
Effectiveness of motivational interviewing interventions for adolescent substance use behavior change: a meta-analytic review

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CRD summary

The review found that motivational interviewing interventions produced small but significant effects for adolescent substance-use behaviour change. The lack of quality assessment and pooling of diverse samples and settings mean that the authors' conclusion should be interpreted with some caution.

Authors' objectives

To summarise information regarding the effectiveness of motivational interviewing interventions used to promote adolescent substance-use behaviour change.

Searching

PsycINFO, PubMed, MEDLINE and ERIC were searched for published studies in English. Search dates were not reported, but search terms were listed. Reference sections of identified articles and systematic reviews were searched. Motivational Interviewing website (motivationalinterview.org) was examined and relevant articles or studies were requested from the members.

Study selection

Studies that included adolescents or adolescents and parents, described a motivational interviewing intervention as the sole intervention or as an adjunct to another treatment and used direct comparison of experimental and control following intervention were eligible for inclusion. Studies had to use quantitative methods and include sufficient data to calculate effect size. No studies exclusively focused on psychiatric inpatients were included. The outcome of interest was change in substance-use behaviour.

More than half (55.1%) of the participants were male. Age ranged from 12 to 23 years old. The ethnic mix was white (67.6%), African American (14.5%), Hispanic (3.8%) and "other" (12.6%). Four of the 21 studies were conducted in the clinic and the rest were in community settings. Motivational interviewing was administered by clinicians, public health workers, counsellors, youth workers and others trained specifically in motivational techniques. Thirteen studies involved only one session of motivational interviewing interventions and eight studies had from two to nine sessions. Most studies had a follow-up period of more than six months. Twelve studies included an outcome measure for frequency of marijuana use, 12 examined alcohol use, seven included tobacco use, six examined use of various street drugs and nine examined use of multiple restricted substances.

Two reviewers screened and selected studies for inclusion. Any disagreements were resolved through discussion until consensus was reached.

Assessment of study quality

No formal quality assessment was reported, but the authors noted the studies that assessed treatment fidelity.

Data extraction

Effect sizes were expressed as standardised mean differences. Two reviewers extracted data. Any disagreements were resolved through consensus.

Methods of synthesis

Studies were pooled using meta-analysis techniques to generate an overall effect size. Studies were weighted by their sample size using a weighted least-squares approach. A random-effects model of effect sizes was used. Effect sizes of 0.20 to 0.49 were rated as small, 0.50 to 0.79 as medium and 0.80 and above as large. The Q statistic was used to examine the degree of heterogeneity.

Results of the review

Twenty-one studies were included in the review (5,431 participants, range 18 to 2,542). Five out of 21 studies reported a fidelity assessment.

A small but statistically significant effect size ($d=0.173$, 95% CI 0.094 to 0.252; 21 studies) was found. There was no significant heterogeneity ($Q=15.416$, $p=0.725$) across the studies.

The effect of motivational interviewing on alcohol and drug use was small and statistically significant ($d=0.146$, 95% CI 0.059 to 0.233; 16 studies). The effect of motivational interviewing interventions on tobacco use was large compared with others ($d=0.305$, 95% CI 0.113 to 0.497; five studies). The effect of motivational interviewing interventions was statistically significant at both time points: less than six months ($d=0.323$, 95% CI 0.040 to 0.607) and more than six months ($d=0.133$, 95% CI 0.023 to 0.244).

Authors' conclusions

Motivational interviewing was an effective intervention for promoting adolescent substance-use behaviour change and should be considered at least as one part of the treatment for the adolescent with substance misuse.

CRD commentary

The review addressed a question that was broad in scope. Inclusion and exclusion criteria were defined, but two studies were included that had participants over 21 years old. The authors used appropriate electronic databases and search terms, but did not report search dates. The restriction to published studies in English risked language and publication biases. Attempts were made to reduce reviewer error and bias throughout the review processes review. No quality assessment was reported, so the risk of bias in the included studies was unclear.

Statistical pooling of the effect sizes of different substance-use outcomes (tobacco, alcohol, marijuana and illicit drug) and different study designs may not have been appropriate. The results of non-randomised studies would produce bias and may over-estimate the result compared with randomised studies. The aggregate effect size was lower when tobacco studies were excluded.

Long-term maintenance of the effect of motivational interviewing was unclear as only seven of the 21 studies assessed outcomes over six months and it is unclear how many were assessed at one year or more.

The lack of quality assessment and pooling of data from diverse samples and settings mean that the authors' conclusion should be interpreted with some caution.

Implications of the review for practice and research

Practice: The authors stated that clinicians should consider using motivational interviewing as at least as one part of their treatment of adolescents with substance-use issues.

Research: The authors advised examination of application of motivational interviewing interventions techniques not only for adolescent substance use but also other health behaviours. They stated that further randomised controlled trials were necessary to explore motivational interviewing techniques with new adolescent populations. They also voiced the importance of assessing fidelity, role of parental involvement and investigation of motivational interviewing versus other comparisons.

Funding

Not stated.

Bibliographic details

Jensen CD, Cushing CC, Aylward BS, Craig JT, Sorell DM, Steele RG. Effectiveness of motivational interviewing interventions for adolescent substance use behavior change: a meta-analytic review. *Journal of Consulting and Clinical Psychology* 2011; 79(4): 433-440

PubMedID

21728400

DOI

10.1037/a0023992

Original Paper URL

<http://psycnet.apa.org/journals/ccp/79/4/433/>

Indexing Status

Subject indexing assigned by NLM

MeSH

Adolescent; Behavior Therapy /methods; Counseling /methods; Humans; Interviews as Topic; Motivation; Substance-Related Disorders /therapy; Treatment Outcome

AccessionNumber

12011004684

Date bibliographic record published

21/12/2011

Date abstract record published

13/03/2012

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.