Efficacy of cognitive behavior therapy for the management of psychological outcomes following spinal cord injury a meta-analysis

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CRD summary
This review concluded that cognitive behavioural therapy delivered during inpatient rehabilitation had a significant positive effect on early emotional outcomes of adults with a spinal cord injury, but more research was needed into long-term effects. These conclusions should be treated with some caution given that most results came from single small studies of poor to moderate quality.

Authors' objectives
To evaluate the short and long-term effects of cognitive behavioural therapy (CBT) in spinal cord injury rehabilitation, particularly in relation to emotional outcomes.

Searching
PubMed, PsycINFO, The Cochrane Library, Meditext, CINAHL and Scopus were searched for studies published in English between January 1980 and April 2010. Search terms were reported. Reference lists were also searched and requests for published data were made through list serves for the American Psychological Association's Division 22 (Rehabilitation Psychology) and the Australian Psychological Society's Rehabilitation Psychology Interest Group.

Study selection
Eligible studies had to be a randomised controlled trial or quasi-experimental study that used CBT alone or in combination with a control and provided CBT by trained health professionals in a face-to-face setting. Participants had to be adults aged 18 or older with a spinal cord injury (acquired or a congenital spinal condition). Outcomes had to be measured using standardised psychological assessments (such as depression, anxiety, coping) administered pre- and post-intervention and report sufficient data to allow the calculation of Cohen's d effect sizes. Studies of unimodal psychological interventions with either cognitive or behavioural elements (biofeedback, drug therapies and physical therapies) or self-management or peer support programs were excluded.

Treatment and control groups were similar in terms of gender (76% males in treatment versus 82% males in control), age (mean 40.8 versus 41.1 years), type of injury (paraplegia 53 % versus 54%) and injury severity (complete lesions 52% versus. 53%). Participants were people undergoing rehabilitation post-injury (up to 47 days) and outpatients with longer term disability (up to 22 years). The mean length of CBT was 10 sessions (range six to 20) given over a mean of nine weeks (range four to 24). Group therapy was the primary mode of treatment in most studies but three studies used group therapy combined with individual therapy. CBT included management of mood, social skills training and management of spinal cord injury-related neuropathic pain and was delivered by a psychologist in most studies. Control groups received standard medical care on an individual basis, supportive counselling, no treatment or were placed on a waiting list. Twenty-six different measures of depression, anxiety and coping were reported.

The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Study quality was assessed using a 20 item questionnaire developed for the review. This covered items such as sample selection and size, handling of withdrawals and drop-outs, psychometric properties of outcome measures and statistical analysis. The maximum possible score was 20 and the assessment was performed by two reviewers independently with final scores reached by consensus.

Data extraction
Means and variance estimates (either reported or calculated from the results of statistical tests) were used to calculate Cohen's d effect sizes. Effect sizes were calculated for the change from pre- to post-CBT and the maintenance effect from post-CBT to follow-up.
Data extraction was performed by one reviewer and authors were contacted regarding missing data.

**Methods of synthesis**
Effect sizes for the same outcome from studies with the same design were weighted by quality score and then averaged. The direction of effect sizes was also standardised to ensure positive results were beneficial, and 95% confidence intervals (CI) were calculated. Fail-safe N was used to assess publication bias. A change in outcome was considered significant if it had; at least a moderate effect size (d greater than 0.40), had a 95% confidence interval that excluded zero, and had a large enough fail-safe N score to suggest that the findings were unlikely to be compromised by the file drawer problem.

**Results of the review**
Ten studies were included (424 participants). The mean quality score was 14.6 (range 11 to 18). Most studies used quasi-experimental designs with small sample sizes, only four used randomisation and two reported using blinded assessors. Where reported, drop-out rates ranged from zero to 43%.

CBT was significantly better than control for the Beck Depression Inventory (d=0.59, 95% CI 0.20 to 0.98; two studies). Individual measures of assertiveness (Behavioral Assertiveness Test; SCI Assertion Questionnaire; Disability and Assertiveness Role-Play Test), coping (Humor subscale; Pain Response Self Statements Catastrophising subscale), self-efficacy (Pain Self-Efficacy Questionnaire), depression (Older Adult Health and Mood Questionnaire) and quality of life (Short Form Health Survey Mental Component subscale and the Multidimensional pain inventory, SCI version) were all associated with large significant treatment effects immediately after CBT but these were all based on single studies.

Five studies undertook follow-up assessments between six weeks and two years. No statistically significant treatment effects were detected apart from humour as a coping mechanism which was significantly worse after CBT than control (d=-0.83, 95% CI -1.49 to -0.17; one study).

**Authors’ conclusions**
CBT had a significant positive effect on early emotional outcomes of adults with a spinal cord injury. CBT delivered during inpatient rehabilitation was associated with stronger effects, but more research was needed to evaluate the long-term effects.

**CRD commentary**
This review stated the inclusion criteria for study design, participants, interventions and outcomes. Relevant databases were searched but only studies published in English were included and there didn't appear to be any attempt made to locate unpublished studies so the review was at risk of publication bias. Study quality was assessed by two reviewers to reduce the chance of error and bias, but it was unclear if this also applied to study selection. Data extraction was performed by only one person. There was a lack of detail about the individual studies as participant details were reported overall and quality as a single score. The authors’ conclusions should be treated with some caution given that most results came from single small studies of poor to moderate quality.

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

**Research:** The authors stated that more research was needed to evaluate the impact of CBT in managing the long-term, emotional consequences of SCI and to ensure that short-term benefits were sustained. Future studies should use the same behavioural outcomes to allow for greater comparison between studies and should also provide a more accurate description of the study participants.

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