

Dialectical Behavior Therapy Compared With Enhanced Usual Care for Adolescents With Repeated Suicidal and Self-Harming Behavior: Outcomes Over a One-Year Follow-Up

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Objective: We conducted a 1-year prospective follow-up study of posttreatment clinical outcomes in adolescents with recent and repetitive self-harm who had been randomly allocated to receive 19 weeks of either dialectical behavior therapy adapted for adolescents (DBT-A) or enhanced usual care (EUC) at community child and adolescent psychiatric outpatient clinics.

Method: Assessments of self-harm, suicidal ideation, depression, hopelessness, borderline symptoms, and global level of functioning were made at the end of the 19-week treatment period and at follow-up 1 year later. Altogether 75 of the 77 (97%) adolescents participated at both time points. Frequencies of hospitalizations, emergency department visits and other use of mental health care during the 1-year follow-up period were recorded. Change analyses were performed using mixed effects linear spline regression and mixed effect Poisson regression with robust variance.

Results: Over the 52-week follow-up period, DBT-A remained superior to EUC in reducing the frequency of self-harm. For other outcomes such as suicidal ideation,

hopelessness, and depressive or borderline symptoms and for the global level of functioning, inter-group differences apparent at the 19-week assessment were no longer observed, mainly due to participants in the EUC group having significantly improved on these dimensions over the follow-up year, whereas DBT-A participants remained unchanged.

Conclusion: A stronger long-term reduction in self-harm and a more rapid recovery in suicidal ideation, depression, and borderline symptoms suggest that DBT-A may be a favorable treatment alternative for adolescents with repetitive self-harming behavior.

Clinical trial registration information: Treatment for Adolescents With Deliberate Self Harm; [http://clinicaltrials.gov/; NCT00675129](http://clinicaltrials.gov/;NCT00675129).

Key words: self-harm, attempted suicide, psychotherapy, randomized trial, longitudinal

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Self-harming behavior (nonfatal self-poisoning or self-injury, with or without suicide intent) in adolescents is a highly prevalent and serious public health problem in many countries,^{1,2} but only a minority of adolescents who have self-harmed report having received any kind of subsequent treatment.³ Self-harm is a powerful predictor of completed suicide,¹ particularly in individuals who have a pattern of repetitive self-harm, often linked to difficulties of emotion regulation and other problems of personality functioning. Adolescents with suicidal and self-harming behavior have often been considered a challenging patient population to treat because of their stronger noncompliance with outpatient care⁴ and because of patient safety issues. There is thus a strong need for effective interventions

accessible and acceptable to adolescents and their families and feasible to deliver by clinicians in community mental health settings. Over the last decade, a wide variety of therapeutic interventions have indeed been proposed for the treatment of self-harm in adolescents,⁵ but only recently the first randomized controlled trials (RCTs) in support of their efficacy have emerged. Still, none of these trials have so far been successfully replicated, and furthermore, our knowledge is limited as to the outcomes of treatment after extended periods of time.

Previously we have reported on the treatment outcomes in 77 adolescents who participated in a randomized controlled trial in Oslo, Norway, in which patients were assigned to receive 19 weeks of either dialectical behavior therapy adapted for adolescents (DBT-A)⁶ or enhanced usual care (EUC), which was standard care with no less than 1 weekly treatment session per patient throughout the trial. The original study design, sample, procedures, and outcomes have been described previously,⁷ and the main findings were that DBT was superior to EUC in reducing



Clinical guidance is available at the end of this article.

frequency of self-harm, severity of suicidal ideation, and depressive symptoms, with generally large effect sizes for outcomes in the DBT-A condition but weak or moderate in the EUC condition. Treatment retention was generally good, and there were few hospital admissions or emergency department visits in both treatment groups.

In the present study, we report 1-year follow-up outcomes in this clinical sample. Our main aim was to evaluate whether the significantly better treatment outcomes achieved in the DBT-A condition would be sustained 1 year after treatment. As in the original study, we used frequency of suicidal and nonsuicidal self-harm episodes and severity of suicidal ideation and depression as our primary outcome measures in addition to several secondary outcome measures regarding use of health care services, psychiatric symptoms, borderline pathology, and overall functioning.

METHOD

The original sample consisted of 77 adolescents (mean age 15.6 years, $SD = 1.5$ years) who were mainly female (88.3%) and for the most part recruited from child and adolescent psychiatric outpatient clinics in the Oslo area. Inclusion criteria were as follows: a history of at least 2 episodes of self-harm, at least 1 episode within the last 16 weeks; at least 2 criteria of *DSM-IV* borderline personality disorder (BPD) plus the self-destructive criterion, or alternatively at least 1 criterion of *DSM-IV* BPD plus at least 2 subthreshold-level criteria; and fluency in Norwegian. Exclusion criteria were a diagnosis of bipolar disorder (except bipolar II), schizophrenia, schizoaffective disorder, psychotic disorder not otherwise specified, intellectual disability, and Asperger syndrome. Self-harm was defined as self-poisoning or self-injury irrespective of intent,⁸ including self-harm with suicidal intent, nonsuicidal self-harm, and self-harm episodes with unclear intent.

Participants were randomly assigned to receive 19 weeks of either DBT-A or EUC at 1 of the participating child and adolescent psychiatric outpatient clinics in a 1:1 ratio stratified according to gender, presence of major depression, and presence of suicide intent during the most serious episode of self-harm behavior within the 16 weeks before enrollment. All treatments were provided free of charge by therapists working at the 10 publicly funded child and adolescent psychiatric outpatient clinics participating in the study. Patients received ancillary nonmanualized pharmacotherapy as needed. DBT-A was delivered according to the manual⁶ by therapists trained in DBT for the purpose of the trial, whereas EUC was standard care enhanced for the purpose of the trial by requiring that EUC therapists agree to provide on average no less than 1 weekly treatment session per patient throughout the trial. EUC was not manualized or checked for fidelity, and was either psychodynamically oriented therapy or cognitive-behavioral therapy combined with psychopharmacological treatment as needed. EUC was delivered for 19 weeks but could extend beyond the trial time window depending on the EUC therapists' assessment of their patients' needs; however, this was not an option for DBT-A participants. Therapists provided only DBT or EUC. The study complied with National Institute of Mental Health (NIMH) recommendations⁹ for intervention research with persons at high risk for suicidality. All study therapists received training in suicide risk assessment and management before patient treatment commenced. For both treatment modalities, results from the baseline assessments of suicide and self-harm risk, psychiatric diagnoses, and symptom severity were made available to the attending therapists before the first therapy session. Also, when a patient's follow-up data indicated high risk of self-harm or suicide, the study management immediately

notified the patient's therapist. The study was approved by the Regional Committee for Medical Research Ethics, South-East Norway, and all patients and parents provided written informed consent.

Study participants were assessed at multiple time points. As data from the trial period of 19 weeks have been published previously,⁷ only data from the assessments (interviews and self-report) made at 19 and 71 weeks (1-year follow-up) are reported here. Assessments at 1-year follow-up were performed by independent interviewers (3 child and adolescent psychiatrists and 1 psychiatrist) blinded to treatment allocation. To ensure the integrity of blinding, an unblinded study coordinator made all of the practical arrangements for follow-up interviews and collected treatment history data. All patients were instructed not to disclose any information about their treatment. When asked after completion of interviews which treatment they thought each patient received, assessors' responses were correct for 44.2% of participants (Cohen $\kappa = 0.12$), indicating that blinding was successful. All interviews were audiotaped, and interrater reliability (IRR) of diagnoses and outcome variables was checked by a child and adolescent psychiatrist (A.M.S.) expert in the relevant assessment instruments. Based on 26 IRR-rated interviews, the mean κ value was 0.68 (range, 0.50–0.81, $SD = 0.10$) for all symptoms rated with Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime Version (K-SADS-PL). Intraclass correlation (ICC) was used to test IRR for the Children's Global Assessment Scale (C-GAS; ICC = 0.42), Montgomery–Asberg Depression Rating Scale (MADRS) score (ICC = 0.76), Lifetime Parasuicide Count (LPC; IRR = 0.99), and Structured Clinical Interview for *DSM-IV* Axis II disorders (SCID-II) diagnostic criteria for BPD (ICC = 0.66).

Assessments

The same measures of function and outcome as in the original study were used for the follow-up. Frequency of self-harm episodes over the 1-year follow-up period was measured through the LPC interview.¹⁰ The severity of suicidal ideation was measured by the 15-item self-report Suicidal Ideation Questionnaire–Junior (SIQ-Jr) (suicidal thoughts rated on a 7-point scale from “I never had this thought” to “almost every day”).¹¹ The level of depressive symptoms was measured by the short (13-item) version of the self-report Mood and Feelings Questionnaire (SMFQ)¹² and through the interviewer-rated 10-item MADRS.¹³ Other outcomes were hopelessness, measured by the 20-item self-report Beck Hopelessness Scale (BHS),¹⁴ borderline symptoms, assessed through the 23-item self-report Borderline Symptom List (BSL),¹⁵ and global level of functioning, measured by the C-GAS.¹⁶ Data on the use of psychiatric services, psychotropic medication, psychiatric hospitalization, and emergency department visits during the follow-up year were collected from each participant through a self-report questionnaire. Participants received a small amount of monetary compensation for participating in each assessment.

Statistical Analysis

Data analysis was by intention to treat. We also conducted a per-protocol analysis based on those patients who had completed at least 50% of the trial treatments. This included a total of 56 patients (DBT-A, $n = 29$; EUC, $n = 27$). Means and standard deviations or median and interquartile ranges were computed for normally distributed and non-normally distributed variables. Differences between central tendencies in the groups were tested by independent-samples t tests or Mann–Whitney U tests. Differences between the group proportions were tested by the Pearson χ^2 or Fisher exact test. Estimation of trend and differences between group trends over time were examined by mixed effects linear spline

regression with a knot at week 19. Only results from weeks 19 to 71 are presented, with the exception of interview-based data on self-harm episodes over both the 19-week treatment period (these have not been previously reported) and the follow-up year. For data on repeated self-harm over these 2 time periods, mixed-effect Poisson regression with robust variance was used to test for between-group difference in the average numbers of self-harm episodes. The tests were 2 sided, and the significance level was set to 0.05. All analyses were performed with STATA 13¹⁷ and IBM SPSS Statistics 20.0 for Windows.¹⁸

RESULTS

Of the 77 adolescents who were enrolled in the study, all continued their participation in the study until the end of the treatment trial at 19 weeks. At 1-year follow-up, 1 participant from each group chose to decline further participation, whereas 75 adolescents remained in the study, resulting in a 97% participation rate for the follow-up phase. The sample characteristics have been published in detail elsewhere.⁷ There were no differences in the baseline demographic characteristics, diagnostic variables, and pretreatment suicidal and nonsuicidal self-harm behaviors between the treatment groups.

Suicidal and Self-Harm Behaviors and Suicidal Ideation

There were no suicides during the follow-up. The self-harm frequency in the 2 treatment conditions during the 2 measured time intervals of the trial period is presented in Figure 1. Whereas EUC patients reported a mean of 22.5 (95% CI = 11.4–33.5) episodes in the 19 weeks of treatment and 14.8 (95% CI = 7.3–22.3) during the subsequent follow-up year (a reduction of 44.9% [95% CI = –63.9 to –1.4]), DBT-A patients reported a mean of 9.0 (95% CI = 4.8–13.2) and 5.5 (95% CI = 1.7–9.1) episodes (a reduction of 55.9% [95% CI = –80.0 to –2.6]) in the corresponding time intervals. The between-group difference was statistically significant at both time intervals ($p < .05$). Both treatment groups had a baseline severity of suicidal ideation well

above the clinical cut-off (usually regarded as 31).¹¹ At 19 weeks, participants having received DBT-A had a significantly lower level of suicidal ideation than participants having received EUC after having experienced a significantly stronger drop over the treatment period (Δ slope = –0.62 per week, $p = .010$), but at follow-up 1 year later, there was no longer any statistically significant difference between the groups according to mixed-effects linear regression analysis (Table 1). Analysis of only participants who had completed at least 50% of the trial treatments did not alter any of these findings.

Other Outcomes

In addition to data on suicidal ideation, Table 1 presents levels of depression, hopelessness, borderline symptoms, and the general level of functioning at 19 weeks and 1-year follow-up for the 2 treatment groups. The general pattern for most of these outcomes was that whereas the DBT-A group had, as we have previously reported,⁷ improved significantly more during the treatment period, notably on levels of depression and borderline symptoms, and generally maintained this level of improvement at 1-year follow-up, the EUC participants improved significantly over the follow-up year. At 1-year follow-up, there were thus no longer any statistically significant differences between the groups on these outcome variables. During the treatment period, both groups showed a significant improvement in the global level of functioning (C-GAS); this was maintained at follow-up 1 year later. Analysis of only those participants who had completed at least 50% of the trial treatments did not alter any of these findings.

Participants' Use of Treatments During the Follow-Up Year

Table 2 presents participants' use of mental health services during the follow-up year. Only 4 participants (2 in each treatment group) had been psychiatrically hospitalized, with a duration ranging from 1 to 42 days. A total of 38.9% of EUC group participants had received outpatient treatment during all of the 12 months of the follow-up period, whereas this was the case in only 10.8% of the DBT-A participants. There was a trend that EUC participants received on average more treatment sessions with their therapist (18.0) than DBT-A participants (7.3) (not significant). A total of 12.1% of participants in the EUC group and 22.1% in the DBT-A group had visited emergency departments during the follow-up year (not significant). There were no statistically significant differences in the mean number of emergency department visits among participants in the DBT-A and EUC groups who had had such visits (Table 2). Only 7 participants (4 in the DBT-A group and 3 in the EUC group) had used any psychotropic medication over the follow-up year (not significant).

DISCUSSION

This was a 1-year follow-up of the first randomized trial of the efficacy of dialectical behavior therapy adapted for the treatment of multiproblem self-harming adolescents with

FIGURE 1 Frequency of self-harm episodes during the 1-year follow-up period for 75 adolescents with borderline personality disorder traits having received dialectical behavior therapy (DBT-A; $n = 38$) or enhanced usual care (EUC; $n = 37$), by treatment group.

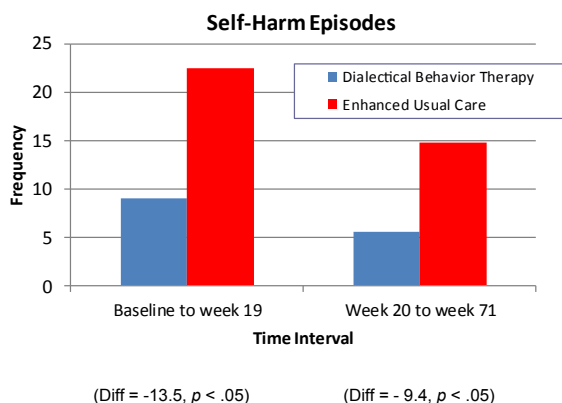


TABLE 1 Outcomes at 1-Year Follow-Up for 75 Adolescents With Borderline Personality Disorder Traits Having Received Dialectical Behavior Therapy (DBT-A; *n* = 38) or Enhanced Usual Care (EUC; *n* = 37), by Treatment Group

Variable	DBT-A (<i>n</i> = 38) ^a		<i>p</i> Value Slope	Effect Size ^b	EUC (<i>n</i> = 37) ^a		<i>p</i> Value Slope	Effect Size ^b	Δ Slope ^c	<i>p</i> Value Δ Slope
	Mean	SD			Mean	SD				
Suicidal ideation (SIQ-Jr)										
19 wk	18.30	11.11			32.56	23.99				
71 wk	20.45	19.15	.993	0.19	22.05	21.86	.023	0.44	0.15	.110
Hopelessness (BHS)										
19 wk	6.23	5.30			9.06	6.53				
71 wk	6.97	5.66	.946	0.14	7.26	6.57	.260	0.28	0.02	.446
Depression (SMFQ)										
19 wk	10.19	5.04			12.58	6.62				
71 wk	9.88	5.53	.400	0.06	9.19	6.57	.010	0.51	0.04	.240
Depression (MADRS)										
19 wk	12.29	7.52			15.76	8.14	.056			
71 wk	15.09	8.08	.054	0.37	15.73	9.06	.929	0.00	0.06	.199
Borderline symptoms (BSL)										
19 wk	21.34	14.38			34.75	22.15				
71 wk	24.45	19.17	.996	0.22	23.09	20.91	.014	0.53	0.18	.074
Global functioning (C-GAS)										
19 wk	65.88	9.52			65.89	13.03				
71 wk	65.68	11.81	.853	0.02	64.22	14.13	.425	0.13	0.03	.067

Note: BHS = Beck Hopelessness Scale; BSL = Borderline Symptom List; C-GAS = Children's Global Assessment Scale; MADRS = Montgomery–Asberg Depression Rating Scale; SIQ-Jr = Suicidal Ideation Questionnaire–Junior; SMFQ = Short Mood and Feelings Questionnaire.

^aDue to missing observations, *n* is slightly lower in some cells.

^bMean improvement from 19 weeks to 71 weeks divided by the standard deviation at 19 weeks. All effect sizes are given as positive values.

^cEstimates of difference in slope (per week) between 19 weeks and 71 weeks.

BPD features. Consistent with findings in the original study, participants who received DBT-A reported significantly fewer self-harm episodes even over the follow-up year. On most other outcomes, however, the 2 treatment groups had converged at the 1-year mark; this was mainly an effect of EUC participants having significantly improved during this time interval, whereas DBT-A remained at their trial completion levels for these outcomes. In both groups, there were few psychiatric admissions, and there was no statistically significant difference in the number of emergency department visits.

There was a nonsignificant trend for EUC participants to have received psychiatric outpatient treatment over a larger proportion of the follow-up year.

Based on these findings, it seems reasonable to conclude that DBT-A both in the short term and in a 1-year post-treatment follow-up perspective leads to a significantly more favorable outcome with respect to reduction in the frequency of self-harm behavior. This is clinically important, because repetitive self-harm is a strong predictor of suicide¹⁹ and is linked to a range of psychosocial problems.²⁰ For other clinical outcomes, DBT-A resulted in faster improvement but did not seem to lead to better long-term results than EUC. As we did not control treatments provided to study participants over the follow-up year, we can only speculate about the reasons to the significant improvement among EUC participants on the mentioned outcomes. We believe that this improvement was not a regression toward the mean but, rather, can be explained by the fact that most

of these participants continued to receive substantial amounts of treatment over the follow-up year. The more speedy improvement among patients who received DBT-A could be linked to differences in treatment strategies of the 2 treatments (such as the strong focus on teaching coping skills in DBT-A) or to differences in the treatment intensity or both. Although we cannot rule out the first of these possibilities, our analyses of change in the original 19-week trial gave little evidence that treatment intensity was a mediator of change in the primary outcome variables.⁷ Whatever the mechanism underlying this time difference between the 2 treatment effects may be, a more rapid recovery is of substantial clinical importance.²¹

Although EUC participants received more treatment over the follow-up year, still many DBT-A participants sought and received further treatment after their 19-week course of DBT-A, probably reflecting that either the adolescents themselves, their parents, or both believed that more treatment was necessary. An add-on or continuation treatment could, therefore, possibly be useful to ensure further recovery, along the lines suggested by Birmaher *et al.*,²² for adolescents having had short-term psychotherapy. For DBT-A, such a continuation treatment in a group format has indeed been developed by Miller and Rathus⁶ but was not part of the current trial. However, it is important to notice that we found no indications that the duration of follow-up treatment and number of follow-up treatment sessions mediated outcomes at 1-year follow-up. Future studies are needed to establish whether continuation treatment would accentuate treatment effects.

TABLE 2 Treatment Use During Follow-Up Year for 75 Adolescents With Borderline Personality Disorder Traits Having Received Dialectical Behavior Therapy (DBT-A; *n* = 38) or Enhanced Usual Care (EUC; *n* = 37), by Treatment Group

Variable	DBT (<i>n</i> = 38)			EUC (<i>n</i> = 37)			<i>p</i> Value
	Mean	SD	% ^a	Mean	SD	% ^a	
No. of treatment sessions with psychiatrist or psychologist	7.25	10.16	65.8	18.04	18.47	72.2	.053
No. of emergency department visits							
Full sample	0.38	0.90	22.2	0.18	0.53	12.1	.255
Patients with emergency department visits only	1.75	1.16		1.50	0.58		.630
No. of psychiatric admissions	0.06	0.23	5.6 ^b	0.06	0.24	6.1 ^b	.609
No. of days in psychiatric hospital	0.20	1.18		1.30	0.74		.523
No. of months in psychiatric treatment							
No treatment			35.1			25.0	.078
0–3 months			18.9			19.4	
4–6 months			21.6			11.1	
7–9 months			13.5			5.6	
12 months			10.8			38.9	

Note: ^aProportion of participants having received any of the relevant treatments.

^b*n* = 2.

The long-term course and outcome after psychotherapy in adolescents is generally very sparingly researched. Although self-harming adolescents with traits of borderline personality disorder have often been regarded as difficult to treat because of their noncompliance with outpatient care⁴ and because of patient safety issues, the outcome of treatment has largely been unknown. Our study suggests that these troubled adolescents are indeed possible to treat and that the long-term prognosis after treatment is favorable. The study participants continued to improve or sustained their treatment gains after the trial completion over a broad range of outcomes. This is consistent with findings in previously published posttreatment follow-up studies of DBT in adults^{23–27} and college students.²⁸

There are several study limitations to note. Although the study was adequately powered, the sample size was small, and findings should be interpreted with caution. Since we have chosen to define and to measure self-harm as nonfatal self-poisoning or self-injury with or without suicide intent, our data did not allow separate analyses of suicidal and nonsuicidal behaviors. The control condition, EUC, was not a manualized treatment, and EUC therapists were not monitored for fidelity, unlike DBT-A therapists. Access to treatment during the follow-up year was uncontrolled. As in most trials of self-harm, the patient sample was mostly female, and the sample was too small to study gender differences in treatment outcomes.

Among the study's strengths are the prospective follow-up design, the application of rigorous procedures for data collection, use of standardized instruments, integrity of ratings and blinding, independence of raters, and very high follow-up rate. The liberal inclusion criteria and the delivering of free-of-charge treatments in a community mental health care setting with patients recruited from a defined catchment area were thought to strengthen the external validity of the findings.

This study suggests that DBT-A is associated with greater long-term reduction in self-harm and more rapid clinical improvements in suicidal ideation, depression, and borderline symptoms than is usual care. These findings indicate that DBT-A may be a favorable treatment alternative for adolescents with repetitive self-harming behavior. &



Clinical Guidance

- DBT-A is an effective treatment for self-harming adolescents with traits of borderline personality disorder in terms of reducing self-harm behavior, suicidal ideation, and depressive symptoms.
- DBT-A leads to significantly more favorable outcomes with respect to reduction in the frequency of self-harm behavior both in the short- and long-term perspective.
- DBT-A leads to more rapid clinical improvements in suicidal ideation, depression, and borderline symptoms than does usual care.

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