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Systematic review of reviews of observational studies of school-level effects on sexual health, violence and substance use

Nichola Shackleton [a], Farah Jamal [b], Russell Viner [a], Kelly Dickson [b], Kate Hinds [b], George Patton [c], Bonell Chris [b,*]

[a] University College London Institute of Child Health, 30 Guilford Street, London WC1N 1EH, UK
[b] University College London Institute of Education, 20 Bedford Way, London WC1H 0AL, UK
[c] School Of Paediatrics, Royal Children's Hospital, University of Melbourne, Level 5, 161 Barry Street, Parkville, 3010 VIC, Australia

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ABSTRACT

For three decades there have been reports that the quality of schools affects student health. The literature is diverse and reviews have addressed different aspects of how the school environment may affect health. This paper is the first to synthesise this evidence using a review of reviews focusing on substance-use, violence and sexual-health. Twelve databases were searched. Eleven included reviews were quality-assessed and synthesised narratively. There is strong evidence that schools' success in engaging students is associated with reduced substance use. There is little evidence that tobacco-control policies and school sexual-health clinics on their own are associated with better outcomes.

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1. Introduction

Health behaviours are shaped early in life during childhood and adolescence and persist across the life course (Sawyer et al., 2010) making these years critical for health improvement (Viner et al., 2012). Substance misuse, violence and sexual risk-behaviours commonly begin in adolescence (WHO, 2013; Patton et al., 2012). They are associated with social and economic costs for the individual, even after adjusting for prior disadvantage, and for society (Bloom et al., 2011). Schools are a key setting for improving adolescent health because of the amount of time young people spend there (Rutter et al., 1979), which is increasing in both high- and low-income countries (United Nations, 2012; Institute for Health Metrics and Evaluation, 2015).

Our understanding of the effects of secondary schools on health and social adjustment has grown over the past three decades (Hale et al., 2014; Rutter et al., 1979). Over that time, studies have examined a broad range of school characteristics as determinants of health risks, behaviour and academic achievement. However, there has been no adequate synthesis drawing together evidence on a diversity of school-level factors that influence students' health-related behaviours. Most existing systematic reviews in this area have a narrow scope, for example focusing on school-based health services (Paul and Fabio, 2014), rules and policies (Coppo et al., 2014) or engagement and support (Aveyard et al., 2004). This paper reports a systematic review of reviews (RoR) to examine observational studies of school-level effects on substance use, violence and sexual-health. This was conducted as part of a broader RoR undertaken as part of the Lancet Commission on Adolescent Health and Wellbeing (http://thelancetyouth.com) which also synthesised reviews of evaluation studies of the effects of interventions on these outcomes, to be published separately. RoRs assess the quality and summarise the findings of existing systematic reviews using predefined research questions and methods of searching, quality assessment and synthesis. They are helpful in synthesising broad evidence on diverse interventions to inform policy and identify gaps where research and reviews are required (Caird et al., 2014).

2. Methods

Reviews reported in this paper were included if they: reported their review questions, methods of searching, quality assessing

* Corresponding author.
E-mail addresses: n.shackleton@ucl.ac.uk (N. Shackleton), f.jamal@ioe.ac.uk (F. Jamal), r.viner@ucl.ac.uk (R. Viner), k.dickson@ioe.ac.uk (K. Dickson), k.hinds@ioe.ac.uk (K. Hinds), gcpatton@unimelb.edu.au (G. Patton), c.bonell@ioe.ac.uk, C.bonell@ioelac.uk (B. Chris).

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and synthesising evidence; were published after 1980; synthesised results focusing on student physical violence, substance use (smoking, drinking and drug use) and sexual and reproductive health; reported results predominantly focused on individuals aged 11–18 years; examined school level exposures related to the physical and social environment, management/organisation, teaching, pastoral care, discipline, school health services, whole-school health promotion activities and policies and extra-curricular activities; and synthesised ecological or multi-level studies separately from studies conducted solely at the individual level. Reviews of school policy studies were included in this review if they focused on observational studies of existing school policies/practices rather than randomised or controlled evaluations of policy/practice interventions (the latter being included in the review of intervention studies published separately). Our review did not include reviews focused on the effects of student composition. Studies were not excluded on the basis of language or publication status. Reviews were only included if they reported (in specific tables, narrative text or statistical meta-analysis) results separately for studies within our remit.

The following database sources 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 & Practice; Australian Education Index; Social Science Citation Index; British Education Index; the Campbell library; and the Cochrane Database of Systematic Reviews. We also checked citation lists of included studies for other relevant reviews.

All records identified by the database searching were uploaded onto EPPI- Reviewer 4 software and duplicate records were removed. Records were initially screened based on title and abstract. Screening was hierarchical such that answering 'yes' to the first criterion led the reviewer to consider the second and so on. Two reviewers double-screened a random selection of 100 records and any discrepancies were resolved by discussion. Agreement before reconciliation was 96%. Two reviewers then single- screened the remaining records. The full texts of references not thus excluded were retrieved and double-screened by four reviewers (NS, CB, KH, KD) working in pairs. Disagreements were resolved by discussion.

One reviewer extracted data from and assessed the quality of included reviews (NS), with a second (CB) checking this. Disagreements were resolved through discussion. Where available, data were extracted on: review questions; inclusion criteria; search methods (databases, terms and other methods); quality assessment criteria; synthesis methods; designs of included studies; population; school-level exposures of interest; relevant outcomes reported; narrative or statistical synthesis of evidence fitting our remit; and details of pertinent included primary studies.

We adapted the AMSTAR checklist (Shea et al., 2007) to assess the quality of included reviews and used this to qualitatively weight findings in our narrative synthesis (Caird et al., 2014). To aid presentation of results we defined reviews as high, medium or low quality. High-quality reviews were required to have: provided a priori published designs (for example published protocols or ethics committee approval); searched at least two bibliographic databases plus conducted another mode of searching; searched for reports regardless of publication type; listed and described included studies; used at least two people for data extraction; documented the size and quality of included studies and used this to inform their syntheses; synthesised study findings narratively or statistically; assessed the likelihood of publication bias; and included a conflict of interest statement. Medium-quality reviews were required to have: searched at least one database; listed and described included studies; documented the quality of the included studies; and synthesised study findings narratively or statistically. Low-quality reviews did not meet at least one of these criteria. We did not seek to obtain and separately assess the quality of primary studies included in each review.

Synthesis began by summarising review results and conclusions in note form. Reviews were then grouped based on combinations of health-related behaviour outcomes and school level exposure categories. The notes of reviews in these groupings were then combined. First, we identified an 'index review' within each grouping based firstly on review quality but also recentness or the number of relevant included studies if reviews were of similar quality. This approach was used to ensure that the discussion of the findings of the reviews within each grouping began with and gave most weight to the highest quality, most recent and/or largest reviews. We elaborated our notes on the index review into a narrative summary by referencing back to the full text of the review. We then compared and contrasted this with the next-most-useful review. The resulting narrative was then contrasted with the findings of a third review and so on. Finally, drawing on information on the primary studies reported in the reviews, we assessed whether the conclusions of review-level evidence appeared reasonable, for example considering effect sizes and designs. In our narrative synthesis we minimised 'vote-counting' (quantifying the number of studies reporting positive and negative findings regardless of their size and quality) by weighing findings according to the size and quality of reviews and size and design of primary studies, as well as by identifying where the same primary studies were included in different reviews (Caird et al., 2014).

3. Results

3.1. Included reviews

The search strategy identified 7544 unique references. Screening on title and abstract excluded 7257. Of the remainder, we were able to retrieve 260 records of which 29 met the inclusion criteria for the overall RoR (Fig. 1). We included one additional review found from reference checking included reviews. Of the 30 reviews, 11 examined observational studies of school-level effects on student health-related behaviours (Table 1) and so are included in the review reported in this paper. There were several reviews (Strunk, 2008; Shek, 2010; Bonell et al., 2013a; Feldman and Matjasko, 2005; Steffgen et al., 2013) that narrowly missed out on inclusion, mainly because of a lack of separate synthesis for school level analyses and individual level analyses. One review was excluded because it reported the same information, by the same authors, as another included review (Bonell et al., 2013a).

Included reviews of interventions were all written in English. They were published between 2003 and 2014, covering primary studies published from 1987 to 2012. Primary studies included in the reviews; Australia and New Zealand; the Middle East; South America; Asia; and Africa. One review specifically focused on developing countries (Speizer et al., 2003). The reviews included children and young people aged between 4 and 24, with the majority focusing on adolescents aged 10–18 years.

Five reviews considered school policies (Galanti et al., 2014; Black et al., 2012; Aveyard et al., 2004; Coppo et al., 2014; Sellström and Bremberg, 2006) with four considering the role of school tobacco policies (Galanti et al., 2014; Aveyard et al., 2004; Coppo et al., 2014; Sellström and Bremberg, 2006). Three reviews considered the school physical environment (Johnson, 2009; Bonell et al., 2013c; Fletcher et al., 2008) and four reviews considered the social environment (Sellström and Bremberg, 2006; Johnson, 2009; Fletcher et al., 2008; Bonell et al., 2013c). The model in Fig. 2 provides an illustration of how schools impact on student health-related behaviours. This is informed by a published

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