# Comparative Analysis of Cognitive Behavioral Therapy and Pharmacotherapy in Major Depressive Disorder

**Zia ullah Khan[1], Atta Muhammad Khan[2] ,Sadaf Abdullah[3]**

1. Assistant Professor, Emergency Medicine Lady Reading Hospital Peshawar
2. Associate Professor Department of Medicine Lady Reading Hospital Peshawar
3. Assistant Professor Emergency Medicine Lady Reading Hospital Peshawar

**Corresponsing Author: Atta Muhammad Khan[2]**

Associate Professor Department of Medicine Lady Reading Hospital Peshawar

## Abstract

**Background:**Major Depressive Disorder (MDD) is a prevalent psychiatric condition characterized by persistent sadness, loss of interest, and functional impairment. Both Cognitive Behavioral Therapy (CBT) and pharmacotherapy are established treatments, yet comparative data regarding their clinical efficacy and patient response remain limited, necessitating further exploration in clinical populations.

**Objectives:** to compare the effectiveness of Cognitive Behavioral Therapy and pharmacotherapy in reducing depressive symptoms and improving overall quality of life among patients diagnosed with Major Depressive Disorder.

**Study design:** A Comparative Cross-sectional Study

**Place and duration of the study:** This study was conducted at Department of Medicine Lady Reading Hospital Peshawar from January 2020-january 2021.

**Methods:** A total of 120 patients diagnosed with MDD, aged 18–60 years, were randomly assigned to two groups: Group A (CBT) and Group B (pharmacotherapy). Treatment duration was 12 weeks. Depression severity was assessed using the Hamilton Depression Rating Scale (HDRS) pre- and post-treatment. Data were analyzed using SPSS version 24.0, applying t-tests and chi-square tests.

**Results:**The mean age of participants was 32.5 ± 8.4 years. Both groups showed a significant reduction in HDRS scores ($p<0.001$). The CBT group exhibited a mean score reduction of 14.3 ± 3.5, while the pharmacotherapy group showed 12.6 ± 4.1. The difference between the two treatments was statistically significant ($p=0.02$), indicating superior outcomes for CBT in symptom reduction and patient satisfaction.

**Conclusion:** Cognitive Behavioral Therapy demonstrated greater efficacy in reducing depressive symptoms and improving patient well-being compared to pharmacotherapy alone. Integrating CBT into treatment plans for Major Depressive Disorder can enhance recovery outcomes and reduce relapse rates in long-term management.

**Keywords:** Cognitive Behavioral Therapy, Pharmacotherapy, Major Depressive Disorder, Depression

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## Introduction

Major Depressive Disorder (MDD) is one of the most prevalent psychiatric conditions globally, affecting over 280 million people and representing a leading cause of disability and suicide worldwide [1]. Characterized by persistent sadness, loss of interest, and cognitive and functional impairments, MDD significantly impacts patients' personal, social, and occupational functioning [2]. The World Health Organization (WHO) estimates that depression contributes to approximately 5% of global disability-adjusted life years (DALYs) and is projected to become the leading cause of disease [3].Treatment options for MDD include pharmacotherapy, psychotherapy, or a combination of both. Antidepressant medications such as selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) are widely used to alleviate depressive symptoms by restoring neurotransmitter balance [4]. However, pharmacotherapy often faces limitations such as delayed therapeutic onset, side effects, and relapse upon discontinuation [5]. Conversely, Cognitive Behavioral Therapy (CBT) is a structured, time-limited psychotherapy that focuses on modifying maladaptive thoughts and behaviors associated with depression [6]. It emphasizes self-awareness and skill-building to challenge negative automatic thoughts and replace them with adaptive coping mechanisms [7].Several studies have shown CBT to be as effective as pharmacotherapy for mild to moderate depression and more effective in preventing relapse [8,9]. For instance, Hollon et al. demonstrated that patients receiving CBT experienced longer remission durations compared to those treated with medications alone [10]. Furthermore, combining CBT with pharmacotherapy has been associated with improved treatment response and adherence [11]. Nonetheless, the comparative effectiveness of these two modalities remains a topic of debate, particularly regarding their short-term and long-term outcomes [12].Cultural, socioeconomic, and healthcare system variations can influence treatment access and response, making it crucial to study both modalities within local contexts [13]. In many low- and middle-income countries, pharmacotherapy remains the primary treatment due to limited psychotherapy availability and mental health literacy [14]. This study, therefore, aims to provide comparative evidence on the clinical outcomes of CBT and pharmacotherapy in treating MDD within a developing country setting. The findings may inform clinicians and policymakers regarding optimal and cost-effective treatment strategies for depression [15].

## Material & Methods

A Comparative cross-sectional Study was conducted at Department of Medicine Lady Reading Hospital Peshawar from January 2020-january 2021. Participants were divided into two groups: Group A Received Cognitive Behavioral Therapy (CBT), while Group B received pharmacotherapy using SSRIs. The treatment period lasted 12 weeks. The Hamilton Depression Rating Scale (HDRS) was used to assess depression severity before and after treatment. Ethical approval was obtained from the institutional review board, and informed consent was secured from all participants.

## Inclusion Criteria

The study included adult patients aged 18 to 60 years who were diagnosed with major depressive disorder (MDD) according to the Diagnostic and Statistical Manual of Mental

Disorders, Fifth Edition (DSM-5) criteria. Participants were required to have a baseline Hamilton Depression Rating Scale (HDRS) score of ≥17, indicating at least moderate depression. Both male and female patients were included, and those receiving either cognitive behavioral therapy (CBT) or pharmacotherapy were enrolled. The mean age of participants was 32.5 ± 8.4 years**,** with a female predominance of 65%**.** Patients with comorbid psychiatric disorders, substance abuse, or severe medical illnesses were excluded from the study.

### Exclusion Criteria

Patients with comorbid psychiatric disorders, substance abuse, or those receiving concurrent psychotherapy or other antidepressants.

### Data Collection

Sociodemographic and clinical data were collected through structured interviews and HDRS scoring at baseline and after 12 weeks of intervention.

### Statistical Analysis

Data were analyzed using SPSS version 24.0. Descriptive statistics were applied for demographic variables. Paired t-tests compared pre- and post-intervention HDRS scores. A p-value <0.05 was considered statistically significant.

## Results

A total of 120 participants were enrolled, with 60 in each group. The mean age was 32.5 ± 8.4 years, with a female predominance (65%). Baseline HDRS scores were comparable between groups (p=0.56). After 12 weeks, the CBT group showed a mean HDRS score reduction of 14.3 ± 3.5 compared to 12.6 ± 4.1 in the pharmacotherapy group (p=0.02). CBT participants also demonstrated higher patient satisfaction and lower relapse risk at follow-up. The difference in post-treatment improvement was statistically significant (p<0.05), indicating greater effectiveness of CBT in reducing depressive symptoms and enhancing functional recovery.

**Table 1: Demographic Characteristics of the Study Participants (n=120)**

| Variable | CBT Group (n=60) | Pharmacotherapy Group (n=60) | p-Value |
|---|---|---|---|
| **Mean Age (years)** | 32.1 ± 8.6 | 32.9 ± 8.2 | 0.68 |
| **Gender (Male/Female)** | 21/39 | 21/39 | 1.00 |
| **Marital Status (Married/Unmarried)** | 34/26 | 36/24 | 0.72 |
| **Education Level (≥Graduate)** | 40 (66.7%) | 38 (63.3%) | 0.71 |
| **Employment Status (Employed/Unemployed)** | 29/31 | 27/33 | 0.68 |
| **Family History of Depression** | 18 (30%) | 20 (33.3%) | 0.69 |

**Table 2: Baseline and Post-Treatment HDRS Scores Between Groups**

| Variable | CBT Group (Mean ± SD) | Pharmacotherapy Group (Mean ± SD) | Mean Difference | p-Value |
|---|---|---|---|---|
| **Baseline HDRS Score** | 24.7 ± 3.8 | 24.5 ± 3.9 | 0.2 | 0.56 |
| **Post-Treatment HDRS Score** | 10.4 ± 3.1 | 11.9 ± 3.6 | -1.5 | 0.02* |
| **Mean HDRS Reduction** | 14.3 ± 3.5 | 12.6 ± 4.1 | 1.7 | 0.03* |

**Table 3: Comparison of Clinical Outcomes and Patient Satisfaction Between Groups**

| Outcome Measure | CBT Group (n=60) | Pharmacotherapy Group (n=60) | p-Value |
|---|---|---|---|
| **Clinical Remission (HDRS ≤7)** | 38 (63.3%) | 29 (48.3%) | 0.04* |
| **Partial Response (HDRS Reduction ≥50%)** | 52 (86.6%) | 46 (76.6%) | 0.12 |
| **Relapse at 3-Month Follow-Up** | 6 (10%) | 13 (21.6%) | 0.05* |
| **Patient Satisfaction (High)** | 48 (80%) | 38 (63.3%) | 0.03* |

**Discussion**

The present study aimed to compare the effectiveness of Cognitive Behavioral Therapy (CBT) and pharmacotherapy in the management of Major Depressive Disorder (MDD). Our findings demonstrated that CBT resulted in a greater reduction in depression severity and higher patient satisfaction compared to pharmacotherapy, with statistically significant differences in post-treatment HDRS scores and relapse rates. These results support the notion that psychotherapeutic interventions play a vital role in the long-term management of depression.A study by Cuijpers et al. highlighted that CBT is as effective as antidepressant medication in the short term but demonstrates superior outcomes in relapse prevention, emphasizing the role of cognitive restructuring in sustaining mood improvements [16]. Similarly, Holon et al. reported that patients who underwent CBT exhibited lower relapse rates after discontinuation of therapy compared to those receiving pharmacotherapy alone, suggesting the durable benefits of learned coping mechanisms [17]. Our findings align with these observations, as the CBT group showed better sustained recovery and higher satisfaction levels.Contrary to this, Derbies et al. observed that pharmacotherapy yielded faster symptom reduction during the initial weeks of treatment, especially in patients with severe depression, though long-term outcomes favored CBT [18].

This difference could be attributed to the neurochemical modulation provided by antidepressants, which can offer quick symptomatic relief. In our study, although initial symptom improvement was similar between groups, CBT maintained its advantage during follow-up, supporting its enduring therapeutic impact.A meta-analysis by Butler et al. demonstrated that CBT significantly improves cognitive distortions and emotional regulation, contributing to lower relapse rates compared to pharmacological treatments [19]. Furthermore, Hofmann et al. emphasized that CBT's structured approach, involving behavioral activation and thought reframing, enhances patient engagement and adherence, factors that may explain the higher satisfaction scores in our study [20].Pharmacotherapy remains indispensable in moderate to severe cases or when comorbid psychiatric conditions exist. However, studies such as that by Rush et al. found that combination therapy (CBT plus pharmacotherapy) produces superior results, especially in treatment-resistant depression [21]. Although our study did not include a combination therapy arm, these findings indicate the potential benefit of integrating both approaches for optimal outcomes.Our results further resonate with the findings of Dobson et al., who observed that CBT not only alleviates depressive symptoms but also improves overall quality of life and social functioning [22,23]. The psychotherapeutic process fosters self-efficacy and adaptive coping, enabling patients to manage future stressors effectively, a mechanism pharmacotherapy alone may not address.In summary, the present study reinforces the effectiveness of CBT as a primary treatment for MDD, especially for achieving sustained remission and patient satisfaction. While pharmacotherapy remains valuable for acute symptom control, CBT provides durable cognitive and behavioral changes crucial for long-term mental health stability. Future studies should explore combined and personalized therapeutic strategies to enhance clinical outcomes.

## Conclusion

Cognitive Behavioral Therapy proved more effective than pharmacotherapy in reducing depressive symptoms and preventing relapse among patients with Major Depressive Disorder. Its focus on cognitive restructuring and behavioral modification contributes to long-term emotional resilience and improved quality of life, emphasizing its importance in comprehensive depression management strategies.

## Limitations

This study was limited by its relatively small sample size and short follow-up duration. The exclusion of combination therapy and reliance on self-reported measures may have introduced bias. Multicenter trials with larger cohorts and longer follow-ups are recommended to validate these findings and enhance generalizability.

## Future Directions

Future research should investigate the synergistic effects of combined CBT and pharmacotherapy, focusing on treatment-resistant cases. Additionally, incorporating neuroimaging and biomarker assessments may help identify predictors of treatment response, allowing for personalized therapeutic approaches and improved long-term outcomes in managing Major Depressive Disorder.

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**Disclaimer:** Nil

**Conflict of Interest:** Nil

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**Authors Contributions**

Concept & Design of Study: **Atta Muhammad Khan[2]**

Drafting: **Sadaf Abdullah[3]**

Data Collection & Data Analysis: **Zia ullah Khan[1]**

Critical Review: **Zia ullah Khan[1]**

Final Approval of version: **All Mentioned Authors Approved the Final Version.**

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