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Dietary composition in the treatment of polycystic ovary syndrome: a systematic review to inform evidence-based guidelines

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CRD summary

This review concluded that the limited evidence did not identify an optimum dietary composition conferring benefit over caloric restriction in women with polycystic ovary syndrome. This conclusion reflects the limited evidence available and appears to be appropriate.

Authors' objectives

To compare the effect of different dietary compositions on anthropometric, reproductive, metabolic and psychological outcomes in women with polycystic ovary syndrome.

Searching

AMI, MEDLINE, EMBASE, CINAHL, PsycINFO, EBM reviews, The Cochrane Library, Cochrane Methodology Register, HTA Database and NHS EED were searched to January 2012 for studies in English; search terms were reported. Bibliographies of relevant studies and reviews were checked for additional relevant studies. The review authors suggested additional studies.

Study selection

Studies of weight-loss or maintenance diets that compared different dietary compositions in women with polycystic ovary syndrome who were not taking anti-obesity medications were eligible for inclusion. Systematic reviews and randomised controlled trials (RCTs) were sought in the first instance, where these were not available other types of comparative study were sought. Outcomes of interest were anthropometric outcomes (such as changes in weight, waist circumference, fat), fertility outcomes (such as rate of pregnancy, menstrual regularity), reproductive non-fertility outcomes (such as total testosterone, free testosterone), metabolic outcomes (such as. changes in fasting insulin and glucose, lipid profile) and changes in quality of life and emotional well-being outcomes. The dietary intervention had to last at least two weeks.

The included studies were conducted in the United States and Australia. Participants were patients with polycystic ovary syndrome. Some studies only included overweight women or women who were not diabetic. Where reported, participants' average age ranged from 30 to 33 years and the average body mass index (BMI) ranged from 34 to 37.4. Various diets were included, all delivered by a dietitian. Interventions lasted between 16 days and 12 months. There was no concurrent use of insulin-sensitising or reproductive hormonal medication immediately before or during the studies exception for metformin and oral contraceptives.

Two reviewers independently assessed studies for inclusion.

Assessment of study quality

One reviewer assessed the quality of the included studies using pre-defined criteria, including criteria of selection, blinding, randomisation and concealment of allocation, methods of outcome assessment and data analysis. Studies were rated as having a low risk of bias (all criteria were fulfilled or unfulfilled criteria were very unlikely to affect the conclusions of the study), moderate risk of bias (some criteria were fulfilled and unfulfilled criteria may affect the conclusions of the study) or high risk of bias (few or no criteria were fulfilled or unfulfilled criteria were likely to affect the conclusions of the study).

Data extraction

Data on each of the outcomes of interest were extracted by one reviewer.

Methods of synthesis

A narrative synthesis was presented.

Results of the review

Three RCTs (123 participants) and two non-randomised controlled trials (111 participants) were included in the review. The three RCTs were considered to have a moderate risk of bias. The two controlled trials were considered to have a high risk of bias. Only 137 of 234 women who commenced the dietary interventions completed these.

Only one of the five trials showed a significant difference between two diet groups in anthropometric outcomes; an acute low-carbohydrate weight-maintenance diet over 16 days resulted in greater weight loss compared with a monounsaturated fatty acids-enriched weight-maintenance diet.

One trial reported a significantly higher rate of increased menstrual regularity after a low-glycaemic index ad libitum weight-loss diet compared with a standard healthy ad libitum weight-loss diet. One trial reported a significantly increased free androgen index in weight maintenance for women after a standard protein diet compared with a high-protein diet; none of the other four trials reported significant differences in reproductive non-fertility outcomes between different dietary treatments.

Patients on a low-glycaemic index diet reported a greater improvement in the emotions sub-domain of the polycystic ovary syndrome quality of life questionnaire than those on a healthy weight-loss diet (one trial). Depression and self esteem improved for patients on a high-protein weight-loss diet but not for those on a standard-protein weight-loss diet (one trial). One trial found no difference in psychological outcomes between the two dietary treatments assessed. Quality of life related to hair growth, weight, fertility and menstrual problems improved with weight loss, independent of diet composition (one trial).

Results relating to metabolic outcomes were reported.

Authors' conclusions

The limited evidence did not identify an optimum dietary composition conferring benefit over caloric restriction in women with polycystic ovary syndrome.

CRD commentary

The review question and inclusion criteria were clear. Various relevant sources were searched. Language restrictions were applied so some relevant studies may have been missed. Two reviewers independently assessed studies for inclusion and this reduced potential for reviewer bias and error; data extraction and quality assessment were undertaken by only one reviewer. The quality of the included studies was assessed using appropriate criteria and full results of the quality assessment were presented. Adequate study details were presented. A narrative synthesis was appropriate in view of the differences between studies in terms of participant and intervention characteristics.

The authors acknowledged that considerable clinical heterogeneity was present, sample sizes were low, the included studies were of moderate to high risk of bias, attrition rates were high for most studies and intention-to-treat analysis was performed for only two studies (among other methodological concerns).

In view of the limitations in the evidence base, the authors' conclusions appear to be appropriate.

Implications of the review for practice and research

Practice: The authors stated that weight loss should be targeted in all overweight women with polycystic ovary syndrome through reducing caloric intake in the setting of adequate nutritional intake and healthy food choices irrespective of diet composition. It was important to ensure that any dietary approach met nutritional requirements for women of reproductive age or appropriate nutrient supplementation was utilised where this was not the case.

Research: The authors stated that the lack of long-term studies was a significant gap in the literature. There was a need for further research to assess the effect of dietary composition on weight maintenance or prevention of weight gain in both lean and overweight women with polycystic ovary syndrome and the effect of dietary composition on reproductive, metabolic and psychological parameters independent of changes in weight in lean women with polycystic ovary syndrome. There was a lack of data on adverse effects of the diets.

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Bibliographic details

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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.

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