Problem solving in diabetes self-management and control: a systematic review of the literature

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CRD summary
This review assessed problem solving for improving diabetes self-management and control and concluded that there was limited evidence that problem solving may constitute an effective intervention for selected outcomes. The authors’ cautious conclusions reflected the evidence but given, but the absence of validity assessment and a lack of a detailed analysis mean they should be interpreted with caution.

Authors' objectives
To assess problem solving for improving diabetes self-management and control.

Searching
PubMed, PsycINFO and ERIC were searched from 1990 onwards (the latest search date was not reported). Search terms were reported. The search was restricted to English-language studies. Reference lists of retrieved articles were searched for additional studies. Dissertation abstracts were excluded.

Study selection
Quantitative or qualitative studies of any design that evaluated problem solving as a process or strategy for diabetes self-management were eligible for inclusion; this abstract is focused on studies that assessed interventions to develop problem solving skills in patients with diabetes. Interventions in included studies mostly involved education or support in problem solving. Details of intervention and control treatments and study duration varied. Included studies were in children/adolescents and adults. Outcomes included problem solving, self-management behaviours, physiological outcomes and psychosocial outcomes.

Two reviewers screened abstracts for selection. It was not reported how disagreements were resolved.

Assessment of study quality
One author assessed validity based on whether study methodology and findings were reported in sufficient detail. Studies that did not meet this criterion were excluded.

The American Diabetes Association (ADA) Evidence Grading System for Clinical Practice Recommendations was also considered.

Data extraction
One reviewer performed the data extraction, which was independently reviewed by a second reviewer; discrepancies were resolved through discussion and consensus.

Methods of synthesis
The studies were grouped by outcome (problem solving, self-management, physiological and psychological).

Results of the review
Fifty-two studies were included in the review: 36 were quantitative (n=3,832); 11 were conceptual; and five qualitative. There was a discrepancy between the text and tables in that 35 studies were tabulated.

Intervention studies of the effect of problem solving on diabetes outcome in children/adolescents (eight studies): Two studies reported a positive intervention effect on problem-solving ability. Six studies reported on the effects on self-management behaviours with improvements noted in dietary intake, self-monitoring of blood glucose and treatment
adherence. Two studies reported significant decreases in A1C level for the intervention group. Improvements in self-efficacy were reported in three studies.

Intervention studies of the effect of problem solving on diabetes outcome in adults (eight studies): Six studies reported on the effects on self-management behaviours with improvements, four of them with dietary behaviours. Self-monitoring of blood glucose in two studies, exercise in three studies and medication adherence in one study were all reported to show improvements at six or 12 months. Four studies reported decreases in A1C level following intervention and two studies decreased weight.

Authors' conclusions
There was limited evidence that problem solving was an effective intervention for selected outcomes.

CRD commentary
The review question was clear, although very broad. A small number of relevant databases were searched. The authors did not report searching for unpublished studies and this, together with the decision to limit the review to studies reported in English, may have led to the exclusion of relevant studies and the introduction of publication and language biases. Appropriate methods were employed to minimise reviewer error and bias during the review process. There was some assessment of the methodological quality of the included studies, but this did not form part of the results and the process for its execution was unclear. Given the inclusion of all types of study design, the omission of a formal validity assessment within the review process cast doubt upon the reliability of the included studies and hence the synthesis based on them. Due to variations between the studies, the method of data synthesis was appropriate. The authors' conclusions were suitably cautious in reflecting the wide range of available evidence, but given the uncertainty over study quality and a lack of a detailed analysis they should be interpreted with caution.

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

Research: The authors made a number of recommendations, including use of additional research designs, in particular well-conducted prospective cohort studies and meta-analyses. A number of details of intervention study design and conduct should be reported routinely. Inclusion of study quality ratings in meta-analyses would provide insight into optimal use of problem solving in diabetes self-management and control.

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