Efficacy of vitamin B-6 in the treatment of premenstrual syndrome: systematic review

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Authors' objectives
To assess the efficacy of Vitamin B-6 in the treatment of premenstrual syndrome.

Searching
The authors searched MEDLINE ((1966 to 1998), EMBASE (1988 to 1996), PsycLIT (1974 to 1997), CINAHL (1982 to 1997), and the Cochrane Controlled Trials Register using the MeSH terms 'premenstrual syndrome' and 'pyridoxine' together with title and abstract searches for the keywords: 'vitamin and pyridoxine', 'premenstrual syndrome', 'PMT', 'LLPDD', and 'PMDD'. The authors searched all included and excluded articles for additional relevant study references. The authors also contacted relevant pharmaceutical companies for additional information. There were no language restrictions.

Study selection
Study designs of evaluations included in the review
Randomised, placebo-controlled, double-blind, parallel or cross-over studies (published or unpublished). Studies investigating the effect of multivitamin supplements on premenstrual syndrome were also included when the vitamin preparation contained 50 mg or more of vitamin B-6. Treatment duration ranged from 2 months (or cycles) to 4 months (or cycles).

Specific interventions included in the review
Vitamin B-6 (pyridoxine) in dosages of 50 to 600 mg/day for vitamin B-6 alone, or 50 to 300 mg/day in a multivitamin for the intervention group and placebo for the control group.

Participants included in the review
Female patients with premenstrual syndrome.

Outcomes assessed in the review
The proportion of women whose overall premenstrual symptoms showed an improvement over placebo.

A secondary outcome was the proportion of women whose premenstrual depressive symptoms showed an improvement over placebo.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors used two methods to score the quality of the retrieved studies. The Jadad scale (see Other Publications of Related Interest) was used to assess the methodological quality of each study (randomisation, blinding, and reports of drop-outs and adverse effects). A second 8-point scale was developed by the authors to assess the studies for study design, reproducibility, and statistical analysis. A score of 3 or more (out of 5) on the Jadad scale and a score of 6 (out of 8) on the authors' scale was required but this was not used to include or exclude studies due to the low quality of the available studies. Two of the authors independently scored each trial and any differences were resolved by a third author.

Data extraction
The authors do not state who, or how many of the reviewers performed the data extraction. data were extracted for the
categories of study identification, participant characteristics, intervention, outcome measures, reported results, withdrawals and side effects, Jadad and authors' quality scores, and comments. Where there were insufficient data, authors were contacted for further details.

Methods of synthesis
How were the studies combined?
Pooled odds ratios (ORs) were calculated for discrete data with 95% confidence intervals (CIs) using fixed-effect and random-effects models. The results of the random-effects calculations are reported in the review.

For continuous data, the authors calculated a standardised mean difference (or effect size) and converted to an odds ratio (OR) using a relation given by Hasselblad and Hedges (see Other Publications of Related Interest).

How were differences between studies investigated?
The authors used the chi-square statistic to test for heterogeneity, with p < 0.05 indicating statistically significant heterogeneity. The overall OR (10 trials) in favour of B6 was 1.57 (95% CI: 1.40, 1.77). One trial caused significant heterogeneity in the overall OR (p < 0.001) and when removed, resulted in homogeneity (p = 0.187). Following removal of that trial the recalculated OR relative to placebo for an improvement in overall premenstrual symptoms was 2.32 (95% CI: 1.95, 2.54) which was statistically significant.

Results of the review
Ten RCTs met the inclusion criteria however 1 RCT was excluded from the meta-analysis because of statistical heterogeneity. 9 RCTs with 940 participants were included in the meta-analysis.

The overall OR relative to placebo for an improvement in premenstrual depressive symptoms (5 trials) in favour of B6 was 2.12 (95% CI: 1.80, 2.48). Again, one trial caused significant heterogeneity in the overall OR (p < 0.001) and when removed, resulted in homogeneity (p = 0.079). Following removal of that trial the recalculated OR relative to placebo for an improvement in overall premenstrual depressive symptoms (4 trials, n = 541) was 1.69 (95% CI: 1.39, 2.06) which was statistically significant.

Authors' conclusions
The conclusions of the review are limited by the low quality of most of the trials included. Results suggest that doses of vitamin B-6 up to 100 mg/day are likely to be of benefit in treating premenstrual symptoms and premenstrual depression.

CRD commentary
This is a good systematic review. The authors have clearly stated their research question and some inclusion and exclusion criteria. The literature search is very good and the authors have used statistical tests for publication bias and location bias.

The quality of the included studies was formally assessed using two scoring criteria although these were not used to exclude poor quality studies from the review. The authors have not reported on how the articles were selected, or how many of the reviewers were involved in the study selection or data extraction, but they have reported on the specific design of the included studies.

The data extraction is reported in tables and text and the statistical pooling was appropriate. There were tests for heterogeneity and the authors have discussed several methodological and data limitations in the review. The authors conclusions appear to follow from the results.

Implications of the review for practice and research
Practice: The authors state that there is no rationale for giving daily doses of vitamin B-6 in excess of 100 mg.
Research: The authors state that this review highlights the need for an RCT which should be conducted with sufficient subjects and should have the power to detect any significant clinical difference between vitamin B-6 and placebo.

Bibliographic details

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Original Paper URL
http://bmj.com/cgi/content/full/318/7195/1375

Other publications of related interest

These additional published commentaries may also be of interest. Stevinson C. Tentatively positive conclusions from a meta-analysis of vitamin B6 for premenstrual syndrome. FACT 1999;4:205-6. Macdougall M. Review: poor quality studies suggest that vitamin B=6 is beneficial in premenstrual syndrome. Evid Based Nurs 2000;3:18.

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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.