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RESEARCH PAPER

Effectiveness of Culturally Adapted Cognitive Behavioral Therapy in Reducing Depression among Infertile Women

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ABSTRACT

The study aimed to evaluate the effectiveness of Culturally Adapted Cognitive Behavioral Therapy (CaCBT) in reducing depression among infertile women in South Punjab, Pakistan. Infertility is linked to significant psychological distress, particularly depression, highlighting the need for culturally sensitive interventions. CaCBT, based on the "Khushi and Khatoon" manual, aligns with the cultural context of Pakistani women, offering a relevant therapeutic approach. Initially study was conducted with 284 infertile women from Bahawalpur, Multan, and Rahim Yar Khan. Then sixty-eight participants were randomly assigned to either the experimental group, which received CaCBT weekly session of 60-80 minutes, or the control group, which received no intervention. Depression levels were measured at baseline, immediately after the intervention, and during follow-up. Results showed a significant reduction in depression among the experimental group, suggesting long-term benefits of CaCBT. The study underscores the need for culturally adapted interventions in health care settings of Pakistan.

Keywords: CaCBT, Depression, Infertility, Randomized Control Trial

Introduction

Infertility remains a major public health issue in Pakistan, affecting a substantial portion of the population and deeply intertwined with cultural, social, and psychological dimensions (Ali et al., 2023). In a society where patriarchal and pronatalist values dominate, childbearing is highly valued, and women who cannot conceive often face severe social, emotional, and physical consequences. This childlessness is frequently perceived as a personal failure, leading to significant societal pressure, stigma, and blame directed at women, regardless of the medical cause of infertility (Mumtaz et al., 2013). Recent studies estimate the prevalence of infertility in Pakistan to be between 22% and 25%, with considerable regional variations, indicating a widespread yet under-addressed health concern (Ali et al.,2023). The psychological impact of infertility on women in Pakistan is profound, often resulting in heightened levels of depression, anxiety, and stress. The societal emphasis on motherhood as a core aspect of a woman's identity and worth further exacerbates psychological distress, contributing to strained marital relationships and diminished quality of life (Khan et al., 2019). The interplay between infertility and psychological distress in Pakistan reflects broader issues related to gender roles and societal expectations, where women bear the emotional and social burden of infertility. Addressing this complex relationship requires a holistic approach, including medical interventions, psychological support, and efforts to reduce societal stigma, in order to improve the overall well-being of those affected by infertility. Infertility refers to the inability to achieve pregnancy after a year of regular, unprotected intercourse it affects both men and women (Kushwaha et al., 2018). Infertility can be further classified mainly into three types that are named as primary infertility that is related to inability to conceive after one year of regular unprotected intercourse without any prior pregnancy whereas secondary infertility refers to inability to conceive again after successfully conceiving at least once in the past (Latif et

al., 2021). The third type of infertility is called idiopathic infertility which refers to the infertility where no specific cause can be identified despite indepth medical evaluation. There are various factors that contribute to cause infertility among women like age, ovarian disorders, uterine abnormality, and fallopian tube abnormality, psychological and environmental factors (Hazlina et al. 2022).

Individuals undergoing infertility treatment often experience significant psychological distress, highlighting the critical need for mental health interventions. Research shows a complex relationship between infertility and psychological distress. Infertile couples are found to experience higher stress levels and are at greater risk of developing psychological disorders compared to those without fertility issues. Conversely, heightened psychological distress can further exacerbate infertility (Sharma & Shrivastava, 2022). Although not life-threatening, infertility is recognized as a highly stressful life event, largely due to the societal importance placed on having children (Dastjerdi et al., 2022). Infertile couples frequently conceal their emotions, thoughts, and beliefs, as infertility remains a private and often stigmatized topic. This concealment may expose them to additional social pressures, further straining their mental health. Relationships with partners, family, and friends may also suffer, with well-meaning but unsolicited advice often contributing to emotional distress. Consequently, many infertile couples withdraw from social interactions, particularly avoiding friends who have children or are pregnant (Boivin et al., 2018). Infertility can also severely impact an individual's self-esteem. For example, a study among rural Jordanian women highlighted the profound negative effects of infertility on self-perception and emotional well-being (Dogar et al., 2008). Mental health issues related to infertility, much like other conditions, can be managed or mitigated with timely diagnosis and intervention, reducing their long-term impact (Pour, 2014). The growing recognition of these psychological challenges underscores the importance of incorporating mental health support into infertility treatment, aiming to improve overall well-being and treatment outcomes for affected individuals.

Depression represents a major global health concern and is projected to become the second leading cause of disability, following cardiovascular diseases (Gdanska et al., 2017). It is characterized by symptoms such as persistent low mood, diminished interest in activities, a decrease in overall pleasure and suicidal ideation. Infertility has been strongly associated with increased levels of depression and anxiety, with research indicating that up to 40% of infertile women experience these conditions (Bagade et al., 2022). Moreover, approximately 31% of infertile couples are affected by psychiatric disorders, with depression being the most common (Hegyi, 2020).

The emotional impact of infertility is further highlighted by elevated depression rates among women undergoing assisted reproductive technologies (ART) (Sadeghi et al., 2015), and significant symptoms of both depression and anxiety in individuals seeking reproductive assistance (Holley et al., 2015). Infertile women, particularly those who encounter repeated treatment failures, are also at an increased risk of suicidal ideation, reflecting the severe psychological distress associated with infertility (Shani et al., 2016). Despite the high levels of psychological distress, depressed women are often less likely to initiate or persist with infertility treatments, underscoring the need for integrated mental health support within fertility care settings (Maroufizadeh et al., 2015).

Literature Review

Infertility is a significant reproductive health issue in Pakistan, affecting a substantial proportion of couples. Ullah et al. (2021) highlighted that primary infertility impacts about one-fifth of married couples in Pakistan, illustrating the widespread nature of this problem. Supporting this, Ahmed et al. (2020) reported that infertility accounts for approximately 22% of all infertility cases in the country. On a global scale, Nevoral et al. (2021) estimated that infertility affects around 48.5 million couples, further emphasizing its

pervasive impact.To understand the prevalence and types of infertility among Pakistani women, Jabeen et al. (2022) revealed that primary infertility is more prevalent than secondary infertility in Pakistan, with 56.25% (about 3,600 couples) experiencing primary infertility, while 43.75% (around 2,800 couples) suffer from secondary infertility. Additionally, the psychological impact of infertility differs between types; primary infertility is often associated with greater emotional distress, particularly in women. This heightened psychological burden may stem from societal pressures and personal expectations related to first-time conception, highlighting the need for targeted mental health interventions. Overall, these findings underscore the importance of addressing both the medical and psychological aspects of infertility to provide comprehensive support for affected couples.In Eastern and Muslim nations, motherhood is a deeply fulfilling and essential part of a woman's life; in contrast, the inability to conceive can lead to significant personal distress and marital issues, sometimes even resulting in divorce or a second marriage, particularly in Islamic societies where polygamy is permissible (Khan et al., 2019). Infertility is not just a medical issue but a global concern with profound psychosocial implications, particularly in traditional societies like Pakistan, where social and cultural pressures emphasize childbearing. Women facing infertility often experience elevated levels of depression, dysphoria, and a lack of motivation, alongside lower life satisfaction and poor marital adjustment (Sajjad et al., 2020; Bai et al., 2019). Research highlights that infertility is frequently associated with stress, emotional turmoil, low self-esteem, criticism, and marital dissatisfaction, making it a multifaceted issue deeply intertwined with societal expectations (Hassain et al., 2020). In Pakistani society, the issue of infertility extends far beyond medical causes, encompassing cultural, emotional, and gender-specific dimensions.

Muhammad and Begum (2018) emphasize that infertility often leads to significant social challenges, especially for women, who face stigma, discrimination, and isolation. Such societal pressures are further compounded by cultural beliefs that a woman's worth is often tied to her ability to bear children, leading to feelings of shame, guilt, and emotional distress. Recent studies, such as Ali et al. (2023), have highlighted that infertile women, particularly in Faisalabad, experience emotional distress due to familial misunderstandings, though the presence of family support can mitigate some of these challenges. (Nawaz et al., 2016). Furthermore, qualitative research by Husain and Imran (2021) explores how infertility is perceived in collectivist cultures like Pakistan, where group values often overshadow individual needs. The study reveals that infertility is frequently seen as a source of shame not just for the couple but also for their extended families, highlighting the broader cultural implications. This emotional burden is exacerbated by societal expectations, leading to heightened levels of anxiety and depression among infertile women (Farooq et al., 2018). Furthermore Hassan et al. (2021) reported that stressors such as fears of husband's remarriage, societal criticism, and in-law conflicts are prevalent, illustrating how deeply cultural norms influence the psychosocial experiences of these women. In many cases, societal stigma around infertility is perceived as a form of social violence against women. Awan (2022) identified various socio-psychological determinants of infertility and noted that infertile women often perceive themselves as stigmatized, which can deteriorate marital life, increase family tensions, and raise fears of abandonment in old age due to childlessness. Research conducted in Quetta adds another layer by examining perceptions of infertility's causes, revealing that many women attribute their condition to divine displeasure, family curses, or spiritual influences, alongside clinical factors such as menstrual disorders and sexual issues (Riaz&Panezai, 2022). Collectively, these studies underscore that infertility in Pakistan is not just a medical condition but a deeply rooted social issue shaped by cultural norms, emotional distress, and gender-specific challenges. Addressing the psychosocial needs of infertile women requires a comprehensive approach that considers the cultural context, provides targeted mental health support, and challenges societal stigma, paving the way for improved psychological well-being and social acceptance. Research indicates that various psychotherapies are effective in alleviating psychological distress among infertile women. Hamzedgardeshi et al. (2019) found that

interventions such as group consultations, cognitive behavioral therapy (CBT), and group psychotherapy help modify maladaptive thought patterns in infertile couples. Soltani et al. (2014) reported that Emotionally Focused Therapy (EFT) notably reduces depression, anxiety, and stress in Iranian couples experiencing infertility. Similarly, Najafi et al. (2015) found that Emotionally Focused Therapy for Couples (EFT-C) enhances marital satisfaction and quality of life among infertile couples. Counseling has also been shown to improve emotional well-being, particularly by reducing depression and bolstering social support, although its impact on anxiety is less pronounced (Sorkhani et al., 2022).

Mohammadi et al. (2018) further highlighted the efficacy of positive psychotherapy in decreasing psychological distress and enhancing self-compassion in infertile women. There is several researches on psychological interventions for infertile women has consistently demonstrated the effectiveness of various therapies in reducing psychological distress and improving the chances of pregnancy. Cognitive Behavioral Therapy (CBT) is one of the most widely used interventions, proving as effective as pharmacotherapy in treating depression and anxiety (Faramarzi et al., 2008; Frederiksen et al., 2015). Studies, such as those by Boivin (2003) and Nakano et al. (2013), have shown that CBT significantly reduces depression and anxiety in infertile women, with some participants even achieving pregnancy post-intervention. Meta-analyses and recent studies further support CBT's effectiveness in improving psychological well-being, reducing infertility-related stress, and enhancing quality of life (Wang et al., 2023). In Egypt, Mahmoud and Ali (2022) found that CBT significantly reduced stress and anxiety in pregnant women who had experienced miscarriages. In Pakistan, Qamar et al. (2021) demonstrated that CBT effectively reduced depressive symptoms in women with major depressive disorder. However, there remains a research gap in Pakistan regarding CBT's impact on infertile women, as most studies originate from other countries. However, there remains a research gap in Pakistan regarding CBT's impact on infertile women, as most studies originate from other countries.

Material and Method

Nature of the Study

The present research was based on Randomized Control trial (Experimental interventional research using between-subject designs) with pre-post assessment.

Population

Infertile women with age range 20 to 40 years who exhibited moderate levels of depression were the subject of this study.

Sample Size

The sample size of this study comprised 68 infertile women.

Sampling Techniue

Participants were recruited for the intervention phase through Random sampling technique.

Instruments

To screen out the depression among infertile women UDASS-42 item was used. This scale was developed by (Lovibond., &Lovibond., 1995). In this study Urdu translated version of DASS- 42 items was used. DASS-42 is comprised on 42 self reported items that are used to assess psychological distress. It is most widely used in clinical setting to screen out depression, anxiety and stress (Vajpeyee et al., 2022). The internal consistency reliability

coefficients for the overall scale and its subscales for depression, anxiety and stress were .91, .86, .74 and .86 respectively. The analysis for construct validity of U-DASS-42 revealed significant positive correlation between U-DASS-42 and its subscales i.e. depression ($r = .91$, $p < .001$) anxiety ($r = .97$, $p < .005$), and stress ($r = .92$, $p < .001$) 1). In present study researcher only used the items of depression and anxiety.

Intervention: Description of CaCBT Manual Khushi and Khatoon

Participants in the experimental group received Culturally Adapted Cognitive Behavioral Therapy (CaCBT) through the self-help manual titled "Khushi and Khatoon." Each participant attended weekly therapy sessions lasting 60-80 minutes. The manual comprises eight modules, each corresponding to a therapy session that covers distinct topics and includes various exercises and homework assignments. The modules focus on areas such as psycho education, management of behavioral and emotional symptoms, problem-solving skills, understanding the connection between thoughts, emotions, and behaviors, changing maladaptive thought patterns, rational thinking, relationship enhancement, and assertiveness skills. The therapeutic approach includes specific exercises like breathing techniques, attention diversion, positive imagery, cost-benefit analysis, cognitive disputing, and prioritizing and scheduling activities, aiming to equip participants with practical skills for managing their psychological distress.

Pilot Testing

Pilot testing was carried out on a small number of participants to assess the reliability of Depression Anxiety and Stress Scale. The Chronbach's Alpha value 0.974 indicated excellent internal consistency across its 28 items.

Data Analysis Technique

Pearson Coorelation Analysis was used to examine the relationship between variables, Paired Sample T Test was used to compare the mean depression scores of the experimental group before and after the intervention and to compare the pre and post depression scores within the control group. Similarly Repeated Measures ANOVA was used to analyze the within subject and between subject variation in depression levels whereas Post Hoc Analysis was used to compare depression levels across different trials.

Ethical Consideration

The study followed ethical guidelines and received approval from the institutional review board. Informed concent was obtained from all participants, ensuring their confidentiality and anonymity.

Procedure

This study was conducted as a randomized controlled trial and was registered with the Iranian Clinical Trial Registry (IRCT), accessible via irct.ir. The initial sample consisted of 284 infertile women from three major cities in South Punjab: Bahawalpur, Multan, and Rahim Yar Khan. From this pool, 68 participants were selected for Randomized Control Trial. By using random sampling techniques these selected participants were then randomly assigned to either the experimental group or the control group using the online randomization tool "random.org." The experimental group received Culturally Adapted Cognitive Behavioral Therapy (CaCBT) based on the "Khushi and Khatoon" manual. The intervention comprised eight session with one session weekly, each lasting between 60 and 80 minutes. During these sessions, participants in the experimental group were received session through structured therapy protocols specifically designed to address depression among infertile women in a culturally sensitive manner. In contrast, the control group did

not receive any intervention and acted as a passive comparison group. Data was collected at baseline and post-intervention to evaluate the effectiveness of the therapy. The study adhered to ethical standards, with all participants providing informed consent before participation.

Results and Discussion

Table 1
Reliability of the Measures

Scale specification	A	Items
Depression Anxiety and Stress	0.974	28

Note. The table showed high reliability of the DASS with a Cronbach's Alpha of 0.974.

Table 2
Correlation Matrix of Depression with Age Years of Marriage and Treatment Duration

	Clinical variables	1	2	3	4	5	6	7
1.	Age	1						
2.	Marriage years	0.712**	1					
3.	Treatment duration	0.582**	0.782**	1				
4.	Depression	0.017	0.221**	0.257**	0.536**	1		

**p < 0.01

Note. The above table showed significant correlations between depression and age, years of marriage and treatrment duration.

Table 3
Pre-Test and Post-Test Comparison among Experimental Group

Clinical Variables	Paired samples T-Test		*MD*	*T*	*p*
	Pre-Test	Post-Test			
Depression	11.38 (6.16)	7.76 (5.72)	3.62	5.42	0.000

Note. The above table showed a significant reduction in depression scores in the experimental group from pre test to post test.

Table 4
Pre-Test and Post-Test Comparison among Control Group

Clinical Variables	Paired samples T-Test		*MD*	*T*	*p*
	Pre-Test	Post-Test			
Depression	11.35 (6.37)	11.65 (6.47)	-0.294	-2.052	0.048

Note. The above table showed a non significant change in depression scores in the control group from pre test to post test.

Table 5
Repeated Measure Analysis Of Variance for Depression Level among Respondents

Source of variation	Sum of squares	Mean square	*F (1,283)*	*p*
Within subject	264.258	264.258	35.119	0.000
	55.935	55.935	13.103	0.001
Between subject	7971.194	7971.194	86.274	0.000

Note. The above table indicated significant variation in depression levels within subjects and between subjects.

Table 6
Pair Wise Multiple Comparison for Overall Depression Level among Respondents

Group	Trials	M (SD)	Trial Comparison	*MD*	η^2

Experimental Group	Pre-Test	11.38 (6.16)	Pre-Post	3.62*	0.540
	Post-Test	7.76 (5.72)	Post-Follow up	0.02 NS	
	Follow up	7.74 (5.59)	Pre-Follow up	3.64*	
Control Group	Pre-Test	11.35 (6.37)	Pre-Post	0.3 NS	0.113
	Post-Test	11.65(6.47)	Post-Follow up	0.0 NS	
	Follow up	11.65 (6.47)	Pre-Follow up	0.3 NS	

*. P<0.05, NS = Not Significant

Note. The results shows significant mean difference in pre-post and pre-follow up values among experimental group whereas among control group all the comparisons are not significant.

Discussion

This study demonstrated the effectiveness of culturally adapted cognitive behavioral therapy (CaCBT) in reducing depression among infertile women in Pakistan. The significant reduction in depression scores within the experimental group, as compared to the control group, highlights the impact of culturally adapted cognitive behavior therapy on alleviating psychological distress.

Furthermore the sustained reduction in depression observed during follow-up assessments suggests that CaCBT provides long-term benefits, reinforcing its potential as an effective therapeutic approach for infertile women. This study contributes to the growing body of evidence supporting culturally adapted cognitive behavioral therapy and highlights the importance of introducing psychological intervention to decrease psychological distress among infertile women.

Similarly the correlation matrix reveals that depression levels were not significantly correlated with age, suggesting that age does not play a major role in depression levels among participants. However, the years of marriage showed a moderate positive correlation with depression, indicating that a longer marital duration is associated with higher depressive symptoms. Similarly, treatment duration also had a moderate positive correlation with depression, reflecting that extended infertility treatment is related to increased depressive symptoms.

These findings of present study are aligned with an international study by Bagheri et al. (2023), who demonstrated that cognitive behavioral counseling effectively reduced post-abortion grief, highlighting its potential in managing grief and psychological symptoms in reproductive health contexts. Similarly, Hung et al. (2022) found that a mental health website intervention led to significant reductions in perceived stress and depression among women with recurrent miscarriage, further emphasizing the role of targeted interventions in alleviating psychological distress.

Conclusion

This study confirms that culturally adapted cognitive behavioral therapy (CaCBT) is effective in reducing depression among infertile women. The significant decrease in depression scores and the sustained improvement during follow-up highlight CaCBT long-term benefits. The findings suggest that integrating culturally adapted psychological interventions, like CaCBT, into fertility treatment programs can significantly improve mental health outcomes for infertile women. Health care providers should consider implementing such tailored therapies to address psychological distress and enhance overall well-being. Additionally, future research should explore further adaptations of psychological interventions to meet the specific needs of diverse populations and investigate the long-term benefits of such approaches.

Recommendations

For policymakers, it is crucial to take initiatives that raise awareness about psychological interventions for infertility-related distress and to enhance access to CaCBT and similar mental health services, particularly in underserved areas. Additionally, supporting research initiatives that explore the effectiveness of culturally adapted therapies across various regions of Pakistan and investigating the impact of socio-economic factors on mental health outcomes would be beneficial.

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