Mindfulness meditation for substance use disorders: a systematic review
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CRD summary
The review found that there was no conclusive evidence to support mindfulness meditation-based therapies for treatment of substance use disorders, although preliminary evidence was promising. Although the review was limited in several respects, notably by the small amount of randomised data and heterogeneity of the primary studies, the authors’ cautious conclusions appear reliable.

Authors' objectives
To assess the effectiveness of mindfulness meditation-based therapies for substance use disorders.

Searching
Cochrane Database of Systematic Reviews, EMBASE, PubMed, PsycINFO, CINAHL, AMED, and CRISP were searched from inception to March 2008 for published or unpublished studies. Search terms were reported. Scientific Research on The Transcendental Meditation Program: Collected Papers was handsearched. Reference lists of relevant articles were checked. Experts in the field were consulted. The search was limited to studies in English.

Study selection
Longitudinal studies of any design that assessed mindfulness or mindfulness meditation-based therapies for substance use, misuse or related disorders that reported pre and post intervention assessments were eligible for inclusion.

Participant groups in the review included adults with severe alcohol or drug dependence treated in residential or outpatient settings, adolescents with clinically-diagnosed substance use disorders, substance-using prisoners and adults in the community with marijuana or tobacco dependence. Mean age of adult participants ranged from 20 to 46 years. Mindfulness meditation interventions were based on vipassana meditation, Mindfulness-Based Stress Reduction, Spiritual Self Schema Therapy, Acceptance and Commitment Therapy or Dialectical Behaviour Therapy. The format of mindfulness meditation varied but typically it was therapist-led and manualised, with individual and/or group sessions held at least once a week for about eight weeks (range one session to 52 weeks). The review reported substance use-related outcomes (such as heroin use, abstinent days), other efficacy outcomes (such as psychological rating scores, satisfaction rates, treatment experiences) and adverse events. Duration of follow-up ranged from seven days to 68 weeks.

Two reviewers conducted the initial screening of abstracts, one reviewer conducted a secondary screening and three independent reviewers performed a final assessment. Disagreements were resolved by consensus.

Assessment of study quality
An adaptation of a published instrument (Miller 2003) was used to assign a methodological quality score (MQS) to each study. Items assessed included treatment allocation, outcome measures, losses to follow-up, blinding and statistical methods. Maximum score was 17 for controlled studies and 12 for observational studies.

Two reviewers conducted the assessment and resolved disagreements by consensus.

Data extraction
For dichotomous data on substance-use outcomes, the authors calculated absolute risk reductions and numbers needed to treat. Effect sizes (Cohen’s d) were calculated for continuous between-group or within-group data.

Two reviewers extracted data and resolved disagreements by consensus. Primary study authors were contacted for more information if required.
Methods of synthesis
Studies were grouped by design and publication status and combined in a narrative synthesis. The proportion of studies with positive cumulative evidence scores was reported for intention-to-treat and/or per protocol analyses. The impact of control interventions was examined in subgroup analyses.

Results of the review
Twenty-one studies (25 articles, n=1,083, range three to 305) were included in the review: nine RCTs (two unpublished) (n=383); four controlled studies (n=493); five case series (one unpublished) (n=129); two qualitative studies (n=75); and a case report (n=3). The RCTs were of moderate quality (mean MSQ score 11.3, range 8 to 14). Three of the published RCTs used blinded assessment and six had no losses to follow-up or used intention-to-treat analysis. The quality of the non-randomised studies was limited (MSQ range 4 to 8).

Randomised evidence (nine RCTs):
Six of the published RCTs reported that mindfulness meditation was associated with statistically significant (p<0.05) improvement in both substance use and other outcomes (compared to controls and/or baseline values); analysis was by intention-to-treat (two RCTs) or per protocol (four RCTs). The seventh published RCT reported statistically significant improvement (p<0.05) in the mindfulness meditation group compared to controls for medical symptom severity only.

Results tended to favour mindfulness meditation more markedly when controls received standard care or a non-matching active intervention: per protocol effect estimates from the three relevant RCTs were absolute risk reductions of 20% and 30% and an effect size of 1.0 (a moderate to large effect).

Comparisons of mindfulness meditation with behavioural interventions (two RCTs) yielded smaller non-significant absolute risk reductions of 5% (per protocol) and 12% (intention-to-treat). Both the unpublished RCTs reported statistically significant benefit in the mindfulness meditation group compared to controls for substance-use, with small (0.3) and moderate (0.6) effect sizes (both per protocol).

Other evidence:
The results of the non-randomised studies were generally positive for mindfulness meditation. These and other results (which included numbers needed to treat) were reported in the review. There were few data on adverse events.

Authors’ conclusions
There was no conclusive evidence to support mindfulness meditation for treatment of substance use disorders, although preliminary evidence was promising.

CRD commentary
The objectives and inclusion criteria of the review were clear. Relevant sources were searched for studies. The restriction by language made the review at risk of language bias. More than one reviewer undertook the processes of validity assessment and data extraction. It appeared that study selection was undertaken partly by a single reviewer, which increased the risk of reviewer bias and error. The decision to combine the studies by narrative synthesis rather than statistical pooling appeared appropriate given the heterogeneity between them. The better quality studies were prioritised in the interpretation of results. However, it was difficult to determine the clinical significance or applicability of the review findings due to the heterogeneity of study populations and interventions, large number of outcomes measured, small amount of intention-to-treat data available and failure to report statistical measures of variability. The authors noted that analytical methods used in the primary studies might have been unsuitable due to their small sample sizes. The statement that mindfulness meditation seemed safe was questionable, as it appeared to be an assumption based on lack of data.

Although the review was limited in several respects, notably by the small amount of randomised data and heterogeneity of the primary studies, the authors’ cautious conclusions appear reliable.

Implications of the review for practice and research
Practice: The authors stated that there was insufficient evidence to formally recommend for or against use of mindfulness meditation for treating substance use disorders.

Research: The authors stated that well-powered studies with specific clinical questions should investigate which people with addictive disorders benefit most from mindfulness meditation, evaluate the effect size and effect mechanisms of mindfulness meditation and explore the effects of the dose and quality of the intervention using suitable outcomes measures. They stated that mindfulness meditation interventions should be guided by a written manual and that consensus guidelines were required on use of mindfulness meditation as part of an addiction treatment programme.

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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.