Does prenatal care improve birth outcomes: a critical review

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Authors' objectives
To evaluate evidence that prenatal care improves birth outcomes.

Searching
MEDLINE was searched from 1966 to October 1994. Relevant references cited in retrieved articles were also included.

Study selection
Study designs of evaluations included in the review
Studies that assessed the effect of prenatal care on birth outcomes were included if they used statistical probabilities for birth outcomes based on some measure of prenatal care. Time series were selected if groups were controlled, e.g. cohort or case studies if an adjustment factor was used for prenatal visits relative to gestational age. Non-randomised studies were selected if they showed evidence that the treatment and control groups were comparable. Randomised trials were excluded if there was evidence of contamination of treatment and control groups.

Specific interventions included in the review
Prenatal care including weekly and biweekly visits, home visitation (by trained lay workers, black para-professionals, trained social workers and trained midwives), a multidisciplinary team approach, cervical examinations, education and the provision of 'hot lines'.

Participants included in the review
Pregnant women of several nationalities were studied including Latin American, Australian, British and Americans. Adolescents and high-risk women were included.

Outcomes assessed in the review
The main outcomes were: percentage low birth weight, very low birth weight, pre-term delivery, small for gestational age, and still birth, infant death and neonatal mortality.

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

Assessment of study quality
The studies were graded using the system developed by the U.S. Preventive Services Task Force, and were assessed for both adequate statistical power based on the specified outcome measure and using established criteria for the evaluation of prenatal interventions. The author does not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
Risk ratios for adequate care were calculated.

Methods of synthesis
How were the studies combined?
The studies were combined by a narrative review.

How were differences between studies investigated?
The potential causes of heterogeneity were discussed.

**Results of the review**
There were 14 observational studies with 669,876 women, 11 randomised controlled trials (RCTs) with 11,222 women, 12 time series, and 13 quasi-experimental studies.

None of the RCTs of enhanced care showed positive effects on rates of low birth weight infants or pre-term delivery. There is limited evidence from time series for cessation of effects. The strength of association between prenatal care and outcome appears to be highly sensitive to confounding.

**Cost information**
A discussion on some of the issues surrounding the cost of prenatal care was included.

**Authors' conclusions**
Current evidence does not satisfy the criteria necessary to establish that prenatal care improves birth outcomes definitively. However, policy makers must consider these findings in the context of the overall benefits and potential cost-effectiveness of prenatal care.

**CRD commentary**
This is a well written review, which considers the problems of evaluating research in the field in detail. Limiting the literature search to published articles from MEDLINE may have resulted in failure to retrieve some relevant studies. No information was given on either the time series or the quasi-experimental studies, and the observational studies lacked details of the prenatal care provided. As the author discusses, there are many problems with evaluating research in this area; these include the lack of definition of adequate care, studies being controlled for few of the many known confounding factors, unrecognised confounding factors, any benefit of prenatal care being limited by the rate of modifiable risk factors in the population and selection bias for participants in observational studies. Included studies were graded for quality according to predefined criteria. The evidence supporting causal criteria for the effect of prenatal care on birth outcomes is considered, and the finding that current evidence does not satisfy these criteria is supported.

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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.