

Evidence Check

Peer-led education for at risk youth

An **Evidence Check** rapid review brokered by the Sax Institute for the Drug and Alcohol Population and Community Programs Unit, NSW Ministry of Health. May 2016.

This report was prepared by:

Sally Hunt, Frances Kay-Lambkin, Magenta Simmons, Louise Thornton, Tim Slade, Eoin Killackey, Maree Teesson.

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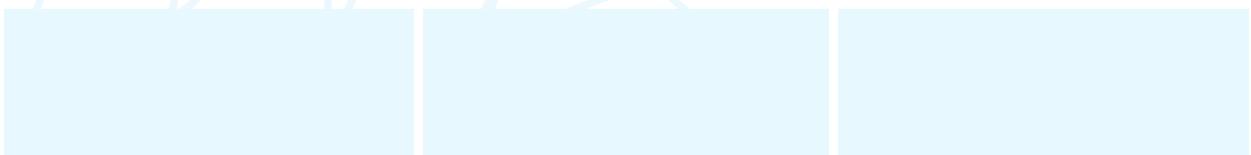
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Evidence for the effectiveness of peer-led education for at risk youth: resilience and harm minimisation in alcohol and other drug use

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Contents

1	Executive summary	7
	Background.....	7
	Key criteria	7
	Search methods.....	8
	Key findings.....	8
	1. Which models of peer-led education programs about alcohol and other drug use for at risk young people have been evaluated for the outcomes of interest?	8
	2. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest, what are the key components of the model that led to success?	9
	3. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest in Question 2, are there key components which are common across models?	9
	Recommendations.....	9
	A further consideration.....	10
2	Introduction	11
	Prevention of AOD use disorders is a public health priority	11
	Adolescence and early adulthood represents a key time to intervene to prevent the development of AOD use disorders.....	11
	Peers have an important role to play in promoting positive AOD use messages.....	11
	Implementation should be guided by available evidence	12
	Evidence Check: Evidence for the effectiveness of peer-led education for at risk youth; resilience and harm minimisation in alcohol and other drug use.....	12
3	Method	13
	Types of participant.....	13
	Types of intervention.....	14
	Assessment of included studies	14
4	Results	17
	Systematic Literature Search	17
	Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: primary search and analysis	26
	Evidence Base	26
	Consistency	26

Clinical Impact.....	27
Generalisability.....	28
Applicability.....	28
Summary of availability and quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: primary search and analysis.....	29
Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: secondary search and analysis.....	41
Evidence Base	41
Consistency	41
Clinical Impact.....	43
Generalisability.....	43
Applicability.....	44
Summary of availability and quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: secondary search and analysis.....	44
Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: manual searches	44
Music festivals as an opportunity to reach at risk youth.....	45
Australian and New Zealand initiatives using peer-leaders or peer-involvement.....	45
Festival interventions for harm reduction in other health domains.....	46
5 Discussion	48
Question 1. Which models of peer-led education programs about alcohol and other drug use for at risk young people have been evaluated for the outcomes of interest?	48
Question 2: For those models identified in Question 1, which have been found to be effective in achieving the outcomes of interest, what are the key components of the model that led to success?.....	48
Question 3: For those models identified in Question 1, which have been found to be effective in achieving the outcomes of interest, are there key components, which are common across models?	49
Limitations of the review.....	50
Recommendations.....	50
6 References	52
7 Appendix A.....	56
Table S1. Search strategy for MEDLINE (adapted from MacArthur et al., 2016).....	56

List of tables

Table 1. Levels of evidence used to classify the included studies in this Evidence Check*	15
Table 2. Matrix employed to summarise the evidence base for peer-led interventions for at risk youth*	15
Table 3. Studies which met the three essential criteria and three secondary criteria.....	19

Table 4. Overall evaluation of the seven included studies that met all key and secondary inclusion criteria for a review of peer-led interventions in at risk youth* 29

Table 5. Studies that met all three essential criteria and at least one of the secondary criteria for inclusion in the Evidence Check..... 30

Table 6. Overall evaluation of the seven included studies that met all key and secondary inclusion criteria for a review of peer-led interventions in at risk youth* 44

Table 7. Definition of NHMRC grades of recommendations for practice* 50

1 Executive summary

The purpose of the report is to review and summarise the evidence base for the effectiveness of peer-led education for promoting resilience and harm minimisation in alcohol and other drug use among at risk youth.

The review sought to address the following questions:

1. Which models of peer-led education programs about alcohol and other drug use for at risk young people have been evaluated for the outcomes of interest?
2. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest, what are the key components of the model that led to success?
3. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest in Question 2, are there key components which are common across models?

This review's findings, based around these three questions, makes judgements about the overall strength of evidence for each question and makes recommendations arising from the evidence. For the purposes of this report the term 'interventions' encompasses a broad range of programs, interventions, and education approaches aimed at reducing alcohol and other drug (AOD) use among young people.

This review was commissioned by the Drug and Alcohol Population and Community Programs Unit, at the NSW Ministry of Health.

Background

Substance use and mental disorders are among the leading global causes of disease and disability in young people.^{1,2} The peak of this disability occurs in those aged 15-24 years old and corresponds with the typical period of onset of these problems.^{3,4} There is a growing body of evidence for early intervention programs aimed at young people, including those at risk.⁵⁻¹⁰ Prevention is critical, yet the barriers to implementation and sustainability of programs are considerable. The stigma associated with problems related to alcohol and drugs is also a significant barrier.

Peers have a critical role to play in reinforcing both positive and negative attitudes and behaviours around AOD use. Peer-led interventions for adult dependence on alcohol and cocaine, for example, are both cost effective and reduce use of these substances.¹¹ Peer-led interventions for at risk youth have the potential overcome the implementation barriers and the stigma associated with seeking help for alcohol and drug abuse problems, provide education and reduce their harm. We review this literature in the current report.

Key criteria

The National Health and Medical Research Council Centre for Research Excellence in Mental Health and Substance Use at the National Drug and Alcohol Research Centre, University of New South Wales, conducted the Evidence Check. Its aim was to explore evidence-based peer-led interventions, or those with a peer-led component, for reducing alcohol and other drug related harms in at risk youth.

The primary outcome of this review was to examine the evidence that fulfilled six criteria:

1. Interventions where peer involvement was a key component (key criterion)

2. Published between January 2006 and February 2016 (key criterion)
3. Written in the English language (key criterion)
4. The study reported on intervention outcome data (secondary criterion)
5. Participants ranged in age from 16–24 years (secondary criterion)
6. And/or were at risk of alcohol or other drug use (secondary criterion).

Criteria 1, 2, and 3 were primary or essential criteria to be met by all studies in the systematic review, and criteria 4, 5, and 6 were secondary criteria. Promising studies that were identified in non-peer reviewed literature, or which did not fulfil a sufficient number of the criteria but were deemed relevant by the research team, were included as part of a secondary analysis. Examples of this were protocol papers that had been published, or papers where descriptions of programs relevant to peer-led interventions in the target age group were identified, but no evaluation data on their efficacy was available at the time of the review. The review also explored interventions carried out in a wide range of settings, including residential treatment centres, schools, festivals, and community events.

Search methods

Members of the research team conducted a systematic search of twelve electronic data bases (A+ Education, CINAHL, Cochrane – Economic Evaluations, Cochrane – Other Reviews, Cochrane Reviews, Cochrane Trials, Embase, ERIC, Medline, Medline in Process, PsycEXTRA, and PsycINFO) to capture and review studies describing preventative peer-led interventions for young people at risk of alcohol and other substance abuse. Grey literature regarding peer-led interventions for substance use and similar areas in drug use prevention (e.g. HIV prevention) were also searched to identify related initiatives underway in the community.

Key findings

Overall, the review identified seven studies that fulfilled all key and secondary inclusion criteria for the Evidence Check. Of these, the evidence base for the effectiveness of peer-led interventions to prevent or reduce substance use in at risk youth was rated as good and several high quality studies (including randomised controlled trials) were included in the review. Across these studies, the consistency of results was good with the clinical impact of these interventions categorised as poor (restricted) – satisfactory. Generalisability of these studies was rated as high with satisfactory applicability to the Australian context.

An additional 13 studies fulfilled all three key inclusion criteria, and at least one of the secondary criteria. The evidence based across these included studies was high with several randomised controlled trials found, particularly for tobacco use. Most studies reported consistent results across trials, and the clinical impact of the peer-led interventions evaluated in these studies was substantial. Generalisability was again rated as good with these results probably applicable to the Australian context with some caveats.

1. Which models of peer-led education programs about alcohol and other drug use for at risk young people have been evaluated for the outcomes of interest?

Peers have been utilised in a number of key roles in AOD prevention. The most common forms of peer-led education programs involved coaches or peer-support workers to assist the uptake of intervention content and processes within a peer group. They may provide practical support at times of increased stress, for example when coaching an individual through craving as might occur in a 12-step model¹² or supporting a festivalgoer during an adverse drug effect.¹³ Peers have also been involved in the delivery of AOD prevention education both in the classroom¹⁴ and the community.¹⁵

2. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest, what are the key components of the model that led to success?

Several models of peer-led intervention have been shown to be effective in preventing AOD use. The ASSIST peer-led intervention for tobacco used peer supporters to carry out informal anti-smoking discussions with peers over a 10-week period and was effective in reducing uptake of regular smoking in adolescents for two years after the intervention.¹⁶

The Towards No Drugs (TND) intervention was designed as a 12-lesson education program to be delivered by health educators. A study of peer-enhancement of TND, known as TND+peer¹⁷ — which used peer coaches to allow the participants to discuss the session content informally among themselves — found that while TND alone was not associated with changes in any substance use, the peer component was associated with a decrease in take-up of cannabis, cocaine and composite substance use relative to controls. However, it's critical to note that these benefits were only evident among those peers whose networks were not already using substances. For students with peer groups who were already using substances, the TND+peer program actually resulted in acceleration to substance use over time. This highlights both the positive and negative potential for peer groups to influence an individual's decision to use drugs and alcohol.

An important caveat of peer-led interventions was also identified in a study in Ireland, which found that a group of first year high school students who received peer-led intervention reported increased and higher alcohol consumption than those that did not receive the intervention.¹⁸ Thus the development and implementation of alcohol-related peer interventions for adolescents should be approached with caution and consideration of this potential contraindication.

3. For those models identified in Question 1 that have been found to be effective in achieving the outcomes of interest in Question 2, are there key components which are common across models?

A number of key components were common across the peer-led intervention programs with demonstrated effectiveness. Specifically, these were:

1. Programs based on social influence and social learning theories
2. Programs integrating peer-led interventions in larger programs of prevention
3. Programs selecting peer leaders based on the nomination of their peers rather than selection by adults or volunteers
4. Programs where the peer leaders adopted the desired target behaviours associated with the intervention
5. Programs involving the target population in the development of the content.

Both the ASSIST¹⁶ and TND+peer¹⁷ programs utilised peers to support the adult-led components of the interventions. The peers reinforced the no substance use message through informal interactions such as discussions held in the schoolyard and while travelling to and from school. This highlights the importance of involving peers in naturalistic settings outside the classroom.

Another naturalistic setting where peer-involvement has been used to reinforce the drug and alcohol risk reduction message is at youth events such as music festivals. While these initiatives are yet to be evaluated as thoroughly as the ASSIST and TND+peer programs, they show promise and have anecdotal support.

Recommendations

Several recommendations are possible based on the results of the review. While the body of evidence provides some support for these recommendations, care should be taken in their application. The key recommendations are that:

- Peer-led interventions are used to enhance more comprehensive programs of substance use prevention, and not as standalone approaches
- Peer-led interventions are implemented for preventing initial use/uptake of substances, but are not effective for non-using groups when administered by peers that have a current or previous history of use
- Peer-led interventions are effective to prevent or reduce secondary harms of AOD use in non-using peers
- The selection of peers is made carefully to ensure that they are highly credible among the target population for the desired behaviour and that they are not engaging in activities that are the focus of intervention
- Peer leaders should commit to adopting the behaviour desired from an intervention in order to maximise its effectiveness.

A further consideration

It is important to note that no Australian research was found on the use of peer-led interventions for AOD use in at risk youth. The review did identify several peer-led protocols and programs currently under evaluation, and some of the first Australian-based examples of peer-led drug use prevention at festivals and community events. However, formal evaluation data on the effectiveness of these programs was not available at the time of review. In addition, no cost effectiveness studies were found and this remains an important area to pursue in future research.

2 Introduction

Prevention of AOD use disorders is a public health priority

AOD use disorders are among the leading contributors to disease and disability worldwide.^{1,2} Tobacco and alcohol rank second and third in the global burden of non-communicable diseases. Respectively, they were responsible for 6.3 million and 5 million of all global deaths during the period 1990–2010.¹⁹ Deaths due to alcohol and tobacco have only continued to grow since that time.^{2,20} AOD use disorders continue to place a significant psychological, social and economic burden on individuals, their families and wider society.

The physical and psychosocial development that occurs between the ages of 12 and 25 years-old makes the impact of AOD use during this time a significant long-term health concern. Equally, in the short term, the associated risk of injury or death from high or risky levels of alcohol and other substance abuse also presents an immediate health risk to young people. The peak of disability due to substance abuse disorders occurs in those aged 16–24 years old and corresponds with the typical period of onset of these problems.^{3,4}

Adolescence and early adulthood represents a key time to intervene to prevent the development of AOD use disorders

Prevention and early intervention in AOD use disorders is critical to reducing the burden of these diseases. Evidence now exists to demonstrate the importance of social, psychological, and biological risk and protective factors in the developmental pathways to AOD use disorders. Many of these factors are modifiable and therefore potential targets for prevention and promotion strategies. These need to commence early, before problems begin to cause disability, vocational, educational and social harm.^{21,22} However, there are many challenges to attracting young people at risk of AOD use into early intervention programs using traditional methods. Young people aged 16–25 are the least likely to access primary care or specialist treatment than any other age group.²³

Historically, mass media campaigns have been used to reach the target audience of at risk youths with drug prevention messages in Australia. For instance, The National Binge Drinking Campaign was a two-year, \$420-million harm minimisation and behaviour change mass media campaign that aimed to promote behavioural change among young people to minimise harm from drug and alcohol abuse. It centred on the tagline 'Don't turn a night out into a nightmare'.²⁴ One study assessed the reach of this campaign message among 16–29 year-olds who attended the Big Day Out music festival in Melbourne, Victoria. A sample of attendees were surveyed about their awareness of the campaign and also asked about their AOD use. While it was found that the majority of young people surveyed were familiar with the campaign, those at greatest risk of frequent binge drinking had lower odds of recognising the key messages of the campaign advertisement.²⁴ These findings questioned the utility of mass media advertising for reaching at risk youths and suggested that using alternative social marketing strategies including peer-led interventions might be more effective.

Peers have an important role to play in promoting positive AOD use messages

Many theories have been proposed to explain the emergence and maintenance of drinking behaviour among adolescents and young adults. Social learning²⁵, social comparison^{26,27} and social identity²⁸ theories, all of which fall under the broad rubric of social influence²⁹ suggest that individuals learn within a social context — changes in thoughts, feelings, attitudes and behaviours result from interactions with other individuals or groups. In the context of addiction, these models highlight the importance of social factors in

the initiation and maintenance of problematic AOD use, suggesting that misuse is a learned behaviour acquired through a process of observation, modelling, imitation and social reinforcement.

Psychosocial factors drive the onset and development of problematic AOD use in adolescence and young adulthood³⁰, with social influences proving more important than cognitive and behavioural factors in predicting initial involvement with alcohol.³¹ Evidence consistently demonstrates that peer groups are more powerful than parents and other groups in both exposing young people to pro-drinking social environments and shaping their positive expectations of alcohol use.^{32, 33} Peers contribute to adolescent AOD use both directly and indirectly through several complex mechanisms, including modelling, interpersonal persuasion, shaping norms, attitudes, and values, and by providing opportunities and support for use.³⁴⁻³⁶

Peers can also be a source of support and reinforcement for the adoption of healthier behaviours, including low risk use of alcohol and drugs or total abstinence.³⁷ The concept of peer support in the prevention of AOD use has been part of community-based responses to these issues for more than 40 years.³⁸ There is widespread support for the integration of peers in prevention and early intervention efforts³⁹ with high potential for these approaches to overcome some of the barriers reported by young people when thinking about accessing treatment. Importantly, supporters of peer-led education and prevention programs suggest the added appeal is that these approaches are inexpensive and better able to engage young people who frequently report dissatisfaction with information provided by more traditional models.³⁹ It is unclear to what extent peer-led support models in AOD use contexts have been documented and tested.

Implementation should be guided by available evidence

To optimise the finite resources in AOD use treatment settings, and to realise the potential for peer-led interventions to prevent it among young people, priority should be given to preventive programs, models and strategies that demonstrate evidence of their effectiveness. However, building an evidence base is an incremental process. This review was commissioned to identify the extent and quality of the existing body of evidence in this promising area for prevention and early intervention in AOD use in both scientific and grey literature.

Evidence Check: Evidence for the effectiveness of peer-led education for at risk youth; resilience and harm minimisation in alcohol and other drug use

The present Evidence Check aimed to identify, describe, and evaluate the existing evidence base for peer-led interventions in AOD use contexts. Specifically, the target age group was 16-24 years-old, with preference given to studies from Australia, New Zealand, and the United Kingdom. Studies from other countries were also included. Published studies, case reports, and grey literature were included in the systematic review of available literatures in this area. The Evidence Check was designed to answer three key questions:

1. Which models of peer-led education programs about alcohol and other drug use for at risk young people (such as harm minimisation, resilience, and response to emergencies) have been evaluated for the outcomes of interest?
2. For those models identified in Question 1, which are effective in achieving the outcomes of interest, and what are the key components of the model that led to success?
3. For those models identified in Question 1, and found effective in Question 2, are there key components which are common across models?

The term 'interventions' is used throughout this document as a broad term to refer to the range of education, treatment, support and other peer-led approaches identified via the review.

3 Method

To examine the kinds of peer-led interventions that have demonstrated effectiveness in preventing alcohol and other drug use, a systematic review protocol was employed. This review took a focus on studies of interventions with at risk populations where the following criteria were met:

1. Peer involvement was a key component of the intervention (key criterion)
2. The study was published between January 2006 and February 2016 (key criterion)
3. The study was written in English (key criterion)
4. The study reported on intervention outcome data (secondary criterion)
5. Participants ranged in age from 16-24 years (secondary criterion); and
6. Participants were at risk of AOD use due to social, economic or health factors such as not attending school or work, exposure to juvenile justice, living in a low socio-economic area, living in a regional or remote area, and estrangement from family or other sources of support (secondary criterion).

A protocol for the systematic literature review was agreed on by the authors and commissioning agent (see Appendix A for a complete list of search terms used). Electronic databases (A+ Education, CINAHL, Cochrane – Economic Evaluations, Cochrane – Other Reviews, Cochrane Reviews, Cochrane Trials, Embase, ERIC, Medline, Medline in Process, PsycEXTRA, and PsycINFO) were searched for articles meeting the three key criteria. Details of the study selection procedure can be seen in Figure 1. Two authors (SH and FKL) screened the titles and abstracts of the 4,130 studies identified via electronic searches and identified 121 potentially relevant articles. Of these, the full-text of 83 articles were able to be accessed within the timeframe of this rapid review. The report’s authors (SH, MS, TS, FKL, LT, and EK) assessed the eligibility of each articles and extracted the data for included articles. Studies meeting all six of the entry criteria were included in this review and are summarised in Table 3. Due to the small number of studies meeting all criteria, relevant studies of peer-led interventions meeting all of the key criteria (i.e. 1), 2), and 3)) and at least one of the secondary criteria (i.e. 4), 5), and 6)) were included in Table 5.

Data extracted from the studies included: country, substance(s) targeted, description of the intervention, definition and roll of peers, description of the intervention, setting (e.g. school, community, online, festival), level of evidence (e.g. RCT, case study), method of evaluation, outcome measures and study outcomes.

Several descriptions of community harm prevention projects utilising a peer-led component — which are yet to be evaluated or published in peer reviewed literature — are also presented in this report in a section examining promising interventions.

Types of participant

As mentioned, this review focused on at risk young adults aged 16-24 years. At risk populations were defined as those in settings including juvenile justice centres, corrective services, residential rehabilitation and low socio-economic areas. The review also identified individuals with low education, Aboriginal and Torres Strait Islanders, young people living in regional and remote areas, and anyone experiencing social, economic or emotional hardship as at risk. For example, at risk studies included those focusing on a particular group of students, such as those in alternative education or first year university students, rather than whole of school interventions.

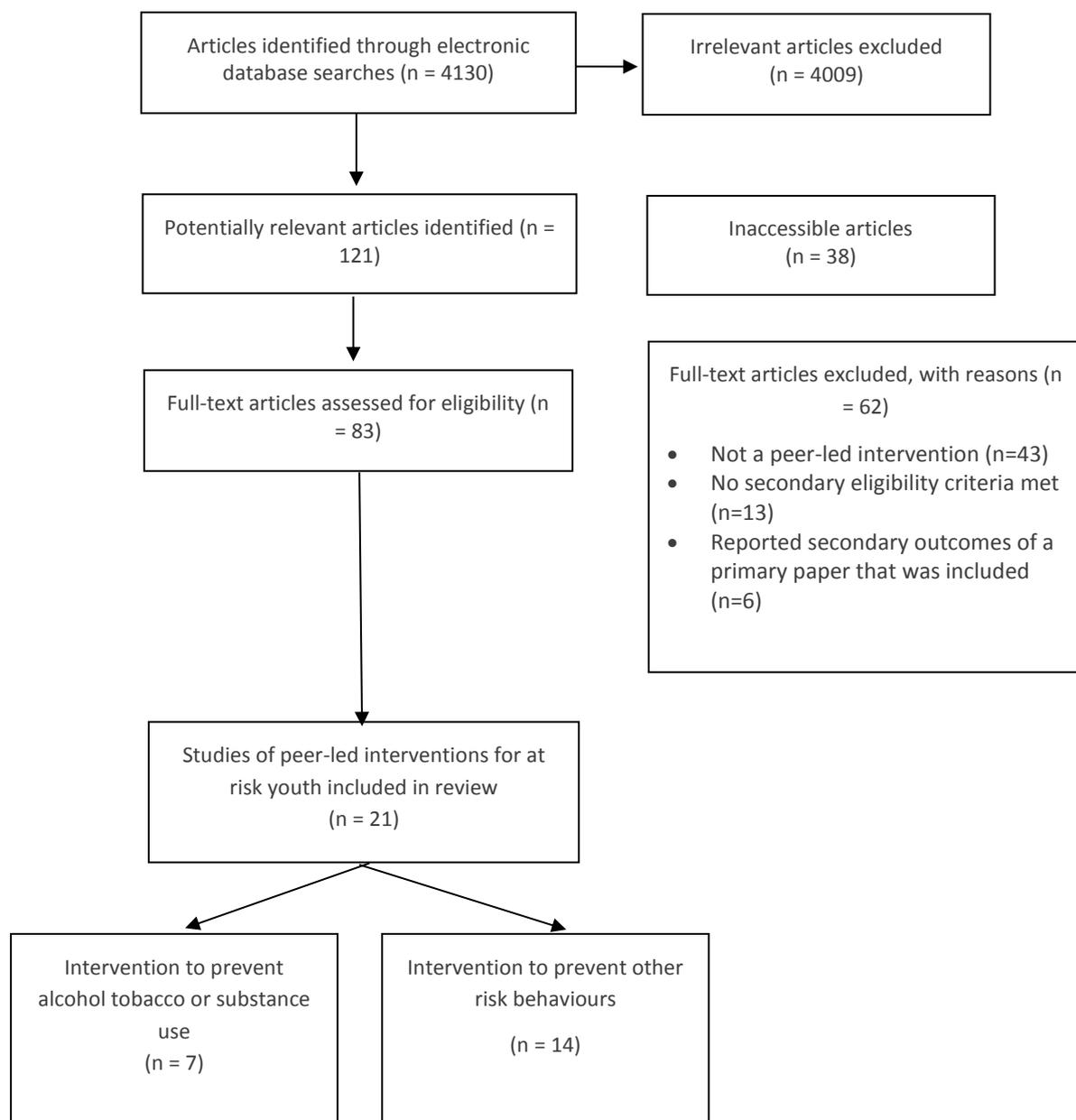


Figure 1. Study flow diagram

Types of intervention

To be included in this review, interventions were required to be peer-led or have a significant peer-led component. Any model of intervention delivery was eligible (e.g. face-to-face, phone, mobile applications, internet applications or mixed methods).

Assessment of included studies

Included articles were evaluated according to the National Health and Medical Research Council (NHMRC) Evidence Hierarchy⁴⁰, with overall impressions of the available evidence summarised according to the NHMRC grading system for recommendations (see http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf for detailed information).

The first step in this process was to rate the quality of the evidence reported in each of the included studies according to the NHMRC. Table 1 was used to guide this evaluation, and each included study was given one of these evidence ratings.

*Table 1. Levels of evidence used to classify the included studies in this Evidence Check**

Level of Evidence	Study Design
I	A systematic review of Level II studies.
II	A randomised controlled trial.
III-1	A pseudo-randomised controlled trial (i.e., alternate allocation or some other method).
III-2	A comparative study with concurrent controls (i.e., non-randomised experimental trials, cohort studies, case-control studies, interrupted time series studies with a control group).
III-3	A comparative study without concurrent controls (i.e., historical control study, two or more single arm studies, interrupted time series studies without a parallel control group).
IV	Case series with either post-test or pre-test/post-test outcomes.

*As per http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

The second step was to summarise the level of evidence for the five key components recommended by the NHMRC. The quality of the evidence rated was on a scale of A (being Excellent) to D (being Poor) for each of the five components. The five components are:

- The evidence base:** the level of evidence and the quantity of evidence in each of the individual included studies as described in Table 1
- Consistency:** the extent to which the body of evidence produced consistent findings in relation to peer-led interventions across the range of included studies
- Clinical impact:** the balance of risks and benefits, the duration of intervention and the relevance of the evidence to the target population for the review
- Generalisability:** how well they matched the aims and questions associated with this review
- Applicability:** to determine the relevance of the included studies to the Australian health care setting.

An evidence matrix was applied, and each of the five key components was given a rating (A–D) for the available studies included in the Evidence Check. This evidence matrix, and definitions for ratings A (excellent) to D (poor) are described in Table 2.

*Table 2. Matrix employed to summarise the evidence base for peer-led interventions for at risk youth**

Component	A	B	C	D
	Excellent	Good	Satisfactory	Poor
Evidence base¹	several level I or II studies with low risk of bias	one or two level II studies with low risk of bias or a systematic review or multiple level III studies with low risk of bias	level III studies with low risk of bias, or level I or II studies with moderate risk of bias	level IV studies, or level I to III studies with high risk of bias

Consistency²	all studies consistent	most studies consistent and inconsistency may be explained	some inconsistency reflecting genuine uncertainty around clinical question	evidence is inconsistent
Clinical impact	very large	substantial	moderate	slight or restricted
Generalisability	population/s studied in body of evidence are the same as the target population in question	population/s studied in the body of evidence are similar to the target population in question	population/s studied in body of evidence differ to target population in question but it is clinically sensible to apply this evidence to target population	population/s studied in body of evidence differ to target population and hard to judge whether it is sensible to generalise to target population
Applicability	directly applicable to Australian context	applicable to Australian context with few caveats	probably applicable to Australian context with some caveats	not applicable to Australian context

*As per http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

¹ Level of evidence determined from the NHMRC evidence hierarchy as in Table 1.

² If there is only one study, rank this component as 'not applicable'.

Recommendations were developed based on this evidence, including suggested peer-led models or specific interventions that show promise.

4 Results

Systematic Literature Search

The search resulted in the identification of one systematic review, and two Cochrane reviews relevant to the Evidence Check. Where the relevant studies included in these reviews met the inclusion criteria for the Evidence Check, the original articles were retrieved and included in the analysis reported in Tables 3 and 5. The main outcomes of these reviews are summarised here.

Thomas et al. (2013) conducted a Cochrane Review of the international literature on school-based prevention programs for tobacco use.⁴¹ The review identified 49 randomised controlled trials (over 140,000 school children) of interventions aiming to prevent children who had never smoked from becoming smokers. Overall results indicated that programs that incorporated a social competence approach and those that combined this with a social influence approach were more effective than other programs at the immediate post-intervention assessment. However, at one year after the delivery of the intervention there was generally no overall effect, except for programs that taught young people to be socially competent and to resist social influences. It is notable that only a small subset of the identified studies included a peer-led component. For those that did, there were no significant differences at one-year post-program for peer-led compared to adult-led programs. The exception to this was for adult-led combined social competence and social influences curricula. At longest follow-up there were significant differences favouring adult-led curricula, and for adult-led social competence curricula and adult-led combined social competence and social influences curricula over peer-led programs.

Gates et al. (2006) carried out a Cochrane systematic review of non-school based prevention programs for drug use in young people under 25 years-old.⁴² 17 studies were identified, including 1,230 participants, and that used four main types of interventions (motivational interviewing, education or skills training, family interventions and multicomponent community interventions). Three of these studies contained a peer component but outcomes were not reported separately by the authors. In general, motivational and family interventions had the largest effect on prevention, particularly for cannabis use. Education and multicomponent interventions showed no benefit over controls for the prevention of drug use in those under 25. More work needs to be done in this area.

MacArthur and colleagues (2016) recently published a systematic review and meta-analysis of peer-led interventions to prevent tobacco, alcohol, and other drug use among youths aged 11-21 years.⁴³ Of the 17 identified studies, half targeted tobacco use, and the remainder alcohol and other drugs. Collectively, the studies together represented 13,706 young people across 220 schools.

The authors concluded that peer-led interventions showed promise in the prevention of tobacco and alcohol use, and provided initial supporting evidence for the preventing of cannabis use. The authors highlighted that the overall evidence base in this area is limited and based on small studies of low methodological quality.

The systematic search of the literature for the Evidence Check yielded seven papers that met the **three essential criteria**:

1. Peer involvement was a key component of the intervention
2. The study was published between January 2006 and February 2016
3. Was written in English

As well as all three of the secondary criteria:

4. The study reported on intervention outcome data
5. The participants ranged in age from 16-24 years
6. And or, the participants were considered to be at risk of alcohol or other drug use.

These studies are summarised in Table 3, which includes the NHMRC Evidence Rating applied to each study.

Table 3. Studies which met the three essential criteria and three secondary criteria.

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Adams et al. (2006)	USA	Alcohol	Theory of Planned Behaviour (TPB) based peer-led education for binge drinking on behavioural attitudes, subjective norms, perceived behavioural control and behavioural interactions. 1. Pre-session 'internet assignment' (to provide students with core knowledge by asking them to search for and provide answers to 10 questions to facilitate participation and discussion during the classroom presentation); 2. A 50-minute interactive in-person 'education session' based on TPB, including an 'impaired vision' activity, a presentation that described short- and long-term effects of alcohol consumption, alcohol laws and violations, a trivia game that addressed the misconceptions about alcohol consumption on campus, and video testimonial of a student whose life had been impacted by a drunk driving accident.	Trained undergraduate Peer Health Educator. The student who presented the curriculum had completed a one-year training program and was subsequently recruited to deliver the curriculum to Freshman Orientation classes.	University	34 received intervention. All participants were 'freshmen' in orientation.	TPB instrument measured alcohol behaviour with 5 subscales: Attitudes, Subjective Norms and Motivation to Comply, Perceived Behavioural Control, and Behavioural Intention. Administered 1-week pre-intervention and immediately following intervention.	Paired t-tests indicated that Attitude was the only variable that changed from pre- to post-intervention ($t = 2.13, p = .04$). The regression model for pre-test data indicated that of all TPB constructs, only Attitude predicted Behavioural Intentions ($\text{Adj } R^2 = .21, p = .004$). The results for post-test data were similar.	IV cohort study with pre-test/post-test outcomes

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Boekeloo et al. (2009)	USA	Alcohol	Peers as Family intervention based on the Information-Motivation-Behavioural Skills Model (IBM) involving 3 workshops. 1. Included 4 activities - self-administered quiz about alcohol and group discussion about answers; watching a DVD of upperclassmen student testimonials about attitudes and normative beliefs around drinking; watching 3 popular movie clips about decision making re drinking followed by discussion to address attitudes, decision making skills and self-efficacy by developing 'I will' statements; voting on which 'I will' statements to include in their dormitory's 'Peer Pledge'; 2. Watching and performing 5 skits: setting and sticking to drinking limits; avoiding drunkenness and risky situations; helping others regarding alcohol; preventing an alcohol health crisis; showing respect of others regarding alcohol; 3. An 'adventure' including information and motivation related to perceived susceptibility, severity, cost benefit analysis, attitudes, and normative beliefs.	Workshop facilitators were targeted through e-mail announcements to graduate students at the study university and other local universities. Once screened, selected facilitators were hired to participate in three hours of materials review and four 4-hour training sessions that addressed facilitator guides.	University	576 participants. All participants were 'freshmen'. Block allocation to single-gender (n=207), mixed-gender (n=180), or control (n=189) by dormitory wings. 830 in full sample of participants who completed a survey at any time point.	Alcohol use measured using a modified timeline follow back for past 30 days; National Study of Living Learning Programs instrument measured frequency of experience of negative consequences arising from others' alcohol use. Administered at baseline, 2-month follow-up (2-weeks post-intervention), and 6-month follow-up (4.5-months post-intervention).	Significant study condition by gender interaction ($F = 3.91$, $p = .026$). Among males the adjusted mean weekly alcohol use was lower in the single-gender than the control condition ($M = 1.89$ vs. $M = 2.72$, $p = .041$). Among females, the adjusted mean weekly alcohol use was lower in the mixed-gender than the single-gender ($M = 1.60$ vs. $M = 2.44$, $p = .021$) and control condition ($M = 1.60$ vs. $M = 2.27$, $p = .056$). No significant difference for second-hand effects of others' drinking.	III-1 pseudorandomised controlled trial

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Cimini et al. (2009)	USA	Alcohol	Random allocation to one of three 2-hour programs. 1. Group Motivational Interviewing (MI) - small group discussions and peer facilitators; 2. Motivationally enhanced peer theatre - student actors presenting vignettes based on campus norms with peer facilitator generating discussion with audience between scenes; 3. Interactive alcohol education program.	Peer leaders were fellow students recruited from a university based peer-education program.	University	685 participants. All were undergraduate college students who had violated a university alcohol policy. Random allocation to MI, motivationally enhanced peer theatre, or interactive alcohol-education	Daily Drinking Questionnaire measured average number of drinks per week and peak number of drinks consumed on one occasion (peak drinking) in past 30 days. Rutgers Alcohol Problem Index (RAPI) measured alcohol-related problems. Drinking Norms Rating Form measured perceived drinking norms. Protective Behaviours Strategies Scale measured protective behavioural strategies. Administered at baseline and 6-month follow-up	Nil significant main effect for peak drinking, drinks per week or RAPI total score from baseline to 6-months. Nil significant main effect for treatment and time by treatment effects.	II randomised controlled trial (individuals randomised to condition)

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Kwan et al. (2015)	USA	Tobacco, alcohol and other drugs	1. Towards No Drug Abuse (TND): a 12 session school based curriculum designed to motivate youths to change their perspectives and perceptions of drug use and teach social skills, life skills and decision-making techniques. Sessions delivered over 45-60 minutes, each day for a period of 3 to 4 weeks. Intervention delivered by trained health educators; 2. TND-Network: A modified version of the TND curriculum that involves more interactive group work, utilized peer leaders to lead small groups of students in addition to health educators.	Students nominated by people in the class as 'good leaders'. These peer leaders led small groups of other students in the TND-Network condition.	Continuation High School	985 students recruited. 525 completed post-test survey. All were adolescents at risk of substance abuse due to the large proportion of substance users within their peer group and overall surroundings.	Past 30-day use of alcohol, tobacco and 9 other hard drugs. Peer leader use of the same substances was matched to that of the students in their group. Administered at baseline (1-week prior to intervention), pre-test (at start of intervention), post-test (3- to 4-weeks post-baseline), and 12-month follow-up	Among mixed-gender group there was no association between peer leader drug use and drug use of other students. Among males in the TND Network condition peer leader hard drug use at post-test increased the odds of a group member's hard drug at post-test by 5.13 times. Among females, peer leader use of marijuana at baseline was negatively associated with individual marijuana use at post-test (OR = 0.78, 95% CI 0.60-1.00), peer leader use of cigarettes at baseline increased the odds of cigarette use at post-test (OR = 4.02, 95% CI 1.86-8.67). The interaction term between Network condition and peer leader use of marijuana and cigarettes at post-test was negatively associated with individual use at post-test (OR = 0.66, 95% CI 0.44-0.99 and OR = 0.31, 95% CI 0.14-0.69, respectively).	II randomised controlled trial (cluster randomised by school)

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Mastroleo et al. (2014)	USA	Alcohol	Comparison of different methods of peer counsellor training and supervision. All study participants received the peer-led intervention known as Brief Alcohol Screening and Intervention for College Students (BASICS) program. Randomisation then occurred to one of two conditions: 1. evidence based application approach (EAA) which involved closely supervised weekly sessions during which tape recordings of BASICS sessions were reviewed and discussed to provide individual supervision focused on personalised feedback on MI skill development; 2. Common practice approach (CPA) where peer counsellors received training and group supervision with no further individual supervision.	Peer counsellors took the role as health and wellness educators based in the office of health promotion and education at the university where the study took place.	University	82 participants. All were undergraduate college students who had violated campus alcohol policy.	Daily Drinking Questionnaire measured typical daily drinking over past month. Quantity/Frequency/Peak Index measured past-month highest number of drinks consumed and time spent on one drinking occasion. Heavy episodic drinking measured frequency of heavy drinking. Young Adult Alcohol Problems Screening Test measured frequency of negative consequences of alcohol use. Administered at baseline, 6-week and 3-month follow-up.	Nil significant peer supervision group effects on student drinking. Students reduced their alcohol use regardless of whether their peer counsellors had been assigned to the EAA or CPA supervision conditions.	IV cohort study with pre-test/post-test outcomes

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Sutcliffe (2009)	Thailand	Methamphetamine	Comparison of two interventions both comprised seven 2-hour sessions over 1 month. 1. Peer Education, additional 2 boosters at 3- and 6-months, two peer-facilitators of same age and background as index participant, conducted with index participant only, encouraged to think critically about and reduce methamphetamine use and sexual risk taking, and then communicate these messages to network; 2. Life skills intervention, CBT, skill building, no boosters.	Peer- facilitators of same age and background as index participant.	Community outpatient	983 participants. All were either an index participant (n=415, 18-25 years, used meth at least 3 times in past 3 months, and sex in past 3 months) or a sex or drug use network members of index participant (n=568, 18-25 years, used meth at least 3 times in past 3 months, and sex with index participant in past 3 months). Block randomisation of index participants to Peer Educator Network Intervention (n=495) or Life Skills Curriculum (n=488).	Collection of biological specimens (including drug testing), substance use and sexual history and networks. Administered at baseline, 3-, 6-, 9-, and 12-month follow-ups.	Significant reduction in methamphetamine use over time. Nil time by group interaction indicating no additional benefit of peer-led education.	III-3 two-arm study randomised trial without concurrent controls

Author (date)	Country	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Valente et al. (2007)	USA	Substance abuse	Comparison of control and two intervention arms. 1. Project TND (Towards No Drug Abuse) uses a school based lesson delivery model with 12 lessons; 2. TND Network was a modified TND with increased number of group activities and utilised peer leaders and small groups made of 3-5 students in their own social networks. TND Network encourages small group discussions in groups created from naturally occurring friendships and led by a student-chosen leader.	Peer leader chosen by peers and identified using social network nominations. Leaders were taught how to facilitate group discussion, how to manage group interaction and encouraged to embrace anti-substance use norms.	School	938 participants. All were high school (year 10) students in 'continuation high schools'. cluster RCT schools randomly assigned to TND, TND Network, or prevention as usual control	Drug and alcohol use in past month. Administered at baseline and 1-year follow-up	TND was not associated with changes in any substance use. TND Network was associated with decreased marijuana, cocaine and composite substance use relative to control. The interaction of peer use and being in the TND Network condition was associated with increases in marijuana, cocaine and composite substance use. Conclusion that the reduced substance use in TND Network came at the expense of increasing use among some students with existing networks of substance using peers.	II randomised controlled trial (cluster randomised by school)

Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: primary search and analysis

Evidence Base

Of the seven studies, three were randomised trials, two were two-arm studies without concurrent controls, one was a pseudo-randomised trial (i.e. it did not randomly allocate people to difference conditions) and one was a cohort study. Six of the studies were conducted in the USA and one in Thailand. None of the studies were conducted in Australia. A range of outcomes was measured across these trials, including:

1. Past-month drug and alcohol use^{15, 17, 44-47}, including tobacco use⁴⁶
2. Sexual history¹⁵
3. Alcohol-related problems^{45, 47} and negative consequences (from own or others drinking^{44, 47})
4. Drinking norms^{45, 48} including motivation to comply with norms⁴⁸
5. Protective behaviours⁴⁵
6. Attitudes⁴⁸, intentions to drink⁴⁸, and perceived behavioural control for alcohol use⁴⁸

One study¹⁵ measured biomedical outcomes for substance use and HIV status.

Overall, the evidence base for the included studies was rated B (Good) in line with the NHMRC evidence matrix. Table 4 contains a description of this rating.

Consistency

This component of the available evidence was assessed across the range of outcomes reported in the included studies.

1. Past-month drug and alcohol use, including tobacco use

Studies were somewhat inconsistent in providing support for peer-led interventions in the reduction of AOD use, including tobacco. For example, of the three RCTs identified^{17, 45, 46}, two reported no benefit of peer-led interventions on alcohol or tobacco use over comparison groups, while one¹⁷ reported reductions in cannabis, cocaine, and overall substance use in school students whose regular drug education lessons were enhanced with a peer-led intervention. Of the remaining studies, only one⁴⁴ reported an advantage of peer-led interventions over control for alcohol use, with all others reporting no effect. The Boekeloo et al. (2009) study, rated as III=1, reported an advantage of same-sex delivered peer intervention for alcohol in males, and an advantage of mixed-gender delivered peer intervention for alcohol use in females at University.⁴⁴

2. Sexual History

The only study to report outcomes for this domain⁴⁵ found that peer intervention had no effect on condom use or related health sexual practices.

3. Alcohol-related problems and negative consequences

Three studies^{44, 45, 47} reported that peer leader, peer counsellor and peer-led interventions had no effect on these outcomes.

4. Drinking norms

Of the two studies reporting outcomes related to drinking norms^{45, 48}, neither found that peer counsellor involvement has any impact on these attitudes.

5. Protective behaviours

Cimni et al. (2009) were the only authors to report on protective behaviours for alcohol use associated with their peer interventions. They found that the peer counsellor intervention had no protective behaviour effect against alcohol use.⁴⁵

6. Attitudes, intentions to treat and perceived behavioural control

Only one study⁴⁸ measured these outcomes. Its results indicated a relationship between the peer-led intervention and a more negative attitude towards alcohol use.

The overall rating of consistency in the findings related to peer-led interventions for the studies identified in the Evidence Check is difficult to determine given the range of outcomes reported and the nil reported effect of peer-led interventions across some, but not all, domains. Based on the NHMRC evidence matrix (see Table 2) the overall consistency is rated as B (Good), averaged across a C (satisfactory) for past month alcohol or other drug use, including tobacco, and an A (good) for attitude change (although only one study was found) in favour of peer-led interventions.

It should be noted that for sexual history, alcohol-related problems and negative consequences, drinking norms, and protective behaviours, the identified evidence is highly consistent (achieving an A rating or excellent), but provides no evidence that peer interventions confer additional benefit over controls or non-peer-led interventions. See Table 4 for a summary of this rating.

Clinical Impact

No evidence was found of an advantage of peer-led interventions as a stand-alone approach for reducing AOD drug use (including tobacco), safer sexual practices, drinking norms, alcohol-related harms, and protective behaviours. An increase in desirable attitudes towards alcohol use in university students was found when peer testimonial videos were combined with an intensive internet program for reducing risky alcohol use in the US (no control group comparison⁴⁸).

When peer interventions were embedded in an ongoing program of rehabilitation, education or other strategies, such as the addition of peers as coaches to reinforce this other content (e.g. delivered via internet, group programs, lessons, etc.) there was an associated reduction in the use of alcohol, methamphetamine and other substances among both high school and university students, and clients in drug and alcohol rehabilitation or outpatient treatment populations. However, the addition of these peer-led components did not generally lead to better outcomes across these domains than a control condition, or the implementation of these other strategies without the peer enhancement. Peer enhancements did not undermine the impact of other strategies in the majority of studies included in the review.

Peer network interventions (Take No Drugs Network Condition¹⁷) show promise in high schools for reduced cannabis, cocaine and overall substance use, but only in those peer networks where the peer leaders and peer groups were not already using substances. In the Valente et al. (2007) study, peers chose their own peer leader using social network nominations (for which they used a formal questionnaire). The peer leaders were elected based on those which were found to have the most influence over other students in these target years. The peer-leaders were then taken out of the school setting, trained in communication skills and drug-free messages, and asked to go back into their peer population at school and encourage small group discussions around positive drug messages in naturally occurring friendship groups (or networks). When this enhancement was added to ongoing education for positive drug messaging alone (12 lessons during regular school time), significantly less uptake of substance use occurred in those networks where there were no substance using peers.¹⁷

The choice of peer leader is critical. Boekeloo et al. (2009) found that using same-sex peers to deliver or support alcohol use interventions was only effective for males, with females responding better (in terms of

greater alcohol use reduction) in mixed-gender delivered interventions for alcohol (i.e. male peer leaders).⁴⁴ However, this may only be the case for peer groups and networks that are not already using alcohol or other drugs. Two studies reported increases in substance use when peer network interventions (added to other anti-drug education strategies) were evaluated. This was for all participants in Valente et al. (2007), who reported increased cannabis, cocaine and overall drug use when a peer network intervention was implemented among peers already using one or more these substances.¹⁷ In Kwan et al. (2015), a gender effect was observed, such that for males, when same-sex peer leaders were drug users, the odds of substance use increased five-fold in program participants. For females, cannabis and tobacco use by same-sex peer leaders was associated with a 1–4 fold increase in the likelihood of cannabis and tobacco use in program participants post-intervention.⁴⁶

Overall, according to the NHMRC body of evidence matrix (Table 2), the clinical impact of the included studies for the effectiveness of peer-led interventions to reduce AOD use (including tobacco), improve healthy sexual practices, influence positive attitudes towards alcohol, affect drinking norms, increase protective behaviours, and reduce alcohol-related problems and negative consequences was rated C–D (satisfactory-poor). See Table 4 for a description of this rating.

Generalisability

All of the included studies in Table 1 met all key and secondary criteria of interest to the rapid review. This included the desired age range (16–24 years) and target population (at risk youth) across a range of harms (AOD use, tobacco use, unsafe sexual practices, etc.). This, translated to an overall NHMRC evidence matrix rating (see Table 2) for the generalisability of the included studies to the target population of youth at risk of AOD use and related harms of A (excellent, see Table 4).

Applicability

Importantly, none of the included studies were conducted in an Australian setting. Six of the seven studies were US-based, and one¹⁵ was conducted in Thailand. Of the US-based studies, settings included high schools, universities and colleges — either as part of the regular high school curriculum (with peer enhancement) or as an adjunctive intervention/targeted initiative in the university or college community. Given similar curricula exist in Australian high schools (e.g. via physical health and physical education) it is plausible that the high school-based studies^{17, 46} are highly applicable to the Australian context. Similarly, health services and public health offices at Australian universities could conceivably integrate the drug use prevention programs described in Cimini et al. (2009), Mastroleo et al. (2014), Boekeloo et al. (2009) and Adams et al. (2006) into their curriculums here alongside similar public health initiatives such as safe sexual practices, responsible service of alcohol, drink spiking and the like.^{44, 45, 47, 48} It is also highly plausible that the results reported in these US-based studies would be replicated in Australian settings — along with the potential risks associated with, for example, implementing peer network interventions in already using peer groups. However, further studies are required to confirm these observations.

The Thailand-based study¹⁵ was carried out in a community outpatient drug treatment setting. While similar settings do exist in Australia, it is unclear from the available data whether these results (and the program itself) would translate directly to Australian substance users. More work to understand these important translational questions is required.

Overall, according to the NHMRC body of evidence matrix (Table 2), the applicability of the identified studies to the Australian setting was rated as C (Satisfactory, See Table 4 for a description of this rating).

Summary of availability and quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: primary search and analysis

Table 4 displays the overall evaluation of each component of the evidence drawn from the included studies in the rapid review that met all key and secondary criteria for inclusion. In summary, based on the above analysis and Table 4, the findings of the review of all included studies are promising but not consistent in support of peer-led interventions to prevent or reduce drug and alcohol use, and related harms in at risk youth. No study demonstrated the benefit of peer-led interventions as stand-alone initiatives and positive outcomes were only seen when peer support or leadership was embedded in another strategy to reduce risk of use or harm from alcohol and drugs (including tobacco). In these cases, support for peer-led interventions was found for some outcomes (e.g. cannabis use, cocaine use, overall substance use, alcohol use, attitude change) but not others (drinking norms, intentions, negative consequence, perceptions of harm) and only in some circumstances (e.g. in peer network interventions with non-using peers and non-using leaders). The clinical impact of the identified peer-led interventions is restricted and more evidence is required to test the promising approaches identified in this review to an Australian setting.

*Table 4. Overall evaluation of the seven included studies that met all key and secondary inclusion criteria for a review of peer-led interventions in at risk youth**

Component	Rating	Description
Evidence base	B	Good: one or two level II studies with low risk of bias or a systematic review or multiple level III studies with low risk of bias
Consistency	B	Good: most studies consistent and inconsistency may be explained
Clinical impact	C-D	Satisfactory (moderate) – Poor (slight-restricted)
Generalisability	A	Excellent: the populations included in the review are the same as the target population in question
Applicability	C	Satisfactory: probably applicable to Australian context with some caveats

*As per http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

A further thirteen studies were identified that met a reduced threshold for inclusion in the Evidence Check. Studies included in this phase of analysis met all three essential criteria:

1. Peer involvement was a key component of the intervention,
2. The study was published between January 2006 and February 2016
3. The study was written in the English

and met at least one of the secondary criteria:

4. The study reported on intervention outcome data
5. The participants ranged in age from 16-24 years
6. And/or the participants were at risk of alcohol or other drug use.

These studies are summarised in Table 5.

Table 5. Studies that met all three essential criteria and at least one of the secondary criteria for inclusion in the Evidence Check.

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Al-sheyab et al. (2013)	Jordan	4, 6	Tobacco	Comparison of control and the Triple A in Jordan (TAJ) program based on empowerment education in high schools. Peer leaders from year 11 were trained to deliver the 3 TAJ lessons to the year 10 students. The year 10 students then prepared and presented a series of skits to the year 8 and 9 students with content designed to improve self-efficacy to resist smoking, self-management of asthma symptoms, and the school culture towards asthma	Older students acted as peers for lower class groups. Peer leaders from year 11 delivered an intervention to year 10 students. The year 10 students delivered an intervention to year 8 and 9 students.	School	72 participants. All were high school students from 4 schools. Schools were randomised to TAJ (n=33) or control (n=39).	The Self-Administered Nicotine Dependence Scale measured self-efficacy to resist smoking. Asthma symptoms, self-management and quality of life. Administered at baseline and 3-month follow-up	At 3 months the smokers in the Triple A schools had significantly better scores on all outcomes measured and had improved their self-efficacy to resist smoking by 83% from baseline.	II Randomised controlled trial (cluster randomised by school)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Aslan et al. (2007)	Turkey	4	Tobacco	Students from one school received 3-month exposure to a range of activities organised and presented by peer leaders: presentation of regular conferences with health professionals; preparation of a 'demonstration room' to display handmade anti-smoking products and invite friends to visit; individual and group discussion and counselling; presentation of information about smoking; organisation of a drama play; preparation and presentation of the play; brainstorm activities to develop smoke-free slogans; preparation of posters, brochures and handouts; radio programs; collaboration with other anti-smoking activists	10 self-nominated students from the intervention school (same year as the group members). Peer leaders had a 5-day training program covering a wide range of topics: peer counselling method for anti-smoking; teamwork and group skill development; knowledge and attitudes about smoking-related health issues; environmental tobacco smoke exposure; peer influence on smoking; social learning and smoking; how to help people quit; interactive techniques; how to use the training materials more effectively.	School	504 participants. All were high school students in year 10 from two schools. One school was allocated to receive the intervention (n=252) and the other was the control (n=252).	13 item questionnaire about knowledge and attitudes about smoking. Administered at baseline and 3-months post-baseline.	Statistically significant increase in frequency of correct answers to smoking related questions in the intervention group for 10/13 question categories. The changes in most of the frequencies were non-significant at the control school. Intervention students had stronger anti-smoking views in all of the categories in the follow-up survey than they had at baseline. Non-significant reduction in the number of smokers at the intervention school (26% baseline, 24.5% follow-up; p=0.508). Non-significant change at the control school (8.5% baseline, 7.5% follow-up; p=1.0) Note the difference in smoking rate at baseline between the control and intervention schools.	III-2 Comparative, non-randomised study with concurrent controls

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Campbell et al. (2008)	UK	4	Tobacco	Stratified block randomisation of whole school to control or A Stop Smoking In Schools Trial (ASSIST) 10-week intervention, during which peer supporters undertook informal conversations about smoking with peers when travelling to and from school, in breaks, at lunch time, after school in free time, and logged a record of these conversations in a diary.	835 (16% of each year) acted as a peer supporter after nomination by their year group. Current smokers could only be peer supporters if they committed to quitting.	School	10730 participants. All were high school students in year 8. Cluster randomisation of schools to intervention (n=5358) or control (n=5372).	Prevalence of past week smoking. Administered at baseline, post-intervention (10-weeks), 1-year and 2-year follow-up.	Smoking prevalence was lower at intervention than in control schools at all 3 follow-up points (post intervention, 1 year, 2 year). At 1 year the odds ratio of being a smoker in intervention compared to control was 0.77 (95% CI 0.59-0.99). At 2 years the corresponding odds ratio of 0.85 (0.72-1.01) was not significant which suggests an attenuation of this intervention effect over time. Secondary outcome was prevalence of past week smoking in the high risk group of occasional, experimental or past smokers. For the high risk group the odds ratios at 1 year follow-up of 0.75 (0.56-0.99) and at 2 year follow-up of 0.85 (0.70-1.02) suggest that the intervention was no more beneficial for occasional, experimental or ex-smokers.	II Randomised controlled trial (cluster randomised by school)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Goenka et al. (2010)	India	5, 6	Tobacco	Multi-component tobacco prevention (Project MYTRY) based on social cognitive theory. Included classroom curriculum, posters, parent postcards and training teachers and student peer leaders to be intervention implementers.	Peer leaders were students. 4 to 6 out of 30-45 students were elected by classmates to be peer leaders. They facilitated the implementation.	School	5564 participants. All were students in year 6 and year 8.	NA	Communication between students and peer leaders correlated with better implementation outcomes (r=0.66, p<0.005) but smoking outcomes were not reported.	OTHER a process evaluation.
Gorini et al. (2014)	Italy	4	Tobacco	The LdP program included 4 components: 1) The Smoking Prevention Path a 4-hour 'educational path' delivered by trained educators; 2) a 2-hour school lesson delivered by teachers; 3) the life skills peer intervention; 4) the enforcement of a school staff established working group	Self-selected 16- to 17-year-old peers were trained in three 2-hour sessions at school plus one meeting. They organised two 2-hour meetings in every intervention class, conducting a brainstorming on smoking, a discussion on positive and negative aspects of smoking, a creative writing session and administered a questionnaire on health risks of smoking.	School	1646 participants at baseline. All were students aged 14- to 15-years. Cluster randomisation of schools to experimental condition (n=814) or no intervention control (n=832)	Cigarette smoking in the past 30-days. Assessed at baseline and 18-month follow-up	Students in the intervention arm showed a 31% lower prevalence of past day smoking at follow up and a 46% lower prevalence of daily cigarette use compared to controls. The prevalence of frequent (i.e. 1-19 smoking days) cigarette use did not differ between the groups. The LdP program was successful in limiting the increase in the prevalence of past 30-day smokers at follow up and in particular at limiting the increase in the prevalence of daily smokers. Note that the intervention had 4 components of which the peer-led was but 1.	II Randomised controlled trial (cluster randomised by school)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Hamby et al. (2011)	South Africa	4, 5	Alcohol	Block randomisation of school class to control or intervention group. The intervention was based on a participatory action research model combined with a social marketing approach.	The student participants co-developed some of the intervention as this was a participatory action research model. The intervention was led by local adults aged between 20-30 as these were seen as more relatable than middle aged teachers.	School	161 participants. All were school students aged 12- to 18-years. 86 in control and 84 in experimental group	Questionnaire measured knowledge and attitudes towards the four main topic areas: HIV/AIDS, alcohol abuse, conflict resolution, and peer pressure.	Better knowledge in the intervention group compared to the control group in the areas of sex knowledge, alcohol knowledge and conflict resolution knowledge. Intervention group more likely to think condoms were good, to demonstrate concern for others and to view conflict negatively.	II Randomised controlled trial (cluster randomised by school class)
Karnell et al. (2006)	South Africa	4	Alcohol	Comparison of control and peer-led alcohol and HIV prevention program. In the intervention leaders led discussion of topics after the class, listened to a series of monologues delivered by fictional teenage township characters discussing whether or not to drink and/or engage in sexual behaviours.	Peer leaders were 4 members of each participating class who were elected and underwent 2-days of training.	School	661 participants. All were 9th grade school students. Cluster randomisation of schools to experimental condition (n=325) or no intervention control (n=336).	Questionnaire assessed sexual and alcohol related behaviours, and theoretically derived variables hypothesised to mediate the relationship between intervention and behavioural outcome. Administered pre-intervention (2- to 3-weeks prior) and post-intervention (8-weeks after conclusion of intervention).	Intervention students were more likely to have an intention to use condoms, females in this group were more likely to have better sex refusal self-efficacy and there was less likelihood of drinking before having sex.	II Randomised controlled trial (cluster randomised by school)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Klatt et al. (2008)	USA	4, 5	Tobacco	Comparison of health information control and RealU intervention based on social cognitive and problem behaviour theory. Intervention participants were emailed weekly reminders to make 20 weekly visits to the study website over a 30-week period, report health behaviours, complete an online quiz and view a student authored general interest online college life magazine. Participants received a \$10 gift card each week for completing these activities. Smoking cessation content and messages were introduced to the quiz gradually over the intervention period. They also received weekly emails written by a peer coach 'E-pal'. Email messages were based on templates, but personalized by peer coaches using information provided by participants during their weekly visits to the website. Participants were encouraged to write back to peer coaches and received an entry into a \$50 prize draw if they did so.	Peers were trained student support people. Peers provided support to participants via weekly e-mails encouraging healthy behaviours and smoking abstinence.	University	257 participants. All were university student volunteers. Randomly allocated to intervention (n=257) or control group (n=260)	Baseline assessment of smoking included Hooked on Nicotine Checklist to measure nicotine dependence, and other questions about proportion of friends who smoke, readiness to quit and recent quit attempts. Follow-up assessment of website utilisation and meta-data. Questions assessing attitudes towards their E-pal. Smoking outcomes were determined by number of smoking days in past 30 days. Administered 30-weeks after enrolment.	Greater peer engagement via email was associated with increased smoking abstinence and reduced frequency of smoking. At week 30 40.5% of participants in the intervention group reported not smoking any cigarettes in the prior 30 days. 30-day abstinence was significantly related to both perceived support from the peer coach and email engagement. After controlling for age and baseline level smoking, email engagement remained a significant predictor of 30-day abstinence.	II Randomised controlled trial (randomised by individual)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Mackesy-Amiti et al. (2012)	USA	4, 5	Drug injection risk behaviours	Comparison of a peer education intervention (PEI) with a time-matched, attention control. Both interventions consisted of six group sessions over a 3-week period. In the PEI, the first two sessions involved injection-related risk, the third and fourth involved sexual risk behaviour. The format included videos, interaction discussions, exercises in skills building, role playing, and practice. The fifth session involved practicing sharing risk-reduction information in a community setting. The sixth session consisted of group debriefing.	Participants in the peer education intervention condition were trained to be peer educators with the expectation that this would change the behaviour of the educators. All participants who were allocated to the peer education intervention arm were trained to be peer educators.	Community	854 participants. All were injection drug users (IDUs) in the past 6-months. Random allocation to PEI or control	Assessment of IDU and injection-related HIV/HCV risk. Administered at baseline	The peer education intervention reduced risky injection-related behaviour but only for those who were classified (through latent class analysis) as high risk injectors at baseline.	II Randomised controlled trial (randomised by individual)

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Pagano et al. (2015)	USA	4, 5	Alcohol and other drugs	All participants engaged in a standard 12-step AA style intervention. Three programmatic activities were recorded at baseline and at discharge: peer helping, meeting attendance, having a sponsor. Peer helping was the focus of this study as providing service to others is a cornerstone of the 12-step program. There are 9 different ways to engage in peer-helping in the Service to Others in Sobriety (SOS) questionnaire and only one of these involves risk of public scrutiny. 3 others (e.g. packing away chairs) could be performed with no or minimal social interaction.	People attending a 12-step program are all peers for each other.	Residential drug and alcohol treatment facility	195 participants. All were current patients of a residential drug and alcohol treatment facility. At baseline rates of social anxiety disorder (SAD) were assessed: No SAD (n=165), and SAD (n=30).	Assessment of traumatic experiences, DSM-IV-TR lifetime anxiety disorders, lifetime AOD use and 12-step participation. Administered at baseline (treatment admission), treatment discharge, and 6-months post-discharge	Hypothesis of higher peer-helping associated with SAD was confirmed, with 1:1 service engaged in the most. Patients without SAD had higher rates of service activities performed in front of the group. Rates of meeting attendance and having a sponsor were similar between the SAD and no SAD groups. Peer helping increased the chances of SAD youths staying sober post-discharge.	IV cohort study with pre-test/post-test outcomes

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Pallaveshi et al. (2014)	Canada	4, 6	Substance use	All participants attended up to 8 sessions of both the peer-led and professional-led groups. Minimal detail provided about the content of the peer-led group which had a focus on the lived experience of participants. The objective of the professional-led 'Persuasion' group was to try to move participants forward in their recovery toward an active means of discussion of pros and cons of substance use and other strategies.	The Peer leaders involved in the peer-led group were patients who successfully completed the program.	Tertiary mental health care centre	6 participants with a diagnosis of schizophrenia (n=5) or major depressive disorder (n=1) and co-occurring substance use problems (Substances used included alcohol, cannabis, cocaine, methamphetamines, and/or sedatives).	Semi-structured interview exploring the experience of people with co-occurring mental illness and substance use disorders in relation to peer-led and professional-led group interventions. Administered post-intervention.	Peer-led groups were associated with higher reports of comfort in talking about experiences. Professional-led groups were associated with more knowledge and skill development. Both groups were associated with perceptions of positive environment and personal growth.	OTHER this is a qualitative evaluation of a convenience sample.

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Tracy et al. (2012)	USA	4	Alcohol	All participants engaged in the Mentorship for Alcohol Problems (MAP) intervention. MAP is a 12-week program consisting of: 1. Mentor training, provided 1-hour per week for 4-weeks by a supervisory clinician, aiming to characterise and develop good mentoring skills, and teach 'goal attainment strategies'; 2. Weekly mentoring group 1-hour per week for 12-weeks, co-facilitated by supervisory clinician and mentors, discuss goal attainment strategies, recovery plans, mentee presents progress towards goals; 3. Individual pair contact, 1- to 4-hours per week for 12-weeks, by phone or in person, may include social activities, treatment activities (AA attendance), taking to appointments, develop a supportive relationship to reinforce group; and 4. Supervision of mentors, 1-hour per week for 12-weeks.	Mentors met DSM-IV diagnosis for alcohol abuse or dependence and were 6-months abstinent from alcohol and other substances.	Outpatient drug and alcohol services	40 mentees and 10 mentors participated. All mentees met DSM-IV diagnosis for alcohol abuse or dependence and were current users.	Mentorship fidelity measures collected during intervention documented adherence, competence and critical dimensions of the behaviour change process. Alcohol and substance use administered at baseline and weekly throughout treatment.	Significant reductions in alcohol use over the 6-month study period. All mentors maintained abstinence. Confirmed by biological measures. Based on abstinence - development of a relationship based on abstinence, mentor helps mentee develop and achieve abstinence using harm reduction strategies.	IV cohort study with pre-test/post-test outcomes

Author (date)	Country	Secondary Criteria met	Substance	Intervention	Role of peer	Setting	Evaluation	Outcome Measures	Findings	NHMRC Evidence Rating
Van Hout (2011)	Ireland	4, 5	Substance use	Comparison of control schools and schools with peer-led education aimed to equip students with factual information about the risks attached to alcohol, cigarette and drug use. Peer educators delivered education in two sessions per month to their own class of between 25 and 35 students. Content included introduction, tobacco, alcohol, other drugs, and evaluation.	Peer educators were two students from 1st and 5th year who volunteered from experimental schools. They received off site training by adult educators (along with other peer educator volunteers from the other experimental schools to increase networking) and received fact sheets on alcohol, tobacco, drugs, games to engage, and questionnaires.	High school	429 participants. All were high school students in 1st (equivalent to Australian year 7) or 5th year (equivalent to Australian year 11).	Self-reported tobacco, alcohol and other drug use.	Significantly higher self-reported alcohol use among 1st year students who received peer-education (69.5%) compared with those who did not participate (44.6%). No differences on tobacco or illegal drug use. In fifth year sample, no differences between intervention and control	III-3 Comparative study with no formal concurrent controls (just program non-completers).

Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: secondary search and analysis

Evidence Base

Seven studies met two out of the three secondary criteria (five met criteria 4 and 5, one met criteria 5 and 6 and one met criteria 4 and 6). Six studies met only one of the three secondary criteria (five of these met criteria 4, one met criteria 5 and one met criteria 6).

Seven randomised controlled (or cluster randomised) trials were included in this second phase of analysis. A further two were cohort studies, one was a non-randomised trial that included a comparison group, and one was a non-randomised trial with a convenience comparison group of program non-completers. Two studies did not fit into the evidence hierarchy as per Table 1, as one was a qualitative evaluation of a convenience sample of program participants and the other was a process evaluation of a school-based program. These were included in the analysis nonetheless.

The focus of the interventions evaluated in these included studies was most commonly tobacco use (six studies), followed by alcohol use (three studies), other substance use (two studies), and injecting drug use/related risks (one study). One study targeted both alcohol and other substance use.

As in the first tier of included studies, included publications in the second phase of analysis reported a range of outcome variables associated with the peer-led programs. These included:

1. Self-reported AOD use (including tobacco)^{14, 16, 18, 49-53}
2. Self-efficacy to resist tobacco use¹⁴
3. Comorbidities associated with AOD use, including traumatic experiences, anxiety disorders, and asthma^{12, 14}
4. Self-management for target behaviour¹⁴
5. Safe sex and HIV/HCV risk behaviours^{50, 52}
6. Knowledge/attitudes about smoking, alcohol, HIV/AIDS, conflict resolution, and peer pressure^{54, 55}

With seven randomised trials in this pool of included studies, each with acceptable levels of risk of bias, the overall evaluation the evidence base using the NHMRC evidence matrix was rated A (Excellent). Table 6 displays a description of this rating.

Consistency

1. Self-reported AOD use (including tobacco).

Across the included studies in this phase of analysis, consistent benefits of peer-led interventions were reported for reducing tobacco use when compared to control schools or individuals. The majority of these studies were randomised controlled (or cluster randomised) trials. For example, Al-sheyab et al. (2013) reported significantly lower nicotine dependence at three-months post-intervention at schools that adopted the peer-led approach over control schools.¹⁴ Campbell et al. (2008) also demonstrated lower smoking prevalence at three months for peer-intervention versus control schools, and this was maintained at one and two-year follow-up.¹⁶ In high-risk students (e.g. occasional, experimental, or past smokers), Campbell et al. (2008) reported further benefits, with the odds of these high risk students being a smoker in peer intervention schools being significantly lower than at controls at both one and two-years post-intervention.¹⁶ Gorini et al. (2014) reported a 31% lower prevalence of smoking 18-months after intervention and 46% lower cigarette use in peer-intervention schools over controls and a protective effect of the peer-led intervention in limiting increases in past 30-day smoking over control schools in current smokers.⁴⁹ Klatt et al. (2008) also found that greater peer engagement via email was associated with increased smoking abstinence and reduced smoking frequency in university students.⁵¹

There was less consistency in the benefits of peer-led interventions that focused on alcohol use, although no randomised controlled trials were found in this category. For example, Pagano et al. (2015) reported reduced risk of relapse to alcohol use in young people with social anxiety disorder who were exposed to peer helping interventions.¹² Tracy et al. (2012) also found a benefit of peer mentoring, with all peer mentors maintaining abstinence from alcohol throughout their intervention period and mentees reporting significant reductions in alcohol use over time.⁵³ In contrast, Van Hout (2011) demonstrated higher alcohol use among first year high school students who received peer-led education compared with those who did not participate. For students in their fifth year of high school, no differences between peer-led education and non-participants were found for alcohol use.¹⁸

2. Self-efficacy to resist target behaviour.

In the two trials that reported outcomes related to self-efficacy to resist the target behaviour, results were consistent. Al-sheyab et al. (2013) reported an 83% improvement in self-efficacy to resist tobacco between baseline and three months in peer-led intervention schools over controls.¹⁴ Karnell et al. (2006) found that females in the peer-led intervention schools were more likely to report better sex refusal self-efficacy than those in control schools.⁵⁰

3. Comorbidities associated with AOD use, including traumatic experiences, anxiety disorders and asthma.

Again, only two studies reported these outcomes, with mixed findings. Asthma symptoms were significantly lower in peer-led intervention schools than they were in control schools (Al-sheyab et al., 2013), asthma and tobacco-focused intervention).¹⁴ However, Pagano et al. (2015) reported no effect of peer-led interventions on trauma or anxiety symptoms.¹²

4. Self-management for target behaviour.

In the one study that reported on this outcome, Al-sheyab et al. (2013) found significantly higher asthma self-management was evident in peer-led intervention schools (receiving a comprehensive health based intervention around asthma and tobacco) than in control schools.¹⁴

5. Safe sex and HIV/HCV risk behaviours.

Consistent outcomes were found for risk behaviours related to HIV/HCV risk, with Karnell et al. (2006) reporting that peer-led intervention schools (receiving information about alcohol and HIV prevention) reported increased intentions to use condoms than control schools, with female students less likely to endorse drinking alcohol before having sex.⁵⁰ Similarly, Mackesy-Amiti et al. (2013) reported reduced risky injection-related behaviours in their peer-led intervention participants relative to controls but only among those who were high-risk to begin with.⁵²

6. Knowledge and attitudes about smoking, alcohol, HIV/AIDS, conflict resolution and peer pressure.

Consistent support for increases in knowledge about target behaviours were found for peer-led interventions over controls. For example, Aslan and Sahin (2007) found significant increases in correct knowledge about smoking in the peer intervention schools but no increase in controls.⁵⁴ Hamby et al. (2011) found better knowledge about safe sex practices, alcohol and conflict resolution was associated with their peer-led intervention schools over control schools but there was no effect on peer pressure.⁵⁵ In their qualitative study, Pallaveshi, Balachandra, Subramanian, and Rudnick (2014) found that peer-led groups were associated with higher levels of comfort in talking about experiences related to substance use but that professional-led groups were associated with more knowledge and skill development.⁵⁶

Overall, across all outcomes, the support for peer-led interventions was relatively consistent, according to the NHMRC evidence matrix (see Table 2). Using this matrix, the overall consistency is rated as B (Good), averaged across a B (Good) for self-reported alcohol/tobacco use, an A (Excellent) for self-efficacy to resist target behaviours, a C (Satisfactory) for comorbidities, an A (Excellent) for self-management for asthma

(although only one study was included), an A (Excellent) Safe Sex and HIV risk behaviours and a B (Good) for knowledge/attitudes. See Table 6 for a description of this rating.

Clinical Impact

As with the first phase of analysis, peer-led interventions were not conducted in isolation of formal education or intervention programs that were offered in groups, classrooms or online environments. They were not offered as a stand-alone intervention.

The strongest impact of peer-led interventions was found for tobacco use in school-based settings, with intervention schools consistently reporting a range of better tobacco and asthma-related outcomes over control schools (who often received no intervention at all). Notably, most of these studies compared rates of smoking (or rates of desired behaviours related to smoking) with control schools at the follow-up assessment rather than reporting on changes in these behaviours within intervention schools or between control and intervention schools over time (as a function of the intervention). It is possible that the reduced prevalence of smoking (and related outcomes) reported at peer-led interventions schools may be related to other factors particular to those schools and not necessarily to the peer-led intervention per se. However, the consistent findings for tobacco prevention and uptake, particularly in high-risk students, are extremely promising.

Less support was found for peer-led interventions for alcohol use, although no randomised trials were found in this stage of analysis. As in the first review phase, the peer and peer networks were important in explaining these results. In particular, a relationship between peer leader and peer networks that was based on abstinence was important in encouraging alcohol prevention or abstinence. For example, Tracy et al. (2012) demonstrated that an abstinent mentor helped mentees achieve and maintain abstinence.⁵³ This may be because alcohol is a more socially acceptable substance in peer groups than is tobacco, which is frequently associated with negative short and long-term outcomes. Van Hout (2011)¹⁸ reported a negative effect of peer interventions for alcohol use in first year high school students, consistent with Valente et al. (2007)¹⁷ and Kwan et al. (2015).⁴⁶

Important evidence was found for the benefits of including young people (or the targets of the intervention) in the development of the peer-led intervention content, an approach known as participatory design. For example, Aslan and Sahin (2007) found strong effects for tobacco in intervention versus control schools when peers were involved in selecting their leaders, and when those leaders went on to develop the intervention content (e.g., presentation of conferences with health professionals, anti-smoking displays, drama play, brainstorm to develop anti-smoking slogans, in-house advertising campaigns). Even though these activities were delivered by adults (and other non-peers) in some cases, the authors suggest that having the peer leaders organise this content led to a more relevant, credible program, and thus good results.⁵⁴ A similar result was reported by Hamby et al. (2011) where student participants co-developed some of the intervention content. This particular hypothesis has not been tested formally, but shows promise.⁵⁵

In summary, the clinical impact of the included studies is substantial (B), particularly for tobacco use interventions that include peers as both organisers of the content and as partners in delivery of the content (see Table 6).

Generalisability

Of the included studies in this phase of the review, all met the key inclusion criteria. Of the secondary criteria, eleven of the thirteen studies reported outcome data related on the intervention effectiveness. Of these, one additionally included participants at risk of alcohol or other drug use, and five also included youth aged 16–24 years-old. One study met the criterion for reporting on participants at risk of AOD use and the other included study met this criterion in addition to targeting participants aged 16–24 years-old.

In terms of generalisability to the target population for the Evidence Check (i.e. at risk youth aged 16-24 years-old; criterion 5 or 6), eight studies were highly relevant and directly translatable to this population.^{12, 14, 18, 51, 52, 55-57} Thus, the generalisability rating (based on the NHMRC evidence matrix, Table 2) was rated B (Good).

Applicability

Again, there were no Australian studies found in this search phase. Of the 13 included studies, four were from the US, two were UK-based and two were conducted in South Africa. One study came from Canada, and further four came from India, Italy, Turkey, and Jordan. There is considerable cultural and structural variation between tobacco and alcohol (and related) prevention approaches in these countries relative to Australia and thus replication of the effective models identified in this phase of the analysis needs to occur in an Australian setting. Having said this, results were highly consistent, particularly for tobacco use, across the identified studies, adding strength to the suggestion that similar findings might also be found if these models were trialled with Australian youth. On balance, this leads to an overall rating of the applicability of these studies to the Australian setting of satisfactory (C). See Table 6 for a description of this rating.

Summary of availability and quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: secondary search and analysis

As indicated in Table 6, the findings of the second tier of searching and analysis of the effectiveness of peer-led interventions in at risk youth reveal robust benefits of these approaches. This was especially true for tobacco-focused programs, particularly in school-based settings, reducing smoking directly and its associated harms (including reduced uptake). As in the primary search and analysis, no study offered peer-led interventions as a stand-alone approach, embedding peers in the design and delivery of larger interventions supported by experts, teachers or online programs. As with the primary review, more evidence is required to test the transportability of these models and results into Australian settings.

*Table 6. Overall evaluation of the seven included studies that met all key and secondary inclusion criteria for a review of peer-led interventions in at risk youth**

Component	Rating	Description
Evidence base	A	Excellent: several level I or II studies with low risk of bias
Consistency	B	Good: most studies consistent and inconsistency may be explained
Clinical impact	B	Good: substantial
Generalisability	B	Good: populations studied in the body of evidence are similar to the target population
Applicability	C	Satisfactory: probably applicable to Australian context with some caveats

*As per http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

Quality of evidence for peer-led interventions to prevent or reduce harm in at risk youth: manual searches

While the systematic literature search confirmed that peer involvement in substance use prevention for at risk youth has a small but promising body of evidence, these models are not widely evaluated, particularly in the Australian setting. There is however, anecdotal evidence from young people and youth-based community organisations in support of peer-led interventions as an effective method to educate young people and to reduce the harms associated with AOD use.⁵⁸

For the purposes of this Evidence Check, manual internet searches were carried out to identify peer-led interventions that may currently be taking place but have yet to be formally appraised and published in peer reviewed literature with a particular focus on Australia. These searches focused on interventions in settings such as music festivals, youth events and other community events.

Music festivals as an opportunity to reach at risk youth

Music festivals were chosen as one target of this search, as they offer a unique opportunity for the dissemination of information and harm-prevention interventions aimed at young people.⁵⁹ These events typically attract a group at higher risk for illicit drug use and hazardous consumption of alcohol⁶⁰, and also those who are open to experiential activity.⁶¹ To achieve the goal of risk reduction among festival patrons a social norms approach has been recommended.⁶² This strategy involves the circulation of healthy norm messages such as advertising that it is common for festivalgoers to consume bottled water in order to capitalise on the tendency for individuals to try to match the norm increase their own use of bottled water. This approach supports existing research on peer network interventions identified in the Evidence Check (e.g., Valente et al., 2007), which suggested that programs emphasising social interaction as the basis of the peer-led intervention is more beneficial when targeting healthy behaviour norms that are favoured by the target population.¹⁷

The Victorian Government's *Code of practice for running safer music festivals and events*⁶³ recommends the use of peer-support and education to enhance the safety and wellbeing of partygoers through the provision of harm reduction resources, services and information on drug safety. The role of the peer-support worker includes provision of initial crisis intervention and support to distressed or injured partygoers, and to facilitate access to trained medical or first aid personnel. Peer-led facilitation in these programs was intended to decrease the stigma associated with seeking help from non-peers at these events and is similar to the findings in the secondary analysis of this review, which indicate that in the context of talking about substance use the distinguishing feature of peer-led programs over non-peer-led approaches is increased levels of comfort in talking to peers about these issues (e.g., Pallaveshi et al., 2014).⁵⁶ These recommendations are echoed by the Canadian Centre on Substance Abuse which identified a need for festival organisers to provide a safe place where trained peer-support workers could assist festival patrons who are experiencing non-medical symptoms likely exacerbated by substance use or environmental factors (known as 'trip sitting'¹³). Services provided in this safe space include screening and identification of need for medical intervention, and providing emotional support. The guidelines do not specify the level of training that would be required for these peer-support workers or the specific content of their roles.

Australian and New Zealand initiatives using peer-leaders or peer-involvement

A number of initiatives using a peer-support model in festival and youth event settings have developed over the past 20 years. Red Frogs Australia was founded in 1997 to help young people during 'schoolies week' (high school graduation celebrations on the Gold Coast commonly referred to as 'schoolies'). In addition to schoolies-related events, Red Frog currently offers programs in high schools, universities, at festivals and sporting events. The peer-content of these programs includes harm reduction education through a pre-schoolies seminar, peer-support at events in the form of walking young people home after a night out, supporting young people who are experiencing adverse effects of AOD use and providing a positive peer role-model for non-use during the event. The Red Frogs model has been implemented Australia-wide and internationally in over ten countries. This successful expansion and continued provision of the Red Frogs program over 19-years is indicative of the acceptability and utility of this approach, although formal evaluation was not available to be included in this review.

The Australian Red Cross adopted a similar initiative when it established the save-a-mate program in 1997. Save-a-mate is run by young people across Australia. It aims to promote mental health and wellbeing through education and support on youth health issues, particularly those related to AOD use. Save-a-mate

volunteers provide assistance at festivals by distributing health promotion and harm reduction information, as well as providing 'chill-out' spaces at these events for patrons who may be experiencing non-medical adverse events such as confusion or panic following ingestion of drugs or alcohol. No evaluation data were available at the time of the current review to suggest whether this program is effective.

DanceWize is an ongoing program of Harm Reduction Victoria, which uses a peer education model to reduce drug and alcohol related harm at dance parties, festivals and nightclubs in Victoria. DanceWize was formerly known as RaveSafe and developed from a South African initiative established in the 1990's. In a similar model to Save-a-mate, DanceWize peer volunteers carry out activities such as discussing safer drug use with peers, disseminating health resources and providing peer-support in 'chill-out' spaces. As with save-a-mate, no evaluation data was available for the current review.

The Australian Injecting and Illicit Drug Users League (AIVL) runs the National Youth BBV, STI and Drug Use Project which aims to increase knowledge of blood borne viruses (BBVs), sexually transmissible infections (STIs) and drug use harm reduction. They have developed a series of projects in partnership with DanceWize and Youth Empowerment Against HIV (YEAH) to implement education workshops with young people. They identified key barriers to implementing the program throughout the project. Specifically, obstacles included youth organisations failing to identify their members as drug users and hence believing that they would not be interested in safer drug using information; community concerns that harm minimisation and safer drug using education meant 'teaching kids how to inject'; and a belief that education about BBVs was less important for non-injecting drug users who may still be exposed by others or by non-injecting routes.⁶⁴ Outcome evaluation data is still required for this initiative.

Community Action Youth and Drugs (CAYAD) is a New Zealand based program that takes a harm minimisation approach to the impact of AODs on young people.⁶⁵ The Safer Dance Parties (SDP) project has been operating in Auckland since 2008 and uses three intervention strategies:

1. Security search training to improve the effectiveness and standard practice of security guard searches at dance parties
2. Provision of lockable drug boxes for confiscated drugs at dance events
3. Use of a 'safety net' for partygoers in the form of a safe zone offered with support from Red Frogs.

A formal evaluation found that the three SDP strategies were effective in reducing the harm associated with AOD use at dance parties but noted that a barrier to the implementation of the Red Frogs strategy within this program was resistance from some venue managers and promoters, and insufficient awareness amongst patrons of the service that they provide.⁶⁵ To overcome these barriers it was recommended in the report that clearer role descriptions and more formalised training of the peer-support workers would strengthen the role of Red Frogs and improve harm minimisation.

Kenny, Kidd, Tuena, Jarvis, and Robertson (2006) describe the protocol for an Australia-based substance use prevention program for implementation in inpatient and community treatment facilities. Peer educators were young dual diagnosis (mental health and substance use) clients recruited via interview following response to an advertising campaign run throughout the relevant service settings. Peer educators were required to demonstrate that they were finding positive ways to manage their mental health and substance use. Successful applicants took part in a four-day training camp to learn skills related to the program and to bond as a team with each other, and with health professionals. Training emphasised information about medication, treatment options, relapse prevention and skill building to manage stress and illness symptoms. An evaluation of the program is currently underway.⁶⁶

Festival interventions for harm reduction in other health domains

Examples of peer-led interventions for sexual health promotion in the festival setting were also found in the manual search and may inform practices in the drug and alcohol harm-reduction domain. The NSW Festival

Initiative is a program led by the NSW Sexually Transmissible Infections Program Unit (STIPU) in partnership with HIV/AIDS and Related Programs (HARP) Health Promotion teams across NSW, Family Planning NSW and the NSW Sexual Health Infoline. One of the initiatives under this collaboration is the Get Tested, Play Safe (GTPS) campaign, featuring the Love Sex? Love Condoms! intervention aimed at increasing awareness of STI testing, treatment and prevention among heterosexual people aged 16–24 years old. The intervention strategy involved establishing a booth operated by a mixture of health staff (sexual health nurses and health promotion staff) and peer educators at a NSW festival. The booth engaged patrons using humour, educational games and distribution of safe-sex information and condoms. The organisers concluded that sexual health promotion messaging in the festival environment was well received.⁶⁷

Youth Empowerment Against HIV/AIDS (YEAH) delivered a national scale sexual health peer education and health promotion campaign with similar content to Love Sex? Love Condoms! at the 2014 Groovin' the Moo (GTM) music festival. An evaluation of the reach of the sexual health message found that 13% of survey respondents (approximately 13,260 patrons) recalled chatting with YEAH's peer educators across the six GTM events and, of those, 62% said they learnt something new about sexual health as a result.⁶⁸ No evaluation data exists regarding changes in behaviour or reduction in harms associated with this campaign.

The common elements of these festival-based interventions are the use of volunteer, same-aged peers to initiate informal discussions and distribute written health promotion information to festivalgoers, and to provide peer-support to patrons in distress. The information distributed by peer leaders at these events is typically developed by someone other than the peer leader. Furthermore, it is unclear as to how similar the peer-volunteers are to the festival patrons in social circumstances and lived experience of AOD use. Drawing on the peer reviewed literature (see Table 3 and Table 5), those interventions in which peers are nominated from within the peer group have better outcomes provided that the peer and peer group are not already using substances. In addition, there is evidence to suggest that involving the target group in the development and organisation of peer-led interventions (participatory design of intervention content) is associated with better uptake and prevention outcomes in the case of tobacco trials.^{54, 55} There is reason to suspect that similar benefits might apply in festival-based settings.

In summary, these identified festival-based approaches have been successfully implemented across a range of community events but by different organisations and with different drug use prevention targets. Importantly, these programs provide some of the first Australian-based examples of peer-led drug use prevention in situ. Although formal evaluation data was not available at the time of review to support the effectiveness of these programs in preventing drug use and related behaviours, these programs show promise and may offer insights for future interventions.

5 Discussion

This Evidence Check set out to identify, evaluate, and summarise effective models of peer-led interventions as they related to reducing risk of (and actual) use of alcohol and other drugs in at risk young people, aged 16-24 years old. Seven trials were identified that met all key and secondary inclusion criteria for the review. In general, these studies reported consistent evidence for the integration of peer-led interventions in other AOD use prevention and intervention programs, particularly for the domain of attitude change regarding substance use. Importantly, the behavioural effects of peer-led interventions (including intentions to use and actual use) were small to non-existent. When we relaxed the inclusion criteria for eligible studies in the review, a further 13 were identified. The majority of these were tobacco-focused prevention interventions and demonstrated consistent benefits for peer-led in aimed at reducing smoking and preventing its uptake. Of note, however, these peer-led interventions were not stand alone programs, rather they were embedded in education or treatment sessions carried out by teachers, health professionals, other adults or online programs.

This Evidence Check was commissioned to answer three key questions regarding the effectiveness of peer-led interventions/education for at risk youth (aged 16–24 years old) in preventing substance use and reducing associated harms. The answers to these questions, based on the review results, follow.

Question 1: Which models of peer-led education programs about alcohol and other drug use for at risk young people have been evaluated for the outcomes of interest?

A range of models have been developed to empower peers to deliver education and intervention to prevent substance use and promote healthy behaviours. These have typically embedded peers as ‘coaches’ to reinforce other content (e.g. delivered via Internet, group programs, school lessons, etc.), rather than as stand-alone interventions. Certainly, across the identified studies, using peers to leverage their social standing and influence in a peer network encouraged behaviours (including behaviour change) in the direction of reduced substance use. This was particularly true for tobacco.

Promising programs in the Australian setting include the use of peer leaders as real-time educators and interventionists at music festivals and community events. Although no evidence exists regarding the effectiveness of these approaches in preventing drug use or reducing harm, the use of peers in other contexts has been associated with increased comfort in talking about substance use over non-peer-led program.⁵⁶ In general, these adjunctive peer-led interventions are associated with reduced alcohol, methamphetamine and other substance use among both high school and university students, and clients in drug and alcohol rehabilitation and outpatient treatment populations, in at least some studies identified in the review.

Question 2: For those models identified in Question 1, which have been found to be effective in achieving the outcomes of interest, what are the key components of the model that led to success?

Several peer-led interventions are worthy of mention.

Campbell et al. (2008) compared control schools with schools who received the ASSIST peer-led intervention for tobacco use. ASSIST was described as a 10-week intervention involving peer supporters undertaking informal conversations about smoking with peers at opportunistic times (e.g. travelling to and from school or between classes) and logging those conversations in a diary. Current smokers could only be peer supporters if they committed to quitting. The ASSIST training program was effective in reducing uptake of regular smoking in adolescents for two years after its delivery.¹⁶

In another study, Valente et al. (2007) combined the Towards No Drugs (TND) intervention with peer network enhancement and evaluated the effect of TND alone versus TND+peer enhancement on substance use outcomes over time. TND is a 12-lesson program designed to prevent and reduce substance use in high school students delivered by external health educators. Peer leaders were engaged to support the TND program in schools by facilitating discussions about lesson content in small groups of their own friends. Peers were identified using social network nominations. Peer leaders were taught how to facilitate group discussion, manage group interaction and encouraged to embrace anti-substance use norms. TND alone was not associated with changes in any substance use. TND+peer enhancement was associated with decreased cannabis, cocaine and composite substance use relative to controls but only for those peers whose networks were not already using substances. This highlights the power of peer influence on both positive and negative attitudes to drug use (and related) outcomes.¹⁷

In a related study using the same TND intervention, Kwan et al. (2015), studied adolescents who were at risk of using due to the large proportion of substance users within their peer group and overall surroundings. In the TND+peer enhancement condition, males who received the intervention from a peer who was using at baseline transitioned to alcohol use at follow-up. Among females, cannabis and tobacco use by female peer leaders was associated with increased use of these drugs by program recipients at follow up.⁴⁶ Boekeloo et al. (2009) added to this trend by reporting that females reduced their alcohol consumption by a greater extent when a male led their peer intervention — again, only in populations not already using substances.⁴⁴

The review identified a potential disadvantage of peer education when it came to reducing alcohol use in first year high school students. Van Hout (2011) observed that those who received the peer-led intervention in first year reported increased and higher alcohol use than did those not receiving the intervention.¹⁸ Prevention of alcohol use in the target age group (16–24 year olds) via peer-led interventions was generally not strongly supported by the available literature in the current review. It may be that there is a certain social normalcy around alcohol use in this age group in contrast to tobacco use. It follows then that caution must be exercised in developing and implementing alcohol-related peer interventions in this age group.

No one setting emerged as more effective than others in which to conduct peer-led interventions. Successful studies used university, college, and school settings most often as they are often ideal places to capture an audience at risk of AOD related harm. The evidence suggests that peer-led interventions can be implemented in these settings and that participants will benefit over controls in terms of reduced use (most commonly reduced tobacco use) and related harms.

No specific components emerged as more important for particular at risk groups. There was some suggestion in the available literature that a focus on increasing healthy behaviours, rather than decreasing unhealthy behaviours, was associated with greater uptake and outcome of some peer-led interventions (e.g., Valente et al., 2007).¹⁷ Klatt et al. (2008) described such an approach in a case where the peer-led intervention group was incentivised to interact with an online program on college life and to monitor health behaviours over 30 weeks. The peer-led component involved responding to weekly emails from a peer coach. Smoking cessation content was introduced gradually over intervention period. In this study, the peer-led intervention group reported higher rates of tobacco abstinence and reduced frequency of smoking. Thirty-day abstinence rates were significantly higher in the intervention group, and were related to perceived support from the peer coach and email engagement.⁵¹

Question 3: For those models identified in Question 1, which have been found to be effective in achieving the outcomes of interest, are there key components, which are common across models?

Several elements were crucial to the success of the peer-led interventions in the current review:

1. Peer-led models of intervention that were based on social influence or social learning were the most common (and most effective) approach to prevention (or increasing) the target behaviours.

2. Asking people in the target group for the intervention to identify influential peers, in contrast to volunteers putting themselves forward for that role or being nominated by a teacher, health professional or non-peer.
3. Peer-led interventions involving a networking component (e.g. peers engaging their social networks to promote a prevention/reduction message) were only effective when the target population was not already using AODs (including tobacco) and when the peer delivering the support/education was also compliant with the message being sent via these interventions (e.g. abstinence, safe sex, harm reduction and so on).
4. Involving the target population (peer leaders or peers more broadly) in the development of content, the phrasing and framing of messages regarding drug-related goals and norms to be promoted in the content, and in organising the external (non-peer) input into the program, resulted in more effective prevention outcomes.

Limitations of the review

Several limitations of the current review should be mentioned. Firstly, no Australian research was identified on the use of peer-led interventions for AOD use in at risk youth. It is anticipated that this will change in the future through the identification of several protocols and programs currently under evaluation. However, the recommendations and outcomes of this review need to be interpreted in this context. Results and programs may not translate directly from other countries to the Australian context. Given the review identified no cost effectiveness studies in the field, this is a gap in translating existing research into practice and policy, and remains an important area to pursue with relevance to Australian translational efforts. The restricted date range set for the review (2006-2016) opens it to a risk that it failed to include studies of relevance to the Evidence Check. Furthermore, narrowing the study to 16–24 year-olds excluded a number of school-based prevention programs, which aimed to reach young people earlier in their high schooling. These have been included in the secondary analysis (see Table 5). Finally, the scope of this review reflects the content that was identified in the context of a rapid review and may have resulted in the omission of some other relevant studies or prevention ventures.

Recommendations

The NHMRC provides a grading system, based on the accumulation and evaluation of available evidence, on which to base the strength of recommendations for a range of clinical and other interventions. The definition of these recommendations is contained in Table 7.

*Table 7. Definition of NHMRC grades of recommendations for practice**

Grade of recommendation	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution

*As per http://www.nhmrc.gov.au/files/nhmrc/file/guidelines/stage_2_consultation_levels_and_grades.pdf

Based on the Evidence Check, the body of evidence provides some support for peer-led interventions and education for at risk youth (aged 16–24 years old) to reduce harms and prevent or reduce AOD use.

However, recommendations arising from this review must be applied carefully to individual and community settings, particularly in Australia where no studies were found for these programs. The results of the review suggests that peer-led interventions were most useful for enhancing ongoing programs of AOD use prevention as there is no evidence for their effectiveness as a stand-alone program in this context. In addition, it is recommended that peer-led interventions (including education programs) are safest and most effective in preventing initial use and uptake of substances (i.e. in cases of non-using peer leaders among non-using populations) but are not effective, and may even increase use, in already using populations. The same recommendation holds for the prevention or reduction of secondary harms of AOD use (e.g. unsafe practices). If peer-led interventions are to be effective in substance using or high-risk populations, the available evidence suggests that the peer leaders must commit to adopting the behavioural goal associated with the intervention (i.e. abstinence if promoting abstinence, safe practices if promoting safe practices, healthy behaviours if promoting healthy behaviours and so on).

Given the evidence reported in this review, however, these recommendations can at best be given a 'C' rating (as per Table 7), with care taken in applying these recommendations in practice and much more research required, especially in Australia, to test these approaches.

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7 Appendix A

Table S1. Search strategy for MEDLINE (adapted from MacArthur et al., 2016)

- 1 adolescent/ or child/
- 2 (school* or student* or child* or pupil*).tw.
- 3 (Adolescen* or teen* or young person or young people or youth* or young adult* or early adult* or juvenile* or minor? or emerging adult* or girl* or boy* or young m#n or young wom#n or young male* or young female* or under 18* or sixth-form* or secondary education or tertiary education or higher education or further education).mp.
- 4 or/1-3
- 5 exp peer-group/
- 6 (peer* adj3 (educat* or promot* or intervention* or program* or train* or counsel* or advis* or lead* or tutor* or advocat* or teach* or taught* or help* or instruct* or manag* or assist* or led or deliver* or directed* or involve* or participat* or support* or adviser* or advisor* or approach*)).mp.
- 7 (teen* adviser* or teen* advisor* or teen* tutor* or teen* trainer* or teen* instructor* or teen* leader* or teen* led or teen* delivered or teen* directed or teen* planned or teen* promoted or teen* taught).tw.
- 8 (adolescent* adviser* or adolescent* advisor* or adolescent* tutor* or adolescent* trainer* or adolescent* instructor or adolescent* leader* or adolescent* led or adolescent* delivered or adolescent* directed or adolescent* planned or adolescent* promoted or adolescent* taught).tw.
- 9 (pupil* adviser* or pupil* advisor* or pupil* tutor* or pupil* trainer* or pupil* instructor or pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* promoted or pupil* taught).tw.
- 10 (student* adviser* or student* advisor* or student* tutor* or student* trainer* or student* instructor* or student* leader* or student* led or student* delivered or student* directed or student* planned or student* promoted or student* taught).tw.
- 11 (young people adviser* or young people advisor* or young people led or young people delivered or young people directed or young people planned or young people promoted or young people taught).tw.
- 12 or/5-11
- 13 exp Drinking Behavior/
- 14 exp Alcohol-Related Disorders/
- 15 ((alcohol* or ethanol or beer or cider or wine or spirit* or alcopop*) adj3 (use* or usage* or

- using or intake or consum* or drink* or misus* or abus*).mp.
- 16 ((alcohol* or drink* or ethanol) adj3 (excess* or binge* or binging or intoxicat* or poison* or risk* or depend*).mp.
- 17 or/13-16
- 18 exp "tobacco use disorder"/
- 19 smoking/
- 20 smoking.mp.
- 21 ((tobacco or cigarette* or nicotine) adj3 (addict* or use* or usage or using or intake or consum*).mp.
- 22 or/18-21
- 23 cannabis/ or exp street drugs/ or marijuana smoking/ or Drug-Seeking Behavior/ or Substance-Related Disorders/ or substance abuse, intravenous/
- 24 ((marijuana or cannabis or recreational drug* or class c or substance) adj3 (abus* or use* or using or usage or misus* or smok* or addict* or depend*).mp.
- 25 ((Class a or class b or drug* or cocaine or ecstasy or mdma or glue or gas or aerosol* or solvent* or inhal?nt* or magic mushroom* or crack or ketamine or heroin or morphine or narcotic* or opiat* or opioid* or popper* or lsd or methamphetamine* or amphetamine*) adj3 (abus* or addict* or depend* or inhal* or misus* or sniff* or use* or using or usage)).mp.
- 26 or/23-25
- 27 (randomized controlled trial or controlled clinical trial).pt.
- 28 (randomi#ed or placebo or randomly).ab.
- 29 trial.ti.
- 30 clinical trials as topic.sh.
- 31 or/27-30
- 32 exp animals/ not humans.sh.
- 33 31 not 32
- 34 4 and 12 and (17 or 22 or 26)
- 35 34 and 33