this effect (Hayes, 2013). The findings are consistent with research that stress the value of interventions that result in observable, statistically significant changes across repeated measures (Baker & Harris, 2016). Despite these hopeful findings, issues such as the study's limited sample size and lack of diverse participant demographics should be addressed. Future studies should look at bigger, more representative samples and the long-term consequences of cognitive restructuring to further support its efficacy. Finally, the data demonstrate cognitive restructuring's transformative potential for treating infertility-related depression. Mental health experts are advised to use this strategy within therapeutic frameworks to promote infertile women's overall well-being.

Conclusion

The findings shed light on the potential benefits of this strategy in relieving depression symptoms in this specific demographic. Additional research is required to expand the evidence foundation and improve the support accessible to those with infertility and depression. The research proposal will be useful for gaining valuable insight into the effect of factors.

Limitations and Future Directions:

Despite the existing research, limitations such as small sample sizes, a lack of long-term follow-up, and participant demographic diversity should be taken into account. Future research should address these limitations by carrying out larger-scale trials with diverse populations and exploring the long-term impact of Cognitive Restructuring Technique on depression in infertile women.

Clinical Implications:

The findings highlight the potential of Cognitive Restructuring Technique as an effective intervention for lowering the rate of depression among infertile women. Mental health professionals working with this population should consider Cognitive Restructuring Technique into their therapeutic approaches and treatment plans to address negative thought patterns and promote psychological well-being.

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