

# Translation of tobacco control programs in schools: findings from a rapid review of systematic reviews of implementation and dissemination interventions

L. Wolfenden<sup>A,B,C,D</sup>, J. Carruthers<sup>A</sup>, R. Wyse<sup>A,D</sup> and S. Yoong<sup>A,D,E</sup>

<sup>A</sup>School of Medicine and Public Health, University of Newcastle, Callaghan, NSW 2308, Australia.

<sup>B</sup>Hunter New England Population Health, Hunter New England Local Health District, Wallsend 2287 NSW, Australia.

<sup>C</sup>Priority Research Centre in Physical Activity and Nutrition, Priority Research Centre Health Behaviour, University of Newcastle, Callaghan, NSW 2308, Australia.

<sup>D</sup>Hunter Medical Research Institute, New Lambton 2305 NSW, Australia.

<sup>E</sup>Corresponding author. Email: serene.yoong@hnehealth.nsw.gov.au

## Abstract

**Issue addressed:** School-based programs targeting the prevention of tobacco use are a key strategy for reducing the overall tobacco-related mortality and morbidity in the community. While substantial research investment has resulted in the identification of various effective tobacco prevention interventions in schools, this research investment will not result in public health benefits, unless effectively disseminated and implemented. This rapid review aimed to identify effective implementation or dissemination interventions, targeting the adoption of school-based tobacco prevention programs.

**Methods:** A systematic search was conducted to identify published systematic reviews that examined the effectiveness of implementation and dissemination strategies for facilitating the adoption of tobacco policies or programs in schools from 1992 to 2012.

**Results:** The search yielded 1028 results, with one relevant systematic review being identified. The review included two controlled studies examining the implementation and dissemination of tobacco prevention programs and guidelines. The two randomised trials examined the delivery of active face-to-face training to implement a school-based curriculum compared with video-delivered or mail-based training. Improvements in the implementation of the programs were reported for the face-to-face training arm in both trials.

**Conclusions:** Little rigorous evidence exists to guide the implementation and dissemination of tobacco prevention programs in schools.

**So what?** Few systematic reviews exist to inform the implementation of evidence-based tobacco prevention programs in schools. In the absence of a strong evidence base, health care policymakers and practitioners may need to draw on setting-based frameworks or parallel evidence from other settings to design strategies to facilitate the adoption of tobacco prevention initiatives.

**Key words:** adolescent, health-promoting schools, smoking.

Received 16 October 2013, accepted 18 April 2014, published online 3 July 2014

## Introduction

Tobacco use represents a considerable health burden globally.<sup>1</sup> Because those who start smoking in adolescence are likely to become established smokers in adulthood,<sup>2</sup> preventing the initiation of tobacco use during this time can prevent future smoking-related morbidity and mortality. More than three decades of scientific research has yielded evidence regarding effective school-based intervention to prevent tobacco use, including the

implementation of school-based curricula that incorporates social competence and influence components.<sup>3</sup> The considerable research investment in the development of school-based smoking prevention initiatives, however, will not yield public health benefits if they are not disseminated and implemented in the community. Implementation research is the study of strategies designed to integrate health policies, programs or practices within specific settings (including schools). Implementation research therefore

evaluates the impact of strategies in achieving the adoption (in policy or practice) of evidence-based programs or best practice guidelines.<sup>4</sup> The US National Institute of Health has identified implementation and dissemination research as a critical research element, termed 'Stage T3', in the research translation process.<sup>5</sup> To inform the development of initiatives to facilitate the adoption of programs to prevent tobacco use by adolescents, a rapid review to identify reviews examining implementation interventions was conducted.

## Methods

A rapid review involves a systematic search to identify systematic reviews.<sup>6</sup> A rapid review approach was chosen to provide a relatively quick and systematic approach of assessing the current evidence. A systematic review was defined as one which synthesised peer review research to answer a research question, with stated inclusion/exclusion criteria and which provided information to indicate that a systematic method of searching and selecting trials had been undertaken.<sup>7</sup> Any systematic review including trials assessing the effectiveness of implementation or dissemination interventions to facilitate the adoption of tobacco policies or programs in schools, published in English, in a peer-reviewed journal from 1992 to 2012, was eligible for inclusion. Implementation interventions were defined as the use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within a specific school.<sup>4</sup> Dissemination interventions were defined as the distribution of information and intervention materials to a specific public health or clinical practice audience.<sup>4</sup> One reviewer (LW) searched electronic databases including Medline, Scopus, PsycINFO and Embase, given such databases provide comprehensive coverage of the health and medical literature. Key words were selected based on the most frequent terms used in implementation research.<sup>8</sup> The search strategy included the following key words: 'school' and 'tobacco or smok\*' and 'implement\* or disseminat\* or adopt\* or organizational change or quality improvement or diffusion or translation or institutional\*' or routin\*. One reviewer screened all citations (LW) and another (JC) extracted data from the included reviews. Systematic review and English language filters of the databases were also applied to refine the search strategy.

## Results

The search strategy yielded 1028 citations. Following review of the titles and abstracts, the full texts of 11 manuscripts were obtained to confirm eligibility based on the criteria stated in the methods. Manuscripts were excluded for the following reasons: not systematic reviews ( $n=4$ ), did not examine interventions to improve implementation (typically examining the efficacy of interventions on preventing or ceasing tobacco use) ( $n=5$ ) and did not examine school-based interventions ( $n=1$ ). One systematic review met the eligibility criteria.<sup>9</sup> The review, published in English in 2010, included

trials for four health behaviours (smoking, healthy diet, physical activity and sun protection) and was an update on an Agency for Healthcare Research and Quality review.<sup>10</sup> Of the 22 studies included in the review, 11 were of interventions to facilitate the adoption of practices, programs or policies in schools, four of which targeted tobacco and two were trials of examining the impact of an intervention using a control or comparative condition. As the review did not draw direct conclusions regarding the effectiveness of implementation and dissemination interventions for school-based tobacco initiatives, full texts of the two individual controlled trials were sought and reviewed.

Both studies were randomised trials. Several methodological limitations (including a lack of intention to treat analysis, the use of outcome measures that had not been validated, high rates of study attrition, and a lack of blinding of outcome assessors) were present in both trials. The first sought to assess the effectiveness of two teacher training approaches to increase the diffusion of 'Smart Choices', a school curriculum-based tobacco prevention program.<sup>11</sup> Thirty-three districts in two educational service centre regions in Texas were randomly assigned to receive video-based training, and 39 districts received training provided as part of a live workshop. Audits of the logs of teachers revealed that teaching of the curriculum was higher among live-trained districts versus video-trained districts (97% vs 79%,  $P=0.02$ ). Similarly, analysis of data from student surveys found that students from live workshop districts were significantly more likely to recall discussions and activities related to the curriculum. There were no differences, however, between groups in completeness or fidelity among teachers teaching the program.

The second randomised trial investigated the extent of implementation of a school health-education curricula and sought to identify factors which enhanced or impeded implementation.<sup>12</sup> Twenty two school districts in North Carolina were randomly assigned to receive an intervention consisting of a consultation workshop and in-depth training on the use of a middle school tobacco prevention curriculum, or a comparison condition where schools were mailed curricula and received technical assistance on request. Four years following the intervention, the mean proportion of schoolteachers implementing the curriculum (60% vs 31%,  $P<0.01$ ) was significantly greater relative to the comparison group.

## Discussion and conclusion

Despite examining over 1000 articles, only one systematic review examining the impact of implementation and dissemination interventions to facilitate adoption of tobacco control initiatives in schools was identified. Several limitations exist with using a rapid review approach, including potentially missing relevant studies, a narrow focus based on the inclusion criteria of reviews and a limited ability to draw generalisable conclusions.<sup>13</sup> Despite these

limitations, this rapid review provides an overview of the current available evidence and highlights the limited research efforts to systematically identify and synthesise the effects of school-based implementation interventions. While the publication of systematic reviews with few included trials offer little practical guidance for health policy makers and practitioners, they represent an important means of identifying important gaps in the literature and encourage future research efforts.<sup>7</sup>

The lack of implementation research identified in this study is surprising, given the focus on the importance of translation in public health research over the past decade.<sup>14,15</sup> Nonetheless, evidence from the two randomised trials suggests that active face-to-face training may represent an effective strategy to facilitate implementation of tobacco prevention curricula in schools. Research in other settings, however, suggests that educational approaches may not be sufficient to sustain long-term changes in organisational health-promoting policies or practices, and that multicomponent interventions utilising additional strategies such as opinion leaders, consensus processes, academic detailing, prompts and performance feedback (and which are tailored to organisational needs) may be required.<sup>16–18</sup> In the absence of a more comprehensive research base, health policymakers and practitioners may be required to draw on setting-based frameworks such as Health Promoting Schools organisational change theory and parallel empirical evidence from other settings to design strategies to facilitate the adoption of tobacco prevention initiatives in schools.

## References

- World Health Organization. WHO global report: tobacco attributable to mortality. 2012. Available from: [http://www.who.int/tobacco/publications/surveillance/rep\\_mortality\\_attributable/en/](http://www.who.int/tobacco/publications/surveillance/rep_mortality_attributable/en/) [Verified 27 May 2014]
- Kuper H, Adami HO, Boffetta P. Tobacco use, cancer causation and public health impact. *J Intern Med* 2002; **251**(6): 455–66. doi:10.1046/j.1365-2796.2002.00993.x
- Dobbins M, DeCorby K, Manske S, Goldblatt, E. Effective practices for school-based tobacco use prevention. *Prev Med* 2008; **46**(4): 289–97. doi:10.1016/j.jpmed.2007.10.003
- Schillinger D. An introduction to effectiveness, dissemination and implementation research. 2010. Available from [http://ctsi.ucsf.edu/files/CE/edi\\_introguide.pdf](http://ctsi.ucsf.edu/files/CE/edi_introguide.pdf) [Verified 27 May 2014]
- Rubio DM, Schoenbaum EE, Lee LS, Scheingart DE, Marantz PR, Anderson KE, Platt LD, Baez A, Esposito K. Defining translational research: implications for training. *Acad Med* 2010; **85**(3): 470–5. doi:10.1097/ACM.0b013e3181ccd618
- Khangura S, Konnyu K, Cushman R, Grimshaw J, Moher D. Evidence summaries: the evolution of a rapid review approach. *Syst Rev* 2012; **1**(1): 10. doi:10.1186/2046-4053-1-10
- Wolfenden L, Wiggers J, Tursan d'Espaignet E, Bell AC. How useful are systematic reviews of child obesity interventions? *Obes Rev* 2010; **11**(2): 159–65. doi:10.1111/j.1467-789X.2009.00637.x
- Tetroe JM, Graham ID, Foy R, Robinson N, Eccles MP, Wensing M. Health research funding agencies' support and promotion of knowledge translation: an international study. *Milbank Q* 2008; **86**(1): 125–55. doi:10.1111/j.1468-0009.2007.00515.x
- Rabin BA, Glasgow RE, Kerner JF, Klump MP, Brownson RC. Dissemination and implementation research on community-based cancer prevention: a systematic review. *Am J Prev Med* 2010; **38**(4): 443–56. doi:10.1016/j.amepre.2009.12.035
- Ellis P, Robinson P, Ciliska D, Armour T, Raina P, Brouwers M, O'Brien MA, Gauld M, Baldassarre F. Diffusion and dissemination of evidence-based cancer control interventions. Evidence Report/Technology Assessment 79. Rockville, MD: Agency for Healthcare Research and Quality; 2003.
- Basen-Engquist K, O'Hara-Tompkins N, Lovato CY, Lewis MJ, Parcel GS, Gingiss P. The effect of two types of teacher training on implementation of Smart Choices: a tobacco prevention curriculum. *J Sch Health* 1994; **64**(8): 334–9. doi:10.1111/j.1746-1561.1994.tb03323.x
- McCormick LK, Steckler AB, McLeroy KR. Diffusion of innovations in schools: a study of adoption and implementation of school-based tobacco prevention curricula. *Am J Health Promot* 1995; **9**(3): 210–9. doi:10.4278/0890-1171-9.3.210
- Ganann R, Ciliska D, Thomas H. Expediting systematic reviews: methods and implications of rapid reviews. *Implement Sci* 2010; **5**(1): 56. doi:10.1186/1748-5908-5-56
- Shea BJ. A decade of knowledge translation research—what has changed? *J Clin Epidemiol* 2011; **64**(1): 3–5. doi:10.1016/j.jclinepi.2010.07.009
- Green LW, Ottoson JM, Garcia C, Hiatt RA. Diffusion theory and knowledge dissemination, utilization, and integration in public health. *Annu Rev Public Health* 2009; **30**: 151–74. doi:10.1146/annurev.publhealth.031308.100049
- Bero LA, Grilli R, Grimshaw JM, Harvey E, Oxman AD, Thomson MA. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. The Cochrane Effective Practice and Organization of Care Review Group. *BMJ* 1998; **317**(7156): 465–8. doi:10.1136/bmj.317.7156.465
- Oxman AD, Thomson MA, Davis DA, Haynes RB. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *CMAJ* 1995; **153**(10): 1423–31.
- Rohrbach LA, Grana R, Sussman S, Valente TW. Type II translation: transporting prevention interventions from research to real-world settings. *Eval Health Prof* 2006; **29**(3): 302–33. doi:10.1177/0163278706290408