The clinical effectiveness of diabetes education models for type 2 diabetes: a systematic review

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CRD summary
This well conducted review concluded that the effectiveness of educational interventions for patients with Type 2 diabetes is difficult to evaluate given differences in the primary studies. However, multi-component interventions appear to have better effects on outcomes than focused programmes. These conclusions may be regarded as reliable.

Authors’ objectives
To assess the clinical effectiveness of patient-education models for adults with Type 2 diabetes mellitus (partial update to a previous review, see Other Publications of Related Interest field).

Searching
The following databases were searched between 2002 - Jan 2007: MEDLINE, EMBASE, CINAHL, PsycINFO, ERIC, Cochrane Library, Science Citation Index, BIOSIS Previews, Social Sciences Citation Index, National Research Register, MRC Clinical Trials Directory, Current Controlled Trials, ClinicalTrials.gov, DARE, NHS EED and HTA. Search terms for the main databases were reported and only English language papers were considered. Studies published only as abstracts or unpublished theses/dissertations were not included. Bibliographies of included studies and other relevant papers were hand searched.

Study selection
Randomised controlled trials (RCTs) and controlled clinical trials (CCTs) with a concurrent comparison group were considered. Trials were required to compare a specific educational programme with usual care or another educational programme. The intervention of interest was defined as educational: the dissemination of knowledge and skills using a variety of approaches, achievable by the usual personnel involved with diabetes care. Specialised psychological interventions, programmes that focused on a single complication or case management interventions were excluded. Included studies were required to describe the intervention in sufficient detail to permit replication (details given in the report) and report at least one of the following primary outcomes at a minimum of one year after start of the intervention: long term blood glucose levels (HbA1c); severe hypoglycaemic episodes; diabetes-related complications; or quality of life (QoL). Eligible participants were adults diagnosed with Type 2 diabetes using standard diagnostic criteria.

The included studies were largely RCTs which evaluated complete self-management approaches or focused on specific aspects of self-management (e.g. diet and exercise). The actual interventions varied widely, as did the characteristics of the patients.

Papers for inclusion were screened by one reviewer and checked by a second. Any disagreements were resolved by discussion.

Assessment of study quality
Included studies were assessed according to the criteria of CRD Report 4 for RCTs (now updated as "Systematic Reviews: CRD’s guidance for undertaking reviews in health care"). RCT criteria from the report relating to binding of the care provider and patient were not applicable. The remaining criteria used were: randomisation, concealment of allocation, baseline similarity, eligibility criteria, results and analysis, description of withdrawals, and drop-outs. For CCTs, validity was assessed based on comparability of groups and assessment of outcomes.

All validity assessments were carried out by one reviewer and checked by a second. Any disagreements were resolved by discussion.
Data extraction
Data were extracted, using a standardised data extraction form, by one reviewer and checked by a second. Any disagreements were resolved by discussion.

Methods of synthesis
The included studies were synthesised using narrative methods and the results tabulated. The synthesis was presented separately for complete or focused self-management programmes, with an overall summary evaluating interventions for Type 2 patients with diabetes.

Results of the review
A total of 21 trials (n=2,668) were included in this review; 13 trials evaluated complete self-management interventions and 8 trials assessed focused self-management programmes. The quality of reporting and methodology in these studies was described as being generally poor.

Complete Self-Management: evaluated by 13 trials, 11 RCTs (n=1,935) and 2 CCTs (n=251). Some positive effects of the interventions on diabetic control (as measured by HbA1c) were demonstrated, these were mostly found in longer-term interventions where there was a shorter interval between end of the intervention and follow-up evaluation. There was little effect seen on body mass index (BMI) or weight loss, and two controlled studies that investigated this outcome reported reduced use of OHAs (oral hypoglycaemic agents) in the intervention groups. Few studies were of sufficient duration to report on diabetic endpoints, where these were reported no significant benefits were found.

Focused Self-Management: evaluated by 8 trials, 7 RCTs (n=378) and 1 CCT (n=104). The majority of studies did not report any significant differences in diabetic control measures, blood pressure, BMI, weight or other measures between control and intervention, or between different intervention groups. One study that investigated this reported significant benefits in QoL in the active intervention group.

Authors’ conclusions
The effectiveness of educational interventions for patients with Type 2 diabetes is difficult to evaluate given differences in interventions, populations, study designs and reported outcomes, however multi-component interventions appear to have better effects on outcomes than focused programmes.

CRD commentary
This review addressed a clear question with defined inclusion criteria and extensive searches. As the authors note, the exclusion of non-English papers may have introduced language bias. The methodology of the review was reported in detail and is likely to have reduced reviewer error and/or bias as far as possible. Methodological quality was assessed using a validated tool and the narrative synthesis was appropriate given the heterogeneity within the primary studies. Overall this was a well-conducted review and the conclusions may be regarded as reliable.

Implications of the review for practice and research
Practice: The authors stated that education delivered by a team of educators, with additional contact and reinforcement, may provide the best opportunity for improving patient outcomes. The educational intervention should have a clear programme, although it is unclear what resources the educators themselves require to ensure successful programme delivery.

Research: The authors stated that good quality longer-term studies could be beneficial if they considered the control group carefully. Further research could explore the sensitivity of diabetes education programmes to the performance of the diabetes educators.

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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.