Effectiveness of secondary pregnancy prevention programs: a meta-analysis

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CRD summary
The authors concluded that secondary pregnancy prevention programmes effectively reduce teenage pregnancy rates, at least up to 19 months after the intervention. The evidence seems limited given the differences between the generally low-quality studies, while poor reporting of the review methods makes it difficult to assess the reliability of the conclusion.

Authors' objectives
To evaluate the effect of teenage secondary pregnancy prevention programmes on subsequent pregnancy rates.

Searching
CINAHL, InfoTrac, PsycINFO, MEDLINE and Social Work Abstracts were searched from 1970 to 2004; the search terms were reported. In addition, the contents of two relevant journals (1994/95 to 2004) were handsearched and reference lists from all studies and reviews were screened. Other organisations (National Center for Health Statistics, the Alan Guttmacher Institute, the National Campaign to Prevent Teen Pregnancy and Child Trends) were contacted for details of other studies. Published and unpublished studies were eligible. Only English language reports were included.

Study selection
Controlled trials that evaluated the effect of secondary pregnancy prevention programmes for adolescents (aged 11 to 20 years) on subsequent pregnancy rates were eligible for inclusion. Studies had to report the sample size and pregnancy rate for each treatment group.

The included studies were randomised controlled trials (RCTs) and non-randomised controlled trials. All participants in the studies were pregnant or parenting teenagers; the mean age, where reported, was 16.75 years. The studies were all conducted in the USA. Where reported, about 60% of studies involved African American adolescents. Most of the studies targeted low-income groups and most programmes were hospital based. Just over a third of programmes were 'comprehensive' (teens offered a range of services such as case management, referral, education and individual counselling). Where reported, the duration of interventions appeared to range from 10 to 15 minutes, plus unspecified family planning services to 2 years. Some studies used more than one control intervention.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Validity was assessed on the basis of study design, sample size 30 or more, and adequacy of description of the participants and intervention. Possible scores ranged from 1 (very low quality) to 9 (high quality). Details of the scoring system were reported.

Three reviewers assessed and scored validity. It was not reported if the assessments were performed independently or not.

Data extraction
The odds ratios (ORs) of pregnancy for each reported follow-up period were extracted from each study; an OR with 95% confidence interval (CI) was presented for each study.

Three reviewer extracted the data, but it was not reported whether this was done independently.

Methods of synthesis
Pooled ORs with 95% CIs were calculated using fixed-effect and random-effect models. The following strategies were
used to deal with the problem of multiple control interventions in individual studies: OR for intervention compared with a randomly selected control for the first reported time period; OR for intervention compared with effect size averaged over all control treatments; and the previous two methods repeated for the second reported time period. Statistical heterogeneity was assessed using the Q statistic and examined using a Galbraith plot. Single-factor analysis of variance was used to examine the influence of race (African American versus other), socioeconomic status (high versus low) and type of intervention (comprehensive versus other). The potential for publication bias was assessed using Rosenthal's fail-safe N (the number of unpublished studies needed to change a statistically significant finding to a non-significant one).

**Results of the review**

Sixteen studies (n=8,200) were included: 11 RCTs (n=6,387) and 5 non-randomised comparisons (n=1,813).

Ratings of study quality ranged from 3 to 9 points out of 9. Five studies scored 7 or more.

The interventions were associated with a statistically significant reduction in pregnancy rates compared with controls at the first follow-up period (mean 19.3 months) when using fixed-effect and random-effects models and multiple control groups (1; 1 or 2; and 1, 2 or 3). Significant heterogeneity was found for all analyses; the OR when using random-effects models and 1, 2 or 3 control groups was 0.442 (95% CI: 0.293, 0.666, p=0.000; Q=59.16, d.f.=15, p<0.05).

There was no significant difference in pregnancy rates between the intervention and control groups at subsequent follow-up (mean 31 months) when using random-effects models and 1, 2, or 3 control groups. Significant heterogeneity was found for all analyses.

The number of unpublished studies needed to change the statistically significant reduction in pregnancy rate for the first follow-up to a non-significant one was at least 136.

Intervention programmes appeared to be more effective among teenagers of high socioeconomic status than among those of low socioeconomic status. Treatment effects were similar regardless of race and type of intervention.

**Authors’ conclusions**

Secondary pregnancy prevention programmes effectively reduce teenage pregnancy rates, at least up to 19 months after the intervention.

**CRD commentary**

The review question was stated clearly. The search seemed comprehensive and made attempts to minimise publication bias; no evidence of serious publication bias was found. However, no attempts were made to minimise language bias. The methods used to assess validity and extract the data were not described in full, while those used to select studies were not reported; it is therefore not known whether any efforts were made to reduce reviewer error and bias during the review process. Validity was assessed, although only the composite score was presented, making it difficult to independently comment on the reliability of the evidence presented; the generally low quality scores suggest that much of the evidence was of a low quality. The RCTs and non-randomised studies were combined statistically but it is questionable whether this approach was appropriate given their different study designs. Heterogeneity was tested and the authors attempted to examine potential reasons for the significant heterogeneity found. Differences between the studies and the reliance upon apparently generally low-quality studies limit the strength of the evidence underlying the authors’ conclusion, while incomplete reporting of the review methods makes it difficult to assess the reliability of the conclusion.

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

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

Research: The authors stated that future studies of pregnancy prevention programmes should be randomised, adequately describe characteristics of the participants and interventions, report the size of treatment groups and statistical comparisons between treatments, and analyse data on an intention-to-treat basis. Studies should also assess outcomes other than pregnancy rates.
Funding
Not stated.

Bibliographic details

Other publications of related interest

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MeSH
Adolescent; Female; Humans; Clinical Trial; Pregnancy; Pregnancy in Adolescence /prevention & control

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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.