Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: a meta-analysis
Andrews G, Cuijpers P, Craske MG, McEvoy P, Titov N

CRD summary
The authors concluded that computerised cognitive-behaviour therapy (CBT) for anxiety and depressive disorders, especially via the Internet, had the capacity to provide effective acceptable and practical health care for those who might otherwise remain untreated. It was possible that some studies were missed, but the authors' conclusions are likely to be reliable.

Authors' objectives
To assess the acceptability and effectiveness of computerised cognitive-behaviour therapy (CBT) for anxiety and depressive disorders.

Searching
PubMed, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), CINAHL, PsycINFO, Social Sciences Citation Index and EMBASE were searched for studies published from March 2008 to January 2009. Search terms were reported. Reference lists of identified reviews and meta-analyses were handsearched. Researchers were contacted to identify unpublished studies. Only studies published in English were considered.

Study selection
Randomised controlled trials (RCTs) that compared computerised CBT delivered over the internet or by computer in the clinic to treatment as usual, placebo or wait list control groups were eligible for inclusion. Studies where computerised CBT was compared with face-to-face CBT were considered. Eligible participants were adults that met DSM (Diagnostic and Statistical Manual of Mental Disorders) criteria for major depression, panic disorder, social phobia or generalised anxiety disorder. Eligible outcomes were: self-report measures of the principal characteristics of each disorder; level of adherence to the course and satisfaction upon completion; and magnitude and stability of outcomes.

About half of the studies compared computerised CBT delivered over the internet plus therapist support to wait list controls. Included programmes contained between five and nine lessons. Characteristics of included patients were not fully reported.

Two reviewers independently selected studies for inclusion. Disagreements were resolved by discussion.

Assessment of study quality
Two reviewers independently assessed the quality of included studies by considering the adequacy of bias minimisation (zero for maximum minimisation to 5 for no minimisation). Key domains assessed were: sequence generation, allocation concealment, blinding, handling of missing data and completeness of reporting of outcomes. Disagreements were resolved by discussion.

Data extraction
Two reviewers independently extracted data to enable calculation of Hedges' g effect sizes and number needed to treat (NNT), each with 95% confidence intervals (CIs). Disagreements were resolved by discussion.

Methods of synthesis
Pooled effect sizes and 95% CIs were calculated using random-effects models. Heterogeneity was assessed using I² and Q statistics. Publication bias was assessed using funnel plots and by trim-and-fill methods.

Results of the review
Twenty-two RCTs (n=1,746 participants, range 23 to 297) were included. Thirteen studies reported adequate method of sequence generation or allocation concealment. All studies used intention-to-treat analysis. Assessment of blinding was considered unnecessary as all studies assessed self-report measures of the main outcome.

The overall mean effect size (Hedge's g) indicated superiority of computerised CBT over control across all four disorders (g=0.88, 95% CI 0.76 to 0.99, NNT 2.15; 22 RCTs). Similar results were found for major depression (g=0.78, 95% CI 0.59 to 0.96; six RCTs), social phobia (g=0.92, 95% CI 0.74 to 1.09; eight RCTs), panic disorder (g=0.83, 95% CI 0.45 to 1.21; six RCTs) and generalised anxiety disorder (g=1.11, 95% CI 0.76 to 1.47; two RCTs). With the exception of panic disorder ($I^2=49.77\%$), no evidence of heterogeneity was found. A small non-significant indication of publication bias was detected (g=0.80).

No significant differences were found in effect sizes between studies that used wait list control groups and treatment as usual and other control groups.

Overall adherence was reported as good: a median of 80% (range 48% to 100%, 22 RCTs) of participants who began the programs completed all lessons. A median of 86% (range 70% to 100%, 10 RCTs) of patients reported that they were satisfied or very satisfied.

Computerised CBT and traditional face-to-face CBT were found to be equally beneficial (five RCTs).

Authors' conclusions
Computerised CBT for anxiety and depressive disorders, especially via the Internet, had the capacity to provide effective acceptable and practical health care for those who might otherwise remain untreated.

CRD commentary
The review question was clearly stated. Several relevant databases were searched. Only studies published in English were considered, which raised the possibility of language bias and missing studies. Attempts were made to identify unpublished articles, which minimised potential for publication bias. Review processes were conducted in duplicate, which reduced risks of error and bias. Study quality was assessed using appropriate criteria and results were reported. The decision to combine results statistically was appropriate given the absence of significant study heterogeneity.

It was possible that some studies were missed, but the authors' conclusions are likely to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further studies with extensive follow-up periods were needed regarding the tailoring of computerised programs to the needs of individuals. Future studies should explore mechanisms by which included programs produced reported benefits.

Funding
National Health and Medical Research Council registration (grant number 630560), Australia.

Bibliographic details

PubMedID
20967242

DOI
10.1371/journal.pone.0013196
Original Paper URL
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0013196

Indexing Status
Subject indexing assigned by NLM

MeSH
Anxiety /therapy; Depressive Disorder /therapy; Humans; Therapy, Computer-Assisted; Treatment Outcome

AccessionNumber
12011000359

Date bibliographic record published
18/05/2011

Date abstract record published
20/10/2011

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.