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Original Investigation

Dialectical Behavior Therapy for High Suicide Risk in Individuals With Borderline Personality Disorder
A Randomized Clinical Trial and Component Analysis

Marsha M. Linehan, PhD; Kathryn E. Korslund, PhD; Melanie S. Harned, PhD; Robert J. Gallop, PhD; Anita Lungu, PhD; Andrada D. Neacsiu, PhD; Joshua McDavid, MD; Katherine Anne Comtois, PhD; Angela M. Murray-Gregory, MSW

IMPORTANCE Dialectical behavior therapy (DBT) is an empirically supported treatment for suicidal individuals. However, DBT consists of multiple components, including individual therapy, skills training, telephone coaching, and a therapist consultation team, and little is known about which components are needed to achieve positive outcomes.

OBJECTIVE To evaluate the importance of the skills training component of DBT by comparing skills training plus case management (DBT-S), DBT individual therapy plus activities group (DBT-I), and standard DBT which includes skills training and individual therapy.

DESIGN, SETTING, AND PARTICIPANTS We performed a single-blind randomized clinical trial from April 24, 2004, through January 26, 2010, involving 1 year of treatment and 1 year of follow-up. Participants included 99 women (mean age, 30.3 years; 69 [71%] white) with borderline personality disorder who had at least 2 suicide attempts and/or nonsuicidal self-injury (NSSI) acts in the last 5 years, an NSSI act or suicide attempt in the 8 weeks before screening, and a suicide attempt in the past year. We used an adaptive randomization procedure to assign participants to each condition. Treatment was delivered from June 3, 2004, through September 29, 2008, in a university-affiliated clinic and community settings by therapists or case managers. Outcomes were evaluated quarterly by blinded assessors. We hypothesized that standard DBT would outperform DBT-S and DBT-I.

INTERVENTIONS The study compared standard DBT, DBT-S, and DBT-I. Treatment dose was controlled across conditions, and all treatment providers used the DBT suicide risk assessment and management protocol.

MAIN OUTCOMES AND MEASURES Frequency and severity of suicide attempts and NSSI episodes.

RESULTS All treatment conditions resulted in similar improvements in the frequency and severity of suicide attempts, suicide ideation, use of crisis services due to suicidality, and reasons for living. Compared with the DBT-I group, interventions that included skills training resulted in greater improvements in the frequency of NSSI acts ($F_{1,85}$ = 59.1 [P < .001] for standard DBT and $F_{1,85}$ = 56.3 [P < .001] for DBT-S) and depression (t_{399} = 1.8 [P = .03] for standard DBT and t_{399} = 2.9 [P = .004] for DBT-S) during the treatment year. In addition, anxiety significantly improved during the treatment year in standard DBT (t_{94} = −3.5 [P < .001]) and DBT-S (t_{94} = −2.6 [P = .01]), but not in DBT-I. Compared with the DBT-I group, the standard DBT group had lower dropout rates from treatment (8 patients [24%] vs 16 patients [48%] [P = .04]), and patients were less likely to use crisis services in follow-up (ED visits, 1 [3%] vs 3 [13%] [P = .02]; psychiatric hospitalizations, 1 [3%] vs 3 [13%] [P = .03]).

CONCLUSIONS AND RELEVANCE A variety of DBT interventions with therapists trained in the DBT suicide risk assessment and management protocol are effective for reducing suicide attempts and NSSI episodes. Interventions that include DBT skills training are more effective than DBT without skills training, and standard DBT may be superior in some areas.

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Evidence continues to accumulate supporting the efficacy of standard dialectical behavior therapy (DBT)[1] for the treatment of suicidal individuals with borderline personality disorder (BPD). A meta-analysis of 16 studies of DBT for BPD[2] found a low overall dropout rate (27.3%) and moderate before-and-after effect sizes for global outcomes as well as suicidal and self-injurious behaviors. The most recent Cochrane review[3] concluded that DBT is the only treatment with sufficient replication to be considered evidence based for BPD.

Although DBT is clearly efficacious and increasingly available in practice settings, demand for DBT far exceeds existing resources.[4] The multicomponent nature of DBT (individual therapy, group skills training, between-session telephone coaching, and a therapist consultation team) lends itself to dismantling in clinical settings. Group skills training in DBT is frequently offered alone or, in community mental health settings, with standard case management instead of DBT individual therapy. Other clinicians, often those in private practice, offer DBT individual therapy without any DBT group skills training. The relative importance of DBT skills training compared with other DBT components has not been studied directly, and the overarching aim of the present study was to conduct a dismantling study of DBT to evaluate this question. We predicted that standard DBT, including DBT individual therapy and DBT group skills training, would be significantly better than DBT skills training without DBT individual therapy but with manualized case management (DBT-S) and better than DBT individual therapy without DBT skills training but with an activities group (DBT-I) in reducing suicide attempts, nonsuicidal self-injury (NSSI) episodes, inpatient and emergency department (ED) admissions, depression, anxiety, and treatment dropout. We made no predictions for differences between DBT-S and DBT-I.

Methods

Study Design

We conducted a 3-arm, single-blind randomized clinical trial from April 24, 2004, through January 26, 2010. A computerized adaptive randomization procedure[5] matched participants on age, number of suicide attempts, number of NSSI episodes, psychiatric hospitalizations in the past year, and depression severity. Assessments were conducted before treatment and quarterly during 1 year of treatment and 1 year of follow-up by blinded independent assessors trained by instrument developers or approved trainers (including K.A.C. and A.M.M.-G.) and evaluated as reliable for each instrument. The participant coordinator, who was not blinded to the treatment condition, executed the randomization and collected treatment-related data. Participants were informed of their treatment assignment at the first therapy session. All study procedures were approved by the institutional review board of the University of Washington and were performed at the Behavioral Research and Therapy Clinics and community settings in Seattle. The full study protocol can be found in the trial protocol in Supplement 1. All participants provided written informed consent after the study procedures were explained. The flow of participants through the study is shown in the **Figure**.

Participants

Participants were 99 women aged 18 to 60 years who met criteria for BPD on the International Personality Disorder Examination[6] and the Structured Clinical Interview for *DSM-IV*, Axis II[7] and had at least 2 suicide attempts and/or NSSI episodes in the past 5 years, at least 1 suicide attempt or NSSI act in the 8-week period before entering the study, and at least 1 suicide attempt in the past year. Owing to recruitment difficulties, inclusion criteria were relaxed late in the study, which allowed 1 participant to enter who had a suicide attempt in the 8 weeks before the study but no additional NSSI episodes and 5 participants to enter who met the recurrent NSSI criteria but did not have a suicide attempt in the past year. Individuals were excluded if they had an IQ score of less than 70 on the Peabody Picture Vocabulary Test-Revised[8]; met criteria for current psychotic or bipolar disorders on the Structured Clinical Interview for *DSM-IV*, Axis I[9]; had a seizure disorder requiring medication; or required primary treatment for another life-threatening condition (eg, severe anorexia nervosa). Recruitment was via outreach to health care practitioners.

Measures

The Suicide Attempt Self-injury Interview[10] measured the frequency, intent, and medical severity of suicide attempts and NSSI acts. The Suicidal Behaviors Questionnaire[11] assessed suicide ideation. The importance of reasons for living was assessed with the Reasons for Living Inventory.[12] Use of crisis services and psychotropic medications was assessed via the Treatment History Interview (M.M.L., unpublished data, 1987), which has been shown to have high (90%) agreement with hospital records. The severity of depression and anxiety was assessed via the Hamilton Rating Scale for Depression[13] and Hamilton Rating Scale for Anxiety.[14]

Therapists

Therapists who delivered individual DBT (n = 15), DBT group therapists (n = 3), and case managers (n = 5) did not differ by sex (17 female [74%]) or clinical experience (18 [78%] had received their degree <10 years earlier). Fifteen therapists delivering individual DBT (93%) had a doctoral degree compared with 1 therapist delivering group DBT (33%) and none of the case managers ($\chi^2_2 = 15.9$ [$P < .001$]). Therapists and case managers were trained independently and monitored by experts in their respective interventions. A licensed psychiatric nurse practitioner provided psychotropic medications under the supervision of a psychiatrist.

Treatments

A detailed description of the treatment conditions and associated protocols is provided in **Table 1**. The DBT Adherence Scale (M.M.L. and K.E.K, unpublished data, 2003) was used to code randomly selected DBT individual and group therapy sessions, and 10% of the coded sessions were evaluated for interrater reliability (intraclass correlation, 0.93).

Standard DBT

Standard DBT[1,15,16] is a comprehensive multicomponent intervention designed to treat individuals at high risk for sui-

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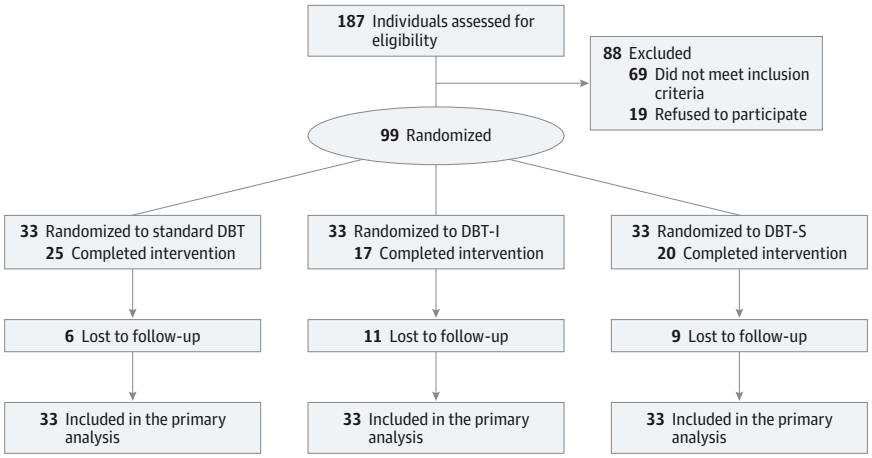
Figure. Participant Flowchart



The CONSORT diagram shows the randomization of participants to standard dialectical behavior therapy (DBT) consisting of individual therapy, group skills training, therapist consultation team, and as-needed between-session telephone coaching; DBT individual therapy (DBT-I) consisting of individual therapists focused on helping patients use the skills they already have; and skills training DBT (DBT-S) consisting of group skills training while removing the individual therapy component.

cide who meet criteria for multiple disorders. Standard DBT is divided into the following 4 weekly components: individual therapy, group skills training, therapist consultation team, and as-needed between-session telephone coaching. Strategies drawn from cognitive and behavioral interventions (eg, behavioral assessment, contingency management, exposure, cognitive restructuring, and skills training), dialectics, and the radical acceptance practices of validation and mindfulness are used across all 4 DBT components, as are an array of DBT protocol-based suicide interventions, including use of the Linehan Suicide Risk Assessment and Management Protocol (LRAMP).[17]

DBT Skills Training

The DBT skills training condition (DBT-S) was designed to evaluate the effect of DBT skills training by providing DBT group skills training while removing the DBT individual therapy component. To control for treatment dose and to ensure crisis and suicide management, individual therapy was replaced by a manualized case management intervention.[18] Case management followed a strengths-based needs assessment model and involved finding resources, providing information, managing suicidal crises, and assisting with solving problems.

DBT Individual Therapy

The DBT individual therapy condition (DBT-I) was designed to eliminate all DBT skills training from the treatment by removing group skills training and prohibiting individual therapists from teaching DBT skills. Instead, individual therapists focused on helping patients use the skills they already had and only offered suggestions, using standard behavioral vocabulary, when patients were unable to generate their own solutions. To control for treatment dose, an activity-based support group was added and delivered by case managers that included psychoeducation and activities commonly used in recreational and activity therapy (eg, drawing, movies, or social outings).

Statistical Analysis

Primary outcome analyses implemented mixed-effects modeling, including mixed-model analysis of variance for nonlinear data,[19] hierarchical linear models for linear data,[20] zero-inflated negative binomial models for outcomes with a preponderance of zeroes,[21] and generalized linear mixed models for binary outcomes.[22] Pairwise contrasts from the mixed-effects models were used to evaluate between-group differences. Pattern-mixture models were used to assess whether estimates in the mixed-effects models were dependent on missing data patterns. For the time to events outcomes, survival curves using the Cox proportional hazards model with censoring for patients who were lost to or unavailable for follow-up or who never achieved the event of interest were used. Cross-sectional comparisons were conducted using analysis of variance, Kruskal-Wallis tests, and χ^2 tests. The study was powered for 1-tailed tests to demonstrate superiority of standard DBT to each of the component treatment conditions. Therefore, all predicted differences were tested with 1-tailed tests, and exploratory analyses comparing DBT-S and DBT-I were conducted with 2-tailed tests. With a sample size of 33 per condition, we estimated 83% power to detect a 1-tailed difference on the primary outcomes of suicide attempts and NSSI acts with an effect size of 0.55.

Results

Treatment Dropout, Implementation, and Adherence

The treatment groups did not differ significantly on pretreatment characteristics (**Table 2**). As shown in **Table 3**, more clients dropped out of treatment in DBT-I than in standard DBT. Time to treatment dropout was more than 2 times faster for DBT-I than for standard DBT ($\chi^2_1 = 3.7$ [$P = .03$]; hazard ratio, 2.3 [95% CI, 1.1-4.7]). Participants in standard DBT received significantly more individual sessions than those in DBT-S owing to weekly sessions in standard DBT and as-needed sessions in DBT-S. Participants in standard DBT and DBT-S received more group therapy sessions than those in DBT-I owing to the

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Table 1. Components of the Study Treatment Conditions

Component	Study Treatment		
	Standard DBT[a]	DBT-S[a]	DBT-I
Individual sessions	DBT individual therapy (1 h/wk)	Standardized case management (as needed with a minimum of 1 in-person or telephone contact per month and a maximum mean of 1 session/wk)	Identical to standard DBT except specific teaching and coaching in DBT skills was prohibited
Group sessions	DBT group skills training (2.5 h/wk)	Identical to standard DBT	Activity-based support group (2.5 h/wk)
Approach to teaching skills	Highly suicidal patients and those with BPD need training to learn new behavioral skills and active coaching in using old and new skills to solve their problems in living	Identical to standard DBT	Highly suicidal patients and those with BPD need active coaching in using skills they already have but are not using to solve their problems in living
Telephone coaching	Available as needed during and after hours within the therapist's limits	Available with case manager during office hours; after-hours calls managed by Seattle Crisis Clinic	Identical to standard DBT
Consultation team	DBT consultation team meeting (1 h/wk)	Case managers have group supervision meeting (1 h/wk); DBT skills trainers identical to standard DBT	Identical to standard DBT
Definition of treatment dropout	Missing 4 consecutive weeks of scheduled individual or group therapy sessions	For DBT skills training, missing 4 consecutive weeks of scheduled group therapy sessions; for case management, missing monthly contact	Missing 4 consecutive weeks of scheduled individual therapy sessions
Medication management	Individual therapists encouraged patients to work with prescriber to taper medication therapy where feasible ("replacing pills with skills"); patient- or therapist-initiated medication requests made only after an 8-wk trial of targeted behavioral treatment	Patient- or case manager–initiated medication requests made only after an 8-wk trial of DBT skills	Identical to standard DBT
Crisis management protocols	All providers used the LRAMP; DBT skills trainers were provided with a crisis management plan from the individual DBT therapist	All providers used the LRAMP; DBT skills trainers were provided with a crisis management plan from the case manager; case managers also filed plans with the Seattle Crisis Clinic	All providers used the LRAMP; activity group leaders were provided with a crisis management plan from the individual DBT therapist

Abbreviations: BPD, borderline personality disorder; DBT, dialectical behavioral therapy; DBT-I, individual DBT; DBT-S, skills training DBT; LRAMP, Linehan Suicide Risk Assessment and Management Protocol.

[a] The skills used were the new updated and expanded set of DBT skills.[15,16]

optional nature of group therapy in DBT-I. Participants in standard DBT attended more groups than those in DBT-S owing to trend-level differences in treatment retention. Treatment adherence did not differ between standard DBT and DBT-S for group skills training, but it did differ between standard DBT and DBT-I for individual therapy. We found no between-group differences in use of psychotropic medications.

Missing Data Patterns

We found no difference in the rate of dropout from study assessments (standard DBT, 6 participants [18%]; DBT-I, 11 [33%]; and DBT-S, 9 [27%] [P >.15]). No evidence indicated that the findings on any major outcome variable were biased by group differences in missing data.

Outcome Analyses

Results of all outcome analyses are shown in the eTable in Supplement 2. These results indicate that participants experienced significant improvements over time on all outcomes.

Suicide-Related Outcomes

One participant in the standard DBT intervention committed suicide during the study 1.5 years after the individual dropped out of the study treatment. We found no significant differences between groups in the occurrence of any suicide attempt, the mean number of suicide attempts among those who attempted suicide, the occurrence of any NSSI act, the highest medical risk for suicide attempts and NSSI acts, suicide ideation, or reasons for living. Survival analysis also indicated no difference between groups in the time to the first suicide attempt ($\chi^2_2 = 1.4$ [$P = .50$]). The only significant between-group difference was in the mean number of NSSI acts among participants who engaged in the behavior. Specifically, the frequency of NSSI acts among those engaging in the behavior was significantly higher in DBT-I than in standard DBT ($F_{1,85} = 59.1$ [$P < .001$]) and DBT-S ($F_{1,85} = 56.3$ [$P < .001$]) during the treatment year but not during the follow-up year.

Use of Crisis Services

During the treatment year, we found no differences between groups in the rates of ED visits or hospital admissions for any psychiatric reason. During the follow-up year, fewer participants in the standard DBT group than in the DBT-I group visited an ED for any psychiatric reason (1 [3%] vs 3 [13%]; $t_{72} = 2.0$ [$P = .02$]) or were admitted to a psychiatric hospital for any psychiatric reason (1 [3%] vs 3 [13%]; $t_{72} = 2.0$ [$P = .03$]). We found no differences

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Table 2. Baseline Demographic and Diagnostic Characteristics[a]

Variable	Study Treatment			All (N = 99)
	Standard DBT (n = 33)	DBT-I (n = 33)	DBT-S (n = 33)	
Demographic Characteristic				
Age, mean (SD), y	31.1 (8.2)	30.1 (9.6)	29.8 (8.9)	30.3 (8.9)
Race[b]				
White	24 (75)	21 (66)	24 (73)	69 (71)
Asian American	1 (3)	3 (9)	1 (3)	5 (5)
Biracial	6 (19)	8 (25)	7 (21)	21 (22)
Other	1 (3)	0	1 (3)	2 (2)
Single, divorced, or separated	25 (76)	28 (85)	31 (94)	84 (85)
Educational level				
Less than high school	1 (3)	4 (12)	2 (6)	7 (7)
High school graduate or certificate of GED	4 (12)	3 (9)	2 (6)	9 (9)
Some college or technical school	19 (58)	20 (61)	18 (55)	57 (58)
College graduate	9 (27)	6 (18)	11 (33)	26 (26)
Annual income, $[b]				
<15 000	17 (53)	25 (76)	17 (52)	59 (60)
15 000-29 999	10 (31)	6 (18)	12 (36)	28 (29)
≥30 000	5 (16)	2 (6)	4 (12)	11 (11)
Lifetime Axis I Psychiatric Diagnosis[b]				
Major depressive disorder	32 (97)	32 (100)	31 (97)	95 (98)
Any anxiety disorder	30 (91)	30 (94)	27 (84)	87 (90)
Any substance use disorder	27 (82)	23 (72)	19 (59)	69 (71)
Any eating disorder	13 (39)	15 (47)	10 (31)	38 (39)
Current Axis I Psychiatric Diagnosis[b]				
Major depressive disorder	21 (64)	24 (75)	25 (78)	70 (72)
Any anxiety disorder	29 (88)	27 (84)	25 (78)	81 (84)
Any substance use disorder	15 (46)	12 (38)	10 (31)	37 (38)
Any eating disorder	5 (15)	5 (16)	5 (16)	15 (16)
Axis II Psychiatric Diagnosis[b]				
Paranoid	5 (15)	3 (10)	4 (13)	12 (13)
Schizoid	0	0	0	0
Schizotypal	0	1 (3)	0	1 (1)
Antisocial	5 (15)	4 (13)	3 (10)	12 (13)
Histrionic	2 (6)	2 (7)	0	4 (4)
Narcissistic	0	0	0	0
Avoidant	12 (36)	9 (29)	5 (16)	26 (27)
Dependent	2 (6)	1 (3)	0	3 (3)
Obsessive-compulsive	6 (18)	5 (16)	4 (13)	15 (16)
No. of current psychotropic medications, mean (SD)	3.6 (3.2)	3.3 (2.5)	2.5 (2.3)	3.1 (2.7)

Abbreviations: DBT, dialectical behavioral therapy; DBT-I, individual DBT; DBT-S, skills training DBT; GED, General Education Development.

[a] All demographic data were obtained via self-report. Data are given as number (percentage) of participants unless otherwise indicated. Continuous variables were compared using analysis of variance, and categorical data were compared using χ^2 tests. No significant between-group differences were found.

[b] Data were incomplete for these categories.

between groups in the rate of ED visits or hospital admissions for suicidality during the treatment or the follow-up year.

Mental Health Outcomes

During the treatment year, depression improved less in DBT-I than in standard DBT (t_{399} = 1.8 [P = .03]) and DBT-S (t_{399} = 2.9 [P = .004]). During the follow-up year, depression improved more in the DBT-I than the standard DBT (t_{399} = 3.8 [P < .001]) and DBT-S (t_{399} = 3.1 [P < .01]) groups. The rate of change in anxiety did not significantly differ between groups during the treatment year, although anxiety significantly improved in the standard DBT (t_{94} = −3.5 [P < .001]) and DBT-S (t_{94} = −2.6 [P = .01]) groups but not in the DBT-I group (t_{94} = −0.8 [P = .42]). We found a significant difference between groups in the rate of change in anxiety during the follow-up year, with the DBT-I group improving more than the standard DBT (t_{94} = 2.5 [P = .01]) and DBT-S (t_{94} = 2.0 [P = .048]) groups. In sum, the pattern of change was similar for depression and anxiety, with the DBT-I group improving less than the other groups during the treatment year and then catching up during the follow-up year.

Discussion

The focus of this randomized clinical trial was to determine whether the skills training component of DBT is necessary

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Table 3. Treatment Dropout, Implementation, and Adherence[a]

	Study Treatment		
	Standard DBT (n = 33)	DBT-I (n = 33)	DBT-S (n = 33)
Treatment Dropout			
No. (%)	8 (24)	16 (48)	13 (39)[b]
Weeks before	25.5 (8.5-40.0)	22.5 (11.0-37.8)	21.0 (5.5-33.5)
Treatment Implementation			
Treatment year			
No. of individual therapy sessions by study therapists	41.0 (32.0-51.0)	30.0 (12.0-48.0)	19.0 (10.5-34.5)[c]
No. of all individual therapy sessions[d]	42.0 (32.0-52.5)	33.0 (12.0-48.0)	20.0 (12.5-34.5)[c]
No. of group therapy sessions with study therapists	32.0 (23.5-40.0)	6.0 (2.0-11.0)	23.0 (13.5-34.5)[b,c,e]
No. of all group therapy sessions[d]	32.0 (24.0-40.0)	6.0 (2.0-12.5)	26.0 (13.5-36.0)[b,e]
Total treatment hours[f]	55.3 (42.2-67.0)	40.0 (14.0-55.0)	31.7 (16.8-47.3)[b,c]
Weeks in study treatment[g]	52.0 (48.5-54.0)	49.0 (25.0-55.0)	50.0 (27.5-55.0)
Follow-up year			
Any outpatient therapy, No. (%)	15 (52)	10 (44)	12 (50)
Individual therapy, No. (%)	15 (52)	10 (44)	12 (50)
No. of individual therapy sessions	2 (0-19.0)	0 (0-10.0)	1.5 (0-18.5)
Total treatment hours	3 (0-31.8)	3.3 (0-35.0)	8.5 (0-22.7)
Treatment Adherence[h]			
DBT individual therapy sessions, mean (SD)	4.20 (0.18)	4.16 (0.18)[b]	NA
DBT group therapy sessions, mean (SD)	4.20 (0.12)	NA	4.20 (0.11)
Psychotropic Medication			
No. during treatment year, mean (SD)	1.5 (1.6)	1.7 (1.6)	1.7 (1.6)
No. during follow-up year, mean (SD)	2.4 (2.9)	2.5 (2.6)	2.5 (2.1)

Abbreviations: DBT, dialectical behavioral therapy; DBT-I, individual DBT; DBT-S, skills training DBT; NA, not applicable.

[a] Unless otherwise indicated, data are given as median (interquartile range). Proportions were compared using χ^2 tests, and continuous variables were compared with Kruskal-Wallis tests and *t* tests. *P* values are 2 tailed.

[b] *P* < .05, standard DBT compared with DBT-I.

[c] *P* < .05, standard DBT compared with DBT-S.

[d] Includes sessions outside of the study.

[e] *P* < .05, DBT-S compared with DBT-I.

[f] Indicates total inpatient and outpatient treatment time. Each session of individual therapy, family therapy, and vocational counseling was counted as 1 hour of therapy; each group therapy session, 20 minutes of therapy; each day of day treatment, 30 minutes of therapy; and each psychiatric inpatient day, 3.5 hours of therapy.

[g] Indicates total number of weeks clients saw any study therapist.

[h] Rated for 439 individual therapy sessions and 49 group therapy sessions.

and/or sufficient to reduce suicidal behaviors and improve other outcomes among individuals at high risk for suicide. To that end, we compared standard DBT, which included DBT group skills training and DBT individual therapy, with a treatment that evaluated DBT group skills training with manualized case management and removed DBT individual therapy (DBT-S) and a treatment that removed DBT skills training by providing only DBT individual therapy with an activities group and prohibited individual therapists from teaching DBT skills (DBT-I). All 3 conditions resulted in significantly reduced suicide attempts, suicide ideation, medical severity of intentional self-injury, use of crisis services owing to suicidality, and improved reasons for living. Contrary to our expectations, standard DBT was not superior to either comparison condition for any suicide-related outcome, and no significant differences were detected between DBT-S and DBT-I. Thus, all 3 versions of DBT were comparably effective at reducing suicidality among individuals at high risk for suicide.

In contrast, findings suggested that DBT interventions that included DBT skills training (standard DBT and DBT-S) were more effective in reducing NSSI acts and improving other mental health problems than a DBT intervention without skills training (DBT-I). Specifically, among patients who engaged in at least 1 episode of NSSI during the treatment year, those with skills training engaged in fewer NSSI acts than those without skills training. Those without skills training were also slower to improve on measures of depression and anxiety during the treatment year. These findings are consistent with research indicating that increasing DBT skills use mediates reductions in NSSI and depression,[23] and they suggest that DBT skills training is a necessary component to achieve optimal outcomes in these areas.

Overall, our findings suggest that standard DBT may have several potential benefits compared with both dismantled conditions. Compared with DBT-I, standard DBT was superior in retaining patients in treatment, reducing the frequency of NSSI, improving mental health outcomes during treatment, and reducing ED visits and hospitalizations after treatment. In addition, although not reaching the level of statistical significance, several clinically meaningful differences emerged during the follow-up year between standard DBT and DBT-S. Specifically, during the follow-up year, the rates of suicide attempts, ED visits, and hospitalizations were each 2.0 to 2.4 times lower

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in the standard DBT than in the DBT-S groups. Together, our findings suggest that standard DBT and DBT-S show advantages over DBT-I during the acute treatment year, and standard DBT may be particularly effective in maintaining gains in the year after treatment.

Several characteristics of our design are important to remember when interpreting these results. First, because we believed that standard DBT would be superior, we were not willing to let someone die by suicide to make a point. Therefore, every treatment provider, including the study pharmacotherapist, was trained in the DBT suicide risk assessment and management protocol (the LRAMP[17]). Several notable effects resulted from such a decision. First, all practitioners were required to fill out the LRAMP whenever there was an increase in suicidality, a credible suicide threat, or an actual NSSI act or suicide attempt. The impact was to enforce consistent monitoring of suicidality on all treatment providers. Although routine assessment of suicide risk is a critical component of competent care for suicidal individuals,[24] it is not the norm among mental health care professionals.[25] Moreover, monitoring of behavior inevitably leads to targeting of problem behaviors and, based on our clinical experience, we believe that behaviors monitored and targeted are those most likely to change.

Second, by virtue of training in the LRAMP, treatment providers across conditions had specialized training in the assessment and management of suicidal behavior. Specialized training in suicide management may be a critical factor in the management and reduction of suicidal behaviors. For example, in a study that compared rates of suicide attempts among individuals discharged from inpatient units for suicidality,[26] those who continued treatment with their inpatient psychiatrist had higher rates of suicide attempts than those referred to a suicide crisis center. Similarly, in a large study finding no significant differences in suicidality between DBT and an emotion-focused psychodynamic treatment plus medications,[27] both conditions were led by experts in suicide interventions.

Third, DBT has always had a strong bias toward having 1 and only 1 practitioner in charge of treatment planning, including managing risk. Therefore, across all conditions, patients believed to be at imminent risk for suicide were referred immediately to their individual treatment provider for risk management. This practice is in contrast to many settings where the treatment providers interacting with the client routinely make independent decisions for or against admission to the ED or the inpatient unit. This procedure combined with DBT's bias toward outpatient rather than inpatient treatment for suicidality may have been instrumental in keeping ED and inpatient admissions reasonably low. Although we know of no research on this issue to date, hospitalizing suicidal individuals might be iatrogenic rather than therapeutic, as is suggested by the well-documented findings that individuals leaving psychiatric inpatient units have a very high risk of committing suicide in the week and year after discharge.[28] To our knowledge, no credible evidence suggests that hospitalization is more effective than outpatient treatment in keeping suicidal individuals alive. The 2 small studies that have compared inpatient with outpatient interventions[29,30] found no differences in subsequent suicide or suicide attempts. Furthermore, in several trials,[31-33] use of crisis services has been significantly lower in DBT than in control conditions, whereas DBT simultaneously achieved a significantly lower rate of suicide attempts and NSSI acts.

Should clinicians shift treatment from standard DBT to DBT-S? Recent data suggest that DBT skills training alone is superior to wait lists (Shelly McMain, PhD, written communication, July 4, 2014) and standard group therapy[34] for individuals with BPD. The skills training component of DBT alone has also been shown to be effective across a range of clinical populations, such as individuals with major depression,[35] treatment-resistant depression,[36] high emotion dysregulation,[37] attention-deficit/hyperactivity disorder,[38] and eating disorders[39,40] and in disabled adults with mental illness.[41,42] Our study was not powered to assess equivalence between DBT-S and standard DBT, and equivalence should not be assumed. In addition, dropout rates were particularly high in the DBT-I and DBT-S groups, although the latter did not have a higher dropout rate than the standard DBT group. These high dropout rates together with low power limit our ability to fully interpret our results.

Conclusions

In future studies, examination of the significance of suicide expertise, the LRAMP in particular, and the possible iatrogenic vs therapeutic effects of hospitalization in terms of their effect on suicide-related outcomes will be important. In addition, because therapists could not teach DBT skills within the DBT-I condition, we do not know whether DBT individual therapy without this restriction would look more like standard DBT or DBT-S in terms of outcomes. Furthermore, the differences in dropout rates led to differential treatment doses across conditions, which might have affected the results. More research is needed before strong conclusions can be made as to what is the best DBT intervention for highly suicidal individuals.

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