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## Motivational interviewing: a systematic review and meta-analysis

Rubak S, Sandbaek A, Lauritzen T, Christensen B

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### CRD summary

This review assessed the effectiveness of motivational interviewing. The authors concluded that motivational interviewing improved outcomes for a variety of behavioural problems and diseases in comparison with traditional advice. However, it is not possible to judge the robustness of the authors' conclusions, owing to the limited reporting of review methods and the lack of adequate information on individual studies.

### Authors' objectives

To assess the effectiveness of motivational interviewing across different diseases.

### Searching

Searches were conducted of the following sources (up to January 2004 unless stated otherwise) using the reported search terms: the Cochrane CENTRAL Register (Issue 4, 2002), MEDLINE, EMBASE, CINAHL, PsycINFO, Cancerlit, ScienceDirect, Sociological Abstracts, Social Services Abstracts, EBSCO, CSA EconLit, CSA Biological Sciences, Biological Abstracts, AIDS and Cancer Research Abstracts, AskERIC, BIOSIS Previews and ABI/INFORM. Proceedings from the conferences of four named diabetes-related associations were searched. The reference lists of included studies and reviews were screened, and authors contacted for additional data were also asked for details of any additional unpublished studies.

### Study selection

#### Study designs of evaluations included in the review

Randomised controlled trials (RCTs) were eligible for inclusion. The median duration of follow-up was 12 months (range: 2 months to 4 years).

#### Specific interventions included in the review

Studies that compared motivational interviewing (defined according to Miller and Rollnick, see Other Publications of Related Interest) with traditional advice were eligible for inclusion. The included studies used interventions in the following fields: alcohol abuse (single most common field), psychiatric/addiction, weight loss/physical activity, smoking cessation and diabetes/asthma. The majority of studies (94%) used individual interviews and the median duration of the encounter was 60 minutes (range: 10 to 120). Interviews were most commonly conducted by psychologists, followed by medical doctors and others (nurses, midwives and dieticians).

#### Participants included in the review

No inclusion criteria for the participants were specified.

#### Outcomes assessed in the review

No inclusion criteria for the outcomes were specified. The included studies assessed a variety of outcome measures, details of which were reported in supplementary tables on the British Journal of General Practice website (accessed 26/07/2005). See Web Address at end of abstract. The review focused on the following outcomes: body mass index (BMI), glycated haemoglobin (HbA1c), total blood cholesterol, cigarettes per day, systolic blood-pressure, blood alcohol concentration and standard ethanol content. The review also assessed adverse effects.

#### How were decisions on the relevance of primary studies made?

One reviewer selected studies for inclusion.

### Assessment of study quality

Validity was assessed and scored using the Jadad scale, which considers the reporting and handling of randomisation,

blinding and the handling of withdrawals. The maximum possible score was 5. Studies scoring 2 or more points were considered to be high quality. The authors did not state who performed the validity assessment.

### Data extraction

The authors did not explicitly state how the data were extracted for the review, or how many reviewers performed the data extraction. All four reviewers confirmed outcome measures and clinically relevant goals. Authors of primary studies with missing results data were contacted for additional information. Where reported, the treatment difference was extracted in appropriate units, together with the 95% confidence interval (CI) and level of statistical significance (reported in the supplementary tables on the British Journal of General Practice website). The studies were classified as showing an effect if they reported a statistically significant effect and a relevant clinically significant effect.

### Methods of synthesis

#### How were the studies combined?

All studies were combined in a narrative. Studies that used objective measures and presented sufficient relevant data were pooled using a generic, inverse variance fixed-effect meta-analysis. A funnel plot was used to examine the possibility of publication bias.

#### How were differences between studies investigated?

The influence of the following factors on the results was examined by considering the percentage of relevant studies that showed positive effects of the intervention: length of encounter; group or individual encounter; number of encounters; duration of follow-up; type of health care counsellor; area of intervention; and the use of direct or indirect measures. The results of this examination were tabulated and discussed in the text.

### Results of the review

Seventy-two RCTs were included. The total number of participants involved was neither reported nor calculable. The numbers included in the meta-analyses are reported below.

Fifty RCTs scored 3 points out of a maximum of 5 for quality, 21 scored two points and one scored 1 point.

Seventy-four per cent of all studies (i.e. 53 out of 72) showed an effect with motivational interviewing. None of the studies reported any adverse effects of motivational interviewing, but none explicitly aimed to assess adverse effects. A higher percentage of studies reported effects for: encounters of 60 minutes compared with less than 20 minutes (81% versus 64%); more than five encounters compared with one encounter (87% versus 40%); at least 12 months compared with 3 months of follow-up (81% versus 36%); psychologists or medical doctors compared with others (79% and 83% versus 46%).

Motivational interviewing showed an effect in: 75% of studies (i.e. 35 out of 47) that focused on alcohol abuse, psychiatric diagnoses and addiction; 72% (i.e. 18 out of 25) of those that focused on physiological problems; 67% (i.e. 8 out of 12) of those that focused on smoking cessation alone; and 77% (i.e. 10 out of 13) of those that focused on asthma, diabetes and weight. A similar proportion of studies using direct and indirect measures reported an effect (75% versus 74%).

The funnel plot was judged to show no evidence of publication bias.

Nineteen studies provided sufficient data for inclusion in a meta-analysis. The meta-analysis showed a significant effect for the following outcomes: BMI (6 RCTs, n=1,140; effect size 0.72, 95% CI: 0.33, 1.11, P=0.0001), total blood cholesterol (3 RCTs, n=1,358; effect size 0.27 mmol/L, 95% CI: 0.20, 0.34, P=0.0001), systolic blood-pressure (2 RCTs, n=316; effect size 4.22 mmHg, 95% CI: 0.23, 8.99, P=0.038), blood alcohol concentration (6 RCTs, n=278; effect size 72.92 mg%, 95% CI: 46.80, 99.04, P=0.0001) and standard ethanol content (7 RCTs, n=648; effect size 14.64 standard units, 95% CI: 13.73, 15.55, P=0.0001).

There was no significant effect of motivational interviewing on cigarettes per day (3 RCTs, n=190) or HbA1c (4 RCTs, n=243).

### Authors' conclusions

Motivational interviewing improved outcomes for a variety of behavioural problems and diseases compared with traditional advice.

### CRD commentary

The review addressed a clear question that was defined in terms of the intervention and study design; inclusion criteria were not defined for the outcomes or participants, resulting in the inclusion of a wide variety of participants and outcomes. The search strategy was extensive and attempts were made to locate unpublished studies, thus minimising the potential for publication bias; appropriate methods were used to assess the presence of publication bias, but no evidence of it was found. It was not reported whether attempts were made to limit language bias. Only one reviewer selected studies and this lack of duplication raises the potential for bias. The methods used to extract the data were not reported in full and those used to assess validity were not described; it is therefore not known whether any efforts were made to reduce reviewer errors and bias. Validity was assessed using established criteria, but only a validity score was reported rather than a more comprehensive description of study quality.

Despite some information on the included studies being summarised, there was no information on the individual studies. Statistical heterogeneity was not assessed, so the appropriateness of pooling studies cannot be assessed. Differences between the studies were discussed in relation to several study characteristics. Owing to the limited reporting of review methods and the lack of adequate information on individual studies, it was not possible to judge the robustness of the authors' conclusions.

### Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that there is a need for large RCTs and qualitative studies to determine how to implement methods of motivational interviewing.

### Funding

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### Bibliographic details

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<http://bjgp.org/content/55/513/305.abstract>

### Other publications of related interest

Miller WR, Rollnick S. *Motivational interviewing, preparing people to change addictive behavior*. New York: The Guildford Press; 2002.

### Indexing Status

Subject indexing assigned by NLM

### MeSH

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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.