Effect of pharmacist intervention on glycemic control in diabetes

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CRD summary
The authors concluded that there were statistically and clinically significant associations between pharmacist intervention and improvement in glycaemic control in patients with diabetes. Variation in trial characteristics, along with the unknown quality of included trials, mean that some caution is required when interpreting the reliability of the authors' conclusion.

Authors' objectives
To evaluate the effect of pharmacist intervention on glycaemic control in patients with diabetes.

Searching
MEDLINE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched for published articles in English from inception to June 2010. The full search strategy was reported. Retrieved articles were manually reviewed for further publications of interest.

Study selection
Randomised controlled trials (RCTs) that measured the effects of pharmacist intervention on glycated haemoglobin and fasting blood glucose in patients with diabetes were eligible for inclusion. Trials were excluded where the pharmacist was part of a healthcare team.

The included trials were conducted worldwide. Most included patients had type 2 diabetes; their mean age ranged from 49 to 71 years. The duration of diabetes ranged from 2.6 to 10 years. Mean baseline glycated haemoglobin ranged from 6.4 to 12.2%. Interventions were located in clinics, community pharmacies, or a combination of clinic and hospital settings. All interventions included multiple components, comprising at least two of: diabetes education; instruction on diet and exercise; medication counselling and adherence assessment; and adjustment to pharmacotherapy regimen (where necessary). Comparator interventions were mainly usual care, where reported. Pharmacist experience and training varied.

Two reviewers independently selected the trials for inclusion.

Assessment of study quality
The authors did not state that they assessed the methodological quality of included trials.

Data extraction
Mean changes in glycated haemoglobin level and fasting blood glucose, along with 95% confidence intervals (CI), were extracted or imputed.

Two reviewers independently extracted the data.

Methods of synthesis
Weighted mean differences (WMDs) with 95% confidence intervals were calculated in a random-effects meta-analysis. Heterogeneity was assessed with $I^2$.

Subgroup and sensitivity analyses were conducted taking account of baseline glycated haemoglobin level (under 10% versus 10% or over), intervention length (six months or under versus over six months), country (USA only), and publication year (after 2005 only).

Publication bias was investigated with funnel plots and Egger's test.

Results of the review
Fourteen RCTs (2,073 patients) were included in the meta-analysis. Follow-up ranged from four to 24 months.
Statistically significant differences were reported as a result of pharmacist intervention, with decreased glycated haemoglobin levels (WMD -0.76%, 95% CI -1.06 to -0.47; 14 trials; high heterogeneity, $I^2=81.9\%$) and decreased fasting blood glucose (WMD -29.32mg/dL, 95% CI -39.54 to -19.10; four trials; moderate heterogeneity, $I^2=44.1\%$).

Results were similar and remained statistically significant in sub-group and sensitivity analyses.

The potential for publication bias was low.

**Authors' conclusions**
There were statistically and clinically significant associations between pharmacist intervention and improvement in glycaemic control in patients with diabetes.

**CRD commentary**
The review question was clear and inclusion criteria were potentially replicable. Two relevant databases were searched. Language bias was a possibility. Publication bias (although formally explored) could not be ruled out (as acknowledged by the authors). The processes of study selection and data extraction were conducted with sufficient attempts to minimise error and bias. The absence of any reported quality assessment of the included trials precludes interpretation of their reliability. Trial details were presented clearly.

The authors acknowledged that the observed heterogeneity might be due to differences in intervention implementation, and the variable training and experience of those involved in delivery. This, together with the unknown quality of included trials, mean that some caution is required when interpreting the reliability of the authors' conclusion.

**Implications of the review for practice and research**
**Practice:** The authors stated that pharmacists can play an integral role in the diabetes management.

**Research:** The authors did not state any implications for research.

**Funding**
Not stated.

**Bibliographic details**

**PubMedID**
20961643

**DOI**
10.1016/j.diabres.2010.09.023

**Original Paper URL**
http://www.diabetesresearchclinicalpractice.com/article/S0168-8227(10)00492-4/abstract

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Aged; Diabetes Mellitus /metabolism; Female; Hemoglobin A, Glycosylated /metabolism; Humans; Male; Middle Aged; Pharmacists; Randomized Controlled Trials as Topic

**AccessionNumber**
12011006404

**Date bibliographic record published**

21/12/2011

Date abstract record published
21/05/2012

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.