CRD summary
The authors stated that psychological interventions had a significant, medium-sized effect on pain reduction for children with chronic abdominal pain. The review findings were based on a limited number of small-sized and variable studies. This, together with uncertainty about error and bias in the review process, means that the authors’ conclusion and practice recommendation might be unreliable.

Authors' objectives
To evaluate the effects of psychological therapies for pain reduction in children with recurrent abdominal pain.

Searching
PubMed, PsycINFO and PSYNDEx were searched to November 2009. Search terms were reported. Reference lists of relevant articles were scanned for further studies. It appeared that languages were limited to English and German.

Study selection
Eligible for inclusion were experimental studies with a control group that assessed the efficacy or effectiveness of psychotherapy for reducing recurrent abdominal pain in children and adolescents with functional gastrointestinal disorders.

The included interventions varied, but could be broadly classified as cognitive-behavioural therapy and relaxation therapy, brief targeted therapy and psychosomatherapy. Intervention components included psycho education, problem solving strategies, relaxation training/biofeedback, improvement of social situation, cognitive behavioural therapy, yoga, self-monitoring and other behavioural change strategies. Intervention duration ranged from two sessions to six months. There were more females than males and the age ranged (where reported) from four to 18 years.

The authors did not state how many reviewers carried out the selection of studies.

Assessment of study quality
Study quality was assessed using seven criteria, with a maximum achievable score of eleven. Five criteria addressed internal validity (sample size; soundness of outcome variable; univariate or multivariate analysis; use of randomisation; and drop-out rate) and two criteria assessed external validity (probability sampling; diagnosis/classification according to standard criteria).

The authors did not state how many reviewers carried out the quality assessment.

Data extraction
Data for direct or indirect pain measures were extracted or calculated to enable the presentation of effect sizes, which were interpreted as follows: up to 0.2 was small; up to 0.8 was medium; and over 0.8 was large (95% confidence intervals (CI) were reported). Authors were contacted for missing information where necessary. An outlier analysis was conducted to exclude from further analysis all values with a difference of ±2 standard deviations from the mean.

The authors did not state how many reviewers were involved in the data extraction.

Methods of synthesis
A fixed-effect meta-analysis was used to pool the effect sizes, which were weighted by sample size. Statistical heterogeneity was assessed using $X^2$. A moderator analysis was carried out where heterogeneity was evident. Differences between studies were explored in relation to missing values, use of randomisation, and type of control group. A sensitivity analysis was conducted by adding one study at a time to the base model. Publication bias was assessed using Rosenthal's fail-safe analysis.

Results of the review
Ten studies were included (477 participants; sample size range: 16 to 101). Quality scores ranged from 5 to 11. One study had a sample size over 100 participants. Nine studies were randomised. Most studies had less than 25% drop-outs. Less than half of studies were considered to have robust outcome variables.

Statistically significant moderate effects were reported for the analyses of all studies, 0.66 (95% CI 0.35 to 0.97); in the moderator analysis by type of therapy (cognitive behavioural or relaxation) (0.58, 95% CI 0.42 to 0.74; eight studies; no significant heterogeneity); and in the analysis of studies that compared cognitive behavioural therapy with other therapies (0.55, 95% CI 0.39 to 0.71; five studies; no significant heterogeneity).

Sensitivity analysis did not alter the main results. There was no evidence of publication bias.

Authors' conclusions
Psychological interventions had a significant, medium-sized effect on pain reduction for children with chronic abdominal pain.

CRD commentary
The review question was clear. Inclusion criteria were broad which gave a varied yield of studies. The search strategy included some appropriate data sources, but the apparent language restrictions might have meant that relevant studies were missed. Due to lack of clarity on how many reviewers were involved in the review process, the extent to which attempts were made to minimise error and bias was uncertain. Some appropriate quality criteria were applied, and results were clearly presented.

The authors acknowledged that the review findings were based on a limited number of small-sized and variable studies. Uncertainty about error and bias in the review process means that the authors' conclusion might be overstated and unreliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that methodologically-rigorous studies were needed. These studies should include randomisation, standardised outcome measures, the application of ROME III criteria, contain adequate reporting, address common methodological biases appropriately and measure long-term outcomes. The assessment of differential effects of psychological treatments (or combinations of treatments) in different subgroups of children was also recommended.

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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.