



Description of a Dialectical Behavior Therapy program in a Veterans Affairs Health Care System[☆]

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ABSTRACT

A comprehensive Dialectical Behavior Therapy (DBT) program was created within a VA Health Care System for patients with recent psychiatric hospitalization, suicidality and/or significant emotion dysregulation. The program was notable for being one of a relatively small number of comprehensive DBT programs in the VA system, and for including patients with psychosis and psychotic disorder, with a majority of patients (58%) having a documented history of psychosis or endorsing psychotic symptoms in assessments. We describe the process of creating this program at a VA medical center and present preliminary program evaluation data. All patients completed assessments of suicidality (C-SSRS), emotion dysregulation (DERS), skills use and dysfunctional coping (DBT-WCCL), borderline symptomatology (BSL-23), and depression (PHQ-9) at program entry and subsequently every 6–8 weeks through program completion. Suicide attempts and hospitalizations were also tracked. Twelve patients completed multiple (up to six) assessment timepoints, allowing for evaluation of change during treatment. Patients demonstrated improvements on most measures and no hospitalizations or suicide attempts during active treatment, and the subsample with psychosis showed average improvements on every outcome measure. Eleven of 12 patients completed a full six-month rotation.

1. Introduction

Suicide prevention is recognized as the top clinical priority of the Department of Veterans Affairs (VA; Wilkie, 2019). Veterans are at significantly heightened risk of suicide when compared to other Americans, and approximately 17 Veterans die by suicide every day (Office of Mental Health and Suicide Prevention, 2020). There is a need for the identification and dissemination of effective treatments for suicide within the Veterans Health Administration (VHA).

Dialectical Behavior Therapy (DBT) is an evidence-based treatment that has been shown to reduce suicidal behavior in a number of clinical trials (DeCou et al., 2019). DBT is considered to be a transdiagnostic intervention and has been shown to reduce emotion dysregulation and depression in diverse samples (Muhomba et al., 2017; Neacsiu et al.,

2014; Rizvi & Steffel, 2014). Within the VA system, DBT has been found to be effective for Veterans with Borderline Personality Disorder (Koons et al., 2001; Meyers et al., 2017), as well as non-psychotic Veterans irrespective of personality disorder diagnosis (Goodman et al., 2016), and in one study DBT was shown to reduce cost of services and mental health service utilization among Veterans (Meyers et al., 2014).

DBT has been recommended for the treatment of individuals with Borderline Personality Disorder and recent self-directed violence by the Clinical Practice Guidelines (VA/DOD, 2019), however, there is no institutionalized national framework for VA-based clinicians to obtain support for DBT programs in the form of training, administrative resources, or outcomes-monitoring. The complexity of DBT and the significant training requirements involved can make this treatment modality challenging to implement without sufficient institutional

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support (Carmel et al., 2014; Chugani et al., 2017). In the VA, providers often identify lack of protected staff time, access to intensive training, and support from leadership as major obstacles (Landes et al., 2017). As of this writing, there are 38 comprehensive DBT programs offered across the 1255 health care facilities that compose the Veterans Health Administration system, though no centralized monitoring of treatment quality or fidelity (VA DBT intranet SharePoint, 2020). In May 2021 (after the program evaluation data to be described in this manuscript had already been collected), the VA sponsored an implementation and training pilot of DBT within the Suicide Prevention 2.0 (SP 2.0) Telehealth Program in VISNs 6, 17, 19, with plans for more widespread rollouts in 2022. This program consists of a multi-day training followed by ongoing consultation and adherence coding by DBT Consultants and Master Trainers and outcomes monitoring DBT offered through SP 2.0. The programs are full-model (with skills coaching restricted to business hours) and entirely remote (offered through VISN Clinical Resource Hubs), with Veterans eligible for treatment if they have engaged in suicidal behavior within the past year, have a mental health point of contact at their home VA, have access to a computer or iPad, and are willing and able to be seen entirely remotely (Jessica A. Walker, personal communication, May 24, 2021). However, the above program has not yet produced outcomes data. Health care facilities that have not yet started full model DBT programs in a VA setting may find it useful to learn about the experiences of VA-based teams that have done so.

In 2019, clinicians working within a large VA Medical Health Care System started a comprehensive DBT program that included a skills group, individual therapy with a DBT therapist, a weekly therapist consultation group for DBT therapists, and phone coaching. The program serves Veterans across a nearly statewide region, and has collected relatively detailed outcome measures for progress monitoring and program evaluation purposes.

This program has broad eligibility criteria and, unlike many other DBT programs, does not exclude patients with psychosis or psychotic disorders. Psychosis is a common exclusion criteria for DBT programs (cf., Goodman et al., 2016; Meyers et al., 2014; Neacsu et al., 2014; Valentine et al., 2015) and suicide-focused clinical trials in general (Villa et al., 2020), despite the fact that psychosis is associated with much higher rates of suicide (Olsson et al., 2015; Saha et al., 2007) and represents a significant clinical risk factor for suicide among Veterans receiving care from the VHA (Britton et al., 2012; Office of Mental Health and Suicide Prevention, 2020). We know of two descriptions of DBT programs (McCann et al., 2000; Rosenfeld et al., 2007) that identified at least one participant with psychosis or psychotic disorders, though neither paper presented information about these subgroups taken separately.

In this article, we describe the process of creating and delivering this comprehensive DBT program within a VA context and present program evaluation data. Additionally, given the unusual rates of psychosis in our program, we also provide information on how this subsample (which comprised the simple majority of enrolled patients) fared during treatment.

2. Method

2.1. Sample

Veterans were eligible to join the DBT program if they demonstrated at least two or more of the following three criteria: (1) History of multiple psychiatric hospitalizations in the past five years, with at least one hospitalization in the previous 12 months; (2) history of suicide attempts and/or non-suicidal self-injury in the past five years; and (3) emotion dysregulation or impulsivity that is currently interfering with functioning. Non-suicidal self-injury is defined as deliberate, self-inflicted destruction of body tissue without suicidal intent, including cutting, burning, biting, and scratching of skin. Veterans were not eligible to participate if they were unwilling to commit to regularly attending

weekly individual and group therapy for six months; have significant cognitive impairment that would interfere with treatment; primary diagnosis of antisocial personality disorder; or are otherwise assessed to be more appropriate for other services (e.g., neurology or neuropsychology interventions, detox, etc.).

The above inclusion criteria diverge from VA/DOD Clinical Practice Guidelines which recommend DBT only for patients with Borderline Personality Disorder (VA/DOD, 2013; VA/DOD, 2019). This DBT team was programmatically concerned with reducing high-risk behavior and understood DBT as an essentially transdiagnostic treatment following writers such as Lungu and Linehan (2016) and Ritschel et al. (2015). Therefore, the DBT program chose to adopt high-risk behavioral inclusion criteria and to avoid use of exclusion criteria as much as possible in order to avoid limiting access to treatment for patients who might otherwise benefit. Patients with particular diagnoses were not specifically sought out, however, on the basis of referral streams and screening, the majority of patients that were included in the outcomes evaluation sample (92%) were determined to meet criteria for Borderline Personality Disorder as assessed by the SCID-5, and a large proportion had a chart diagnosis of psychotic disorder (25%; see Results below).

Veterans who enrolled in the DBT program and completed assessments on more than one timepoint—the minimum necessary for assessment of change during treatment—were included in the “outcomes evaluation sample.” The Institutional Review Board reviewed the current proposal and determined that the project was exempt.

2.2. Program description

Consistent with the DBT treatment manual (Linehan, 2014), the DBT program includes weekly individual DBT therapy, group DBT skills training, a therapist DBT consultation group, and phone coaching, with the exception that after-hours phone coaching (i.e., after 4:30 p.m. until 8:00 a.m. the next day) is not available. In situations when phone coaching is needed after-hours, Veterans are encouraged to call the Veterans Crisis Line (a 24/7 crisis hotline). Veterans engage in the program for six-month commitments, which equates to a full cycle of each skills module in the DBT group (mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness). Veterans are given the option of recommitting to the program after their initial six-month contract, for a maximum of 12 months of participation. Veterans are considered fully enrolled in DBT unless they violate the “four miss rule,” which states that Veterans who miss four consecutive group or four consecutive individual therapy visits are automatically discharged from DBT (Lindenboim et al., 2017; Linehan, 1993).

2.2.1. Referral and enrollment process

Veterans are referred to DBT by their current mental health provider, which may include therapists, prescribers (nurse practitioners, psychiatrists), social workers, and case managers. The program requires that referring clinics remain available to provide support during Veteran’s engagement in DBT, as the program does not have a designated physician or prescriber, as well as to ensure that Veterans have a “home base” to return to for treatment planning post-DBT completion or following treatment dropout.

Upon receipt of the referral, Veterans’ charts are reviewed to determine whether they are likely to meet program eligibility criteria. The referral is then discussed during the DBT consultation team meeting, and if appropriate the patient is scheduled for a screening appointment. During the screening appointment, a DBT provider delivers a clinical interview to ensure that eligibility criteria are met, orients the veteran to the program and assesses interest as well as tentative treatment targets, and delivers a baseline assessment battery. Following the screening visit, Veterans are assigned an individual therapist to begin the orientation process to the program.

2.2.2. Timeline of program implementation

This VA Health Care System offered a three-day DBT training in December 2018 for all interested mental health staff facilitated by two trainers who were members of DBT consultation teams at their respective VA Medical Centers. Training was open to any mental health clinician in the VA Health Care System. The first two days of the workshop reviewed foundational skills about DBT clinical applications; the final day focused on administrative issues and program development with an explicit focus on cultivating a comprehensive DBT program at the target VA, and was therefore restricted to VA clinicians interested in becoming founding members of a DBT consultation team. This three-day training model was chosen as the period of time recommended by the DBT trainers. The cost of the training was covered by a \$3500 Mental Illness Research, Education, and Clinical Center (MIRECC) “small grant” which was applied for by a staff psychologist and later member of the DBT team. The grant covered travel expenses for trainers as well as the purchase of DBT Skills Training Manuals (Linehan, 2014) and “Doing Dialectical Behavior Therapy” (Koerner, 2012) for attendees of the third day of training. The founding DBT clinical service was ultimately composed of five staff psychologists, a psychology postdoctoral fellow, and a Masters level clinical social worker. These team members represent providers from different programs across the regional VA system including the Mental Illness Research, Education, and Clinical Center, the Trauma Recovery Program, the Community Resource and Referral Center, and the outpatient Mental Health Clinic. Following the workshop, one trainer provided 12 months of at least one hour per week of team consultation to offer guidance in the development and clinical application of the service.

Maintaining treatment fidelity and supporting the work of the DBT clinician are important factors in both sustaining the DBT consultation team and delivering treatment adherent to the model. The DBT program described and evaluated for this paper received direct weekly guidance and supervision from a DBT trainer as described above for the majority of the program evaluation period (with the exception of the final month), but as of this writing the team has not formalized an approach to encouraging fidelity to the DBT model in the long-term and has never used standardized measures of fidelity that would provide direct data on treatment adherence. In the period following the program evaluation period and after the departure of the DBT trainer subsequent to her one-year commitment (which ended in January 2020), the DBT consultation team has experienced significant transitions including staff departures for other job opportunities and the acquisition of one new member (who had taken the Btech Foundational Training in DBT and had significant prior DBT consultation team experience). Following the program evaluation period described in this paper, the team continued to engage in trainings as a group. With support from the local VA Education Office the Consultation Team, the DBT team was able to obtain additional funding support for five team members to complete the 5-day Foundational Training provided by Behavioral Tech. This was an interactive virtual training course intended to provide a comprehensive knowledge base on DBT content, skills, and strategies for members of a DBT team. The team has also attended a virtual, 2-day DBT training offered by another VA Medical Center, and participated in a half-day retreat for training, recommitment, and development of a personal plan to remain up-to-date with the DBT model. During weekly consultation team meetings, the team explicitly reviews assumptions and principles of DBT, such as balancing acceptance and change in providing consultation, applying DBT principles and strategies during consultation team meetings, and addressing motivation and therapist capability on the team. Once a month, the team has an administrative meeting to address programmatic needs and concerns. The above measures have been self-motivated rather than prescribed.

In February 2019, electronic referrals became active and providers began submitting referrals; within one month, the program had received consults, completed screenings, and initiated treatment with enough Veterans to begin the first DBT skills group in March 2019, officially

starting the full model program. Since that time, the DBT program grew to include seven psychologists, one psychology postdoctoral fellow, and one psychology intern, with plans to expand the training program and recruit additional clinicians, each dedicating approximately 4–6 hours per week to the DBT Clinical Service. Further, the program is now included on the Mental Health Clinical Center’s organizational chart, establishing it as a standalone service with a designated team lead (with allocated administrative time to support the workload required for managing this program) as well as a program supervisor serving as a liaison between the DBT program and VA leadership.

A note on COVID-19. The unexpected COVID-19 pandemic led to the total cessation of in-person services in March 2020. At that time, the DBT consultation team implemented a change from in-person to virtual mental health treatment (telemedicine and phone) which hindered the continued collection of systematic outcome measures. Accordingly, in this article we only include data that was collected from assessments occurring before March 2020. However, since the launch of DBT via telemedicine, we have continued to enroll patients and have had patients graduate from the comprehensive program, including those who began in person but transitioned to virtual participation.

2.3. Measures and data collection

Veterans were assessed at a screening visit and at the beginning of each new DBT Skills Module, with assessment time points thus separated by six to eight-week intervals. Missing measurements sometimes occurred due to (e.g.) Veteran absence or incomplete responding. See [Table 1](#) for detailed information on missing data at each timepoint.

2.3.1. Structured Clinical Interview for DSM-5 (SCID-5) Borderline Personality Disorder module

The SCID-5 is the most widely used diagnostic interview for assessing DSM-5 mental health conditions (First, 2014). At screening, we delivered only the Borderline Personality Disorder module of the SCID-5 to assess for symptoms of Borderline Personality Disorder.

2.3.2. Columbia-Suicide Severity Rating Scale (C-SSRS)

The C-SSRS is a measure of suicide risk that assesses suicidal ideation, plan, and intent. Evidence concerning the psychometric properties of the C-SSRS is mixed, in part due to ambiguities in scoring the standard version (Giddens et al., 2014). The VA uses a simpler “triage and risk identification” scoring protocol suggested by the Columbia Lighthouse Project, which simplifies scoring considerably by reducing the C-SSRS to eight yes-no items intended to capture past-month ideation, plan, and intent, as well as lifetime and recent preparatory behavior (Triage and Risk Identification The Columbia Lighthouse Project, 2017). We calculate a total score by adding “yes” responses for a total possible score of eight.

2.3.3. Difficulties in Emotion Regulation Scale (DERS-36)

The DERS-36 is a Likert-style measure intended to capture various aspects of the emotion dysregulation. The scale has a total score composed of six subscales, with higher scores indicating worse dysregulation: “Nonaccept” measures difficulty accepting one’s own emotional responses, “Goals” measures difficulty engaging in goal-directed behavior when experiencing difficult emotions, “Impulse” measures impulse control difficulties, “Awareness” captures lack of emotional awareness, “Strategies” measures self-reported lack of knowledge of emotion regulation strategies, and “Clarity” measures lack of emotional clarity. The DERS has been shown to have adequate psychometric properties (Hallion et al., 2018).

2.3.4. Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9 is a nine-item Likert-style questionnaire used to measure symptoms of depression. The measure ranges from 0 to 27 with scores of 0, 5, 10, 15, and 20 representing minimal, mild, moderate, moderately

Table 1
Participant scores on outcome measures during treatment.

	Timepoint						Change between each timepoint (95% CI)	Cohen's d
	1	2	3	4	5	6		
DERS Total Score	114.4 (24.3) n = 11	112.2 (29.3) n = 12	100 (26) n = 11	105.4 (24) n = 9	98.2 (16.2) n = 4	NA n = 0	-4.59 (-7.76 to -1.42)	-1.00
NONACCEPT	20.7 (5.7) n = 11	20.5 (7.3) n = 12	19.2 (8) n = 11	17.2 (7.9) n = 9	14.8 (4.6) n = 4	NA n = 0	-1.81 (-2.71 to -0.9)	-1.37
GOALS	18.4 (4) n = 11	18.4 (5.6) n = 12	18.1 (5.3) n = 11	19.2 (5.2) n = 9	18.8 (3.7) n = 4	NA n = 0	-0.27 (-0.91 to 0.37)	-0.29
IMPULSE	16 (4.7) n = 11	16.5 (5.3) n = 12	11.5 (4.2) n = 11	13.1 (4.1) n = 9	12 (2.7) n = 4	NA n = 0	-1.07 (-1.82 to -0.32)	-0.98
AWARENESS	18.9 (5.4) n = 11	18 (6.6) n = 12	15.7 (5.4) n = 11	20.4 (6.7) n = 9	18.8 (4.8) n = 4	NA n = 0	0.16 (-0.86 to 1.17)	0.11
STRATEGIES	26 (7.4) n = 11	25 (9.4) n = 12	22.1 (8.6) n = 11	22.4 (7.6) n = 9	20.8 (5.6) n = 4	NA n = 0	-1.57 (-2.48 to -0.66)	-1.18
CLARITY	14.4 (5.3) n = 11	13.8 (5.4) n = 12	13.3 (4.2) n = 11	13 (2.9) n = 9	13.2 n = 4	NA n = 0	-0.04 (-0.62 to 0.53)	-0.05
DBT-WCCL Skills Use	1.3 (0.6) n = 11	1.8 (0.6) n = 12	1.8 (0.4) n = 11	1.8 (0.5) n = 9	1.8 (0.6) n = 5	2.6 (NA) n = 1	0.12 (0.03-0.21)	0.83
General Dysfunctional Coping	2.0 (0.5) n = 11	1.8 (0.5) n = 12	1.7 (0.6) n = 11	1.6 (0.6) n = 9	1.6 (0.3) n = 5	2.1 (NA) n = 1	-0.09 (-0.17 to -0.01)	-0.77
CSSRS	4.4 (2.1) n = 11	3 (0.8) n = 4	3.3 (1.8) n = 11	3 (2.8) n = 9	3.2 (2.3) n = 5	5 (NA) n = 1	-0.39 (-0.78 to -0.01)	-0.73
PHQ-9	17.9 (6.1) n = 12	15.7 (5.8) n = 12	13.3 (7.8) n = 11	12.1 (7.6) n = 9	15 (3.7) n = 5	14 (NA) n = 1	-1.45 (-2.44 to -0.46)	-0.94
BSL-23	2.2 (0.9) n = 12	2.0 (0.9) n = 12	1.8 (1.2) n = 11	1.5 (1.1) n = 9	2.0 (0.7) n = 5	2.9 (NA) n = 1	-0.14 (-0.28 to 0.001)	-0.64

Notes. This table gives mean scores at each timepoint, with standard deviations in parentheses. The number of non-missing measurements at each timepoint is given for each outcome measure at each timepoint. Timepoint 1 is each participant's baseline score prior to the beginning of the DBT skills group. Timepoint 2 is the participant's first DBT Skills Group. Each subsequent Timepoint marks the completion of a 6–8 week DBT Skills Module. The estimated change between each timepoint is calculated using a multilevel model which accounts for the varying number of measurements at each timepoint. Variation in the sample size at each timepoint is mostly due to the length of time each participant was in treatment and occasional missing values. However, the unusually low *n* for CSSRS at timepoint 2 is due to a programmatic change, as we decided to use the CSSRS as a repeated (rather than only baseline) measure somewhat later in treatment after many participants had already been assessed for their second time. Additionally, there is no DERS at timepoint 6 because we switched to an alternative measure at that time. Note that later timepoints have fewer measurements, and so average scores at these timepoints correspond to a smaller subset of individuals rather than to the full treatment cohort.

severe, and severe depression, respectively. The measure has been shown to have good construct and criterion validity and is sensitive to change in treatment (Kroenke & Spitzer, 2002).

2.3.5. *Borderline Symptom List-23 (BSL-23)*

The BSL-23 is a Likert-style measure of common symptoms associated with Borderline Personality Disorder, such as hating oneself, feeling out of control, thinking of hurting oneself, and feeling lonely. The measure has been found to have good internal consistency and discriminative validity, and has been shown to be sensitive to change with treatment (Bohus et al., 2009).

2.3.6. *DBT-Ways of Coping Checklist (DBT-WCCL)*

The DBT-WCCL is a measure consisting of two subscales assessing functional and dysfunctional coping, respectively. The scale has good to excellent internal consistency, test-retest reliability, and content validity (Neacsiu et al., 2010).

2.3.7. *Hamilton Program for Schizophrenia Voices Questionnaire (HPSVQ)*

The HPSVQ is a self-report multidimensional measure of hallucinations with good psychometric properties (Kim et al., 2010; Van Lieshout & Goldberg, 2007) that has been used effectively in transdiagnostic clinical samples (Hazell et al., 2018). Two items from the HPSVQ were

administered in order to capture the simple presence of auditory hallucinations for the purposes of monitoring the progress of patients with psychosis.

2.3.8. *Routine monitoring of suicide attempts and hospitalizations*

We tracked suicide attempts and hospitalizations on a weekly basis, recorded at each DBT therapist consultation meeting.

2.4. *Statistical analysis*

Given the small sample size and lack of control group, we refrain from calculating statistics such as *p*-values that might suggest causal inference concerning the effect of treatment or concerning differences between people with or without psychosis. Instead, we provide relatively detailed information about the results of our assessments at each timepoint (i.e., baseline, the end of pre-treatment, and then again after each 6–8-week DBT module). Please see Table 1 for the full sample, and the appendix for the subsample with psychosis history. In order to be able to report the average observed change for Veterans on each outcome measure over time, we used the *lme4* package in R which can account for the complication that observations are embedded within people, and that there are varying numbers of total timepoints and missing values between participants and over time (Bates et al., 2020).

Note that estimated changes on outcome measures are calculated with respect to each time interval—rather than across treatment as a whole—because patients were in treatment for varying periods of time. Estimated changes between timepoints must be read as cumulative for patients who remained in treatment across multiple timepoints. For example, the estimated change between timepoints for the PHQ-9 was -1.45 (95% CI = -2.44 to -0.46). A patient who stayed in treatment from baseline through pre-treatment and then through three additional modules would therefore be estimated to improve by $-1.45 * 4 = -5.8$ points on the PHQ-9 because they were in treatment for four timepoints. The *lme4* package computes confidence intervals which we report in order to highlight the large degree of uncertainty attributable to the small sample size.

3. Results

3.1. Referrals and enrollment

During the program evaluation period (from February 2019 to March 1, 2020), the DBT program received 44 referrals for 42 unique Veterans (two Veterans were referred twice). Eighteen referrals came from Mental Health Clinic (a generalist outpatient clinic), 14 from the Trauma Recovery Program, five from the PRRC (a serious mental illness program), four from residential programs, and three from inpatient units. Seventeen of 44 referrals were declined due to a determination of Veteran ineligibility upon DBT consult team review ($n = 7$), Veteran declining the appointment ($n = 6$), or Veteran not being reachable ($n = 4$).

Twenty-three of the 44 referrals were screened by DBT clinicians. Of these 23 screened Veterans, three were found to be ineligible for the program during the screening appointment, four were found to be eligible but either declined enrollment or were unable to be reached following the screen, and 15 were offered and accepted a spot in the DBT clinical program. Of the 15 Veterans offered spots in the DBT clinical program, four patients (26.7%) did not complete the standard six-month rotation due to the “four-miss rule” (the standard definition of dropout in DBT programs; (Lindenboim et al., 2017)). This dropout rate is consistent with those measured in other community DBT programs, which have documented dropout rates ranging from 24% to 58% (Comtois et al., 2007; Feigenbaum et al., 2012; Priebe et al., 2012).

3.2. Outcomes evaluation sample

Twelve of 15 patients completed at least two timepoints necessary for evaluation of change over time and these 12 were therefore included in our outcomes evaluation sample. Of these 12, one patient dropped out during the first six-month rotation. The average age of the sample was 37.3 (SD=10.2). Seven patients identified as female, four as male, and one as non-binary. Eight identified as White, three as Black, and one as Hispanic. One patient was employed part-time, six unemployed, four were disabled, and one identified as retired. We do not provide full diagnostic information on patients given concerns about identifiability, however, we performed the Borderline Personality Disorder module of the SCID-5 at screening and found that all but one patient (92%) met full criteria for Borderline Personality Disorder.

At screening, 10 of 12 patients endorsed past-month thoughts of killing themselves on the C-SSRS and five had made preparations to end their lives in the preceding three months. Seven of the 12 patients either had a history of psychosis indicated in their chart ($n = 3$) or endorsed voice-hearing on at least one assessment during active treatment ($n = 5$).

3.3. Treatment outcomes

Please see Table 1 for average scores on each outcome measure at each timepoint for people in the DBT program. Timepoint 1 is each participant’s baseline score prior to the beginning of the DBT skills group. Timepoint 2 occurs immediately before the first DBT skills group

following the four individual DBT pre-treatment sessions. Each subsequent timepoint occurs immediately before each subsequent skills module (i.e., two weeks of Mindfulness followed by four to six weeks of either Emotion Regulation, Interpersonal Effectiveness, or Distress Tolerance). The number of observations at each timepoint are noted in each cell of the Table. There are differing numbers of observations over time due mostly to the length of time each participant was in treatment and occasional missing values. The change in n is accounted for statistically as appropriate, with observations that have greater n being naturally awarded more weight by the multilevel model used to estimate change over time. This change in n should also be taken into account by the reader when interpreting the Table. For example, average scores on the General Dysfunctional Coping subscale of the DBT-WCCL show a consistent decrease over time until the final Timepoint 6, at which point average dysfunctional coping is even higher than the average observed at Timepoint 1. However, Timepoint 6 is comprised of a single assessment of a single participant, and therefore should not be overinterpreted.

According to the multilevel longitudinal model, for each timepoint interval that patients were in treatment, there were estimated improvements on the PHQ-9, the C-SSRS, the DERS, the DBT-WCCL Skills Use and Dysfunctional Coping subscales, and the BSL-23. These improvements are cumulative, such that patients spending more time in the program are predicted by the statistical model to improve further. For example, for the average patient who finished pre-treatment and completed all four modules of DBT (i.e., four timepoints), the model measures an average total improvement of 18.36 points on the DERS and 5.8 points on the PHQ-9. These are large and clinically significant improvements, representing (for example) the difference between Severe and Moderate depression on the PHQ-9, or between Moderate and None/Minimal Depression on the same measure. However, the lack of a control group and very small sample size prevent generalization, and we note that there are very wide confidence intervals in the estimated change between timepoints on outcome measures which sometimes include zero (viz., on the BSL-23; see Table 1). There were no suicide attempts or hospitalizations for any patients in the outcomes evaluation sample during treatment.

Given the unusually high number of people with psychosis history in our treatment sample and their known high-risk status (Britton et al., 2012), we also report outcomes for this subsample which comprised the simple majority (58%) of the group. These results are given in Table 2, and indicate average improvements on a range of outcome measures as well, although the sample size is even smaller and should not be taken as evidence that our results will generalize. (Please note that due to peer reviewer interest we also ran statistics for just those participants who reported active psychotic symptoms on our outcome measures, irrespective of diagnosis, and report these results in Appendix A.).

4. Discussion

This team’s experience executing a comprehensive DBT program with associated program evaluation illustrates a process that may be replicated in other VA medical centers. The group was able to successfully collect program evaluation data which illustrated average improvements on a range of outcome measures. Additionally, a substantial proportion (58%) of patients either had a chart diagnosis of psychotic disorder or endorsed active psychosis during treatment, and we measured average improvements among people in this subsample. While the sample size was small and the lack of control group prevents causal inference, these results are encouraging as people with psychosis or psychotic disorders are routinely excluded from suicide-focused clinical trials (Villa et al., 2020) despite being at very high risk of suicide (Olsson et al., 2015; Saha et al., 2007).

There were a number of limitations to the present evaluation. There was no control group, and so we cannot rule out the possibility that treatment gains may be attributed to factors other than DBT. The

Table 2
Scores on outcome measures during treatment for people with psychosis symptoms or chart history of psychotic disorder.

	Timepoint						Change between each timepoint (95% CI)	Cohen's d
	1	2	3	4	5	6		
DERS Total Score	116.5 (26.8) n = 6	122 (32.4) n = 7	102.5 (23.4) n = 6	108.2 (27.6) n = 5	92.5 (12) n = 2	NA n = 0	-6.1 (-10.62 to -1.58)	-1.31
NONACCEPT	21.2 (4.8) n = 6	24.3 (5.1) n = 7	20.8 (7.8) n = 6	19.8 (7.6) n = 5	15 (1.4) n = 2	NA n = 0	-1.77 (-2.99 to -0.56)	-1.41
GOALS	18.8 (3.4) n = 6	20.4 (5.1) n = 7	19.5 (4.2) n = 6	20.6 (4.7) n = 5	16.5 (3.5) n = 2	NA n = 0	-0.62 (-1.56 to 0.32)	-0.63
IMPULSE	16.2 (4.9) n = 6	17.6 (5.8) n = 7	11.2 (3.1) n = 6	13.2 (5.1) n = 5	13.5 (3.5) n = 2	NA n = 0	-1.1 (-2.39 to 0.24)	-0.78
AWARENESS	18.3 (7.2) n = 6	18 (8.5) n = 7	15 (6.7) n = 6	17.6 (7) n = 5	15.5 (4.9) n = 2	NA n = 0	-0.525 (-1.9 to 0.85)	-0.37
STRATEGIES	26 (5.7) n = 6	26.9 (9) n = 7	23 (8) n = 6	23.8 (7.5) n = 5	21 (2.8) n = 2	NA n = 0	-1.44 (-2.75 to -0.13)	-1.07
CLARITY	16 (6.5) n = 6	14.9 (6.9) n = 7	13 (4.9) n = 6	13.2 (3.4) n = 5	11 (1.4) n = 2	NA n = 0	-0.67 (-1.43 to 0.1)	-0.85
DBT-WCCL Skills Use	1.5 (0.7) n = 6	1.8 (0.5) n = 7	1.8 (0.5) n = 6	1.8 (0.4) n = 5	1.7 (1) n = 2	2.6 (NA) n = 1	0.05 (-0.04 to 0.15)	0.54
General Dysfunctional Coping	1.9 (0.6) n = 6	1.7 (0.4) n = 7	1.7 (0.7) n = 6	1.8 (0.6) n = 5	1.4 (0) n = 2	2.1 (NA) n = 1	-0.04 (-0.16 to 0.08)	-0.30
CSSRS	4.5 (1.9) n = 6	3.5 (0.7) n = 2	3.5 (2.2) n = 6	4.0 (3.3) n = 6	5 (2.8) n = 2	5 (NA) n = 1	-0.21 (-0.74 to 0.32)	-0.43
PHQ-9	17 (5.7) n = 7	15.3 (5.9) n = 7	14.2 (7.7) n = 6	13 (7.9) n = 5	15 (1.4) n = 2	14 (NA) n = 1	-1.06 (-2.2 to 0.09)	-0.84
BSL-23	2.4 (1) n = 7	2.1 (1) n = 7	1.8 (1.2) n = 6	1.7 (1.4) n = 5	2.3 (0.4) n = 2	2.9 n = 1	-0.13 (-0.26 to -0.005)	-0.96

Notes. This table gives mean scores at each timepoint, with standard deviations in parentheses, as well as the number of non-missing measurements at each timepoint. Timepoint 1 is each participant's baseline score prior to the beginning of the DBT skills group. Timepoint 2 is the participant's first DBT Skills Group. Each subsequent Timepoint marks the completion of a 6–8 week DBT Skills Module. The estimated change between each timepoint is calculated using a multilevel model which accounts for the varying number of measurements at each timepoint.

problem of causal inference is also affected by the fact that patients were recruited in part on the basis of symptom severity (e.g., provider concerns about high suicide risk), which produces a particularly high likelihood of regression to the mean such that we would expect patients to show improvements over time for purely statistical (rather than clinical) reasons (Barnett et al., 2005); though the likelihood of other negative outcomes, such as dropout, may also be increased). Other issues such as the Hawthorne effect, attrition bias, and confirmation bias, also prevent drawing strong conclusions from our experience. Another limitation was the program evaluation (rather than research) design which entailed that continued assessment was contingent upon continued engagement with treatment: Veterans who dropped out of treatment were no longer measured, and so it was not possible for us to determine whether such Veterans improved less (or more) than those who remained engaged with the DBT program. Additionally, the three-day training provided to the team is less than what is often provided in the private sector, and we had no method for assessing the impact of the varying amount of prior training received by members of our DBT team. Further, there was no attempt to randomize between the people who entered treatment versus those who did not, and we only collected outcome measures on those people who entered treatment which prevents us from analyzing how they may have differed. Moreover, the sample size was small and the sample of patients with history of psychosis was even smaller.

Further research may be warranted on whether patients with psychotic disorders can benefit from DBT. Research suggests that emotion dysregulation is a core feature of psychotic spectrum disorders (Khoury & Lecomete, 2012; Tully & Niendam, 2014), and people with psychosis exhibit wide-ranging deficits in the perception (Pinkham et al., 2007; Tremereau, 2006) prediction (Kring & Caponigro, 2010), expression (Henry et al., 2007; Mandal et al., 1998), identification (Kimhy et al.,

2012; Lincoln et al., 2015), and control (Horan et al., 2013; Khoury & Lecomete, 2012; Visser et al., 2018) of their own emotions. Studies of people with psychosis have demonstrated a direct association between emotion dysregulation and suicide ideation (Grattan et al., 2019; Palmier-Claus et al., 2013; Palmier-Claus et al., 2012) self-harm (Mork et al., 2012), and suicide attempts (Grattan et al., 2019), all serious problems among people with psychotic disorder (Hor & Taylor, 2010). Nevertheless, emotions are rarely targeted in treatments for psychosis (Tully & Niendam, 2014). A randomized control study with sufficient sample size to examine group differences is indicated given that patients with psychotic disorders are often excluded from DBT programs. There is also a need for qualitative or quantitative research exploring how DBT skills are used by people with psychosis. While no adaptations were made to any of the standard DBT material for any particular patient subgroup (including those with psychosis), DBT skills are always applied and taught within the context of patients' unique concerns and difficulties. For example, we informally observed that patients in our program with psychosis have used Opposite Action to successfully decrease paranoia by engaging in approach behaviors, and one participant said that Wise Mind and the STOP skill were helpful for command hallucinations, but we had no formal framework for collecting information about these practices. Additionally, future studies are needed to examine if these findings are generalizable to other VA settings and whether full model DBT programs with the VHA lead to improvements suicidal behaviors and negative outcomes.

5. Conclusions

This article describes one team's process of developing a comprehensive DBT program in a VA healthcare system. The team achieved

institutional recognition and stability, including being added to the institution’s organizational chart, securing a dedicated team lead position, and gaining a program supervisor. Preliminary program evaluation data suggests that Veterans improved on a range of measures during treatment, including suicidality, depression, and emotion dysregulation. Veterans with a history of psychosis generally appeared to improve as well.

6. Lessons learned

Despite initial worries about the sustainability of the program given competing time requirements faced by clinicians based in a diverse range of clinics across the VA Health Care System, the DBT program has been sustainable. Achieving formal recognition as a program by the hospital system served to increase visibility and legitimize the program, including its demands on clinician time. While we did not engage in qualitative research about the experience of patients with psychosis in our program, this decision to include Veterans with psychosis or psychosis history has not appeared to pose problems and we have measured

improvements for these people during treatment. As noted in our Results, we unexpectedly saw very high rates of clinician referrals for Veterans who turned out to be inappropriate for the program due to not meeting our inclusion or exclusion criteria, often due to not having recent enough suicidality or hospitalizations. We therefore found it necessary to be very proactive about educating providers in the health care system about the nature of our program and its inclusion/exclusion criteria by advertising through internal listservs and also by providing concrete feedback to referring providers about why their referred patient may not have met eligibility criteria.

Author statement

PLP conceived of the current study, conducted the statistical analysis, and wrote the initial draft of the manuscript. PLP, JG, TB, JYJ, CC, KM, EM, AJ, ER, and MB all contributed to the preparation and revision of the manuscript. PLP, JG, TB, JYJ, CC, KM, EM, and AJ have all served as clinicians within the DBT program described in this manuscript.

Appendix A. Scores on outcome measures during treatment for people who endorsed psychotic symptoms on assessments during treatment (with or without psychotic disorder)

	Timepoint						Coef.	SE	t	df	95% CI		d	p
	1	2	3	4	5	6					lower	upper		
DERS Total Score	129 (8.1) n = 4	134 (22.2) n = 5	106.2 (16) n = 4	118 (6.2) n = 3	101 (NA) n = 1	NA n = 0	-7.122	2.849	-2.5	12.762	-13.32944	-0.914562	-1.39962	0.0269
NONACCEPT	22.2 (1) n = 4	24.6 (4.1) n = 5	21.5 (5.2) n = 4	21 (3) n = 3	16 (NA) n = 1	NA n = 0	-1.3321	0.5313	-2.507	11.9057	-2.501483	-0.162717	-1.45314	0.0277
GOALS	19 (2.4) n = 4	21.6 (2.1) n = 5	19.5 (3) n = 4	21.3 (0.6) n = 3	19 (NA) n = 1	NA n = 0	-0.2458	0.4014	-0.612	11.836	-1.129275	0.6376754	-0.35578	0.552
IMPULSE	18.8 (2.8) n = 4	19.6 (4.7) n = 5	10.5 (2.5) n = 4	15 (3) n = 3	16 (NA) n = 1	NA n = 0	-1.6966	0.9043	-1.876	15	-3.62407	0.2308698	-0.96876	0.0802
AWARENESS	22.8 (2.1) n = 4	21.4 (7.6) n = 5	17.2 (7.3) n = 4	21 (7.2) n = 3	19 (NA) n = 1	NA n = 0	-1.3914	0.9316	-1.494	12.2279	-3.421182	0.638382	-0.85449	0.161
STRATEGIES	27 (4.2) n = 4	29 (8.1) n = 5	22.5 (6.2) n = 4	25.3 (3.5) n = 3	19 (NA) n = 1	NA n = 0	-1.4581	0.9223	-1.581	12.6187	-3.467619	0.5514191	-0.89013	0.139
CLARITY	19.2 (4.5) n = 4	17.8 (5.7) n = 5	15 (4.7) n = 4	14.3 (2.5) n = 3	12 (NA) n = 1	NA n = 0	-1.3372	0.4188	-3.193	11.3814	-2.258973	-0.415427	-1.89291	0.00822
DBT-WCCL Skills Use	1.1 (0.5) n = 4	1.6 (0.4) n = 5	1.8 (0.6) n = 4	1.7 (0.5) n = 3	1 (NA) n = 1	NA n = 0	0.08567	0.06644	1.289	11.84785	-0.060563	0.2319035	0.748968	0.221879
General Dysfunctional Coping	1.8 (0.6) n = 4	1.7 (0.5) n = 5	1.7 (0.8) n = 4	1.7 (0.7) n = 3	1.4 (NA) n = 1	NA n = 0	0.03317	0.05929	0.56	11.49608	-0.097326	0.1636664	0.330326	0.586527
CSSRS	3.8 (1) n = 4	3.5 (0.7) n = 2	4.2 (2.2) n = 4	5.3 (3.8) n = 3	7 (NA) n = 1	NA n = 0	0.3078	0.2639	1.166	8.848	-0.300754	0.9163545	0.783982	0.274
PHQ-9	15.8 (5.9) n = 5	16.6 (5.7) n = 5	15 (9.4) n = 4	12.7 (5.9) n = 3	16 (NA) n = 1	NA n = 0	-0.2879	0.748	-0.385	12.5936	-1.917652	1.341852	-0.21698	0.706679
BSL-23	2.3 (1.1) n = 5	2.2 (0.7) n = 5	1.9 (1.2) n = 4	1.6 (1.2) n = 3	2 (NA) n = 1	NA n = 0	-0.1027	0.0808	-1.271	12.2941	-0.278748	0.0733481	-0.72498	0.22732

Notes. This table gives mean scores at each timepoint, with standard deviations in parentheses. The number of non-missing measurements at each timepoint is given for each outcome measure at each timepoint. "Coef." is the average amount of change on the outcome measure between each individual timepoint, as estimated by a multilevel model which accounts for the varying number of measurements at each timepoint. Timepoint 1 is each participant’s baseline score prior to the beginning of the DBT skills group. Timepoint 2 is the participant’s first DBT Skills Group. Each subsequent Timepoint marks the completion of a 6–8 week DBT Skills Module. Variation in the number at each timepoint is mostly due to the length of time each participant was in treatment and occasional missing values.

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