

Meta-analysis of CBT for bulimia nervosa: investigating the effects using DSM-III-R and DSM-IV criteria

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Authors' objectives

To answer the following questions:

1. To what extent does cognitive-behavioural therapy (CBT) affect the binge eating and purging frequency in patients with bulimia nervosa?
2. Is there a difference in the effect of CBT depending on whether the comparisons are made within or between groups?

Searching

MEDLINE and PsycLIT were searched from 1986 to 1998 using 'cognitive-behavioural therapy' and 'bulimia nervosa' as the subject keywords. The references of selected articles were examined for additional studies.

Study selection

Study designs of evaluations included in the review

Only empirical, randomised, and controlled studies were eligible for inclusion. When more than one publication reported the same sample of patients, only one was included.

Specific interventions included in the review

CBT. The included studies either investigated the use of CBT alone or in combination with medical therapy (fluoxetine or desipramine), or compared CBT with the following: supportive-expressive therapy, desipramine, interpersonal therapy, behavioural therapy, response prevention, wait list or 'monitoring'.

Participants included in the review

Participants with bulimia nervosa, diagnosed according to the criteria of the American Psychiatric Association (DSM-III-R or DSM-IV, see Other Publications of Related Interest nos.1-2, respectively). The mean age of the participants ranged from 20.7 to 29.6 years.

Outcomes assessed in the review

The frequency of binge eating and purging behaviour was assessed.

How were decisions on the relevance of primary studies made?

The abstracts were read and examined to identify empirical, randomised and controlled studies with the inclusion criteria of diagnosis according to DSM-III-R or DSM-IV. The authors do not state how many of the reviewers performed the selection.

Assessment of study quality

The authors did not state that they assessed quality.

Data extraction

The authors do not state how the data were extracted for the review, or how many of the reviewers performed the selection.

Specific information was extracted on: author and year; availability of between- and within-group comparison; intervention(s); the number of participants; the mean age of the participants; binge frequency; purging frequency; and effect size.

Methods of synthesis

How were the studies combined?

The effect sizes for binge eating and purging frequency were estimated using both between-group (treatment versus control) and within-group (pre- versus post-treatment) comparisons.

The effect size (Cohen's *d*) was transformed into the correlation coefficient(*r*) and corresponding 'Fisher's *Z*'. The weighted '*Z*' was calculated by taking the sample size into consideration, then transformed into '*r*'.

The fail-safe *N* was calculated for the combined effect sizes, in order to address unreported studies with non significant findings (see Other Publications of Related Interest no.3).

How were differences between studies investigated?

The homogeneity of the effect sizes was tested from the *r*-values (see Other Publications of Related Interest no.3).

Results of the review

Seven randomised controlled trials (RCTs) met the inclusion criteria.

Within-group comparisons: 4 of the studies reported parameters for calculating the effect sizes of CBT for bingeing, while 6 studies reported data on purging frequency.

Between-group comparisons: the parameters necessary for calculating the effect sizes for binge eating and purging were reported in 4 and 5 studies, respectively.

Within-group comparisons.

The weighted effect size (*Z*_r) for binge eating (4 studies, *n*=219) was 0.61; this corresponded to an effect size (*r*) of 0.55 or alternatively, a Cohen's *d* of 1.32. The *Z*_r for purging (6 studies, *n*=317) was 0.70; this corresponded to a *r*-value 0.61 or alternatively, a Cohen's *d* of 1.5. The combined probability

for the effect of CBT on purging frequency (3 studies) was calculated ($p=0.0000001$).

Between-group comparisons.

The Z_r of CBT for binge eating (3 studies, $n=197$) was 0.23; this corresponded to a r -value of 0.23 or alternatively, a Cohen's d of 0.47. The Z_r of CBT for purging (5 studies, $n=334$) was Z_r 0.29; this corresponded to a r -value of 0.28, or alternatively, a Cohen's d of 0.58. The combined probability for the effect of CBT on purging frequency (3 studies) was calculated ($p=0.00001$).

The analysis of homogeneity showed that in the within-group comparisons, there was significant heterogeneity in the effect sizes concerning binge eating frequency (chi-squared 11.68, $d.f.=3$, $p<0.01$), but not in those concerning purging frequency. The test of homogeneity for the between-group comparisons showed no significant results in the effect sizes for either bingeing or purging frequency.

The fail-safe N values for the combined likelihood of the effects of CBT on purging in within- and between-group comparisons were 24.5 and 19.4, respectively.

Authors' conclusions

This meta-analysis was in accordance with the previous meta-analysis of cognitive-behavioural treatment studies for bulimia (see Other Publications of Related Interest no.4), although smaller effects were found. The present meta-analysis might be viewed as more representative of the patients with bulimia nervosa seen and diagnosed in psychiatric settings.

CRD commentary

The authors posed a suitable review question, and the inclusion criteria and literature search were adequate. However, overall, the methodological quality of this meta-analysis was weak. The authors failed to assess study quality and the description of the included studies was minimal. Very few studies were included in the meta-analysis, and the assessment of publication bias (fail-safe N) suggested that studies might have been missed. Significant heterogeneity was found in the within-group binge eating frequency, and the authors admit that this may have led to an overestimation of the overall effect size on this measure.

The authors' conclusions should be viewed with caution due to the limitations described.

Implications of the review for practice and research

Practice: The authors stated that since 'CBT was shown to be superior to other active treatments in the present meta-analysis, it should be considered as the treatment of choice for bulimia nervosa'.

Research: The authors stated that any future controlled evaluations of CBT for bulimia nervosa should include results on the long-term outcome.

Bibliographic details

Ghaderi A, Andersson G. Meta-analysis of CBT for bulimia nervosa: investigating the effects using DSM-III-R and DSM-IV criteria. *Scandinavian Journal of Behaviour Therapy* 1999; 28(2): 79-87

Other publications of related interest

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed. Revised. Washington (DC): American Psychiatric Press Inc.; 1987. 2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington (DC): American Psychiatric Press Inc.; 1994. 3. Rosenthal R. Meta-analysis: a review. *Psychosom Med* 1991;53:183-92. 4. Lewandowski LM, Gebing TA, Anthony JL, O'Brien WH. Meta-analysis of cognitive-behavioural treatment studies for bulimia. *Clin Psych Rev* 1997;17:703-18.

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