The effectiveness of preterm-birth prevention educational programs for high-risk women: a meta-analysis


Authors' objectives
To evaluate whether pre-term-birth prevention educational programs are effective at reducing neonatal mortality, low birth weight and pre-term delivery.

Searching
MEDLINE was searched from 1979 to February 1994, using MeSH terms: 'labor, premature', 'prevention and control' or 'patient education'. The bibliographies of all the articles identified by this MEDLINE search, and the bibliographies of papers identified from an additional search of MEDLINE for 'preterm labour' or 'low birthweight' were scanned.

Study selection
Study designs of evaluations included in the review
The review included randomised controlled trials (RCTs), studies using non randomised control groups, and studies comparing results to historical controls. However, only RCTs were included in the meta-analysis.

Specific interventions included in the review
Patient education with either weekly cervical examinations or home visitation.

Participants included in the review
Women at high risk of pre-term birth were included.

Outcomes assessed in the review
The outcomes assessed were pre-term labour rate, pre-term delivery rate, low birth weight rate, neonatal survival rate, gestational age and birth weight.

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 quality of the individual studies was assessed according to study design, with studies of similar methodology grouped for analysis. RCTs were then analysed separately from studies with other methodologies. Two evaluators independently reviewed the methods and results of the studies. The evaluators were blinded to the identity of the authors and journal.

Data extraction
The results sections are stated to have been reviewed independently by two reviewers. This may indicate that data were extracted from relevant studies in this manner.

Methods of synthesis
How were the studies combined?
A simple meta-analysis was carried out. This involved pooling crude rates of low birth weight, pre-term delivery neonatal survival and pre-term labour in order to calculate the overall effect of the intervention. These crude overall rates are then expressed as relative risks (RR). Overall mean birth weights and gestational ages are also calculated.
How were differences between studies investigated?
After employing tests for heterogeneity it was found that only the RCTs showed homogeneity in outcomes; only RCTs were therefore included in the meta-analysis. The tests showed no significant difference between the RCTs in terms of outcomes (p>0.05).

Results of the review
Six studies were included, with a total of 3,187 controls and 3,258 patients in the intervention group.

No effect of intervention on rate of pre-term delivery (RR=1.08, 95% CI:0.92,1.27, p=0.34), low birth weight (RR=0.99, 95% CI: 0.88,1.11, p=0.84), neonatal survival (RR=1.00, 95% CI: 0.99,1.01, p=0.47), birth weight (difference in means=0.03, 95%CI: -0.03,0.09, p=0.14), or gestational age (difference in means=0.03., 95% CI:-0.02,0.09, p=0.06) was found. Diagnosis of pre-term labour was made 1.7 times as often in the intervention groups (RR=1.7, 95% CI: 1.41,2.08, p<0.001).

Authors' conclusions
There appears to be no beneficial effects of pre-term-birth prevention educational programs on neonatal survival, low birth weight rates or pre-term delivery rates. The only effect appears to be a doubling of the risk of being diagnosed as having pre-term labor during pregnancy. The unfavourable benefit-risk ratio of these programmes therefore suggests that they should not be instituted.

CRD commentary
A more formal meta-analysis may have been more appropriate than the method of using pooled rates, and this would have allowed a more reliable estimate of the effects of the intervention. However, not enough summary information on the outcomes is given in the results section to allow the reader to recalculate the pooled RRs using other methods. There is also little detail on the actual interventions used, for example, on the content of the educational programs, so it is difficult to determine from this review whether all educational interventions are likely to be ineffective.

Implications of the review for practice and research
Intensive education of patients and providers may result in over-diagnosis of pre-term labour.

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