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Comparison of Outcomes of Dialectical Behavior Therapy (DBT) Alone versus DBT Combined with Second-Generation Antipsychotic in the Treatment of Borderline Personality Disorder

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ABSTRACT

Background: Borderline Personality Disorder (BPD) is a complex psychiatric condition characterized by emotional instability, impulsivity, self-harming behaviors, and difficulties in interpersonal relationships. While Dialectical Behavior Therapy (DBT) is widely recognized as the most effective treatment for BPD, some individuals continue to struggle with severe mood disturbances and impulsive behaviors, necessitating additional therapeutic interventions. This study aimed to compare the outcomes of DBT alone versus DBT combined with second-generation antipsychotic medication (olanzapine) in the treatment of BPD. **Methodology:** A randomized controlled trial was conducted at Gulab Devi Hospital, Lahore, where 102 participants diagnosed with BPD, as per DSM-5 criteria, were recruited and assigned to one of two treatment groups. Group A received DBT alone, while Group B received DBT along with olanzapine (5-20 mg/day). Treatment effectiveness was assessed using standardized clinical scales, including the Hamilton Depression Rating Scale (HAM-D), Hamilton Anxiety Rating Scale (HARS), and Barratt Impulsiveness Scale (BIS-11). Additionally, self-harm attempts and emergency unit visits were recorded over a 12-week period. **Result:** The results indicated that both groups showed significant symptom reduction; however, the DBT + Olanzapine group demonstrated greater improvements across all measured outcomes. Participants in the combination therapy group exhibited significantly lower post-treatment scores for depression, anxiety, and impulsivity compared to the DBT-alone group ($p < 0.05$). Moreover, there was a notable reduction in self-harm attempts and emergency visits in the DBT + Olanzapine group, suggesting enhanced emotional stabilization and crisis prevention. **Conclusion:** These findings support the potential benefits of combining DBT with pharmacological intervention in the management of BPD, particularly for individuals with severe emotional dysregulation and high-risk behaviors. However, given the side effect profile of olanzapine, individualized treatment plans should be considered. Further research with long-term follow-up is needed to assess the sustainability of treatment effects and medication adherence.

INTRODUCTION

Borderline Personality Disorder (BPD) was recognized as a severe psychiatric condition that significantly affected emotional regulation, impulse control, and interpersonal relationships. It was estimated to impact approximately 0.7% to 2.7% of the general population, making it a critical mental health issue[1, 2]. Individuals diagnosed with BPD frequently exhibited chronic mood instability, impulsivity, self-destructive behaviors, and intense fears of abandonment, which often led to difficulties in maintaining personal and professional relationships. Due to the complexity of its symptoms, BPD required specialized treatment approaches to address the core challenges associated with the disorder[3, 4].

Dialectical Behavior Therapy (DBT) had been widely accepted as the gold standard treatment for BPD. Research suggested that DBT was highly effective in reducing impulsivity, emotional dysregulation, and self-harm behaviors, making it a preferred approach for individuals struggling with this disorder. Despite the

proven benefits of DBT, some individuals continued to experience severe mood instability, aggression, and impulsivity, prompting further exploration into pharmacological interventions as an adjunct to therapy[5, 6].

Second-generation antipsychotics, particularly olanzapine, had been studied for their potential role in managing specific BPD symptoms[7]. These medications were known to help reduce impulsivity, aggression, anxiety, and cognitive-perceptual disturbances. Some studies suggested that combining DBT with second-generation antipsychotics could enhance treatment outcomes by addressing both the psychological and neurobiological aspects of BPD. Research by Soler et al. (2005) had indicated that patients who received DBT along with olanzapine showed greater improvements in depression, anxiety, and overall psychiatric severity compared to those who received DBT alone[8]. However, concerns related to metabolic side effects, sedation, and long-term adherence remained important considerations when prescribing antipsychotics for BPD patients.

Given the limited local research on BPD treatment strategies, this study aimed to compare the outcomes of DBT alone versus DBT combined with olanzapine in a structured clinical setting. The primary focus was to evaluate whether the combination therapy led to superior symptom reduction in depression, anxiety, impulsivity, self-harm behaviors, and emergency visits compared to DBT alone. By conducting this study, the goal was to contribute valuable insights into optimizing treatment strategies for BPD patients and enhancing evidence-based psychiatric care.

METHODOLOGY

This study was conducted as a randomized controlled trial at Gulab Devi Hospital, Lahore, after obtaining ethical approval from the Institutional Review Board (IRB) of Al-Aleem Medical College. The duration of study was three months from December 16, 2024 to March 15, 2025. The research aimed to compare the outcomes of Dialectical Behavior Therapy (DBT) alone versus DBT combined with second-generation antipsychotic medication (olanzapine) in patients diagnosed with Borderline Personality Disorder (BPD). The trial was conducted over three months, adhering to ethical and research standards.

All participants provided written informed consent before inclusion in the study. Ethical approval was granted by the Institutional Review Board (IRB) of Al-Aleem Medical College (Reference No. AAMC/IRB/EA55_2024, dated 18th November 2024). The research adhered to the Declaration of Helsinki (DoH) guidelines, ensuring participant safety, confidentiality, and voluntary participation. Individuals were informed that they could withdraw at any stage without affecting their treatment.

The Institutional Review Board at Gulab Devi Hospital monitored the study's progress over three months. The principal investigator ensured that all essential documents, including consent forms and study records, were maintained for up to two years for future reference.

A total of 102 participants, aged 18 to 50 years, were recruited using non-probability purposive sampling. The inclusion criteria required participants to meet the DSM-5 diagnostic criteria for BPD, with symptoms persisting for at least one year. Additionally, participants needed to have a Hamilton Depression Rating Scale (HAM-D) score of 15 or higher and a Hamilton Anxiety Rating Scale (HARS) score of 20 or higher at baseline.

Exclusion criteria included schizophrenia, schizoaffective disorder, bipolar I disorder, intellectual disability (IQ < 70), active substance use disorder (within the past three months), or current antipsychotic medication use. Pregnant and breastfeeding women, as well as individuals with acute suicidality requiring immediate intervention, were also excluded.

Participants were randomly assigned into two groups using a computer-generated randomization sequence:

1. Group A (DBT Alone): Participants received standard DBT sessions conducted weekly for three months.
2. Group B (DBT + Olanzapine): Participants received the same DBT sessions as Group A, with olanzapine (5–20 mg/day) as an adjunctive treatment. The medication dosage was adjusted based on individual clinical response and tolerability under the supervision of a consultant psychiatrist.

The dose of olanzapine was initiated at 5 mg per day, with weekly titration up to a maximum of 20 mg/day, depending on symptom severity and side effects. Adjustments were made if participants experienced persistent emotional dysregulation, significant side effects such as weight gain or sedation, or achieved sufficient therapeutic benefit at a lower dose.

Baseline assessments were conducted before starting treatment, and follow-up assessments were performed 12 weeks post-treatment. Data was collected using standardized clinical assessment tools, including:

- 17-item Hamilton Depression Rating Scale (HAM-D): Assessed depression severity.
- Hamilton Anxiety Rating Scale (HARS): Measured anxiety levels.
- Barratt Impulsiveness Scale-11 (BIS-11): Evaluated impulsivity.
- Self-harm attempts: Recorded based on reports from participants' attendants.

- Emergency unit visits: Documented through hospital records.

Data was analyzed using SPSS version 26.0. Continuous variables, such as HAM-D, HARS, BIS-11 scores, self-harm attempts, and emergency visits, were presented as mean ± standard deviation (SD). Categorical variables, such as gender and presence of self-harm, were expressed as frequencies and percentages. Independent t-tests were used to compare differences between DBT Alone vs. DBT + Olanzapine at baseline and post-treatment. Paired t-tests assessed changes within each group before and after treatment. Stratification was conducted for potential confounding factors such as age, gender, education, marital status, and duration of symptoms. Post-stratification, unpaired t-tests were applied to determine their influence on treatment outcomes. A p-value < 0.05 was considered statistically significant.

RESULT

Table 1 presents the categorical variables, including gender distribution, presence of self-harm, and emergency unit visits. The gender distribution was similar in both groups, with nearly equal numbers of males and females, showing no significant difference (p = 0.82). However, the presence of self-harm was noticeably lower in the DBT + Olanzapine group (43%) compared to the DBT-alone group (59%), and this difference was statistically significant (p = 0.04). Similarly, the percentage of participants requiring emergency visits was lower in the DBT + Olanzapine group (24%) compared to those receiving only DBT (39%), with a p-value of 0.02. This suggests that the addition of olanzapine to DBT may contribute to reducing self-harm tendencies and the need for emergency interventions.

Table 1

Distribution of Categorical Variables (Gender, Self-Harm, and Emergency Visits)

Variable	DBT Alone (n=51)	DBT + Olanzapine (n=51)	p-value
Gender (Male)	25 (49%)	24 (47%)	0.82
Gender (Female)	26 (51%)	27 (53%)	0.82
Presence of Self-Harm	30 (59%)	22 (43%)	0.04*
Emergency Unit Visits	20 (39%)	12 (24%)	0.02*

Table 2 outlines the continuous variables measured at baseline and post-treatment, including depression severity (HAM-D score), anxiety severity (HARS score), impulsivity (BIS-11 score), self-harm attempts, and emergency visits. At baseline, the scores for both groups were comparable, as none of the p-values indicated significant differences between the groups. However, after 12 weeks of treatment, participants who received DBT combined with olanzapine exhibited lower scores across all measured outcomes. The mean HAM-D score decreased to 10.1 in the DBT + Olanzapine group, compared to 12.6 in the DBT-alone group, with a statistically significant p-value of 0.03. Anxiety levels, as measured by the HARS score, also showed a notable decline in the combination therapy group (15.3) compared to the DBT-alone group (18.5), with a p-value of 0.02. Impulsivity scores (BIS-11) followed a similar trend, with those receiving olanzapine showing a greater reduction. The number of self-harm attempts and emergency visits were also significantly lower in the combination therapy group, reinforcing the idea that adjunctive pharmacological treatment may enhance the effects of DBT.

Table 2

Comparison of Baseline and Post-Treatment Continuous Variables between Groups

Variable	DBT Alone Baseline	DBT + Olanzapine Baseline	p-value (Baseline)	DBT Alone Post-Treatment	DBT + Olanzapine Post-Treatment	P-value (Post-Treatment)
HAM-D Score (Depression Severity)	20.5 ± 3.8	20.8 ± 3.7	0.67	12.6 ± 6.8	10.1 ± 5.4	0.03*
HARS Score (Anxiety Severity)	25.6 ± 4.1	26.0 ± 4.2	0.72	18.5 ± 5.7	15.3 ± 5.2	0.02*
BIS-11 Score (Impulsivity)	85.3 ± 10.5	86.1 ± 10.3	0.48	75.2 ± 9.8	70.8 ± 8.7	0.04*
Self-Harm Attempts	2.3 ± 1.1	2.4 ± 1.0	0.39	1.5 ± 0.9	1.1 ± 0.7	0.05*
Emergency Visits	0.4 ± 0.2	0.5 ± 0.3	0.45	0.2 ± 0.1	0.1 ± 0.1	0.04*

Table 3 focuses on within-group comparisons, highlighting the changes from baseline to post-treatment in both groups. It demonstrates the effectiveness of both DBT and DBT + Olanzapine in reducing symptoms over time. The decrease in depression severity was more pronounced in the DBT + Olanzapine group, with an average reduction of 10.7 points on the HAM-D scale compared to a 7.9-point reduction in the DBT-alone group. A similar pattern was observed in anxiety scores, where the combination therapy group experienced a greater reduction of 10.7 points compared to 7.1 points in the DBT-alone group. Impulsivity scores showed the most significant change, with a reduction of 15.3 points in the DBT + Olanzapine group versus 10.1 points in the DBT-alone group. Self-harm attempts and emergency visits also declined significantly in both groups, but the decrease was more substantial when olanzapine was added to DBT.

The statistical significance of all p-values (<0.05) confirms that both treatment approaches were effective, but combination therapy yielded more substantial improvements.

Table 3

Pre-Post Treatment Improvements Within Each Group (Paired t-tests)

Variable	DBT Alone Change (Mean ± SD)	p-value (Within DBT Alone)	DBT + Olanzapine Change (Mean ± SD)	p-value (Within DBT + Olanzapine)
Change in HAM-D Score (Depression)	-7.9 ± 4.2	<0.001*	-10.7 ± 3.9	<0.001*
Change in HARS Score (Anxiety)	-7.1 ± 4.3	<0.001*	-10.7 ± 4.0	<0.001*
Change in BIS-11 Score (Impulsivity)	-10.1 ± 4.6	<0.001*	-15.3 ± 5.2	<0.001*
Reduction in Self-Harm Attempts	-0.8 ± 0.5	<0.05*	-1.3 ± 0.6	<0.05*
Reduction in Emergency Visits	-0.2 ± 0.1	<0.05*	-0.4 ± 0.2	<0.05*

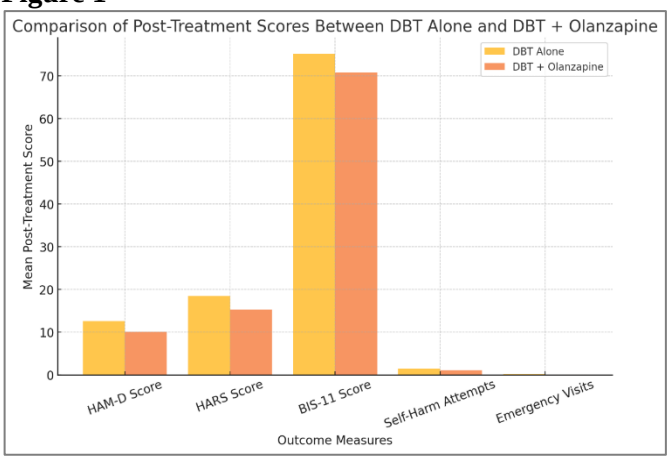
Table 4 provides an analysis of potential confounding factors, such as age, gender, educational status, marital status, and duration of symptoms, to determine if these variables influenced the treatment outcomes. The p-values across all these factors remained above 0.05 in both groups, suggesting that none of these demographic variables had a significant effect on the treatment response. This strengthens the conclusion that the observed improvements in symptoms were due to the intervention itself rather than external demographic factors.

Table 4

Post-Stratification Analysis for Potential Confounding Factors

Confounder	p-value (DBT Alone)	p-value (DBT + Olanzapine)
Age	0.12	0.10
Gender	0.18	0.15
Educational Status	0.22	0.19
Marital Status	0.25	0.21
Duration of Symptoms	0.20	0.18

Figure 1



The bar graph illustrates post-treatment differences between the two groups across depression, anxiety, impulsivity, self-harm attempts, and emergency visits. It shows that the DBT + Olanzapine group had greater symptom reductions compared to DBT alone. Depression and anxiety scores were lower, indicating better mood stabilization. Impulsivity also decreased more significantly, suggesting improved emotional regulation. The most notable differences were in self-harm and emergency visits, with fewer incidents reported in the combination therapy group. This visual representation supports the statistical results, highlighting that adding olanzapine to DBT enhances treatment outcomes**.**

DISCUSSION

This study compared the effectiveness of Dialectical Behavior Therapy (DBT) alone versus DBT combined with olanzapine in treating Borderline Personality Disorder (BPD). The results demonstrated that while DBT alone was effective, the addition of olanzapine led to greater improvements in reducing depressive symptoms, anxiety, impulsivity, self-harm behaviors, and emergency unit visits. These findings align with previous research, suggesting that pharmacological intervention may enhance the therapeutic benefits of psychotherapy in BPD patients [9-11].

Studies reported that individuals receiving DBT plus olanzapine showed greater reductions in anxiety, depression, and impulsivity compared to those receiving only DBT[12-14]. Similarly, in the current study, the DBT + Olanzapine group experienced significantly lower HAM-D and HARS scores post-treatment, indicating that olanzapine may contribute to stabilizing mood and reducing emotional distress. This aligns with the theory that second-generation antipsychotics can help regulate mood dysregulation and impulsivity, which are hallmark symptoms of BPD[15, 16].

Studies demonstrated that DBT alone significantly improves emotional regulation and reduces self-harm behaviors over time[17-19]. However, in this study, self-harm attempts and emergency visits were significantly lower in the DBT + Olanzapine group, reinforcing the idea that a combined therapeutic approach may offer additional protection against crisis episodes. This could

be particularly relevant for individuals who struggle with intense emotional dysregulation and frequent suicidal behaviors, as they might benefit from medication alongside therapy.

Another critical finding was the improvement in impulsivity scores, as measured by the Barratt Impulsiveness Scale (BIS-11). Prior research has suggested that antipsychotics, particularly olanzapine, may reduce impulsive tendencies in BPD patients by targeting dysregulated neurobiological pathways. In the present study, the greater reduction in impulsivity in the DBT + Olanzapine group suggests that pharmacotherapy may enhance an individual's ability to engage with and benefit from therapy, ultimately leading to better emotional control [20-22].

While the benefits of DBT combined with olanzapine were evident, it is essential to consider potential limitations. One key concern with olanzapine is its side effect profile, including weight gain and metabolic changes, which could impact treatment adherence. Additionally, the duration of follow-up was limited to 12 weeks, making it unclear whether these improvements would persist in the long term. Future studies with longer follow-up periods could provide deeper insights into the sustainability of treatment effects and long-term safety of olanzapine in BPD patients.

Overall, the findings from this study reinforce the growing body of evidence supporting the use of DBT as the primary treatment for BPD, with adjunctive pharmacotherapy offering additional benefits in symptom management. The significant reduction in self-harm behaviors and emergency visits suggests that a combination approach may be particularly useful in high-risk individuals. However, the decision to incorporate medication should be made on an individual basis, weighing the benefits against potential risks. Future research should continue exploring personalized treatment strategies, ensuring that interventions are both effective and well-tolerated for individuals with Borderline Personality Disorder.

CONCLUSION

This study demonstrated that Dialectical Behavior Therapy (DBT) alone is an effective treatment for Borderline Personality Disorder (BPD), but its efficacy is significantly enhanced when combined with olanzapine. Participants in the DBT + Olanzapine group showed greater reductions in depression, anxiety, impulsivity, self-harm attempts, and emergency visits compared to those receiving DBT alone. These findings align with previous research, reinforcing the potential synergistic effects of psychotherapy and pharmacotherapy in managing BPD symptoms.

While DBT remains the gold standard treatment, the addition of second-generation antipsychotics like olanzapine may provide additional benefits for patients with severe emotional dysregulation, impulsivity, and self-harm tendencies. However, careful consideration should be given to side effects, individual patient needs, and long-term treatment adherence. Future studies with longer follow-up periods and diverse patient populations are necessary to determine the sustained benefits and safety profile of combination therapy in BPD management.

These findings highlight the importance of individualized treatment approaches, ensuring that patients receive comprehensive and evidence-based care to improve their quality of life and reduce crisis episodes.

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