2020

Is a Modified Dialectical Behavior Therapy (DBT) Regimen Effective in Reducing PTSD Symptom Severity in Adult Women with Comorbid PTSD and BPD?

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Is a modified dialectical behavior therapy (DBT) regimen effective in reducing PTSD symptom severity in adult women with comorbid PTSD and BPD?

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A SELECTIVE EVIDENCE BASED MEDICINE REVIEW

In Partial Fulfillment of the Requirements For

The Degree of the Master of Science

In

Health Sciences – Physician Assistant

Department of Physician Assistant Studies
Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

December 13, 2019

ABSTRACT

OBJECTIVE: The objective of this selective EBM review is to determine whether or not "a modified dialectical behavior therapy (DBT) regimen is effective in reducing PTSD symptom severity in adult women with comorbid PTSD and BPD?"

STUDY DESIGN: Review of two randomized controlled trials (RCTs) and one case study published in English between 2013-2015.

DATA SOURCES: Two RCTs and one case study found via PubMed and Google Scholar evaluated the benefit of a modified dialectical behavior therapy (DBT) in reducing PTSD symptom severity in patients with comorbid PTSD and BPD.

OUTCOMES MEASURED: PTSD Symptom severity was measured via the Clinician-Administered PTSD Scale (CAPS), PTSD Symptom Scale – Interview (PSS-I), and PTSD Checklist (PCL).

RESULTS: Both RCT's performed by Bohus et al. (*Psychother Psychosom*. 2013;82(4):221223. doi: 10.1159/000348451) and Harned et al. (*Behav Res Ther*. 2014;55:7-17. doi: 10.1016/j.brat.2014.01.008) found a statistically significant relationship between a modified DBT regimen, DBT-PTSD or DBT + DBT PE respectively, and a marked reduction in PTSD symptom severity as compared to the control group. Granato et al. (*J. Clin. Psychol*. 2015;71:805 -815. doi: 10.1002/jclp/22207) conducted a case study that descriptively revealed the patient's reduced PTSD symptomatology after completing DBT + DBT PE yet is deficient in its ability to produce significant data due to their lack of sample size.

CONCLUSIONS: The reported evidence in each study supports the efficacy of a modified DBT regimen in the marked reduction of PTSD symptom severity in adult women with co-occurring PTSD and BPD. However, only the two RCTs by Bohus et al and Harned et al. elicited data with statistical significance. Based on the findings from these two trials, it is evident that women who severely suffer from both mental illnesses are capable of reducing their PTSD symptomatology with potential remission from one of the diagnoses after completion of a modified DBT treatment, as compared to traditional DBT that is unable to elicit the same change. These studies prove that it is imperative to simultaneously target both symptomatic manifestations of BPD and PTSD that co-occur and cause significant impairment. Future research should focus on expanding sample sizes and lengthening follow-up measures to assess the treatment's long-term impact on psychological remission.

KEY WORDS: Borderline Personality Disorder, Post-Traumatic Stress Disorder, Dialectical Behavior Therapy, Psychotherapy.

INTRODUCTION

Borderline personality disorder (BPD) frequently surfaces from late adolescence to early adulthood and is characterized by marked impulsivity in areas of spending, substance abuse, or sexual acts, drastic fluctuations in mood and temper, unstable interpersonal relationships, self-injurious behavior and distortions of self-image. The pattern of this disorder is impairing, as it is known to harshly impact close relationships. Those affected by this disorder are unable to reconcile with other people's opposing opinions, also referred to as "splitting," causing the individual to dramatically go from a state of idealization to devaluation in the smallest conflict.[1]

First-line treatment for BPD is psychotherapy, such as dialectical behavior therapy (DBT), mentalization-based therapy, transference-focused treatment, and cognitive behavioral therapy.[1] DBT is the best empirically supported treatment for BPD and is a comprehensive treatment program involving individual therapy sessions, group therapy, and therapist teams prioritizing patients with emotional dysregulation, intentional self-injury, and suicidal tendencies. Its change-oriented approach originates in the concepts of mindfulness and instilling awareness about how destructive emotionally driven reactions are in their lives, which then shifts into a new motivation to create personal change. This realization allows patients to render a new balance between acceptance and validation of their harmful tendencies. The therapist avoids portraying concepts as "right" or "wrong," yet molds their opinion with that of the patient. Together, they develop strategies to restructure and remove triggers in the patient's daily environment, imparting new behavioral techniques that will mitigate negative responses caused by internal distress and prioritizes preserving negatively affected interpersonal relationships.[2] Pharmacotherapy is understudied, yet antipsychotics like olanzapine, antidepressants like fluoxetine, or mood stabilizers like lamotrigine, may reduce targeted symptoms.[1]

Post-traumatic stress disorder (PTSD) arises in individuals after they endure an impactful traumatic event, which may include sexual/physical assault, childhood trauma, experiencing a natural disaster or medical catastrophe, or being a prisoner at war. Symptomatic manifestations are divided into 4 categories: intrusion symptoms or re-experiencing the trauma via flashbacks or thoughts, avoiding trauma-related stimuli, alterations in cognition and mood, and heightened levels of arousal. Treatment measures fall in the realm of psychotherapies, as CBT with exposure therapy are proven efficacious. If patients are unresponsive to the above, SSRIs like sertraline, SNRIs like venlafaxine, or anti-psychotics like risperidone, are used along with psychotherapy.[3]

The onset of PTSD not only doubles the frequency of intentional self-injury in individuals with BPD, but those with both PTSD and BPD are a particularly high-risk group with a 2-5 times increased risk of completing suicide compared to someone with either BPD or PTSD.[4] While CBT has been successful in the treatment of PTSD alone, CBT explicitly excludes individuals who self-harm or who are acutely suicidal, essentially eliminating PTSD patients with comorbid BPD. Traditional CBT therefore fails to treat co-occurring PTSD and BPD. This comorbidity is gaining clinical significance, as the dual presence maintains and intensifies the affected individual's emotional dysregulation, non-suicidal self-injury (NSSI), and dampens overall remission rates.[4] DBT is indicated in BPD patients, but prioritizes self-injury and other behavior dysfunctions, without specifically targeting a patient's underlying PTSD diagnosis.[5]

The lifetime prevalence of PTSD alone is twice as high in women compared to men (10-12% vs. 5-6%, respectively). About 30% of people with PTSD have a dual diagnosis of BPD.[4,6,7] While there's limited data on the specific distribution of women with comorbid illnesses, these statistics suggest a disproportionate effect on females. The cost of a modified DBT protocol has not yet been standardized in the U.S. The mean total cost of traditional DBT in the U.K. was

higher than treatment as usual (£5,685 vs. £3,754)[6] but after comparing expenditures on health services pre- and post-treatment, patients saved £36,000 after the post-treatment year.[8]

Data that account for the yearly visits amongst women with comorbid PTSD and BPD has not yet been quantified. Additional data separating the number of BPD and PTSD medical visits is inadequate and falsely low, as providers, especially at the primary care level, often come up short in their clinical capacity to diagnose these mental disorders.[9] Physician assistants (PAs) are a vital component within primary care, clinically educated in behavioral medicine. Since PAs and patients form enduring relationships, recognition of new behavioral changes from their baseline should prompt referral to mental health services even without certainty of a diagnosis.

Currently, there is no universally accepted standardized treatment model for patients with co-occurring PTSD and BPD. Clinical trials have assessed new forms of DBT that uniquely target patients with these diagnoses. The two variants of DBT are named DBT-Prolonged Exposure (DBT + DBT PE) and DBT-PTSD.[4,5,10] DBT-PTSD is a comprehensive modular program that includes a psychoeducation program and trauma-focused interventions that pinpoint high-risk traits, such as dissociation and self-harm, and imparts new skills via mindfulness training and exposure-based individual interventions to control their actions associated with heightened emotional dysregulation.[5] DBT + DBT PE starts with 1 year of traditional DBT, and if/when participants achieve control over their high-priority symptoms, such as suicidal tendencies or severe quality of life-interfering behaviors, the PE portion begins. Patients are directly exposed to traumatic memories and learn processing techniques to combat the onset of global distress.[4,10] Standard DBT is not indicated in patients with PTSD, yet because of its co-occurrence with BPD that in turn exacerbates self-harming tendencies, a modified DBT that specifically targets debilitating behaviors has elicited groundbreaking clinical improvement.

OBJECTIVE

The objective of this selective EBM review is to determine whether or not "a modified dialectical behavior therapy (DBT) regimen is effective in reducing PTSD symptom severity in adult women with comorbid PTSD and BPD?"

METHODS

The search was conducted within PubMed and ClinicalKey using specific inclusion criteria for this review, in which 2 unblinded RCTs and 1 case study were chosen. The patient population is composed of adult women, 18 years and older, with PTSD and BPD. The interventions are modified dialectical behavior therapies (DBT + DBT PE and DBT-PTSD). The control group used for comparison underwent the treatment-as-usual wait list (TAU-WL) protocol or traditional DBT. The outcome measured is reduction in PTSD symptom severity.

DATA SOURCES:

Keywords that were used when searching for articles were "BPD," "PTSD," "DBT" and "psychotherapy." Each article is published in a peer review journal and written in the English language. Articles were selected based on their relevance to the clinical question and their inclusion of patient oriented outcomes (POEMS). The inclusion criteria for articles used in this review were as follows: studies published after 2011, RCT, modified DBT, subjects with comorbid PTSD and BPD, and adult women 18 years and older. Exclusion criteria for articles included studies published before 2011, studies with men or children under age 18, standard DBT, and studies focusing on patients with BPD or PTSD alone. Summary of statistics reported include p-value, numbers needed to treat (NNT), experimental event rate (EER), control event rate (CER), relative benefit increase (RBI), and absolute benefit increase (ABI).

OUTCOMES MEASURED

The outcomes measured in these articles were all POEMs. Harned et al.[4] measured the efficacy of DBT + DBT PE in reducing PTSD symptomology via the PTSD Symptom Scale-Interview (PSS-I), with content corresponding to DSM-IV PTSD diagnostic criteria. PTSD remission was defined as no longer meeting DSM-IV diagnostic criteria, and PTSD symptomatic severity reduction was assessed by comparing changes in participant's scores on the PSS-I throughout the intervention, with a maximum score of 51 points. Bohus et al.[5] measured the efficacy of DBT-PTSD in reducing PTSD symptom severity via a Clinician-Administered PTSD Scale (CAPS) score, with "treatment response" defined as a reduction of 30 out of the 60-point score. Patients who gained "full remission" from their original PTSD diagnosis no longer met the DSM-IV criteria after completion of the trial. Granato et al.[10] measured the efficacy of DBT + DBT PE in reducing PTSD symptomatology via the 17-item PTSD checklist (PCL) that corresponds to the DSM-IV PTSD criteria. The participant answered each question on a 5-point Likert scale: 1 defined as "not at all" to 5 defined as "extremely," in terms of how significantly their symptoms impacted them in the past week. The highest possible score totals to 85 points, with a score < 45 considered to be out of the diagnostic range for PTSD.

Table 1: Demographics & Characteristics of Reviewed Articles

Study	Type	Pts	Age	Inclusion Criteria	Exclusion Criteria	W/D	Interventions
Bohus[5] (2013)	RCT	82	17-65	Female; ongoing self-harm; diagnosed DSM-IV PTSD related to childhood sexual abuse; patients met 1 of the following: current eating disorder, MDD, substance abuse, ≥4 DSM-IV for BPD	Men or children; lifetime diagnosis of schizophrenia, current substance dependence, BMI < 16.5, intellectual disability, medical conditions contradicting the exposure protocol (CVD etc.) and suicidal behavior in the past 4 months.	13	12-week residential DBT-PTSD multi-component modular treatment program.
Harned[4] (2014)	RCT	26	18-60	Females who meet DSM-IV criteria for both BPD and PTSD; can remember at least some part of index trauma; recent/recurrent	Met DSM-IV criteria for a psychotic disorder, bipolar disorder, or mental retardation; legally mandated to treatment; if patient	8	1 year of standard DBT coupled with a modified DBT + DBT PE protocol that starts once improvement in select

				self-harm/injury; participant lives within close proximity to the clinic	required a primary treatment for another life-threatening disorder		high-priority targets were achieved.
Granato[10] (2015)	Case Study	1	31	Adult female who meets DSM-IV criteria for both PTSD and BPD; significant trauma history	None reported	0	10-month period – begins as standard DBT requiring 14 sessions and then integrates DBT + DBT PE that is delivered in 27 sessions.

RESULTS

Bohus et al.[5] conducted an RCT where 82 adult women were randomized in a 1:1 allocation ratio. Participants in the experimental group completed a DBT-PTSD program versus the control group where participants completed treatment-as-usual wait list (TAU-WL), undergoing 6 months of a treatment of their choice excluding DBT-PTSD.[5] All patients had a DSM-IV defined diagnosis of PTSD related to childhood sexual abuse and ≥ 4 DSM-IV defined diagnosis of BPD. In the first 3 days after randomization, 8 candidates became ineligible to participate, leaving 74 participants included in the analysis.[5] A total of 69 participants completed the whole trial after 5 participants dropped out during the trial, with no significant dropout rate associated with either intervention. Participants were further broken down for data analysis into 2 groups based on the severity of their BPD diagnosis according to DSM-IV criteria, with 33 participants who fit into the ≥ 5 BPD criteria (DBT-PTSD, n = 17; TAU-WL, n = 16) versus 41 participants who fit into the < 5 BPD criteria (DBT-PTSD, n = 19; TAU-WL, n = 22).[5]

Data were collected at admission into the study, at 12 weeks, 18 weeks, and 24 weeks; post-discharge follow-up at 6 and 12 weeks was garnered from the DBT-PTSD group.[5] The mean change in the CAPS score was greater in the DBT-PTSD group, with a mean reduction of 33.16 points, while those in the TAU-WL group only saw a mean reduction of 2.08 points.[5]

Both subgroups in the DBT-PTSD arm, meeting ≥ 5 BPD or < 5 BPD, showed significant weekly improvement on the CAPS scores compared to the control groups (-1.510 ± 0.249, $p <$

0.001 and -0.496 + 0.234, p = 0.038, respectively).[5] More participants on the DBT-PTSD arm showed a significant response to treatment, with 29.4% (n=5) in DBT-PTSD and 0.0% for TAU-WL, with a p-value of 0.039.[5] NNT, CER, EER, RBI, and ABI are reported in table 2.

Table 2. Treatment Responders Using CAPS Scores[5]

CER	EER	RBI	ABI	NNT
0.0	0.294	0.0	0.294	4

Harned et al.[4] conducted an RCT in an outpatient setting where 26 participants were randomized to 2 groups. Participants were allocated in a 2:1 ratio to the experimental group, 1 year of DBT with prolonged exposure (DBT + DBT PE) protocol, versus the control group in which participants completed 1 year of standard DBT. The experimental group had double the amount to maximize the amount receiving the intervention under investigation, with n = 17 in the DBT + DBT PE and n = 9 in DBT alone.[4] All participants were adult women who reported intentional self-injury, had experienced some past traumatic life event, with dual diagnoses of BPD and PTSD.[4] Participants in the control group reported intense urges to commit suicide pre- and post-treatment as compared to the experimental group, in which 2 people relapsed in intentional bodily injury and 1 successfully completed suicide during the study.[4] In the experimental group, 1 person made a suicide attempt, and 1 reported self-injury.[4]

Subjects were assessed pre-treatment, at 4-month intervals within the period of treatment, and at 3-months follow-up, with a specific focus on the content garnered from participants after completion of the PSS-I during these time periods.[4] There was an attrition of 31%; the dropout rate did not significantly associate to either treatment group. Ten participants completed the experimental trial after 7 dropped out, and 5 participants completed the control trial, after 4 dropped out.[4]

In the experimental group, 58.3% of participants were in PTSD remission at post-treatment versus 33.3% in the control group.[4] Completers in the experimental group were 1.3 times more likely to report clinically significant PTSD symptom reduction and 2 times more likely to achieve diagnostic remission from PTSD.[4] At 3-month follow-up, 50% of the experimental group remained in PTSD remission, compared to 0% of the control group.[4] An MMANOVA assessing "time x condition x completer" amongst participants who completed the DBT + DBT PE protocol and with assessing PTSD symptomatology, rendered an F-value = 3.4[3,42] with a p-value < 0.05.[4] This confirmed that the experimental group had the largest PTSD symptom reduction out of the two treatment groups.[4]

Table 3: Treatment Responders Using PSS-I Scores[4]

CER	EER	RBI	ABI	NNT
0.667	0.833	0.25	0.166	6

Granato et al.[10] conducted a case study on an adult female with DSM-IV diagnosed PTSD and BPD, who experienced traumatic childhood events with tendencies to experience dissociative symptoms that cause her to self-harm.[10] The traumatic event of greatest impact occurred at the age of 12 when she was unknowingly drugged, subsequently gang-raped and beaten.[10] The course of treatment includes a 41-session regimen persisting over a 10-month period, with standard DBT delivered in the first 14 sessions, wherein the DBT + DBT PE protocol is introduced and delivered in the remaining 27 sessions.[10] Prolonged exposure occurred in three phases - preexposure, exposure, and termination and consolidation, and was effective in making the participant confront the memory of past trauma and change fear-based cognitions and responses to these emotions. PE was discontinued if the patient was actively self-harming.[10]

The participant completed the 41-session treatment protocol in full.[10] Midway through treatment between sessions 19-20, the patient participated in hallucinogenic drug use and

intentional self-harm, in which PE was halted for a total of 5 sessions and then resumed. The patient self-harmed again at session 28 without serious injury, in which PE was halted and resumed the next session. No other threats to her safety were reported.[10] The table below elicits the participant's PCL score reduction of 25 points over time, totaling at 55. This score was determined to be in the diagnostic range for active PTSD according to current guidelines.[10]

Table 4. PTSD Checklist (PCL) Scores During PE Treatment[10]

	Session 15 (pre-exposure PE)	**Session 41** (last PE session)
PCL Score	80	55
Total point reduction	25 points	

DISCUSSION

Bohus et al.[5] deemed their DBT-PTSD treatment method to have a statistically significant impact in reducing PTSD symptom severity in the experimental group, also defined as participants "responding to treatment," endorsed by a p-value of 0.039. PTSD remission rates amongst patients meeting diagnostic criteria for BPD was 41.2% vs. 0.0% in the control group, with $p = 0.0058$. Harned et al.[4] found that both DBT and DBT + DBT PE endeavors were effective in reducing PTSD symptom severity in participants, as the experimental group achieved greater reduction in symptoms (80% vs. 60%) and remission rates post-treatment (80% vs. 40%) as compared to DBT alone, respectively. Individuals with a severe co-occurrence of these illnesses often self-harm, and traditional PTSD treatment protocols persistently exclude these persons from receiving care. Yet, those in the experimental group reported a reduced desire to self-injure, which impacted their perception of the treatment protocol and eventual decline in PTSD symptoms.[4] Both RCTs had an NNT of 4 and 6, translating as a large treatment effect.[4,5]

Granato et al.[10] carried out a case study conducted on one adult female, and researchers considered their results to be "clinically" significant yet not generalizable to a larger patient population. The researchers believed that the patient's dramatic decrease of 25 points on the

PTSD checklist (PCL) elicits significance in the DBT + DBT PE regimen while also assessing her clinical picture subsequent, in which her dissociative and self-harming tendencies were greatly reduced in conjunction with her PTSD symptoms.[10]

One stark flaw that stands out for all the studies is the lack of a substantial sample size, in which attrition rates are high in both RCTs. Harned et al.[4] had an observed attrition of 31%, and Bohus et al.[5] had an attrition totaling to 16% and neither study carried out worst-case analyses to account for these losses. There were a multitude of reasons that participants dropped out, as the impulsive nature of their severe mental illness, lack of global functioning, and self-injurious behavior most certainly impacted attrition rates. All studies had less than 100 participants, but the small initial sample size can be explained in part by how individualistic, unique and time-consuming each treatment plan is, as participants were strategically paired with specially trained clinicians recruited to function in these studies. Also, the RCTs control groups lack homogeneity with each other, as Harned et al.[4] participants completed standard DBT, yet Bohus et al.[5] participants completed a TAU-WL, or their treatment of choice. There is considerable fault in allowing patients to choose their own treatment in a trial of this nature, as the group may be confounded by unknown factors that researchers are unable to control.

There were two modified DBT regimens carried out in the three studies, “DBT + DBT PE” and “DBT-PTSD,” both of which have similar diagnostic and therapeutic aims yet are not fundamentally identical. Although each target a population of patients with the same diagnoses, it has been subsequently determined that DBT-PTSD is effective in patients with PTSD and moderate BPD without life-threatening behavior, as compared to DBT + DBT PE in its efficacy to target patients with PTSD and severe BPD with self-injurious behavior.[11] Knowledge of this

core disparity amid the two is of importance for researchers when recruiting new subjects and for future clinicians advocating for standardization and implementation of these treatment measures.

CONCLUSION

It's of evolving scientific consensus that adult women with the complex diagnoses of PTSD and BPD suffer through an unrelenting course of illness that has proven to be resistant to the standard, universally recognized treatments. As previously reviewed, the dual diagnosis of PTSD and BPD is clearly ubiquitous, as individuals have a higher incidence to intentionally self-injure and a lower likelihood to benefit from treatment measures that independently target PTSD or BPD alone. PTSD can actually inhibit someone from achieving full diagnostic remission from BPD, which illustrates the clinical significance in focusing on reducing PTSD symptoms as a core feature of these novel DBT treatments to be replicated in future research endeavors. The modified DBT regimens analyzed in this review, DBT-PTSD and DBT + DBT PE, have proven a robust statistically significant impact in their ability to bate PTSD symptomatology and allow subjects to achieve full diagnostic remission from both illnesses, thus rendering them as promising treatment options in adult women with co-occurring PTSD and BPD.

Future research should prioritize recruitment of a larger, more robust sample with a plan to combat the high dropout rates. There is great significance in longer-term follow-up measures especially in an area of this focus, as knowledge of a subject's lasting psychological remission and enhanced quality of life thereafter should be of great importance. Further trials should revise and refine these DBT measures, with an aim to personally standardize and individually tailor a treatment option to patients with both BPD and PTSD who fall on a spectrum of disease severity.

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