



Review article

School-Based Interventions Going Beyond Health Education to Promote Adolescent Health: Systematic Review of Reviews



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 A B S T R A C T

Purpose: Health education in school classrooms can be effective in promoting sexual health and preventing violence and substance use but effects are patchy and often short term. Classroom education is also challenging because of schools' increasing focus on academic-performance metrics. Other school-based approaches are possible, such as healthy school policies, improving how schools respond to bullying, and parent outreach, which go beyond health education to address broader health determinants. Existing systematic reviews include such interventions but often alongside traditional health education. There is scope for a systematic review of reviews to assess and synthesize evidence across existing reviews to develop an overview of the potential of alternative school-based approaches.

Methods: We searched 12 databases to identify reviews published after 1980. Data were reviewed by two researchers. Quality was assessed using a modified Assessing the Methodological Quality of Systematic Reviews checklist and results were synthesized narratively.

Results: We screened 7,544 unique references and included 22 reviews. Our syntheses suggest that multicomponent school-based interventions, for example, including school policy changes, parent involvement, and work with local communities, are effective for promoting sexual health and preventing bullying and smoking. There is less evidence that such intervention can reduce alcohol and drug use. Economic incentives to keep girls in school can reduce teenage pregnancies. School clinics can promote smoking cessation. There is little evidence that, on their own, sexual-health clinics, antismoking policies, and various approaches targeting at-risk students are effective.

Conclusions: There is good evidence that various whole-school health interventions are effective in preventing teenage pregnancy, smoking, and bullying.

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IMPLICATIONS AND CONTRIBUTION

Multicomponent school interventions are effective for sexual health, bullying, and smoking. There is less evidence that these can reduce alcohol and drug use. Economic incentives for school retention can reduce teenage pregnancies. School clinics can promote smoking cessation. Sexual-health clinics, smoking policies, and targeted approaches have little effect.

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Health behaviors are shaped early in life and persist into adulthood [1]. Substance misuse, violence, and sexual risk behaviors commonly begin in adolescence [2,3]. They incur social and economic costs for individuals and societies [4]. Although these behaviors are declining among adolescents in some high-income countries, these trends are patchy and less clear in low- and middle-income countries (LMIC) [3]. Schools are key sites for improving adolescent health [5] because of the time spent there in both high-income countries and LMIC [6,7]. Traditionally, schools and health systems address these behaviors via health education delivered in classrooms. Although this is often effective in promoting knowledge and changing attitudes, effectiveness in reducing risk behaviors is patchy and often short term [8–11]. Educational approaches are least effective for deprived groups and may increase inequalities. There is increasing interest in schools promoting health in complementary ways, reflecting broader interest in the social determinants of health [12]. Schools face increasing pressure to achieve academic-performance metrics so there is often less space in curricula for health education [13,14] providing a further rationale to develop alternative school-based approaches.

This systematic review of reviews (RoRs), undertaken as part of the Lancet Commission on Adolescent Health and Wellbeing (<http://thelancetyouth.com>), examines the effects of school-based interventions, such as healthy school policies, improving how schools respond to bullying, and parent outreach, on young people's substance use, violence, and sexual health. It is part of a broader RoR which also synthesized reviews of observational studies of school effects. RoRs assess the quality and summarize the findings of existing systematic reviews. The existing methodological literature on RoRs makes clear that these are intended to provide policy-relevant overviews of research evidence [15]. It stresses that whereas systematic reviews of intervention studies are intended to synthesize evidence on narrow questions (typically on interventions with shared methods and theories of change), RoRs are intended to answer broader questions and so to encompass more heterogeneous evidence [15]. This heterogeneity may be regarding outcomes and interventions. It is useful to bring together evidence on different forms of intervention and on different outcomes because it is useful for policy makers to know what is the range of approaches previously evaluated and whether these have consistent effects across different outcomes [15]. We judged an RoR in this area useful because of the diversity of school-based actions that might promote health, the large number of systematic reviews in this area but the narrow scope of most of these. We focused on sexual health, violence, and substance use because existing evidence suggests these outcomes: tend to cluster together [16,17]; tend not to be subject to sustained positive effects by classroom-based health education [8–11,18]; and are strongly influenced by school-level and student-level engagement with school and education [5,19]. For these reasons, we hypothesized that school-based interventions other than health education might be potentially beneficial across these outcomes.

Methods

Reviews reported in this article were included if they: reported review questions, reported methods of searching, provided quality assessment, and evidence synthesis; were published after 1980; focused on physical violence, substance use

(smoking, drinking, and drug use), or sexual and reproductive health among students aged 11–18 years; examined school-based interventions addressing the physical or social environment, management/organization, teaching, pastoral care, discipline, school health services, whole-school health promotion activities, policies, and extra-curricular activities; and predominantly included randomized controlled trial (RCT) or nonrandom controlled before-after (CBA) designs. Reviews were only included if they reported (in tables, text, or meta-analyses) results separately for interventions within our remit. Studies were not excluded based on language or publication mode. Reviews only focusing on classroom-based health education were excluded.

The following databases were searched in the final week of January 2015 without date or language restrictions: Cumulative Index to Nursing and Allied Health Literature; Database of Abstracts of Reviews of Effects; Education Research Index Citations; Medline; Embase; PsycInfo; Social Policy and Practice; Australian Education Index; Social Science Citation Index; British Education Index; the Campbell library; and the Cochrane Database of Systematic Reviews. See [Supplementary File](#) for a sample search strategy. We also checked citation lists of included studies. Searches involved terms for reviews and children/young people and school interventions.

Search results were uploaded onto EPPI-Reviewer 4 software (EPPI-Centre, London, UK) and duplicates removed. Records were initially screened using hierarchical criteria on title/abstract. N.S./C.B. double screened a random selection of 100 records with discrepancies resolved by discussion (96% agreement before reconciliation). N.S./C.B. then shared single screening of the remaining records. The full texts of references not thus excluded were retrieved and double screened by four reviewers (N.S., C.B., K.H., and K.D.) working in pairs. Disagreements were resolved by discussion (100% agreement).

Data were extracted and reviews quality assessed by N.S., checked by C.B. Disagreements were resolved through discussion. We adapted the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) checklist [20] to assess review quality, qualitatively weighting findings in our narrative synthesis as high, medium, and low quality [21]. High-quality reviews provided a priori published designs; searched > 1 databases plus another mode; listed and described studies; used > one people for data extraction; documented the size and quality of studies and used this to inform syntheses; synthesized findings narratively or statistically; assessed the likelihood of publication bias; and mentioned conflicts of interest. Medium-quality reviews searched at least one database; listed and described included studies; documented the quality of studies; and synthesized findings narratively or statistically. Low-quality reviews failed to meet at least one of these criteria. In adapting AMSTAR, we did not require reviews to report: search terms; whether they included reports regardless of publication type or a test of homogeneity or use a random effects model to account for heterogeneity. We judged these criteria would not differentiate reviews of different quality.

Synthesis began by summarizing review results in note form. Reviews were then grouped based on outcomes and interventions. Notes of reviews in these groupings were combined. First, we identified an index review within each group based on quality, recentness, and/or the number of relevant included studies. We elaborated our notes on the index review into a narrative summary by referencing back to the review. We then

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