Effects of occupational stress management intervention programs: a meta-analysis
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CRD summary
This review concluded that stress management programmes were associated with favourable medium to large effect sizes and cognitive-behavioural stress management programmes consistently produced the largest effects (mainly on psychological outcomes) in occupational settings. Given the variation between studies and uncertainties surrounding the reliability of the data and review methods, the findings of the review should be interpreted with caution.

Authors' objectives
To determine the effectiveness of stress management intervention programmes in occupational settings.

Searching
Academic Search Premier, British Library Direct, Dissertation Abstracts, ERIC, ProQuest ABI/INFORM Global and PsycARTICLES were searched for published and unpublished studies written in English after 1976. Search terms were reported. Attempts were made to locate further studies through a previous review in the topic area (see Other Publications of Related Interest), emailing topic experts, searching abstracts from relevant conferences (2006), searching private and government websites (further details reported in the review) and screening reference lists of retrieved studies.

Study selection
Randomised controlled trials (RCTs) of primary or secondary stress management interventions versus waiting list or no treatment control in working populations not already diagnosed with a major psychiatric disorder or stress-related somatic disorder were eligible for inclusion in the review. Studies of employee assistance programmes were excluded from the review.

Studies included in the review mostly assessed secondary stress management interventions. Most interventions involved multiple components and were conducted in a group training environment. Commonly used techniques included relaxation, meditation and cognitive-behavioural skills training. Other interventions were individual counselling, self help using the Internet, tapes or books and a combination of techniques. Average duration of the interventions was 7.4 weeks with a mean of 7.5 treatment sessions. Included participants were office workers, maintenance workers, teachers, hospital staff, factory workers and social services staff. Two thirds of studies were carried in USA; the other studies were carried out in countries such as Australia, Canada, China, Israel, Japan, the Netherlands, Poland and UK. Where reported, mean age of included participants was 35.4 years and 59% were female. Sixty different outcomes were reported in the studies; these included psychological (stress, anxiety, general mental health, work satisfaction), physiological (systolic and diastolic blood pressure) and organisational measures (absenteeism, productivity). Psychological outcomes were measured using a wide variety of scales, mostly self-report.

The authors did not state how papers were selected for the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Means and standard deviations (SD) were extracted for intervention and control groups. If means and standard deviations were not reported, they were calculated where possible from other data. Where multiple outcome measures were reported, an average effect across all outcomes was calculated. Two reviewers coded a small sample (10%) of the studies with close to 100% agreement. Data from the remaining studies were extracted by one reviewer and a second reviewer consulted if data were unclear.

Methods of synthesis
Studies were grouped according to intervention (cognitive-behavioural and relaxation). Pooled Cohen's d effect sizes with 95% confidence intervals (CIs) were calculated using an inverse-variance weighted effect method and random-effects model. Statistical heterogeneity was assessed using Q and $I^2$ statistics. Subgroup analyses for intervention type, number of intervention components, industry sector, length of treatment and outcome type were conducted to investigate potential sources of heterogeneity. Sensitivity analyses were performed to assess the effect of including additional studies from an earlier review of the topic area. Publication bias was assessed using the trim-and-fill method.

**Results of the review**

Thirty-six studies (n=2,847 randomised, 2,376 after attrition) of 55 interventions were included in the review. Sample sizes ranged from 14 to 219 (mean 49 per intervention).

The overall weighted effect size showed a medium to large effect (Cohen's d 0.526, 95% CI 0.364 to 0.687; 55 interventions) that favoured stress management programmes. Cognitive-behavioural interventions produced the largest effect sizes (Cohen's d 1.164, 95% CI 0.456 to 1.871; seven interventions). Effect sizes were reduced when additional components were added. Alternative, relaxation and multimodal interventions were statistically significant and organisational interventions were not. Analyses were associated with significant levels of statistical heterogeneity. Treatment length, outcome variable and occupation did not significantly modify the effect size by intervention type. There appeared to be some evidence of missing studies (publication bias). Sensitivity analyses did not significantly alter the findings.

**Authors’ conclusions**

The authors’ conclusions appeared to be that stress management programmes were associated with favourable medium to large effect sizes and cognitive-behavioural stress management programmes consistently produced the largest effects (mainly on psychological outcomes) in occupational settings. However, there was significant heterogeneity and limitations with the statistical analysis, and further research was needed.

**CRD commentary**

This review answered a clearly defined review question using a broad range of outcome measures. A number of different resources were searched for published and unpublished studies. Only studies written in English were eligible for inclusion, which suggested a risk of language bias. The reviewers’ own assessments appeared to suggest a risk of missing studies. There was some risk of reviewer error and bias as study data were not always verified by a second reviewer and the authors did not report how many reviewers assessed studies for inclusion in the review. It appeared that no validity assessment was carried out and so the reliability of the data was unclear. There were many differences between the included studies, particularly with respect to interventions, populations and outcomes. Statistical tests suggested that there was significant heterogeneity associated with many of the analyses and some additional analyses were carried out to try and investigate the potential effects of the heterogeneity. The authors acknowledged that the review had a number of limitations that could affect the reliability of the review. The findings were based on a small number of studies with a short duration of follow-up.

Given the variation between studies and uncertainties surrounding the reliability of the data and review methods, the findings of the review should be interpreted with caution.

**Implications of the review for practice and research**

**Practice:** The authors stated that cognitive-behavioural programmes should not generally be combined with other treatment, but relaxation and mediation can be used as part of a larger set of treatment components.

**Research:** The authors stated that further well-designed randomised controlled trials of stress management programmes in occupational setting were required. In particular, studies of single-mode programmes that provided employees with personal job-related skills/abilities were lacking. Future studies should report all outcomes assessed and not just those that were statistically significant. Studies should assess whether stress levels returned when interventions ceased.

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