An updated meta-analysis to assess the effectiveness of psychological interventions delivered by psychological specialists and generalist clinicians on glycaemic control and on psychological status

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CRD summary
The review concluded that psychological and generalist clinicians were similarly effective in delivering psychological interventions to patients with type 2 diabetes and improvements in glycaemic control were clinically significant. The significant variation and high risk of bias found between studies made the authors' conclusions appear to be a somewhat over-optimistic reflection of the available evidence.

Authors' objectives
To determine the effectiveness of psychological interventions on glycaemic control and psychological status in patients with type 2 diabetes and compare effects when interventions are delivered by generalist clinicians compared with psychological specialists.

Searching
The update search strategy was based on one used in a previous systematic review (see Other Publications of Related Interest). MEDLINE, EMBASE, PsycINFO and Cochrane Central Register of Controlled Trials (CENTRAL) were searched (without language restrictions) from February 2003 to March 2007. It appeared that conference proceedings and reference lists of included studies and reviews were searched.

Study selection
Randomised controlled trials (RCTs) that evaluated a psychological intervention for adults with type 2 diabetes were eligible for inclusion. Interventions that did not clearly describe the psychological components were excluded. Relevant outcomes were glycaemic control (HbA1c) and measures of anxiety and/or depression.

Most studies were of cognitive-behavioural therapy; some studies used counselling techniques. Generally populations were aged between around 45 and 65 years. Some studies were only of subgroups, such as patients with depression, or patients with sub-optimum glycaemic control. Nearly half of the RCTs delivered the intervention using psychological specialists and around one third added an educational component. A variety of psychological assessment tools were used. Some studies compared different intensities of psychological therapy. Group and individual treatments were both commonly used. Mean duration of intervention was 13.7 weeks (range four weeks to 12 months). Most control groups received usual care or education sessions.

At least two reviewers independently selected studies for inclusion in the review and disagreements were resolved by discussion.

Assessment of study quality
Study quality was assessed with criteria specified by Schulz (1995) and Jadad: selection bias (randomisation and allocation concealment); attrition bias (withdrawals, dropouts and intention to treat); and detection bias (blinding of outcome assessors). Studies were then classed as having a low risk of bias (A), at least one quality criterion only partly met with moderate risk of bias (B) and at least one criterion not met with high risk of bias (C).

It appeared that two reviewers independently assessed study quality.

Data extraction
Data were extracted in order to calculate standardised mean differences with 95% confidence intervals. Studies were classified according to who delivered the intervention: specialist psychological therapists or generalist clinicians (definitions were provided). Trial authors were contacted for missing data when necessary.
Two reviewers independently performed data extraction.

Methods of synthesis
Meta-analysis was considered if there were five or more RCTs with minimal heterogeneity that measured the same outcome; results were pooled using a random-effects model to produce standardised mean differences (SMD) with 95% CIs.

Heterogeneity was assessed using the $\chi^2$ test and $I^2$ statistic, and by examination of forest plots. Sensitivity analyses were performed using fixed-effect and random-effects models with exclusion of borderline studies, studies that used a less intensive psychological therapy as controls and studies with clinical subgroups, and by comparing poor-quality with higher-quality studies. Meta-regression was used to examine the effect of the number of sessions and duration of treatment. Begg's test and funnel plots were used to assess publication bias.

Results of the review
Thirty-five RCTs were included in the review (n=2,243), of which 19 were eligible for meta-analysis (n=1,431). One study was classed as grade A for risk of bias, eight as B and 26 as C. Only four studies reported using intention-to-treat analyses.

Glycaemic control: Pooled effect size for HbA1c was -0.32 (95% CI -0.47 to -0.16, $I^2=44\%$; 19 RCTs, n=1,431). The treatment effect in absolute units was a decrease of 0.54% (-0.83 to -0.23), which indicated an improvement in glycaemic control following treatment with a psychological intervention (for the nine studies only of interventions delivered by generalist clinicians the result was 0.51% and for the nine studies only of interventions by psychological specialists the result was a 0.57% reduction; both analyses displayed moderate statistical heterogeneity, with $I^2$ values of 52% for the former and 46% for the latter). There was no evidence of publication bias. There was no statistically significant association between improvements in HbA1c and duration of follow-up or duration of therapy, but there was evidence of an association between improvements in HbA1c and increased number of sessions (p=0.001).

Psychological status: Psychological interventions resulted in improvements in psychological status (SMD -0.56, 95% CI -1.00 to -0.13; 13 RCTs); there was no evidence of publication bias, but there was evidence of statistically significant heterogeneity ($I^2$ value not reported). There was evidence of an association between improvements in psychological status and increased duration of therapy, increased follow-up length and increased number of sessions (all p<0.001).

Authors' conclusions
Psychological and generalist clinicians were similarly effective in delivering psychological interventions to patients with type 2 diabetes. Improvements in glycaemic control were clinically significant in reducing microvascular and macrovascular complications.

CRD commentary
This review, which was an update of an earlier review conducted by different authors, addressed a clear question supported by appropriate eligibility criteria. Several electronic databases and conference proceedings were searched to identify relevant studies in any language. Independent duplicate procedures were used to minimise the risk of reviewer error and bias for the processes of study selection, data extraction and quality assessment. The quality assessment showed that most studies exhibited a high risk of bias. Appropriate methods were used to pool data and assess heterogeneity, but most results were subject to statistically significant heterogeneity; possible causes were generally not investigated further.

Considering that the authors pooled heterogeneous data from studies that mostly had a high risk of bias and their conclusions appear to be a somewhat over-optimistic reflection of the available evidence.

Implications of the review for practice and research
Practice: The authors stated that psychological training opportunities for generalist clinicians could lead to wider
availability of effective psychological care.

Research: The authors stated that there was a need to test differences in high quality fully powered RCTs in the UK, including more studies delivered by generalists, to assess the degree of effectiveness between psychological care specialists and generalist clinicians. There was a need for future studies to describe the training provided to intervention delivery staff and recommendations were made to quality assure interventions to both understand and assess intervention fidelity by clinician and patient.

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