Effectiveness of universal school-based programs to prevent violent and aggressive behavior: a systematic review


CRD summary
The authors concluded that universal school-based interventions for the prevention of violent and aggressive behaviour are associated with reductions among pre-school and school-aged children. Given several considerations about the included studies (such as clinical variability) and reporting in the review (including lack of validity and few study details), as well as potential bias, the reliability of the authors’ conclusions is unclear.

Authors’ objectives
To assess the effectiveness of universal school-based interventions in preventing violent and aggressive behaviour among pre-school and school-aged children.

Searching
MEDLINE, EMBASE, ERIC, CINAHL, ASSIA, NTIS, PsycINFO, Sociological Abstracts and NCJRS were searched for publications in English up to December 2004. In addition, the references of retrieved articles were reviewed and experts in the field were contacted.

Study selection
Studies conducted in countries with high-income economies and comparing universal school-based interventions with a control, and reporting directly measured violent outcomes, a proxy measure of violent or non-violent behaviours, and changes in school performance and drug use in samples greater than 20 participants, were eligible for inclusion. The included studies assessed different classroom-based interventions, delivered by varying agents to children of mixed ethnicity in pre-kindergarten and kindergarten (PK-K), elementary, middle and high schools. Between 29% and 50% of schools were reported as having low socioeconomic status and/or high crime rates. The intervention lasted between 16.4 and 30.3 weeks.

Two reviewers screened studies for relevance and any discrepancies were resolved by consensus.

Assessment of study quality
Validity was assessed according to the Community Guide review process, which includes items on quality of execution (good or fair) and level of design suitability (greatest, moderate, or least).

Two reviewers performed the validity assessment and any discrepancies were resolved by consensus with team members.

Data extraction
Data on pre- and/or post-intervention measures were extracted, ultimately to calculate the percentage change in intervention versus control groups (median treatment effects) and interquartile range (IQR) for effect sizes ranging between the 25th and 75th quartiles, where appropriate.

It was unclear how many reviewers performed the data extraction.

Methods of synthesis
The results were presented as a narrative synthesis and as graphs and in tables. For studies with multiple evaluations at different follow-up points, the evaluation with the longest follow-up period with an attrition rate of less than 30% was used. Bivariate analyses were conducted to explore associations between intervention characteristics and effect sizes, taking into account the potential for other confounding factors. Sensitivity analyses were undertaken by removing
studies with poor study design.

**Results of the review**

Fifty three studies were included in the review. The overall number of participants was not provided, but the median sample size was 563 (range: 21 to 39,168).

Thirty-nine studies were prospective and controlled, with seven thought to have little threat to validity and 32 with some threat to validity. Five studies were retrospective or multiple pre-test post-test studies with some threat to validity. Nine studies were single pre-test post-test studies, one with little threat to validity and eight with some threat. The median follow-up for the included studies was 6 months (range: immediate to 6 years).

The overall median effect across school grades showed a 15% reduction (IQR: -44.2, -2.3) in children receiving interventions compared with control groups (53 studies). Middle schools (15 studies) reported a 7.3% reduction (IQR: -35.2, 2.3), elementary schools (26 studies) an 18% reduction (IQR: -44.8, -2.5) and high schools (4 studies) a 29.2% reduction (no IQR reported), and PK-K schools (6 studies) showed a median effect size of -32.4% (no IQR reported). Sensitivity analyses did not significantly alter the results.

Associations between school environment and effect size did not significantly alter the results, and there was no significant relationship between intervention duration and effect size. However, a relationship between follow-up and effect size was reported, with the effectiveness of the interventions reducing slightly over time once the intervention had ended. Studies assessing associations between ethnicity and violent behaviour indicated the greatest reductions in the 5 studies where no clear majority population were reported: 23% reduction (IQR: -50, -7.3).

Other positive and negative effects were briefly mentioned in the review.

**Cost information**

One study estimated that the PATHS curriculum would cost between $15 and $45 per child per year over a 3-year period. Another study estimated the cost-benefit ratio using the Seattle Social Development Project and found a benefit of $3.14 for every dollar invested in the intervention. The authors also mentioned that one study reported the cost per child for the PeaceBuilders intervention to be less than $200, and one study reported the Resolving Conflict Creatively Programme cost $2,449 per teacher and $98 per child. However, these 2 studies did not meet the study inclusion criteria.

**Authors’ conclusions**

Universal school-based interventions are associated with reductions in violence-related outcomes among school-aged children and youths.

**CRD commentary**

The review question was clear and was supported by appropriate inclusion criteria for the participants, interventions, outcomes and study design. A comprehensive literature search was conducted using eight electronic databases and other sources. However, the searches were restricted to the English language, which means that the potential for language bias cannot be ruled out. Together with the fact that there was no apparent search for unpublished material, it is possible that relevant papers were missed. Validity was assessed, although the assessment appeared quite limited and, as few study details were provided (e.g. the interventions employed), it is difficult to assess the reliability of the data from the included studies. Although there were attempts to minimise reviewer error and bias in the selection of studies and validity assessment, the data extraction process was not clear. Sample sizes were large. While heterogeneity was not assessed using statistical methods, there appeared to be several differences between the intervention strategies and study methodologies. Given these considerations and the limited data synthesis, the reliability of the authors' conclusions is unclear.

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

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

Research: The authors stated that further research is needed to identify the most effective intervention characteristics.
and settings; to explore how to prolong the beneficial effects of interventions after they have ended; to explore the effectiveness of interventions aimed at high- and low-risk children and environments, compared with universal school-based interventions; and to assess how cultural and social differences in populations affect interventions and their effectiveness. Furthermore, future research into the economic effectiveness of school-based interventions measured using, for example, cost-benefit ratios, should assess not only the prevention of violent and criminal behaviour, but also the contribution of social, health, academic and labour market outcomes, and how representative the data used to derive the summary measure are.

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**Other publications of related interest**


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