

# BMJ Open Application of Dialectical Behaviour Therapy in treating common psychiatric disorders: study protocol for a scoping review

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## ABSTRACT

**Introduction** Dialectical behaviour therapy (DBT) is a well-known intervention for treating borderline personality disorder, and has been increasingly adapted for other disorders. Standard DBT consists of four treatment modes, delivered over a year. Adaptations to DBT include changes to modes of delivery, treatment length, and skills modules taught to clients, or incorporating interventions from other evidence-based therapies. There is a need to synthesise existing evidence on DBT so that stakeholders—clinicians, researchers and policymakers—can understand how it has been provided for various psychiatric conditions, and whether it has been effective.

**Methods and analysis** This study proposes a scoping review conducted according to Arksey and O'Malley's (2005) procedures, to map and summarise the literature on DBT interventions for treating a range of psychiatric concerns. Electronic databases (ie, the Cochrane Central Register of Controlled Trials, PubMed, PsycINFO, SCOPUS, EBSCOhost and ProQuest Dissertations and Theses), conference proceedings and the US National Institutes of Health Ongoing Trial Register will be searched for intervention studies that involve a control or comparison group, and that report quantitative data on pre/post-measures for psychiatric symptom severity. The initial search was conducted on 18 September 2020, and data charting has not commenced. An update will be performed in September 2022, pending this protocol's publication. Data charting will collect individual studies' characteristics, methodology and reported findings. Outcomes will be reported by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for Scoping Reviews.

**Ethics and dissemination** No ethical approval is required for this study. The goal of dissemination is to keep DBT stakeholders abreast on latest updates in clinical applications of DBT. Findings from this research are intended to inform a more specific topic of study (eg, a meta-analysis), to further aid in the development of DBT interventions for psychiatric populations.

**Registration details** The study protocol was pre-registered with the Open Science Framework on 24 August 2021 (<https://osf.io/vx6gw>).

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Use of a scoping review format will allow for this proposed study to generate a summary of the available research to date on broader applications of dialectical behaviour therapy (DBT), and includes a range of clinical presentations as well as variations of DBT.
- ⇒ Findings arising from the proposed study will clarify how DBT has been adapted to suit the needs of treatment practitioners and patients over time.
- ⇒ The findings will be useful in informing future research on DBT, for example, by identifying areas where there are sufficient data and adequate rigour in the studies, so that subsequent meta-analyses can be designed.
- ⇒ Based on the study selection criteria that specify the inclusion of studies only if client self-reported data were collected, there will be certain client populations that may be excluded, such as persons with intellectual disabilities, since research on this population usually uses clinician-rated or caregiver-rated assessment measures, rather than client self-reports.
- ⇒ In line with the above, certain adaptations such as DBT for parents or families of psychiatric patients will likely also not be included, unless the study administers assessments to clients themselves.

## INTRODUCTION

Dialectical behaviour therapy (DBT) is a comprehensive treatment for pervasive emotion dysregulation,<sup>1</sup> originally developed for highly suicidal and self-injurious individuals who showed poor outcomes from existing psychotherapies.<sup>2</sup> It is based on dialectical philosophy, that is, the resolution of two opposite views into a synthesis. The main dialectic in DBT is balancing between changing what is within control (consistent with traditional therapies) and acceptance of events or one's inner experiences. With roots in behaviourism, DBT also employs social learning theory and behavioural principles to address clients' problems.<sup>3</sup>

**Table 1** Modes and corresponding functions of standard DBT

Modes	Functions
Individual psychotherapy	Improve client motivation to change; structure clients' treatment and natural environments to support client capabilities
Group skills training	Enhance client capabilities for regulating emotion effectively (ie, acquiring skills for effective responding)
Telephone coaching	Facilitate generalisation/transfer clients' new capabilities (ie, skilful responses) to their natural environment in between therapy sessions
Consultation team	Maintain and enhance therapist capabilities and their motivation for treating complex, multiproblem clients; also to structure clients' treatment environment to support client and therapist capabilities

Structuring the environment can occur through additional methods, for example, case management, interactions with administrative or clinical staff (contingency management within the treatment programme), and family and couples' interventions (contingency management within clients' communities).

DBT, dialectical behaviour therapy.

In DBT, the treatment environment is structured according to clients' levels of disorder, that is, the complexity of each case.<sup>4</sup> The standard treatment takes 1 year, and comprises four treatment modes aimed at fulfilling five main functions, as in [table 1](#), which is modified from Koerner.<sup>5</sup>

### Individual psychotherapy

Individual psychotherapy involves mutual verbal commitment to DBT, including jointly organising a hierarchy of treatment targets with clients. These are behaviours requiring change (to increase or decrease) and other client goals. Behaviours to decrease are ordered as (1) life-threatening behaviours, (2) therapy-interfering behaviours and (3) quality-of-life-interfering behaviours. Behavioural interventions are used to implement structure, such as tracking target behaviours and emotions using diary cards, facilitating behavioural analyses (termed chain analyses and solution analyses), contingency management, behavioural rehearsal of skills or exposure tasks. Key DBT techniques are commitment strategies to assess and enhance motivation for change, acceptance strategies to strengthen therapeutic alliances and dialectical strategies to synthesise seemingly opposing views in response to high-emotion situations. These are continually employed in sessions, especially as clients begin applying skills to reduce target behaviours like angry outbursts or substance use.

### Group skills training

Skills training is typically conducted in groups by two DBT skills trainers, resembling a class.<sup>6</sup> Skills training equips clients with skills in a psychoeducational manner, freeing individual therapists to flexibly cater sessions to clients' needs. The group setting helps members learn from each other and practise skills when interpersonal situations arise, allowing for immediate coaching on applying what was taught. Four modules of skills are covered, namely, mindfulness, distress tolerance, emotion regulation skills and interpersonal effectiveness skills.

### Telephone coaching

Through telephone coaching, clients are guided in applying skills to replace dysfunctional responses in actual circumstances. This allows generalisation of learning beyond therapy settings. Agreements are set beforehand to establish understanding of when and how calls are made, and time limits of calls. Typically, calls are disallowed for 24 hours after life-threatening behaviours to prevent reinforcing them.

### Consultation team

Finally, DBT therapists join a peer-consultation team, aimed at maintaining therapists' motivation and clinical skills. Consultation teams usually meet weekly and follow a set of agreements surrounding clients, therapists and therapy. Therapists assume different roles during meetings (eg, rotating leadership), helping each other with case conceptualisation and addressing difficult personal emotions and cognitions that may interfere with effective DBT.

Providing all four treatment modes is known as comprehensive or standard DBT. That said, the treatment developer has acknowledged that 'in principle, DBT can be applied in any treatment mode'.<sup>1</sup> Modes are sometimes condensed due to resource or cost constraints, or supplemented by ancillary treatments (eg, pharmacotherapy, involvement of clients' families).<sup>7</sup> Other reasons for modifications to standard DBT or preferred modes of service delivery include the need to target specific problems, and are briefly outlined below.

A well-established evidence-based treatment, DBT has become the standard of care in treating borderline personality disorder (BPD).<sup>8,9</sup> It has been adapted in recent years for treating various psychiatric disorders. Adaptations have been made to DBT for the treatment of post-traumatic stress disorder (PTSD) related to child sexual abuse and co-occurring problems in emotion regulation by combining trauma-focused cognitive-behavioural techniques with DBT elements (eg, DBT-PTSD).<sup>10-12</sup> A

**Table 2** Examples of known DBT adaptations

Psychiatric diagnosis/ concern(s)	Types of DBT studied
Depression	Radically open DBT (RO-DBT), <sup>34 35</sup> also known in earlier studies as DBT <sup>D+PD36 37</sup> ; 16-week DBT skills training (DBT-ST) <sup>38</sup>
Bipolar disorder	12-week DBT-ST with telephone check-ins <sup>39</sup> ; DBT for adolescents (DBT-A; as in Goldstein <i>et al</i> <sup>40</sup> based on Miller <i>et al</i> 's <sup>41</sup> model)
Anorexia nervosa (including restricting and binge-purge subtypes)	RO-DBT (eg, Lynch <i>et al</i> <sup>42</sup> ); DBT-A with two further adaptations to treatment length and the addition of a supplementary module <sup>43</sup> ; 3-month adapted inpatient DBT programme with eating disorder-specific modifications <sup>44</sup>
Binge eating disorder	The Stanford Model, known in earlier studies as DBT for bulimia nervosa (DBT-BN) or DBT for binge eating disorder (first published by Telch <i>et al</i> <sup>45 46</sup> ); guided self-help in DBT (as in Carter <i>et al</i> 's <sup>47</sup> and Masson <i>et al</i> 's <sup>48</sup> studies, which administered the self-help manual 'The DBT Solution for Emotional Eating') <sup>49</sup>
Bulimia nervosa	Stanford Model (DBT-BN; eg, Safer <i>et al</i> <sup>50</sup> ); standard DBT with and without eating disorder-specific modifications (eg, Chen <i>et al</i> <sup>51</sup> ); appetite-focused DBT <sup>52</sup>
Multidiagnostic or complex eating disorders	Multidiagnostic eating disorders for DBT <sup>53 54</sup> ; DBT-based partial hospitalisation programmes (eg, Brown <i>et al</i> <sup>55–57</sup> )
Post-traumatic stress disorder	DBT for post-traumatic stress disorder <sup>10–12 58</sup> ; standard DBT with a DBT-prolonged exposure protocol <sup>59–61</sup> ; modified DBT-A <sup>62</sup>
Substance abuse and dependence	DBT for substance use disorder <sup>14 15 63</sup> ; 20-week (shortened) standard DBT (as in Axelrod <i>et al</i> <sup>64</sup> ) 3-month DBT-ST <sup>65</sup>
Intellectual disability or developmental disabilities	DBT for special populations <sup>66</sup> ; skills system (SS/DBT-SS) <sup>67 68</sup>

DBT, dialectical behaviour therapy.

treatment protocol for treating patients with comorbid BPD and PTSD has also been developed by Harned *et al*<sup>12</sup> by combining standard DBT with another well-researched trauma-focused treatment, prolonged exposure therapy (PE),<sup>13</sup> known as DBT PE.<sup>12</sup> Standard DBT was also adapted for treating substance use disorders (SUDs) to develop DBT-SUD<sup>14 15</sup> by incorporating concepts and skills specific to managing substance abuse. Systematic reviews examining applications of DBT with intellectual disabilities<sup>16</sup> and eating disorders<sup>17</sup> found some evidence that DBT can be modified to target symptoms unique to these conditions, although further research on efficacy is needed. The names of some of these adaptations are summarised in table 2.

The effect of DBT on such a wide range of clinical concerns has not been investigated in detail, despite it being increasingly employed to treat many psychiatric and behaviour problems as outlined above.

## THE PRESENT STUDY

As mentioned earlier, systematic reviews on DBT for treating specific types of disorders have been conducted.<sup>16 17</sup> However, there are more psychiatric conditions for which DBT has been used, which have not been systematically reviewed, including PTSD and substance use. Other systematic reviews focused on a mode of DBT (eg, of DBT skills training as a standalone treatment),<sup>18</sup> DBT delivered in a single-treatment setting

(eg, DBT skills training groups in schools)<sup>19</sup> or DBT provided for one age group of clients (eg, DBT for self-harm and suicidal ideation in adolescents).<sup>20</sup>

Mapping and summarising the literature are needed to understand how DBT is used as a treatment for various types of psychiatric conditions. To achieve this, this study protocol describes a proposal for a scoping review, a format that would allow a summary of the available research to date on broader applications of DBT to be generated. The proposed scoping review instead aims to examine the effects of all types or variations of DBT on a range of clinical presentations. This study will thus clarify how DBT has been delivered to suit the needs of treatment practitioners and clients over time.

The findings generated from this research are also intended to be used to inform future research on DBT—in particular, to design a future systematic review by identifying gaps in the evidence base so that further development of a more specific topic of study can be facilitated. After determining areas where there are sufficient data and adequate rigour in the studies, subsequent meta-analyses can be designed. In the long term, this study can also be used to further inform the development of DBT or modified DBT interventions for psychiatric populations.

The study objectives are as follows:

1. To outline the range of psychiatric concerns where DBT has been applied in treatment, such as the most

common disorders of mood and anxiety, including comorbid disorders.

2. To summarise the reported effects of DBT (according to the existing evidence base) in addressing these clients' psychiatric symptoms.
3. To index any modifications or adaptations to DBT, specific to the respective client population (eg, DBT for eating disorders).

## METHODS

As it is important to follow an established approach, the scoping review will be conducted according to the procedures outlined by Arksey and O'Malley,<sup>21</sup> who first published a methodological framework for scoping reviews that includes clear stages of conducting the review. Following their seminal work, other authors have built on this framework as a foundation to provide recommendations for strengthening scoping studies. We follow the recommendation by Levac *et al*<sup>22</sup> for further defining the research question (the first stage of Arksey and O'Malley's framework) to specify a target population and health outcomes. We also follow another recommendation by Pham *et al*<sup>23</sup> for reporting outcomes (the fifth stage of Arksey and O'Malley's framework) according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for Scoping Reviews (PRISMA-ScR).<sup>24</sup>

The review protocol was pre-registered on the Open Science Framework database on 24 August 2021, and may be refined through the study screening phase.

### Stage 1: identification of the research question

The review questions are as follows:

1. What psychiatric diagnoses or problems have been treated with DBT in clinical treatment settings? This includes standard DBT, as well as any other forms of DBT interventions.
2. What are the reported effects of DBT interventions on symptom severity for these psychiatric problems?
3. What adaptations, if any, have been made to standard DBT for the treatment of each of these psychiatric conditions?

### Stage 2: identification of relevant literature

#### Selection criteria

#### Types of participants

Participants of all ages and in any clinical or health setting (including community settings) will be included in the review. Studies involving participants of all ages identified with psychiatric concerns (variously defined by study authors) will be included. Participants with subclinical symptoms, or reporting clinically significant distress, will also be included. The levels of symptomatology will be identified by a diagnostic interview or self-report measure (see [table 3](#) for a non-exhaustive list that was generated based on an earlier literature review). A closer examination will be undertaken to establish whether these studies involve participants with

a diagnosis of a psychiatric illness using any recognised diagnostic criteria such as the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition<sup>25</sup> or the 10th revision of the International Statistical Classification of Diseases and Related Health Problems.<sup>26</sup> Studies involving comorbid conditions, if any, will also be eligible for inclusion. Studies involving non-clinical participants will be excluded.

#### Types of studies

First, the results of this scoping review will be used to identify areas of DBT outcome research suitable for conducting a systematic review and/or meta-analysis. Second, an objective of this study is to summarise the reported effectiveness of DBT and its adaptations. Due to these reasons, only empirical studies that report quantitative data and that involve pre/post-measures for symptom severity will be eligible for inclusion in the scoping review. This includes randomised controlled trials and quasi-experimental studies that involve a control or comparison group. We will examine whether DBT adaptations may also be compared with standard DBT or with other types of DBT interventions. Review articles will be collected in order to review the reference list and will not contribute to the total number of studies, unless these also report original data. Theoretical literature, studies using qualitative designs, single-sample case studies and case reports will be excluded. There will be no date or country restrictions.

#### Types of interventions

##### Experimental interventions

Studies employing one or more of the four treatment modes will be included in this review, as well as any modifications to or adaptations of DBT. Examples of adaptations to skills training include delivering it on an individual basis instead of a group setting as specified in the treatment developer's manual,<sup>1</sup> or delivering a shortened programme over 20 weeks instead of the usual 26 weeks in standard DBT, etc. The scoping review will examine the adaptations outlined in [table 2](#). What constitutes a mode of DBT is specified in a full-text screening tool (see online supplemental file 1) that was developed by the lead author, through consultation with the study team.

##### Comparator interventions

Control conditions can comprise a participant group receiving no interventions, treatment as usual or other types of treatment apart from DBT, as well as wait-list controls. Excluding uncontrolled studies ensures that the final sample of included studies has sufficient internal validity, so that the second research question can be adequately answered. This also helps with identifying areas (eg, with a specific psychiatric disorder) where there may be sufficient evidence to design a systematic review and meta-analysis.

**Table 3** Examples of measures of symptomatology employed in DBT-related studies

Psychiatric diagnosis/ concern(s)	Clinician-administered measures (eg, structured or semistructured interview)	Client self-report measures
General psychopathology	Structured Clinical Interview for Axis I DSM-IV Disorders (SCID-I) <sup>69</sup> ; Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II) <sup>70</sup> ; Mini-International Neuropsychiatric Interview <sup>71</sup>	Achenbach System of Empirically Based Assessment forms <sup>72</sup> ; Brief Symptom Inventory <sup>73</sup> ; Symptom Checklist 90-Revised <sup>74</sup>
Affective disorders (eg, depressive symptoms, manic symptoms)	Hamilton-Depression Rating Scale <sup>75</sup> ; Kiddie Schedule of Affective Disorders and Schizophrenia—Present and Lifetime <sup>76</sup>	Beck-Depression Inventory-II <sup>77</sup> ; Beck Hopelessness Scale <sup>78</sup> ; Depression Anxiety and Stress Scale (DASS-21) <sup>79</sup> ; Montgomery-Asberg Depression Rating Scale <sup>80</sup> ; Young Mania Rating Scale <sup>81</sup> ; Zung Self-Rating Depression Scale <sup>82</sup>
Borderline personality disorder (BPD)	Borderline section of the SCID-II; Borderline Disorder Severity Index <sup>83</sup> ; International Personality Disorder Examination-BPD Section <sup>84</sup> ; Structured Interview for DSM-IV Personality <sup>85</sup> ; Zanarini BPD Rating Scale <sup>86</sup>	Borderline Evaluation of Severity over Time <sup>87</sup> ; Borderline Symptom List (BSL) <sup>88</sup> ; BSL-23 <sup>89</sup>
Anxiety disorders	Anxiety Disorders Interview Schedule-Child and Parent version <sup>90</sup>	Beck Anxiety Inventory <sup>91</sup> ; DASS-21; Hospital Anxiety and Depression Scale <sup>92</sup> ; State-Trait Anxiety Inventory <sup>93</sup>
Eating disorder symptomatology	Eating Disorder Examination <sup>94</sup>	Binge Eating Scale <sup>95</sup> ; Eating Disorders Examination Questionnaire (version 6) <sup>94</sup> ; Eating Disorder Inventory-2 <sup>96</sup> ; Emotional Eating Scale <sup>97</sup> ; Emotional Eating Scale for Children and Adolescents <sup>98</sup> ; Eating in the Absence of Hunger Questionnaire for Children and Adolescents <sup>99</sup> ; Preoccupation with Eating Weight and Shape Scale <sup>100</sup> ; Three Factor Eating Questionnaire <sup>101</sup>
Pathological anger	–	State-Trait Anger Expression Inventory-II <sup>102</sup>
Post-traumatic stress disorder (PTSD)	Clinician-Administered PTSD Scale <sup>103</sup>	Dissociative Experiences Scale-II <sup>104</sup> ; PTSD Checklist for DSM-5 <sup>105</sup>
Substance abuse and dependence	Drug Abuse Screening Test <sup>106</sup>	Alcohol Use Disorders Identification Test <sup>107</sup> ; Drug Use Disorders Identification Test <sup>108</sup>
Suicidality, suicidal or parasuicidal behaviours	Parasuicide History Interview <sup>109</sup> ; Suicide Attempt and Self-Injury Interview <sup>110</sup>	Beck Suicide Ideation Scale <sup>111</sup> ; Lifetime Parasuicidal Count <sup>112</sup> ; Suicide Risk Scale <sup>113</sup>
DBT, dialectical behaviour therapy; DSM, Diagnostic and Statistical Manual of Mental Disorders.		

## Search strategy

### Databases

Electronic databases to be searched will include the Cochrane Central Register of Controlled Trials, PubMed, PsycINFO, SCOPUS, EBSCOhost and ProQuest Dissertations and Theses. Only articles published in English will be included, as the study team members are unable to read information written in other languages. Both articles in peer-reviewed journals and unpublished (eg, dissertations) will be included, as long as the inclusion criteria elaborated below are met.

Additionally, manual reviews of conference proceedings from a list of conferences recommended for researchers by Behavioural Tech<sup>27</sup> and of reference lists in relevant papers will also be conducted to identify papers not captured in electronic database searches. Relevant trials will be searched for on the US National Institutes of Health Ongoing Trials Register ([www.clinicaltrials.gov](http://www.clinicaltrials.gov)). Corresponding and/or primary authors will be contacted where necessary, to locate any unpublished studies.

All steps taken will be documented in a Microsoft Excel file, by recording the search terms used, dates of searches and number of findings for each database. If required, screenshots of searches will be saved.

### Search string

A search strategy has been devised to combine the following domains: (1) clinical presentation and (2) treatment approach. A third domain, study population, was initially considered and then excluded, after preliminary scoping searches were conducted to identify the number of articles retrieved by specific keywords, including wildcards, in various databases. Including population into the search string was found to have a negligible impact on the number of search results generated. The finalised search string is listed below, which will be modified as appropriate for various databases (also see online supplemental file 2 for specific search strategies for each database):

("Abus\*" OR "Addict\*" OR "ADHD" OR "Affect\*" OR "Aggressi\*" OR "Agitat\*" OR "Alzheimer" OR "Anger" OR "Anxi\*" OR "ASD" OR "Attenti\*" OR "Autis\*" OR "Behavior\*" OR "Behaviour\*" OR "Binge" OR "Binging" OR "Bipolar" OR "Borderline" OR "BPD" OR "Challeng\*" OR "Cogniti\*" OR "Compulsi\*" OR "Conduct" OR "Control" OR "Cope" OR "Coping" OR "Cut" OR "Dementia" OR "Dependen\*" OR "Depressi\*" OR "Disab\*" OR "Disorder\*" OR "Distress" OR "Dysregulat\*" OR "Eating" OR "Emot\*" OR "Empath\*" OR "Externalis\*" OR "Externaliz\*" OR "Function\*" OR "Hyper\*" OR "Hypo\*" OR "Impuls\*" OR "Injur\*" OR "Internalis\*" OR "Internaliz\*" OR "Interpersonal" OR "Irritab\*" OR "Maladaptive" OR "Mania" OR "Manic" OR "Mental" OR "Mood" OR "Negative" OR "Neuro\*" OR "Non-suicidal" OR "NOS" OR "Not otherwise specified" OR "NSSI" OR "Obsessi\*" OR "OCD" OR "Offen\*" OR "Oppositional" OR "Panic" OR "Para-suicidal" OR "Patholog\*" OR "Personality" OR "Phobia" OR "Posttraumatic" OR "Post-traumatic" OR "Problem\*" OR "PTSD" OR

"Psychological" OR "Psychopath\*" OR "Psychosis" OR "Psychosocial" OR "Psychotic" OR "Regulat\*" OR "Quality of life" OR "Risk\*" OR "Schizo\*" OR "Self-esteem" OR "Self-harm\*" OR "Shame" OR "Social" OR "Socio-emotional" OR "Stalk\*" OR "Stealing" OR "Stress" OR "Suicid\*" OR "Substance" OR "Symptom\*" OR "Theft" OR "Trait\*" OR "Trauma" OR "Trichotillomani\*" OR "Violen\*" OR "Well-being") AND ("DBT" OR "Dialectical Behaviour Therapy" OR "Dialectical Behavior Therapy" OR "Dialectical Behavioural Therapy" OR "Dialectical Behavioral Therapy")

### Stage 3: study selection

There are three steps for the selection of appropriate studies.

Searches are first conducted by the lead author based on title, abstract and keywords within the above-stated electronic databases. The initial search was conducted on 18 September 2020, and data charting has not yet commenced. An update is planned to be performed in May 2022, pending the publication of this study protocol. It is estimated that a further 9 months would be required for study completion thereafter.

All articles will be uploaded to EndNote, and duplicate references identified using EndNote as well as via manual checking will be removed. Articles identified through hand-searches (eg, of reference lists) will be considered for inclusion into data synthesis based on their title.

The second step involves screening the abstracts of articles to ensure that they meet the inclusion criteria. An online platform for citation screening, Abstrackr,<sup>28</sup> will be used to facilitate this process—that is, two independent reviewers will screen the articles for inclusion based on a predetermined rubric (see online supplemental file 3). Any discrepancies will be resolved in consultation with a third, senior reviewer who is experienced in conducting scoping reviews. Reasons for excluding any studies will be logged. Abstracts that meet the following criteria will be eligible for full-text screening:

- Is written in English.
- Is an empirical article; excluding single-sample case studies.
- Sample participants presenting with clinical or subclinical symptoms of any psychiatric disorder.
- Is based in a clinical setting, including but not limited to health, psychiatric, community health and forensic mental health settings. Studies based in non-clinical and/or non-psychiatric settings, such as schools or correctional settings, will be excluded.
- Studies DBT as the primary intervention or as a comparison/control condition, where DBT refers to at least one of the four treatment modes being delivered; the article is excluded if an integrative therapy is being studied, that is, a different treatment that merely incorporates elements of DBT.
- Evaluates symptom severity for any psychiatric condition using psychometric measures.

g. Administers at least two assessment time points (ie, pre-treatment and post-treatment assessments).

In the third step, the remaining articles will be similarly screened for inclusion by two independent reviewers using the full texts. Eligibility criteria for full-text screening were also developed a priori, and include the above criteria as well as the following (also see online supplemental files 1 and 4 for more detailed information):

- a. Closer examination of what constitutes a DBT mode, as defined by the study team. For example, the skills training mode must involve teaching of at least three of the four core DBT skills; that is, interventions that provide training in only one skill area (eg, mindfulness) would be excluded.
- b. Includes clients' self-reported data for any measures (full scales and/or subscales) of psychiatric symptoms or concerns.
- c. Includes a comparator condition.

Each step commences with a pilot round. As mentioned earlier, pilot searches were conducted prior to the finalisation of this proposal. Abstract screening and full-text screening procedures will each also be preceded by a pilot screening round involving at least three different reviewers (including all the listed authors). In the abstract screening and full-text screening pilot rounds, 200 abstracts (approximately 2.5% of search results) and 20 full-text articles will be randomly selected and screened, respectively.

The final dataset of selected studies will be collated in EndNote (as per recommendations by Peters<sup>29</sup>) and listed in Microsoft Excel.

#### Stage 4: data charting

In line with the recommended methodology for data charting,<sup>21 30</sup> data will be collected from the articles using a predetermined data extraction guidebook. Data charting forms have been drafted (see online supplemental file 5) and will be piloted by at least two authors, for the first 10 articles in the final dataset, according to recommendations by Levac *et al.*<sup>22</sup> Subsequently, the forms may be modified based on feedback from the pilot results. Each article will be read by only one reviewer for data collection, but a random sample making up 10% of the data will be spot-checked by a second reviewer for validation purposes.

The following data will be extracted from studies meeting inclusion criteria (see online supplemental file 5 for more details):

- a. Study characteristics (eg, title, authors, year of publication, country, language, treatment setting, sample size and demographics including baseline characteristics and diagnoses).
- b. Study methodology (eg, research questions or aims, study design, intervention description, comparisons or control groups, duration of therapy and number of sessions, study completion rates, treatment outcome measures and measurement time points).

c. Outcomes (eg, results of analyses including numerical information where relevant, suggested mechanisms of the intervention or other limitations).

No formal assessment of the quality of included studies will be made, in line with most published scoping reviews,<sup>23 31 32</sup> although debate on this topic is noted.<sup>22 33</sup>

Nevertheless, the data collected or chartered will include information related to this such as allocation concealment, blinding of participants and personnel, study completion rate, incomplete outcome data, selective outcome reporting, etc (see online supplemental file 5).

Study authors will be contacted in the event of missing data on methods or results, and correspondence will be tabulated.

#### Stage 5: collation, summary and reporting of results

A flow diagram will be included to report on each stage of the review process, as per PRISMA-ScR guidelines.<sup>24</sup>

Findings from the review will be presented in a narrative synthesis, where studies are summarised according to the broad category of psychiatric concerns being treated. Information required to answer the research questions will be outlined, that is, the formats of DBT being delivered for each psychiatric condition, including the context such as treatment setting, population and specific adaptations being made to DBT. Consistent with other scoping reviews,<sup>21 32</sup> tabular information will also be provided for the extracted data, describing the clinical and methodological characteristics (as per the data that have been extracted, including psychometric measures) of the included studies, outcomes, strengths and limitations of individual studies and patterns across studies, and the relationship between study characteristics and reported findings.

The above information will serve as a reference for researchers and practitioners alike. By compiling a full list of the types of DBT (ie, both standard DBT and how it has been modified to suit different treatment needs) employed in clinical settings for psychiatric conditions, readers will be able to understand how DBT has been applied and the current state of DBT research for each condition (eg, types of studies conducted, how effective it has been reported to be). This information also allows readers to identify gaps in the existing literature—for example, whether more rigorous studies are required, or where a low effect size has been reported—in consideration of how studies on DBT and its adaptations may be furthered.

#### Patient and public involvement

No patients were involved in this study.

#### ETHICS AND DISSEMINATION

Ethics approval was not required for a scoping review, which involves examining data from published literature. The finalised dataset will be made available on the Dryad repository. Results from this review will be disseminated through conventional means, such as publication in an open-access

peer-reviewed journal and presentations at scientific conferences.

The target audiences for the final study would be DBT practitioners and researchers, to keep them abreast on the latest updates in DBT-related literature. The results of the review will be used to inform service providers and policymakers in developing their clinical application of DBT based on the existing state of research—for example, by understanding the extent to which any adaptation of DBT is evidence-based before making clinical decisions on whether to adopt standard DBT or adapt it to their own treatment setting. Findings arising from the review can also be used to aid researchers in generating future systematic reviews and/or meta-analyses based on a narrowed scope of interest and more specific research questions.

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