Dialectical behavior therapy for borderline personality disorder: a meta-analysis using mixed-effects modeling
Kliem S, Kroger C, Kosfelder J

CRD summary
This review concluded that dialectical behaviour therapy had a moderate effect size in comparison with usual treatment, comprehensive validation plus 12-step therapy and expert community therapy (but not other borderline-specific treatments) for treatment of patients with borderline personality disorder. Limitations in the included studies and review methodology mean that these findings should be interpreted with caution.

Authors' objectives
To determine the efficacy and long-term effectiveness of dialectical behaviour therapy for borderline personality disorder with respect to suicidal and self-injurious behaviours.

Searching
MEDLINE, PsycINFO and PsychSpider were searched for studies published up to the end of October 2009. Search terms were reported and German equivalents were used. Reference lists of reviews and empirical studies were screened additional studies. An internet search was employed. Relevant research groups were contacted.

Study selection
Studies of at least 10 participants with borderline personality disorder (diagnosed according to the Diagnostic and Statistical Manual of Mental Diseases) who were treated with dialectical behaviour therapy were eligible for inclusion in the review. Dialectical behaviour therapy was described as specified in the dialectical behaviour therapy manual (Linehan 2003) using the four components: individual therapy, group format, training consultation team and telephone or staff coaching. Alternatively dialectical behaviour therapy could be as described in the in-patient dialectical behaviour therapy programmes (Swenson 2001). Outcomes on suicidal behaviours and self-injury were eligible for inclusion.

The included studies compared dialectical behaviour therapy to the treatments: supportive treatment, transference-focused psychotherapy, community therapy by experts, therapy as usual, comprehensive validation therapy (with and without 12-step therapy) and general psychiatric management. Most studies were conducted in outpatients; four studies were conducted on an in-patient basis. Individual patient exclusion criteria varied between the included studies. Patients were generally excluded from the studies if they had conditions of schizophrenia, bipolar I disorder, substance abuse, mental retardation, acute psychosis/psychotic disorder and seizure disorder (further details reported in the review). Where reported, the included studies comprised mostly women (87.5% to 100%). Mean age of participants ranged from 26.7 years to 36.35 years. Outcomes, including drop-outs, were assessed at different time intervals post-intervention dependant on the individual study; they were usually followed up for at least 12 months (range three months to 30 months).

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
Two reviewers independently assessed the methodological quality of the included studies (randomised and non-randomised) using Downs and Black criteria of four subscales: reporting, external validity, internal validity and power. A score was awarded for each study up to a maximum of 32 for randomised controlled trials (RCTs) and 28 for non-randomised studies.

Data extraction
Two reviewers extracted study data and reported effect sizes (Hedge’s g) with 95% confidence intervals (CIs) for continuous data according to the methods of Hedges and Olkin 1985. Odds ratios (OR) with 95% confidence intervals (CIs) were used for dichotomous data and then transformed into Hedge’s g using the log-odds ratio. The authors used the methods of Raudenbush and Bryk (2002) to account for multiple outcome measures.
Methods of synthesis
Data were combined using a Bayesian conditional model. The level of homogeneity was assessed using the H statistic. A likelihood ratio test was used to assess the level of significance of any observed differences in effect. RCTs and non-RCTs/uncontrolled trials were analysed separately and also combined into one analysis. Potential confounders and moderators were controlled for in the analyses (these included methodological quality, inter-rater reliability of quality assessment, duration of follow-up and drop-out rate).

Publication bias was assessed using funnel plots and the file-drawer and fail-safe number methods.

Results of the review
Sixteen studies (794 patients) were included in the review: eight RCTs, one non-randomised study and seven uncontrolled studies. The drop-out rate was 27.3% pre- to post-treatment. The mean Downs and Black score was 22 points (standard deviation=2.0).

A moderate global effect (effect size 0.51, 95% CI 0.38 to 0.64; eight RCTs) and a moderate effect size for suicidal and self-injurious behaviours (effect size 0.60, 95% CI 0.49 to 0.71; six RCTs) were found when a moderator for RCTs with borderline-specific treatments for pre- to post-intervention differences was included. There was no evidence for the influence of other moderators (such as study quality, setting and duration of intervention). A small impairment was shown from post-treatment to follow-up (effect size -0.2, 95% CI -0.25 to -0.15; five RCTs).

Other data were reported in the review and included effect sizes for the combined effects of RCTs and observational studies (which resulted in smaller confidence intervals for effect sizes), effects of moderators, model fit and comparison of drop-out rates.

There was no evidence of significant publication bias.

Authors’ conclusions
A moderate effect size for dialectical behaviour therapy was identified for treatment of patients with borderline personality disorder in comparison with therapy as usual, comprehensive validation plus 12-step therapy and community therapy by experts. There appeared to be no evidence for the relative efficacy of dialectical behaviour therapy in comparison with other borderline-specific treatments.

CRD commentary
This review answered a clearly defined research question. Inclusion criteria for study design were very broad. Relevant databases were searched for studies. Only published papers were included. Despite assessments that suggested little evidence of publication bias, the authors acknowledged that the review was at risk of publication bias. The risk of language bias was unclear. The authors stated that they made attempts to search for German studies through use of German equivalents for the search terms. Some attempts were made to reduce risks of reviewer error and bias during data extraction and assessment of the methodological quality of the studies; it was unclear whether similar steps were taken during study selection.

The methodological quality of the studies was assessed using criteria that were appropriate for randomised and non-randomised studies. Given the inherent biases in some of the less robust study designs, several studies appeared to have methodological problems that may have affected their reliability; the authors stated that methodological quality was satisfactory. The studies were very heterogeneous with respect to their clinical characteristics and design features. The authors made some attempts to account for these differences and the potential effects of confounding/moderating factors in their analyses. They authors acknowledged that there was still a risk that these factors may have had an impact on the reliability of the findings. The studies included many different outcomes and these frequently relied on less robust methods (such as self-report), which suggested that data may not have been reliable.

Numerous limitations in the included studies and the review analyses mean that the findings of this review may not be reliable and should be interpreted with caution.

Implications of the review for practice and research
Practice: The authors stated that the review findings supported the assumption that dialectical behaviour therapy was
effective in clinical practice.

**Research:** The authors stated that further longer term (at least three years follow-up) research was required to compare dialectical behaviour therapy with other active treatments (such as schema-focused therapy, transference focused therapy, psychoanalytic therapy and general psychiatric management) that were proven to be efficacious for treatment of borderline-specific personality disorders.

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