School-based violence prevention programs: systematic review of secondary prevention trials

Authors' objectives
To quantify the effectiveness of school-based violence prevention programmes for children identified as at risk for aggressive behaviour.

Searching
The following electronic databases were searched: the Cochrane Controlled Trials Register (Issue 1, 1998), MEDLINE (from 1994 to June 1998), EMBASE (from 1980 to January 1998), PsycLIT (from 1887 to March 1998), ERIC (from 1970 to September 1997), CINAHL (from 1982 to April 1998), Dissertation Abstracts (from 1861 to March 1998), IBSS (from 1952 to 1998) and NCJRS Abstracts (from 1970 to May 1999). Content terms such as 'aggress*', 'violen*' were combined with terms such as 'school*', 'educat*' and 'student*'. In addition, the Cochrane Collaboration's search strategy to identify controlled trials was adapted, as required, for each source. The complete search strategies were available from the authors. The journal Aggression and Violent Behavior (Issue 1, 1996 to Issue 3, 1998) was handsearched, and the reference lists published trials and reviews were checked. The authors of relevant studies were contacted for additional published or unpublished data, while international organisations were contacted for unpublished and internal reports. There were no language or date restrictions.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) in which concurrent outcome data were collected, were included. Cluster randomised trials with only two randomised schools or classes were excluded.

Specific interventions included in the review
School-based interventions designed to reduce aggression and violence were eligible for inclusion. The included interventions were: affective imagery training; alternative thinking strategies; anger management (individual and group); cognitive restructuring; cognitive roletaking; cognitive skills training; conflict resolution; empathy training; family relationship intervention; increased attention; meditation; self-control; social skills; structured life skills; therapeutic mentoring. The interventions could also contain secondary components, such as parenting skills training or community interventions. The control interventions were no intervention, or placebos such as attention training, discussion groups, problem-solving skills and reading tutoring. Studies comparing different intervention groups or different intensities of the same intervention were excluded from the meta-analysis.

Participants included in the review
Children in mandatory education (from kindergarten to grade 12, or international equivalents) who exhibited or were at risk for aggressive behaviour were eligible for inclusion.

Outcomes assessed in the review
The outcome measures had to include aggressive behaviour, the response of the school or agency to such acts, or violent injuries (e.g. those requiring attendance at an accident and emergency department).

Aggressive behaviour was defined on the basis of standard test scores for observed or reported aggressive or violent behaviours, or counts of actual incidences of aggressive or violent behaviours.

School or agency actions were those taken in response to aggressive or violent behaviours (e.g. detention, suspension or court contact) and officially recorded. Where the school or agency's records did not distinguish between responses to aggressive or non-aggressive behaviours, all types of misbehaviours were included.

Outcomes indirectly related to violence (e.g. poor school achievement, truancy, and knowledge about or attitudes towards violence) and mental health outcomes (e.g. depression or conduct disorder) were excluded.
How were decisions on the relevance of primary studies made?
The titles, abstracts and keywords were screened, and ineligible studies were excluded on the basis of topic, design, population, setting or intervention (if specified in sufficient detail to exclude the possibility of violence prevention). The full texts of the remaining references were reviewed and additional ineligible studies were excluded using the same criteria. Authors were contacted for clarification where necessary. The authors do not state how many of the reviewers performed the selection.

Assessment of study quality
The authors extracted data on randomisation, allocation concealment, blinding of outcomes assessment, and attrition, with the intention of investigating their effects on the pooled analysis (see How Were Differences Between Studies Investigated?). The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
Two authors independently extracted data on the participants, interventions, duration of follow-up, outcomes evaluated, randomisation method, allocation concealment, blinding of outcomes assessment and attrition. A third author independently extracted data on the participants, interventions and outcomes. Any differences found in the data extraction were resolved by discussion. All authors of included trials were contacted to clarify study details, obtain missing data, or to identify unpublished outcomes.

Methods of synthesis
How were the studies combined?
Weighted intervention effects were calculated across the trials. The results were expressed as standardised mean differences, along with 95% confidence intervals (CIs). The Begg test and the Eggar test (with a funnel plot) were used to investigate the effect of study size on the results. A random-effects model was used to combine the data if there was evidence of statistical heterogeneity. The results for the intervention and control groups were compared immediately after the intervention and at 12 months' follow-up, where these data were available. The interventions were grouped according to the predominant intervention focus: skills of nonresponse; and relationship skills, and other social-context interventions.

How were differences between studies investigated?
Trial heterogeneity was investigated using the chi-squared test (significance level 0.05). The review protocol pre-specified subgroup analyses for primary versus secondary school age groups, and for boys-only versus mixed-sex or girls-only groups. A meta-regression based on aspects of methodological quality could not be carried out because the trial reports contained inadequate information.

Results of the review
Forty-four RCTs were included, of which 30 provided outcome data that could be pooled (n=2,380).

None of the identified trials reported data on violent injuries.

When combining the 28 trials that assessed aggressive behaviours (n=2,096), aggressive behaviour was reduced in the intervention group in comparison with the control group; the effect size (ES) was -0.36 (95% CI: -0.54, -0.19). Different training programmes produced similar results.

For the 9 trials that reported data on school or agency responses to aggression (n=1,366), the ES was -0.59 (95% CI: -1.18, 0.01).

Training in skills of nonresponse produced no significant difference between the groups (ES -0.32, 95% CI: -0.90, 0.26). Training to improve relationship or social context skills was effective in 2 trials (ES -0.69, 95% CI: -1.26, -0.13).

Subgroup analyses suggested greater effectiveness in older students (ES -0.82, 95% CI: -1.56, -0.09) with reference to
school or agency actions, but not with reference to immediate effects, or when administered to mixed-sex groups or girls alone rather than to boys alone (ES -0.44, 95% CI: -0.66, -0.23).

A sensitivity analysis that excluded data from 5 trials, for which data were imputed, showed a weaker effect (ES -0.24, 95% CI: -0.40, -0.08).

The heterogeneity tests indicated there was variation in the results within trials (p<0.001 in both groups). The funnel plot was asymmetrical, suggesting publication bias in favour of positive trial results.

**Authors' conclusions**

School-based violence prevention programmes may produce modest reductions in the aggressive and violent behaviours of children who already exhibit such behaviour.

**CRD commentary**

The authors conducted the review according to a well-designed protocol. This protocol included a comprehensive literature search of many relevant databases, independent data extraction, and contact with the authors of the primary studies (for missing data). The pooled analysis appears to have been appropriate, although testing the impact of methodological criteria on the effect sizes was impossible. The authors’ caution in drawing conclusions from the identified studies was appropriate, in view of the many different interventions, controls and outcome measures. The conclusions appear to follow from the data analysis.

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

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

Research: The authors state that these results need to be confirmed in large high-quality trials.

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