A Randomized Trial of Dialectical Behavior Therapy in High-Risk Suicidal Veterans

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ABSTRACT

Objective: Despite advances in suicide prevention implemented throughout the US Department of Veterans Affairs (VA) including the hiring of Suicide Prevention Coordinators (SPCs) at every VA hospital, enhanced monitoring, and the availability of 24-hour crisis hotline services, suicide by veterans remains a critical problem affecting 20 veterans daily. Few empirically based treatment strategies for suicide prevention for postdeployment military personnel exist. This study aimed to test whether dialectical behavior therapy (DBT), one of the few psychosocial treatments with proven efficacy in diminishing suicidal behavior in individuals with personality disorder, can be applied to veterans irrespective of personality diagnosis.

Methods: From January 2010 to December 2014, 91 nonpsychotic veterans at high risk for suicide (61 men, 30 women) were randomly assigned to a 6-month treatment trial at a veterans' medical center comparing standard DBT to treatment as usual (TAU) and followed for 6 months after trial completion. Primary outcome was suicide attempts, measured with the Columbia–Suicide Severity Rating Scale, and secondary outcomes were suicide ideation, depression, hopelessness, and anxiety. There were no exclusions pertaining to substance abuse, homelessness, or medical comorbidity.

Results: Both DBT and TAU resulted in improvements in suicidal ideation, depression, and anxiety during the course of the 6-month treatment trial that did not differ between treatment arms. Survival analyses for suicide attempts and hospitalizations did not differ between treatment arms. However, DBT subjects utilized significantly more individual mental health services than TAU subjects (28.5 ± 19.6 vs 14.7 ± 10.9, $F_{1,77} = 11.60$, $P = .001$).

Conclusions: This study is the first to examine 6-month DBT in a mostly male, veteran population. Increased mental health treatment service delivery, which included enhanced monitoring, outreach, and availability of a designated SPC, did not yield statistically significant differences in outcome for veterans at risk for suicide in TAU as compared to the DBT treatment arm. However, both treatments had difficulty with initial engagement post-hospitalization. Future studies examining possible sex differences and strategies to boost retention in difficult-to-engage, homeless, and substance-abusing populations are indicated.

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Suicide is now the 10th leading cause of death in the United States and a more common cause of fatal injury than homicide (ranked 16th).[1] Veterans account for approximately 20% of suicide deaths in the United States, averaging 20 veteran suicides daily,[2] but comprise only 7.3% of the population. The most recent data, comparing 2009 to 2011, highlight the continuing rise in rates of male and female veteran suicides from 38.7 to 40 suicides per 100,000 men (2 times higher for men aged 18–24) and from 12.9 to 14.4 suicides per 100,000 women.[3] These rates are more than double the overall suicide rates among men and women in the general population (20.2 and 5.5 per 100,000, respectively).[4]

Veterans' suicide completion is closely associated with a history of a previous suicide attempt,[5] status as a male Operation Enduring Freedom (OEF) or Operation Iraqi Freedom (OIF) Veteran, and mental health diagnoses or substance use disorders,[6] but, surprisingly, is unrelated to a diagnosis of posttraumatic stress disorder (PTSD) or physical comorbidity.[7] Suicide rates in the first 12 weeks after psychiatric hospital discharge were roughly 5 times the overall base rate in this population (568/100,000) and remained high for 48 weeks following discharge.[8] These data highlight the need to develop interventions that target younger, psychiatrically ill, recently hospitalized veterans with a history of suicidality.

Treatment for Suicide Prevention

A recent study of 102 suicides[9] concluded that most suicide victims have long-standing trajectories of psychological dysfunction, addiction, and affective disorders, with approximately 75% of the cases receiving suboptimal social and health services. The study's authors assert that 80% of the suicide cases could have been prevented with improved services, with a specific emphasis on treatment upon discharge from emergency departments and inpatient services and utilization of staff specially trained in suicide care.[10]

In a recent report on strategies for suicide prevention in veterans,[11] a rigorous review of the literature was conducted by a panel of experts in suicide prevention and US Department of Veterans

Clinical Points

- Veteran suicide remains a critical problem despite advances in suicide prevention efforts throughout the US Department of Veterans Affairs (VA).
- Very few empirically based treatment strategies for suicide prevention exist for postdeployment military personnel.
- Unlike other studies, this study did not find any advantage of dialectical behavior therapy (DBT) compared to treatment as usual for suicidal ideation and depression; however, its findings suggest that DBT may have superior persistence of treatment effect for anxiety.
- Future trials that control for clinical, sex, and demographic characteristics may help target treatment modalities for specific patient profiles.

Affairs (VA) health care. While most of the studies included were population-based suicide prevention efforts, there were 20 randomized controlled trials (RCTs) of interventions postsuicide attempt. Psychosocial interventions were found to be minimally effective in treating suicidal behaviors,[11] a conclusion in agreement with the Cochrane Collaboration.[12] To date, RCTs of psychosocial interventions for suicidal behavior are limited and include intensive case management,[13] dialectical behavior therapy (DBT),[14,15] interpersonal psychotherapy,[16] and cognitive-behavioral therapy (CBT).[17,18] Only the DBT trial by Koons and colleagues[14] was performed in a veteran population, and it focused specifically on female veterans with borderline personality disorder (BPD). In addition, specific to BPD, there exist empirical data for additional psychosocial interventions including mentalization-based[19] psychotherapy, transference-focused psychotherapy,[20] schema-focused psychotherapy,[21] and general psychiatric management,[22] but these approaches also have not been studied in veterans. Clearly, additional high-quality, randomized trials of psychosocial interventions in a broader group of veterans is a requisite.

Dialectical Behavioral Therapy

Dialectical behavior therapy is an empirically validated, manualized, behavioral treatment emphasizing the role of emotional regulation in the treatment of suicidal and self-destructive behaviors in BPD.[15,23] DBT combines behavioral interventions, including skills training, exposure, and problem solving, with cognitive techniques of mindfulness, to decrease nonsuicidal self-injury and suicide threats and behaviors, diminish treatment-interfering behaviors, address behavioral patterns that adversely affect quality of life, and increase adaptive skills.[23]

Empirical Data Supporting DBT

Dialectical behavior therapy has gained considerable popularity and is now included as a component of the American Psychiatric Association Practice Guideline for the treatment of BPD.[24] The developer of the DBT treatment approach, Dr Marsha Linehan, has conducted several RCTs of DBT in women with BPD. Two of the studies[15,25] compared DBT with treatment as usual (TAU) (combined n = 73). A more recent study[26] (n = 101) compared DBT with nonbehaviorally based psychotherapy by expert therapists, a more rigorous comparison condition. Each of these studies found superior efficacy for DBT in reduction of suicidal or parasuicidal behavior, length of hospitalization, and rate of treatment drop-out for women with BPD.

Other independent research groups have conducted several RCTs[14,27–31] of DBT for individuals with borderline personality disorder with suicidal ideation or behavior or nonsuicidal self-injury. Most of these studies support a benefit of DBT above and beyond TAU in the reduction of suicide risk. However, the superiority of DBT is less evident when comparing it with increasingly structured treatments.[29,30,32]

DBT has been extended to other populations including BPD patients comorbid with substance abuse,[33] depressed adolescents,[34] individuals with eating disorders,[35–37] and BPD patients comorbid with PTSD.[38,39] However, the DBT approach has been studied minimally in men, and there is only 1 small RCT in a veteran population (women only).[14] Moreover, the efficacy of DBT in non-BPD adults at risk for suicidal behavior remains to be tested.

The present study aimed to test whether DBT, one of the few psychosocial treatments with proven efficacy in diminishing suicidal behavior in individuals with personality disorder, can be applied to veterans irrespective of personality diagnosis.

Our specific aim was to examine in an RCT the efficacy of a 6-month treatment with standard DBT compared with TAU in veterans at high risk for suicide. The primary outcome measure was risk of subsequent suicide attempts and length of time to the next attempt. Secondary outcome measures assessed suicide ideation, depression, hopelessness, and anxiety. Based on the empirical literature, we hypothesized that 6 months of DBT would be superior to TAU in all outcomes.

METHODS

Participants

Participants for the RCT included a subset (NCT02462694) from a larger study at the James J. Peters VA Medical Center (JJPVA) that examined suicide risk factors in veterans from January 2010 to December 2014. Ninety-one veterans were included in this study (see Figure 1 for recruitment flowchart). Inclusion criteria included veterans' receiving mental health services between the ages of 18–55 and meeting "high-risk for suicide" status, defined by meeting any of the following criteria: (1) recent suicide attempt or suicidal ideation resulting in psychiatric hospitalization or emergency department presentation within the previous 3 months, (2) chronic suicidal ideation lasting > 3 months, and (3) assignment to the JJPVA "high risk" suicide list maintained by the suicide prevention coordinator (SPC).

Exclusion criteria for patients included meeting *DSM-IV* criteria for schizophrenia or any schizophrenia-related psychotic disorders or current evidence or history of

clinically significant organic brain impairment, including stroke, tumor in the central nervous system, demyelinating disease, and severe head trauma. Subjects without a home or actively engaged in substance use were still eligible for the trial. Concurrent medication was allowed.

All eligible participants received a full diagnostic structured interview, which included the Structured Clinical Interview for *DSM-IV* Axis I disorders (SCID-I)[40] and the Structured Interview for *DSM-IV* Personality (SIDP-IV).[41] Weekly consensus and diagnostic meetings were led by a second clinical psychologist. Written informed consent, approved by the JJPVA Medical Center Institutional Review Board, was provided to all participants.

Randomization

Participants were randomly assigned to DBT or TAU. A computerized randomization sequence program was used that prohibited more than 7 consecutive assignments in either group.

DBT Treatment

Participants randomized to DBT received standard DBT treatment for 6 months, including weekly skills training group (90 minutes), weekly individual treatment (50–60 minutes), and telephone coaching as needed. Dialectical behavior therapists participated in a weekly 60-minute consultation meeting and were experienced clinicians who received 10-day intensive DBT training.

Videotaped sessions of individual DBT therapists were rated for adherence on a 1-to-5 scale by members of Dr Linehan's research group (http://www.linehaninstitute.org/). Adherence monitoring for research participants included review of the initial 2 tapes for any therapist-patient dyad and randomly selected tapes chosen over 6- to 8-week intervals for the remainder of the 6-month treatment. Rating feedback was reviewed in therapist consultation meetings to augment therapist DBT skill level. Additional supervision was provided for any DBT therapist whose adherence ratings dropped below an average of 3.75.

TAU Treatment

Subjects randomized to TAU received treatment according to the recommendations of their mental health treatment team comprising a psychiatrist and case manager.

The VA has heavily invested in suicide prevention care for veterans, including a 24-hour suicide hotline for veterans and the provision of an SPC at every hospital. The SPC monitors at-risk individuals, provides extensive outreach to facilitate engagement, and assists staff with management of suicidal crisis situations. Both TAU and DBT participants utilized SPC services, and individuals from either treatment group who were placed on the JJPVA "high risk suicide list" received, in addition to their clinical treatment, the VA-mandated monitoring. This monitoring comprised additional contact by the JJPVA SPC, weekly for the first month and monthly thereafter. Both groups received medication as indicated by their outpatient psychiatrist, case management services, substance abuse services, and any necessary medical care through JJPVA physicians and social workers.

Measures

Primary outcome measure: suicide attempt. The primary outcome measure for suicidal behavior was the number of patients who attempted suicide in each treatment group during the trial and follow-up. Suicide attempts were assessed using the Columbia–Suicide Severity Rating Scale (C-SSRS), a widely used scale[42–44] that provides a comprehensive identification of suicidal events.

Secondary outcome measures: suicidal ideation, depression, hopelessness, and anxiety. To assess the severity of suicidal ideation and plans for suicide, the Beck Scale for Suicide Ideation (BSS),[45] a 21-item self-report measure, was administered. Depression severity was assessed using the Beck Depression Inventory-II (BDI-II)[46]; hopelessness with the Beck Hopelessness Scale (BHS)[47]; and anxiety, with the Beck Anxiety Inventory (BAI).[48]

Participants were assessed with these measures at baseline, trial halfway point (3 months), trial completion (6 months), and follow-up (6 months after trial completion). In addition, counts of individual mental health clinician visits and hospitalizations for psychiatric reasons were obtained for each patient enrolled in the trial.

Statistical Analyses

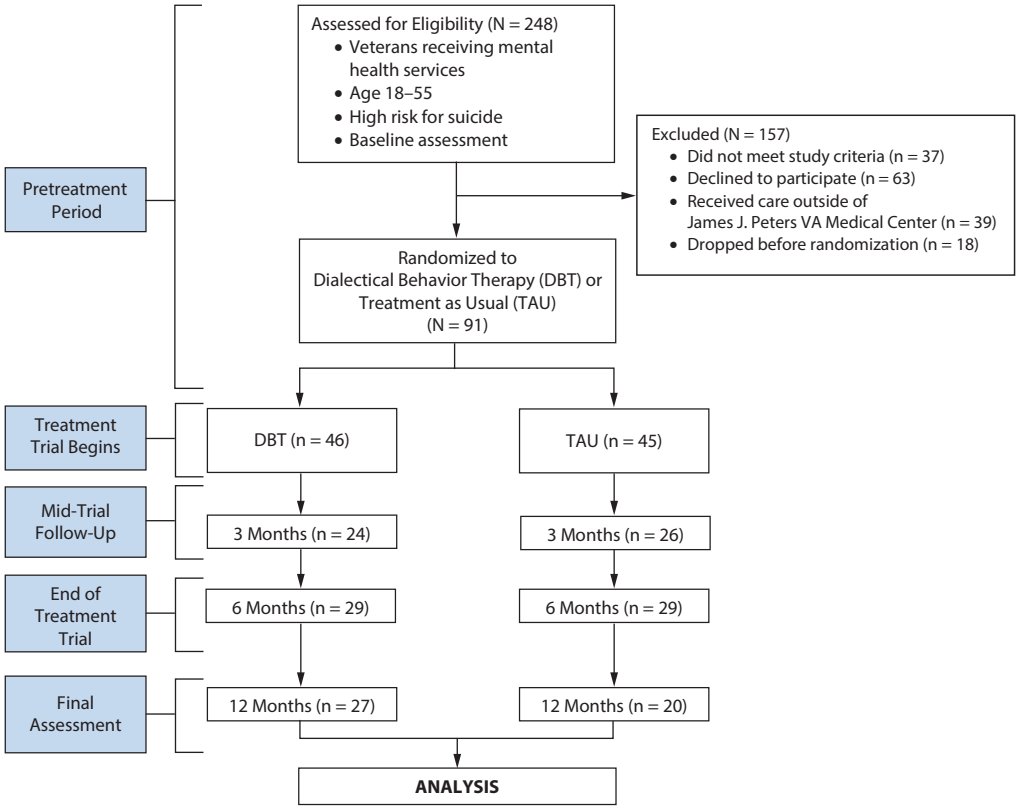
The IBM SPSS Statistical Package version 22 was used for data analyses. Descriptive statistics and distributions of all continuous and categorical measures were examined to identify key features (eg, non-normal distribution, outliers, and skewness) that might impact inferential methods. Demographic measures were examined across the 2 treatment groups using the t test statistic for the continuous measures and the χ^2 statistic for the categorical measures. The secondary outcome measures, including BDI-II, BSS, BHS, and BAI, were examined at baseline across the 2 treatment groups using general linear model univariate procedures (analysis of covariance) including sex, age, education, and the number of psychiatric hospitalizations as an a priori set of covariates.

Each of the secondary outcome measures was longitudinally examined using the general linear mixed models (GLMM) procedures including the a priori covariates. A key concern regarding longitudinal treatment studies is attrition. The mixed-models statistical procedures use all available data. In the presence of missing data, the mixed models statistical procedure estimates parameters and tests hypotheses about the missing data but does not impute missing values. By using GLMM, one can assess the covariance structure of the data and choose the most appropriate covariance model.[49,50]

The GLMM procedure was performed for each outcome measure, examining the main effects for treatment group (DBT vs TAU) and visits (baseline, 3, 6, and 12 months) and their interaction.

The report or occurrence of 3 specific clinical events was monitored during the course of treatment: serious suicidal

Figure 1. Consort Flow Diagram for a Randomized Trial Comparing Dialectical Behavioral Therapy (DBT) and Treatment as Usual (TAU) for the Treatment of Suicidal Veterans



ideation, suicide attempt, and psychiatric hospitalization. The frequencies of these clinical events were compared between the 2 treatment groups using χ^2 and Fisher exact test. Cox proportional hazards regression procedures (survival analysis) were also used to examine the effect of treatment group on these clinical events after controlling for sex, age, education, and number of previous psychiatric hospitalizations.

Analyses were conducted with all participants who entered into the treatment trial (N = 91).

Secondary analyses were also conducted with cases who attended at least 2 visits (n = 62). Despite this early dropout, results were similar between the 2 analyses. Additional secondary analyses were conducted with sex (men vs women) and BPD diagnosis (positive vs negative).

RESULTS

Cohort

Overall, 91 patients (61 men, 30 women) were recruited and randomized into the RCT, 45 into TAU and 46 into DBT (Figure 1). Baseline demographic and clinical characteristics are described in Table 1 and suggest a mostly male, chronically ill sample with considerable Axis I and II comorbidity, with only a single difference between the treatment arms. The TAU patients reported more depression than the DBT patients ($P = .024$).

Treatment Utilization and Attrition

The mean ± SD duration in treatment during the 6-month trial was 17.87 ± 11.5 weeks for TAU and 16.85 ± 11.0 weeks for DBT. Counts of individual mental health visits during the treatment trial are displayed in Figure 2. These include clinical visits pertaining to the research trial plus any other ancillary mental health individual visits including substance abuse, psychopharmacology, or monitoring visits by the SPC. When multiple visits occurred during the same day, only 1 visit was counted. DBT participants had significantly more visits than TAU (28.5 ± 19.6 vs 14.7 ± 10.9, $F_{1,77} = 11.60$, $P = .001$). Total visits differed at a trend level for sex, with male veteran patients having more visits on average than the female patients (23.7 ± 19.0 vs 16.3 ± 10.5, $F_{1,77} = 3.13$, $P = .081$). The interaction term for group by sex was not significant ($F_{1,77} = 1.49$, $P = .226$). A survival analysis for attrition revealed that 32% of the subjects dropped out within the first 2 sessions of the treatment trial, with no significant difference between treatment arms ($B = -0.166$, SE = 0.293, Wald = 0.32, $P = .571$, NS) (Figure 3C).

Suicide Attempts

A survival analysis was conducted using number of patients who attempted suicide during the course of the 6-month trial and 6-month follow-up. In the DBT arm, 3 of 46 participants experienced a suicide attempt compared to 5 of 45 of the TAU subjects (Fisher exact test, $P < .487$, Yates

Table 1. Demographics and Clinical Characteristics at Baseline by Treatment Group[a]

Characteristic	TAU (n = 45)	DBT (n = 46)	Test Statistic	*P* Value
Age, mean (SD)	40.0 (11.1)	36.7 (10.6)	$t = 1.43$	.157
Sex (% male)	66.7 (30)	67.4 (31)	$\chi^2_1 = 0.01$	.941
Education				
Less than high school	26.7 (12)	21.7 (10)		
12–16 years	64.4 (29)	71.7 (33)		
More than 16 years	8.9 (4)	6.5 (3)	$\chi^2_2 = 0.57$	.751
Race				
White (non-Hispanic)	15.6 (7)	13.0 (6)		
Black (non-Hispanic)	31.1 (14)	32.6 (15)		
American Indian	2.2 (1)	0 (0)		
Asian/Pacific Islander	2.2 (1)	0 (0)		
Hispanic	42.2 (19)	47.8 (22)		
Multiple races	6.7 (3)	6.5 (3)	$\chi^2_5 = 2.32$	.803
Marital status				
Married	31.1 (14)	17.4 (8)		
Widowed	0 (0)	2.2 (1)		
Separated	13.3 (6)	13.0 (6)		
Divorced	24.4 (11)	37.0 (17)		
Never married	31.1 (14)	30.4 (14)	$\chi^2_4 = 3.91$	.418
Employment				
Employed	22.2 (10)	28.3 (13)		
Unemployed/student	77.8 (35)	71.7 (33)	$\chi^2_1 = 0.44$	.508
Social class[b]				
2	2.2 (1)	2.2 (1)		
3	20.0 (9)	15.2 (7)		
4	77.8 (35)	82.6 (38)	$\chi^2_2 = 0.36$	.834
Religion				
Christian	40.0 (18)	56.8 (25)		
Other	11.1 (5)	9.1 (4)		
None	48.9 (22)	34.1 (15)	$\chi^2_2 = 2.56$	.277
Years in military service, mean (SD)	5.5 (4.4)	5.1 (3.6)	$t = 0.42$	.673
Current Axis I and Axis II				
MDD	68.9 (31)	58.7 (27)	$\chi^2_1 = 1.02$	.312
Bipolar disorder	11.1 (5)	13.0 (6)	$\chi^2_1 = 0.08$	.777
Substance abuse	66.7 (30)	67.4 (31)	$\chi^2_1 = 0.01$	.941
PTSD	51.1 (23)	50.0 (23)	$\chi^2_1 = 0.01$	.916
Borderline personality disorder	53.3 (24)	50.0 (23)	$\chi^2_1 = 0.10$	.750
Clinical characteristics, mean (SD)				
Previous psychiatric hospitalizations[c]	5.3 (6.7)	5.5 (13.9)	$t = 0.09$	.931
C-SSRS suicide attempts (total score)	2.6 (3.0)	2.5 (4.4)	$t = 0.06$	.956
Medical problem, % Yes	72.7 (32)	67.5 (27)	$\chi^2_1 = 0.27$	.601
Baseline assessments, adjusted mean (SE)[d]				
BSS	12.6 (1.37)	12.0 (1.42)	$F_{1,81} = 0.10$	.759
BDI	31.4 (1.6)	26.1 (1.6)	$F_{1,84} = 5.32$	.024*
BHS	11.5 (0.96)	10.6 (0.95)	$F_{1,85} = 0.45$	.504
BAI	27.0 (1.99)	24.8 (1.97)	$F_{1,85} = 0.61$	.438

[a]Values are % (n) unless otherwise noted. Some percentages are based on denominators less than the group.
[b]Social class numbers represent values from the Hollingshead-Redlich scale (Hollingshead AB, Redlich FC. *Social Class and Mental Illness: A Community Study*. New York, NY: John Wiley & Sons; 1958).
[c]The n value in both groups was 45.
[d]The n values ranged from 42–45 in the TAU group and from 42–46 in the DBT group.
*$P < .05$.
Abbreviations: BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, BHS = Beck Hopelessness Scale, BSS = Beck Scale for Suicide Ideation, C-SSRS = Columbia–Suicide Severity Rating Scale, DBT = dialectical behavior therapy, MDD = major depressive disorder, PTSD = posttraumatic stress disorder, TAU = treatment as usual.

corrected χ^2, $P < .165$). There was not a significant difference in number or timing of suicide attempts between treatment arms ($B = 0.705$, SE = 0.860, Wald = 0.67, $P = .413$, NS) (Figure 3A).

Hospitalization

Both treatment groups exhibited close to a 35% hospitalization rate with similar survival curves over the 6-month treatment plus follow-up period that did not differ between treatment arms ($B = 0.123$, SE = 0.410, Wald = 0.09, $P = .764$, NS) (Figure 3B).

Suicidal Ideation

Suicidal ideation ratings, as measured by the BSS, improved over the course of the treatment trial and remained improved over the 6-month follow-up with no significant differences between treatment groups (Figure 4A).

Depression and Hopelessness

Depression as measured by the BDI and hopelessness as measured by the BHS showed improvement over the course of the treatment trial duration with no differences between treatment arms (Figure 4B and 4C).

Anxiety

Anxiety as measured by the BAI improved during the 6-month treatment trial with no significant differences between treatment groups. However, at the 6-month follow-up, DBT patients showed significantly more improvement in symptoms compared to TAU participants (post hoc analysis, $F_{1,37} = 4.52$, $P = .04$) (Figure 4D).

Stratification by Sex and BPD Diagnosis

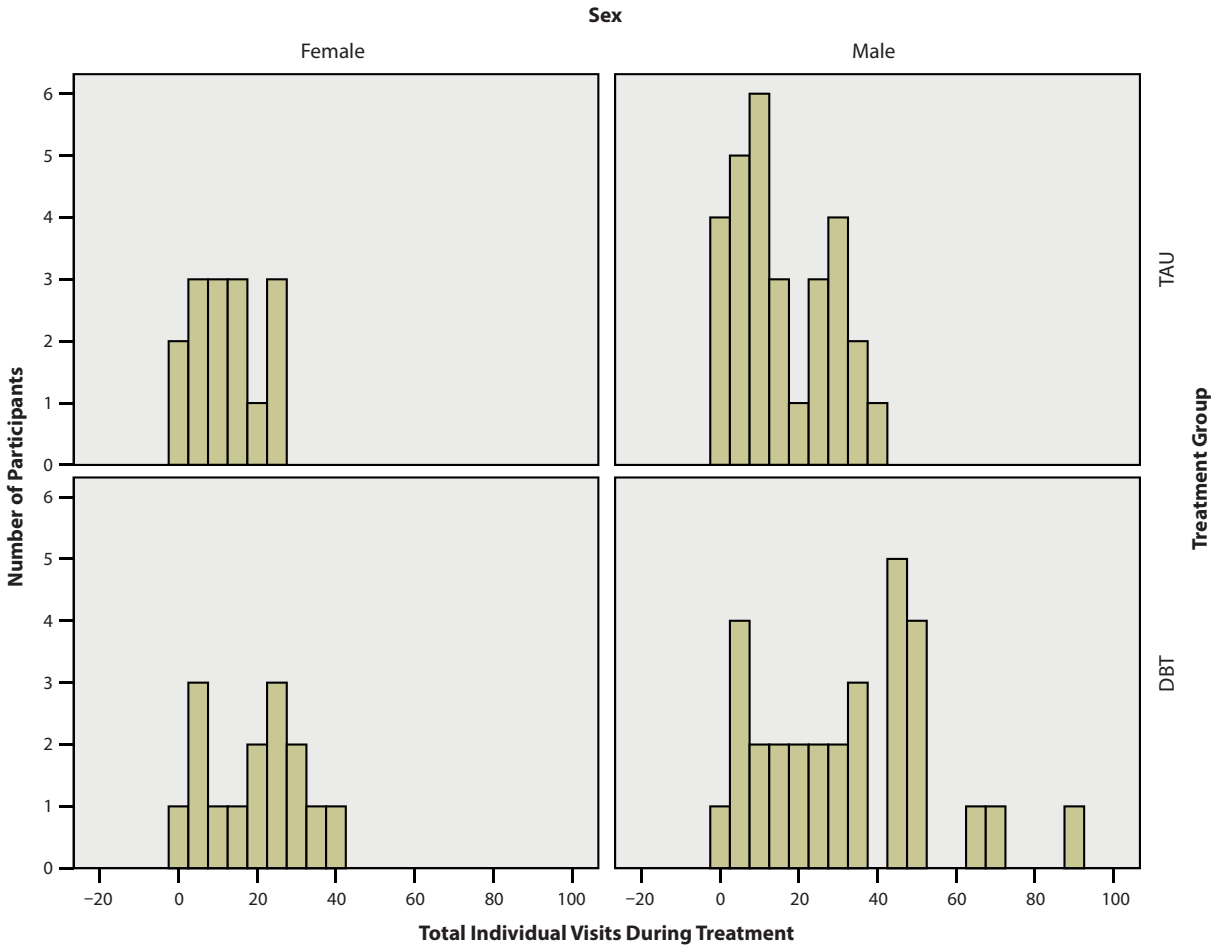
Additional analyses stratified by sex and by the presence or absence of BPD diagnosis were performed and did not change our findings.

DISCUSSION

This study is the first RCT to examine the effect of a 6-month DBT intervention on suicide-related clinical outcomes in a sample of male and female veterans at high risk for suicide, irrespective of diagnosis. Our study compared standard DBT to TAU. Our primary findings indicate that (1) both DBT and TAU result in statistically significant improvements in suicidal ideation, depression, and anxiety during the course of a 6-month treatment trial that did not differ between treatment arms; (2) at the 6-month posttreatment follow-up, DBT produced significantly larger improvement in anxiety compared to TAU; (3) survival analyses for suicide attempts and hospitalizations suggest no differences across treatment groups in these outcome measures; and (4) DBT was associated with significantly more utilization of individual mental health services compared to TAU.

Our results are consistent with previous studies showing a significant effect of DBT in improving suicidal ideation and depression. However, we found no advantage of DBT compared to TAU in any of the outcome measures, with both

Figure 2. Total Number of Individual Mental Health Visits by Treatment Group and Sex: Treatment as Usual (TAU) Versus Dialectical Behavior Therapy (DBT)[a]



[a]Total visits for this diagram were calculated by counting appointments in the medical record system. Data for 1 male from each treatment arm are not included as these individuals had additional outpatient treatment conducted outside the study facility, and those sessions could not be counted.

treatments resulting in similar improvements. This is in contrast to published studies that report significantly larger improvements in the DBT group in suicidal ideation, anger, and depression[14]—in a female veteran population—and reductions in suicide attempts, inpatient hospitalization days,[26] and parasuicide events[15]—in a female civilian population.

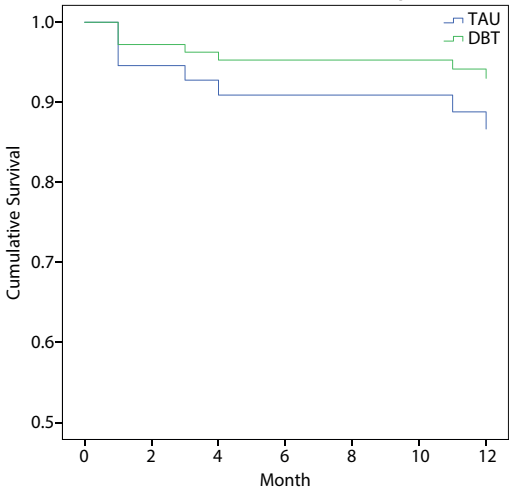
Several factors may contribute to the lack of differences between the positive effects of DBT and TAU in our study. First, the TAU we used as the comparison treatment in our study may be more structured and effective than the TAU used in most studies. The growing emphasis and attention on suicide prevention services in the VA[3] may have resulted in more enhanced treatment services for both groups including access to SPCs, 24-hour hotline services, and mandated treatment monitoring for those individuals on the high-risk suicide list, which did not differ in number across treatment arms. Our findings are consistent with those of more recent DBT RCTs comparing DBT to more structured treatments such as general psychiatric management[29] and transference-focused psychotherapy,[32] which report few significant differences between treatment arms.

In addition, our DBT was adapted for VA practice, which may have diluted its efficacy. Adaptations included the mandated use of the VA suicide-screening instruments and lower thresholds for psychiatric admission than practiced in other settings. Our elevated rate of hospitalization compared to rates in earlier published studies[13,14,21] may also reflect increased levels of homelessness, comorbid medical illnesses, substance abuse, and combat-related PTSD seen in our patients. In addition, our DBT treatment length was 6 months compared to published trials of 1-year duration,[15,26,29] which may have weakened our treatment effect. However, other investigators have studied 6-month treatment duration with beneficial effect.[14,51]

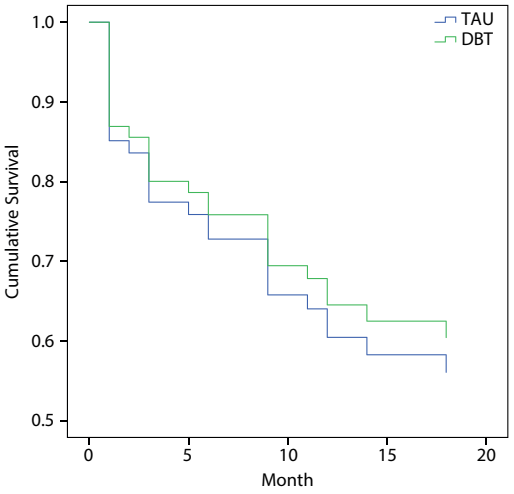
Another possible explanation for our findings pertains to the clinical, sex, and demographic characteristics of our sample. While DBT was developed to treat BPD, we aimed to study the effect of DBT on high-risk veterans irrespective of BPD diagnosis. Borderline personality disorder was present in about half of our subjects, and other diagnoses including depression, PTSD, and substance abuse were also well represented. It is possible that the underlying etiology of suicide-related symptomatology in this broader diagnostic

Figure 3. Cumulative Survival Rates During Trial for Veterans at High Risk for Suicide Receiving Either Treatment as Usual (TAU) or Dialectical Behavior Therapy (DBT) and Followed to 12 Months[a]

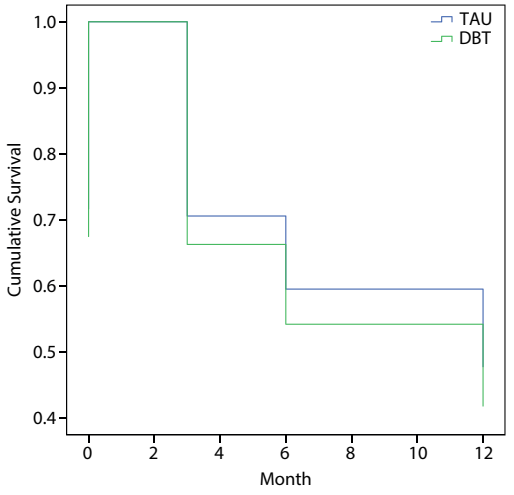
A. Survival Curve for Time to First Suicide Attempt



B. Survival Curve for Time to First Hospitalization[b]



C. Survival Curve for Time to Attrition[c]



[a]There were no significant differences between the 2 treatments for each of the 3 survival analyses. [b]Time to hospitalization was determined by short review to 18 months. [c]32% of subjects dropped out of treatment by the second session, which did not significantly differ between treatment arms.

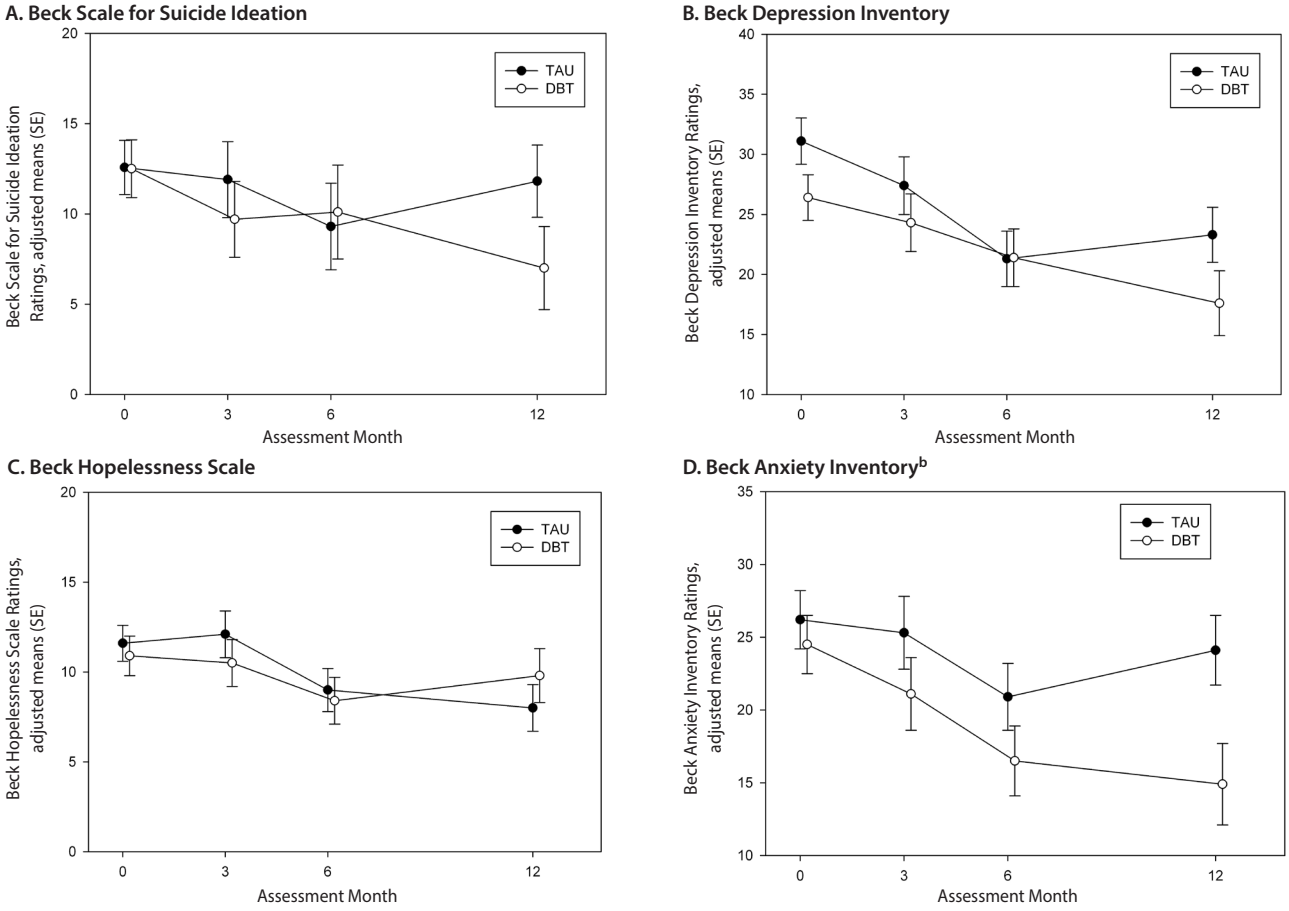
sample may involve factors other than emotion dysregulation, which DBT specifically targets, and therefore would be less effective for these individuals. Moreover, very few DBT trials have included men. According to a 2012 Cochrane report[52] that included 10 published studies on DBT, 7 were all-women samples. Using the Cochrane data to calculate the total number of women and men studied in a DBT trial, we discovered that of the 657 DBT patients studied to date, only 41 (6.2%) were men. Furthermore, only 1 trial was performed in a veteran population, but it included only women. Our study is the first to examine a VA sample including men. It is possible that DBT is perceived as a treatment oriented to women, which may decrease effectiveness in men. The silhouette on the cover of the original skills training manual[23] and many of the teaching examples pertain to traditionally feminine activities. Nevertheless, while we did not find sex differences in our outcome data, we were underpowered to detect them. Given the paucity of data on treatment response to DBT in men, additional studies examining outcome in men are sorely needed.

Substance addiction, a prevalent problem in veterans, is often an exclusionary criterion for DBT research studies. Our high rates of substance abuse (80%–83%) and unstable living arrangements (20%–22%) may contribute to treatment-resistance in our cohort. This was evidenced by our very high dropout rate in the initial phase of the study (32%). The elevated rate of substance abuse comorbidity in our population adds to the growing literature on the extensive health resources required for the treatment of veterans with addiction,[53] the previous reports of limited treatment options for BPD individuals with comorbid substance abuse,[54] and the poor outcomes of DBT with substance abuse.[55] Such data highlight the need for innovative approaches for this refractory population. We particularly had difficulty engaging participants in outpatient care after a hospitalization for suicidality in both treatment arms. This is problematic as the transition period after discharge is a particularly risky time for suicide.[56,57]

Our study did not demonstrate statistically significant differential improvement in suicidality or depression as compared to TAU for suicidal veterans. However, symptomatic improvement in anxiety continued for an additional 6 months posttreatment for the DBT participants but not for TAU, suggesting superior persistence of treatment effect. While this delayed treatment effect is not reflected in the literature, there are data demonstrating continued treatment effect at follow-up intervals of 6–12 months.[15,55]

Dropouts were a noteworthy concern in this study and did not significantly differ between treatment arms. We examined several of our baseline assessment variables in attempts to distinguish subjects who completed versus dropped out of the study irrespective of randomization status. These variables included (1) current symptom levels of depression (BDI-II), hopelessness (BHS), suicidality (BSS), or anxiety (BAI); (2) demographics including age, number of previous hospitalizations, and years in the military; and (3) suicide history measures. Two marginal findings were noted.

Figure 4. Clinical Outcomes Among Veterans at High Risk for Suicide, Receiving Either Treatment as Usual (TAU) or Dialectical Behavior Therapy (DBT)[a]



[a]Means are adjusted for the following covariates: age, sex, education, and previous hospitalizations.
[b]Post hoc analysis for Beck Anxiety Inventory ($F_{1,37} = 4.52$, $P = .04$).

Dropouts compared to completers exhibited marginally lower hopelessness (BHS) scores (10.0 ± 6.2 vs 12.5 ± 6.5, $t = 1.86$, $P = .067$) and suicidality (BSS) scores (10.9 ± 8.7 vs 14.2 ± 9.1, $t = 1.73$, $P = .087$), perhaps indicating less perceived need for treatment. In addition, baseline diagnoses of current major depressive disorder or substance abuse did not significantly impact the number of study visits. Future studies will benefit from a more detailed characterization and examination of predictors of treatment dropout.

One last consideration is that without a placebo control group that our study design did not include, we cannot rule out the possibility that the clinical improvement across both treatment arms is attributable to factors outside of the treatment, including the passage of time, or regression to the mean. In addition, because the study did not utilize a medication algorithm for concurrent psychopharmacologic management, but instead allowed treating psychiatrists to medicate according to clinical judgment, we cannot rule out the effect of medication use or dosage on treatment outcomes. In summary, this is the first study to examine 6-month DBT in a primarily male, veteran population at high risk for suicide across psychiatric diagnoses. Our findings indicate that both DBT and the enhanced TAU for suicidal veterans were effective treatments that did not differ across our outcomes. However, DBT did result in increased mental health treatment service delivery. Future studies examining possible sex differences and strategies to boost retention in difficult-to-engage populations are indicated.

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