Impact of Information Technology-Based Interventions for Type 2 Diabetes Mellitus on Glycaemic Control: a Systematic Review and Meta-Analysis

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Information technologies (IT) are increasingly being used to manage health care. However, there is conflicting evidence regarding whether or not IT improves diabetes outcomes. The objective of this study is to conduct a systematic review and meta-analysis of clinical trials, assessing the impact of IT on changes in levels of haemoglobin (HbA1c) and mapping the interventions with Chronic Care Model (CCM) elements.

Electronic databases Medline and EMBASE were searched to identify relevant studies that were published up until December 2013, a method that was supplemented by identifying articles from the references of the articles already selected using the electronic search tools. The study search and selection were performed by independent reviewers. Of the 1,006 articles retrieved, 29 trials (focussing on a total of 40,536 patients) were included 1-29. A random effects model was applied to estimate the pooled results.

IT-based interventions were associated with a statistically significant decline in HbA1c levels (mean difference -0.28% 95% CI 0.22, 0.34; P < 0.0001). Subgroup analysis showed that studies focussing on computer-based self-management demonstrated the largest reduction in HbA1c (0.48%) 1-13, followed by those with EMR (0.19%) 16-18, an electronic decision support system (0.15%) 19-25, and diabetes registry (0.06%) 26-29. In addition, the more CCM incorporated IT interventions the more improvements there were in HbA1c levels.

IT strategies combined with care were with the cause of improved glycaemic control in diabetes patients. No clinically relevant impact was observed on LDL and blood pressure, but there was evidence that the cost of care was lowered. However, these outcomes should be further explored in future trials.

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