The impact of cognitive-behavior therapy for anxiety disorders on concomitant sleep
disturbances: a meta-analysis

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CRD summary
This review found that available research on the impact of cognitive-behavioural therapy for anxiety disorders on concomitant sleep problems did not permit definitive conclusions. This seems to be an appropriate conclusion, but needs to be considered against some limitations of the review, such as a lack of quality assessment and the pooling of very varied data.

Authors' objectives
To evaluate the impact of cognitive-behavioural therapy for patients with anxiety disorder who have sleep problems.

Searching
PsycINFO, PubMed and Proquest Dissertations and Theses were searched; search terms were reported. Reference lists of included studies and recent meta-analyses were also searched. Only studies published in English or French were included.

Study selection
To be included studies had to have at least one group of patients receiving a psychological treatment with a behavioural or cognitive component, have a group protocol or be a case study of at least three people, had to be in adults and report treatment outcomes. The participants had to have at least one anxiety disorder, such as generalised anxiety disorder, agoraphobia (with or without panic disorder), post-traumatic stress disorder, obsessive-compulsive disorder, social anxiety disorder, or social phobia.

Around half of the included studies were in patients with post-traumatic stress disorder; the rest were in patients with general anxiety disorder, panic disorder/agoraphobia, or a mixed sample of various disorders (one study). Most treatments involved both cognitive and behavioural components, but none directly addressed sleep difficulties. Most studies used individual and group therapies; in one study, treatment was given via the Internet. Mean age ranged from 30.7 to 50.3 years (where reported). Sleep was measured by a single item from a broader measurement, questionnaires and diaries; the number of sleep outcomes measured per study ranged from one to seven; most studies measured sleep alone, insomnia or nightmares.

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

Assessment of study quality
The authors did not report that they assessed study validity, but they did assess attrition rates.

Data extraction
Details of sleep related outcomes, how they were measured, and means and standard deviations for all outcomes (pre- and post-treatment) were extracted by two reviewers independently. Results were used to calculate standardised effect sizes using Hedge's g method for both change within a group and differences between treatment and control groups.

Methods of synthesis
Study results were pooled in a random-effects meta-analysis. Heterogeneity was assessed with the Q and $I^2$ statistics. The effects of moderator variables such as type of sleep outcome, within or between group comparison, and type of anxiety disorder were also tested using the Q statistic.

Publication bias was assessed using funnel plots and by calculating the fail-safe N.
Results of the review

Nineteen studies were included in the review (n=1,201 patients). Eleven studies used randomisation and nine had a no treatment control group.

The effect sizes varied considerably between studies, ranging from -0.05 to 1.41. The pooled effect size across all 19 studies was 0.53 (95% CI 0.31 to 0.75), showing a statistically significant moderate effect of cognitive-behavioural therapy on sleep problems linked to anxiety disorders. There was high heterogeneity ($I^2=85.8\%$). When exploring possible reasons for this heterogeneity, neither the type of sleep outcome nor the type of comparison were found to be related to outcome.

However, the pooled effect sizes varied with the type of anxiety disorder, although the differences between the subgroups were not statistically significant ($p=0.115$). The overall effect size was highest for general anxiety disorders (0.84) and smallest for panic disorders/agoraphobia (0.22).

The funnel plot showed some evidence for publication bias; the number of studies needed to reduce the observed effect size to 0.2 was estimated to be 26.

Authors' conclusions

Available research on the impact of cognitive-behavioural therapy for anxiety disorders on concomitant sleep problems did not permit definitive conclusions; further research is needed.

CRD commentary

The research question of the review was clear. Inclusion criteria specified details of interventions and participants, but not eligible study designs. Three databases were searched, but there were some language restrictions, which increased the risk of missing some relevant studies. Data were extracted by two reviewers, but study selection methods to minimise the chance for error/bias were not reported.

There was no assessment of study quality, so the reliability of the evidence was unclear. All results were converted to a standardised effect size and then pooled; given the high between study heterogeneity, the pooled result may not be reliable.

The authors' conclusion (that there was insufficient research to answer their question) seems appropriate, but needs to be considered against the limitations of the review.

Implications of the review for practice and research

Practice: The authors stated that clinicians treating patients with anxiety disorders should be aware that certain sleep disorders are more strongly associated with certain anxiety disorders, and those working with anxious patients should not assume that sleep will improve as a result of successful treatment for anxiety. They also stated that clinicians can expect residual sleep difficulties in patients who present with associated sleep problems, so they may also wish to consider integrating sleep management strategies into treatment for anxiety disorders.

Research: The authors stated that further research in the impact of cognitive-behavioural therapy for anxiety disorders is needed and sleep outcomes should be included in future trials. The impact of including sleep management strategies in anxiety disorder treatment, on sleep, anxiety symptoms and general daytime functions, as well as the feasibility of including sleep-specific components in cognitive-behavioural therapy, also need to be explored.

Funding

One author was supported by a postdoctoral grant from the Fonds de Recherche en Sante du Quebec (FRSQ).

Bibliographic details

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.