Effectiveness of group medical visits for improving diabetes care: a systematic review and meta-analysis

Housden L, Wong ST, Dawes M

CRD summary
This review concluded that group medical visits, for patients with diabetes, effectively reduced glycated haemoglobin, and their wider implementation would have a positive effect on patient outcomes. The significant clinical and statistical variation between studies, small samples, and lack of long-term outcomes, mean that the reliability of the conclusion is uncertain.

Authors' objectives
To evaluate the effects of group medical visits for patients with type 1 or 2 diabetes.

Searching
Eight databases, including PubMed and EMBASE, were searched for studies, published in English, from database inception to February 2012. Sources of grey literature, and bibliographies of selected articles, were searched. The search strategy was reported.

Study selection
Randomised controlled trials (RCTs), or observational studies, that compared group medical visits with usual care, for patients aged 16 to 80 years, with either type 1 or type 2 diabetes, were eligible. Studies of educational interventions or interventions that did not include health care providers, were excluded. The outcomes of interest were biophysical, patient reported, and process of care.

Most of the included studies were conducted in the USA, with the remaining studies conducted in Europe. The mean age of the participants was 59.3 years, and 56% of those having group visits were men. The duration and frequency of group visits varied widely.

Two researchers independently screened studies for eligibility; disagreements were resolved by the third reviewer if necessary.

Assessment of study quality
The quality of RCTs was assessed using the Cochrane risk of bias tool. One reviewer assessed quality, and 5% of the included studies were checked by a second reviewer, independently, for consistency.

Data extraction
Data were extracted to calculate mean differences for outcomes, such as glycated haemoglobin, weight, body mass index, cholesterol, and blood pressure, and their 95% confidence intervals.

One reviewer extracted the data, and the other two reviewers checked them.

Methods of synthesis
Only RCTs were included in the meta-analysis. The pooled weighted mean differences, with their 95% confidence intervals, were calculated, using a fixed-effect model. Heterogeneity was assessed using $X^2$ and $I^2$. $I^2$ over 25% was considered to show the presence of heterogeneity, in which case a random-effects model was used.

A sensitivity analysis was performed by excluding studies that had a high risk of bias on two or more items, or excluding studies that only included patients with type 1 diabetes, or in which the type of diabetes was unclear. Meta-regression was used to assess the influence of variables, such as the length of time patients spent at visits, and the number of group visits.

Results of the review
Twenty-six studies were included in the review. Of these, 13 were RCTs (4,652 patients; range 37 to 707). Of the 13 RCTs, only one had a low risk of bias in most areas; the others either did not report enough information or had two or more areas with a high risk of bias. Most studies had high or unclear risk of selection and detection bias. Where reported, study duration ranged from four months to four years.

There was a significant reduction in glycated haemoglobin for patients attending group medical visits (WMD -0.46, 95% CI -0.80 to -0.12 [Figure 2]; I²=82%; 10 RCTs); the groups did not differ at baseline. Patients who attended group medical visits for longer periods had better glycated haemoglobin outcomes (0.25 points per extra year). The duration of treatment had a greater effect on glycated haemoglobin than the number of visits attended per year.

Sensitivity analysis excluding studies with two or more items at a high risk of bias, increased the effect size, but excluding only studies with three or more items at a high risk of bias, did not change the results. Excluding studies of only patients with type 1 diabetes, produced a significantly increased effect size (WMD -0.58, 95% CI -1.12 to -0.04).

No significant differences were found for patient weight, body mass index, cholesterol levels, systolic and diastolic blood pressure, and quality of life, between the two groups. There were insufficient data on process-of-care outcomes.

Authors' conclusions
Group medical visits for patients with diabetes effectively reduced glycated haemoglobin, and wider implementation would have a positive effect on patient outcomes.

CRD commentary
The review question was clear and the inclusion criteria were reported. Relevant sources were searched, but only for published studies, and the authors excluded two studies that were not in English. Therefore, language and publication bias cannot be ruled out. Attempts were made to minimise reviewer error and bias, for much of the review. An appropriate quality assessment tool was used, and the results informed the synthesis. Appropriate methods were used for pooling the data and performing sensitivity analyses and meta-regression. The authors included observational studies, but did not use the data from these studies in the synthesis.

The authors' conclusion reflects the evidence presented. It was based on a reasonable number of small-to-medium-sized trials, many of which had unclear risks of bias. There was significant clinical and statistical variation between trials and long-term outcome data were lacking. These factors mean that the reliability of the conclusions is uncertain.

Implications of the review for practice and research
Practice: The authors suggested that the wider implementation of group medical visits for patients with diabetes would have a positive effect on patient outcomes.

Research: The authors stated that group medical visits might be effective for specific populations (such as those on a low income, those with different ethnic backgrounds, and military veterans), but further examination of sub-populations and types of delivery was needed.

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