

## Interventions aimed at decreasing obesity in children younger than 2 years: a systematic review

*Ciampa PJ, Kumar D, Barkin SL, Sanders LM, Yin HS, Perrin EM, Rothman RL*

### CRD summary

The authors concluded that limited evidence suggested that interventions may improve dietary intake and parental attitudes and knowledge about nutrition for children younger than two years. The substandard quality of included studies and potential methodological limitations in the review process mean that the authors' conclusion might be unreliable.

### Authors' objectives

To evaluate the effectiveness of interventions to reduce overweight and obesity in children younger than two years.

### Searching

MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), Web of Science and CINAHL were searched for published articles in English. Search dates spanned from January 1966 to December 2009. Search terms were reported. Reference lists of included articles were scanned for further studies and ClinicalTrials.gov was searched for ongoing trials.

### Study selection

Studies of behavioural, educational or quality improvement based interventions to prevent obesity or promote healthy nutrition and physical activity in children younger than two years were eligible for inclusion.

Included interventions were primarily educational and delivered largely by professionals allied to health in various settings (home, classroom, clinic and community or a combination) over a period of less than six months. The included participants were mothers of infants or children (age range three weeks to 10 years). Interventions focused on improved parental attitudes, knowledge and behaviour related to infant nutrition; one specifically assessed maternal nutrition. Two studies combined education with a programme of physical activity aimed at mothers and/or children. Outcomes included maternal body mass index or change in child weight, changes in parental reports of children's dietary intake or physical activity and parental attitudes and knowledge about nutrition.

Studies were initially selected for inclusion by one reviewer. It was unclear how full-text studies were assessed for inclusion.

### Assessment of study quality

Study quality assessment was based on established criteria (West et al. 2002) on the adequacy of study population, intervention description, comparability of study groups, maintenance of comparison groups, outcome measurements, statistical analysis and confounding. Individual ratings were summarised and presented as composite scores: 0.00 to 0.99 (poor quality), 1.00 to 1.49 (fair quality) and 1.50 to 2.00 (good quality).

Two reviewers independently assessed the quality of included studies.

### Data extraction

Data were extracted to present the direction of effect for the various outcomes of interest and included means and standard deviations, proportions and p-values where appropriate.

The authors did not state how many reviewers carried out the data extraction.

### Methods of synthesis

A narrative synthesis was presented.

### Results of the review

Ten studies (n=at least 1,913 participants, range nine to 1,062) reported in 12 articles were included in the review. There were three randomised controlled designs (all fair quality), two quasi-experimental designs (poor quality), two before-and-after studies (poor quality) and three cohort studies (poor quality). Three of the randomised studies were contained within one larger trial. Limiting features were small sample sizes, lack of appropriate control, high loss to follow-up (mean 32%, range 7% to 74%), confounding, poorly described interventions and invalidated or poorly-defined outcome measures.

Modest improvements were reported for parental reports of dietary intake, knowledge of health nutritional behaviours and attitudes (six studies). One large trial (n=1,065) included in this result showed that dietary fat intake was significantly reduced by 3g to 5g per day, fat as a percentage of dietary intake was reduced by 1.7% to 3.0% (maintained over 10 years of follow-up), cholesterol consumption was reduced by 20 to 29 mg/dL and (in boys) total serum cholesterol and non high-density lipoprotein cholesterol were significantly lower in the intervention groups (reductions of 11mg/dL to 15mg/dL for total serum cholesterol and 9mg/dL to 14mg/dL for non high-density lipoprotein cholesterol). There were no statistically significant differences between groups for overall energy intake and mean child weight.

None of the other studies showed any material differences in maternal body mass index, child weight-for-age percentile or proportions of overweight children. It was difficult to draw conclusions from some studies due to methodological limitations.

Eight on-going trials were identified, but could not be included in this review as results were not yet available.

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**Authors' conclusions**

Limited evidence suggested that interventions may improve dietary intake and parental attitudes and knowledge about nutrition in children younger than two years.

**CRD commentary**

The review question was clear and supported by broad inclusion criteria for study design and outcomes. Consequently, there was wide variation amongst the included studies. The search strategy included some relevant data sources and attempts were made to search for on-going studies, which minimised the possibility of publication bias. The restriction to studies in English raised potential for language bias. Study selection and data extraction were subject to possible error and bias; quality assessment was conducted with reported transparency. The quality assessment criteria appeared relevant only to non-randomised studies. Sufficient study details were presented and the chosen method of synthesis was appropriate, given the high degree of variation among the included studies. The authors acknowledged that generalisability of the findings was limited due to the dominance of one large trial.

The substandard quality of included studies and potential methodological limitations in the review process mean that the authors' conclusion might not be reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that rigorously designed interventions were needed to target young children and their families in preventing or reducing obesity.

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