Integrated treatment programs for individuals with concurrent substance use disorders and trauma experiences: a systematic review and meta-analysis

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CRD summary
This review found there was little evidence to suggest that integrated treatment programmes for patients with concurrent substance use disorders and trauma disorders confer additional benefits compared to non-integrated programmes. Some methodological flaws mean that the results should be interpreted with some caution and the reliability of the authors conclusions’ is not clear.

Authors' objectives
To evaluate the evidence of psychotherapeutic integrated treatment programmes for patients with concurrent substance use disorders and trauma histories.

Searching
PubMed, the Cochrane Central Register of Controlled Trials (CENTRAL), Web of Knowledge, PsycINFO, CINAHL, PILOTS and EMBASE were searched to June 2010 for relevant published studies in English language; search terms were reported. The reference lists of retrieved articles and reviews of substance use and trauma co-morbidity and the websites of published integrated treatment programmes were also checked to identify additional references.

Study selection
Studies of psychotherapeutic integrated treatment programmes that reported quantitative outcomes of substance use and trauma programs were eligible for inclusion. Studies had to include patients who both met diagnostic criteria for, or were seeking help for, substance use disorder and report a history of psychological trauma and/or report symptoms of post-traumatic stress disorder. The studies needed to report quantitative substance use and/or trauma symptom severity outcomes. Although concurrent pharmacotherapy was permitted in included studies, reports of treatment solely by pharmacotherapy of detoxification were excluded from the review as were studies that reported only on other clinical care outcomes (cost-effectiveness, attrition or patient satisfaction), baseline characteristics of the sample or investigations of treatment mechanisms.

The studies were conducted primarily in substance use disorder treatment facilities in the USA. Treatments were provided by addiction or mental health counsellors (Masters level) or graduate and post-doctoral students. The studies enrolled females only, males only or mixed samples; some studies investigated interventions in subgroups of veterans, incarcerated women and adolescents. Integrated treatment was defined as interventions with a coordinated and simultaneous focus on substance use and trauma issues within the same service with delivery by the same (or team) of clinicians. Most of the interventions included a combination of social support, psychoeducation and cognitive-behavioural therapy, the building of problem-solving, interpersonal and emotional regulation skills and the development of strategies to cope with trauma- and substance-related stimuli. Some trials included exposure therapy for post-traumatic stress disorder. Comparison interventions included forms of substance use disorder treatment, naturalistic treatment and parallel treatment approaches where patients received treatment for trauma and substance use disorders in non-collaborating facilities. Follow-up ranged from end of treatment to periods ranging from three to 12 months.

Two reviewers independently performed the study selection; any disagreements between reviewers were resolved by consensus among all authors.

Assessment of study quality
Methodological quality was assessed using the McMaster University Quality Assessment Tool. Quality items assessed were study design, selection bias, confounders, blinding, data collection, withdrawals and drop-outs; each component was rated a "strong", "moderate" or "weak" using standardised guidelines. The ratings for each item were combined to provide a global rating of methodological quality.

Study quality was assessed by two independent reviewers; any disagreements were resolved by consensus.
Data extraction
Data were extracted to calculate effect sizes (ES) and standard errors for the outcomes at the longest available follow-up. Given the assessment of substance use disorders and post-traumatic stress disorder by a range of measurement tools, the reviewers gave preference to established measures on continuous scales such as the Addictions Severity Index and the Clinician Administered post-traumatic stress disorder scale over single-item, unpublished, binary or researcher-created measures which were only used in the absence of other measurements. The Hedges and Olkin correction for small sample bias was applied to all effect sizes.

Data were extracted by one author and reviewed and confirmed by a second reviewer. Any disagreements between the reviewers were resolved by consensus among the review team.

Methods of synthesis
Pooled effect sizes and 95% confidence intervals (CI) were calculated using a DerSimonian and Laird random-effects model. Statistical heterogeneity was evaluated using the Cochran's Q-statistic. The reviewers assessed the potential for publication bias by the use of funnel plots and the Duval and Tweedie "trim-and-fill" method.

Results of the review
Seventeen studies (4,088 patients) were included in the review comprising nine controlled studies (3,817 patients, sample sizes ranged from 19 to 2,729) and eight cohort studies (271 patients, sample sizes ranged from six to 107). One of the controlled studies was a randomised controlled trial.

Five studies were globally rated using the Quality Assessment Tool as "strong" all of which were controlled trials, a further four controlled studies and two cohort studies were rated as "moderate" and six cohort studies were allocated a "weak global rating. The authors stated that the strongest causes of bias were little reporting of randomisation, small sample sizes as a result of treatment drop-out, little use of intention-to-treat analyses and little reporting of blinding procedures.

Statistically significant benefits were found with integrated treatment programmes for the change of substance use disorder symptoms from baseline to longest follow-up (ES 0.60 95% CI 0.42 to 0.78; Q=104.39; p<0.000916 studies), and post-traumatic stress disorder symptoms (ES 0.88, 95% CI 0.66 to 1.09; Q=117.83; p<0.0001) with statistically significant heterogeneity across the studies for both outcomes.

There were no significant differences found between integrated treatment programmes and control/comparator groups at longest follow-up on substance use disorder symptoms (weighted average ES 0.10, 95% CI -0.01 to 0.21; Q=6.09; p=0.64, nine studies) and post-traumatic stress disorder symptoms (weighted average ES 0.08, 95% CI -0.03 to 0.19; Q=3.58; p<0.82).

Evaluations of the funnel plots found some evidence of publication bias across the outcomes.

Authors' conclusions
Although integrated treatment programmes appeared to effectively reduce trauma and substance use disorder symptoms, there was insufficient evidence of superiority over non-integrated treatment programmes.

CRD commentary
The review addressed a clearly defined question and criteria for the inclusion of studies were defined and were reproducible. Appropriate databases were searched for relevant published studies, but the restriction of the review to published studies meant there was a risk of publication bias which was quantified through the use of validated methods. Restriction of the review to studies published in English language meant there was risk of language bias. Steps were taken at each stage of the review process to minimise errors and biases.

The authors' decision to combine the results of the studies in a meta-analysis may not have been justified because of the heterogeneity of study designs, interventions, patients and follow-up. In addition, the results of uncontrolled studies were vulnerable to several known biases and may inflate estimates of effectiveness when pooled in a meta-analysis. The authors correctly acknowledged some of the limitations of the review pertaining to the low quality of the evidence base, potential minimal differences between the interventions and comparator treatments and the potential presence of
assessment bias. Although the authors’ conclusions are based on the evidence presented, some methodological flaws mean that the results should be interpreted with some caution and the reliability is unclear.

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

**Practice:** The authors stated that clinicians who are considering which treatment approach to use should base treatment decisions on factors such as client preference, programme availability and expense.

**Research:** The authors stated that well-designed randomised controlled trials were required to determine the effectiveness of integrated treatment compared to non-integrated therapy and to give greater attention to pharmacotherapeutic options.

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