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## Effectiveness of interventions to promote healthy eating in pregnant women and women of childbearing age: a review

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### Authors' objectives

To assess the effectiveness of specific interventions on changes in pregnant women's dietary knowledge, attitudes and/or behaviour; to determine the extent of such changes; and to determine the characteristics of effective interventions.

### Searching

The authors performed an extensive search using the MEDLINE, EMBASE, CINAHL, PsycLIT and the Cochrane Library databases (search dates not stated). The search strategy was designed around the four categories of:

1. Study design
2. Health promotion and health education.
3. Nutrition and dietary.
4. Pregnancy and childbearing age.

Thirteen additional electronic databases (listed in the report) were also searched. The authors also handsearched journals (1985- 1996) and contacted specialist agencies and experts in the topic for additional information. The authors also searched reference lists of review articles, narrative articles, included studies and relevant book chapters. The search was limited to English language publications.

### Study selection

#### Study designs of evaluations included in the review

Randomised controlled trials (RCTs), non-randomised controlled before-and-after studies, and non-randomised controlled trials and interrupted time series analyses. Studies ranged from an intervention of one session to regular meetings for at least a year.

In the 5 studies including women of childbearing age, all studies were community-based. In the 4 studies including pregnant women, 2 were community-based and 2 studies were clinic-based.

#### Specific interventions included in the review

Interventions to promote healthy eating including health education, counselling, changes in environment and changes in policy. In the 5 studies including women of childbearing age, 2 studies were predominantly educational, 2 studies involved an exercise programme and 1 study offered empowerment and support to new mothers. In the 4 studies of pregnant women, all of the studies had an educational component and in three there was also counselling and/or various levels of psychosocial support.

Healthy eating was defined as any target outcome broadly in line with the National Advisory Committee on Nutrition Education (NACNE) 1983 recommendations (see Other Publications of Related Interest no.1).

#### Participants included in the review

Pregnant women and women of childbearing age. Childbearing-age participants were aged 15-45 or thereabouts. Participants were free-living (i.e. not living in an institution, in prison or a hospital).

#### Outcomes assessed in the review

Changes in knowledge and attitudes about healthy eating and dietary intake (particularly fat intake). Specifically:

1. The extent of the reported change in intake of key dietary indicators in participants (experimental and control).
2. Quantitative differences in the size of changes in intake of key dietary indicators in the two types of participants.

Interventions of weight management in overweight participants and studies reporting the effect of supplementation with vitamins and other nutrients were excluded from this review.

#### How were decisions on the relevance of primary studies made?

Two independent reviewers selected the articles for inclusion. One of the reviewers assessed all of the studies and three other reviewers each assessed one-third of the retrieved articles. Disagreement was resolved by a review by a third reviewer and a final decision made after discussion.

### Assessment of study quality

The authors used a seven-criteria checklist for assessing validity. The authors did not state how many authors performed the validity assessment.

### Data extraction

The authors do not state how all of the data were extracted for the review, or how many of the authors performed the data extraction, although it is stated that one author was responsible for extracting the quantitative outcome data.

Data were extracted for the primary outcomes reported in each paper, in the three categories knowledge, attitudes and behaviour. Data were also extracted for a range of indicators of intake (markers of fat, carbohydrate, fibre and energy intake and biological markers) and baseline and post-intervention nutrition outcomes.

Where possible, data on mean intakes were sought. Where data on sample size or standard deviation were missing, mean values and within group differences were reported but statistical significance could not be calculated.

For any studies with a possible unit of analysis error mean values and differences were reported but statistical testing was not performed or disregarded.

Between-group differences between control or baseline and each intervention group were also calculated and statistical significance calculated using unpaired Student's t-test, subject to the same proviso regarding unit of analysis. Where possible, categorical data were tested using the chi-square test. Results from individual studies are reported in data extraction tables in the appendices of the review.

### Methods of synthesis

#### How were the studies combined?

The studies were combined in a narrative review, owing to heterogeneity.

#### How were differences between studies investigated?

Formal tests for heterogeneity are not reported, however the authors state that a full meta-analysis of the results was not possible due to heterogeneity of interventions, target groups, study designs and statistical techniques.

### Results of the review

Nine studies were included in the review; 7 RCTs, 1 non-randomised controlled trial, and 1 non-randomised before-and-after study with 4,075 participants (973 women of childbearing age (599 intervention, 374 control), and 3,102 pregnant women (1,548 intervention, 1,554 control)).

In the five studies of women of childbearing age, results showed that participants could improve their knowledge and dietary intake and that the changes were statistically significantly greater in groups receiving an intervention compared with the controls. Insufficient details were given to assess whether the within-group before-after changes were each statistically significant or to comment on the likely relative effectiveness of the different components of the

interventions.

In the 4 studies of pregnant women, only one study provided specific outcome data in relation to a healthy diet and that study had adequate statistical power and demonstrated small improvements in both control and intervention groups, with a greater, but statistically non-significant, improvement in the intervention group. This study also evaluated changes in knowledge and attitudes and demonstrated small changes in the desired direction in control and intervention groups; the difference in knowledge scores between the groups reached statistical significance but the magnitude of the difference is unlikely to represent an improvement which is worthwhile in practice. The other three studies suggested that pregnant women appear to improve their intake of energy and possibly protein in response to interventions designed to improve pregnancy outcomes, but they did not provide data on other components of a healthy diet or on knowledge or attitudes. Taken together, the results showed that it was not possible to conclude whether or not healthy eating interventions in pregnancy are effective.

### **Authors' conclusions**

The authors state that women of childbearing age, and women who are pregnant, may be responsive to interventions designed to promote healthy eating. However, the evidence is insufficiently robust to recommend immediate implementation of the interventions without further evaluations. The authors further state that the rationale for health eating interventions in pregnancy needs to be clarified, particularly whether there is good epidemiological evidence that increasing the intake of particular nutrients and energy is of benefit in healthy women and their infants.

### **CRD commentary**

This is a good systematic review although the conclusions do not offer a lot of additional information. The authors have stated their research question and inclusion and exclusion criteria. The literature search was thorough although search dates are not uniformly reported and it was limited to English language publications, which may have missed additional relevant studies. The authors do report who, and how many of the authors, performed the selection of studies and some of the data extraction from the included studies. There is an assessment of validity.

A narrative review was presented because the authors state that a meta-analysis was not appropriate because of heterogeneity. There was discussion about heterogeneity and the methodological limitations of the included studies.

The authors' conclusions appear to follow from the results but do not offer a lot of further information on the topic.

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

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

Research: The authors state that further, more robust, evaluations to assess the repeatability of the findings, the true magnitude of the changes and whether they are sustained over time are needed.

### **Bibliographic details**

van Teijlingen E, Wilson B, Barry N, Ralph A, McNeill G, Graham W, Campbell D. Effectiveness of interventions to promote healthy eating in pregnant women and women of childbearing age: a review. London: Health Education Authority. Health Promotion Effectiveness Reviews; 11. 1998

### **Original Paper URL**

<http://www.nice.org.uk/page.aspx?o=502363>

### **Other publications of related interest**

1. National Advisory Committee on Nutrition Education (NASCE). Proposals for nutritional guidelines for health education in Britain. Health Education Council, London, 1983.

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