

Intervention area: Prevention of cannabis use in young people delivered in non-school settings. Scoping Report

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Introduction

While school-based interventions have been the main focus of drug prevention strategy, non-school-based settings may also be employed to deliver preventive interventions. These include settings such as youth clubs, emergency rooms, colleges, young offender institutions, home, and the community [1]. Delivering preventive interventions in these settings widens the potential benefits to at-risk individuals who may not be fully engaged within the school system. It may also complement school-based interventions by involving the wider community.

Gates and colleagues [1] conducted a systematic review of current evidence relating to the efficacy of drug prevention delivered in non-school settings. Based on the findings from 17 studies included in this Cochrane review, the authors found a lack of evidence in the literature. Many of the included studies had “methodological drawbacks, especially high levels of loss to follow-up” (p.2) [1]. Except two of the reviewed interventions which were implemented in rural China and inner London, all others were from various regions of the United States.

Given the uncertainty associated with the strength of evidence and its possible lack of transferability to the Australian context, a full economic evaluation is probably not informative to the decision makers in Australia. Nevertheless, this briefing paper summarises the studies included in the Cochrane review, with the view to report to the Steering Committee of the ACE-Prevention Project about the current evidence on this topic area. This information may be useful to assess future evaluation need and policy consideration for this type of interventions.

Literature review

Types of interventions

The literature review of Gates and colleagues [1] categorised non-school-based interventions into four broad categories: (i) education and skills training, (ii) family interventions, (iii) multi-component community interventions, and (iv) brief interventions or motivational interviewing (Table 1, p.2). While all these interventions were designed to be delivered in non-school settings, the core elements of interventions differed significantly. For example, some interventions placed greater emphasis on improving individuals’ skills, while others aimed to empower families or communities as

a whole. The intervention targets also differed substantially. Some interventions targeted those who were already at-risk (eg. drug users), whereas the others offered broad-base primary prevention.

Table 1: Non-school based interventions

Type of intervention	Key intervention characteristics	First Author
Education and skills training interventions	Cognitive behavioural training and information delivered to young women who were at high risk of substance use.	Palinkas (1996) [2]; Lindenberg (2002) [3]
Family interventions	To improve family functioning or parenting skills, delivered to parents, children, or family as a unit, either alone or in group	Dembo (2002) [4]; Catalano (1997) [5]; Lochman (2002) [6]; McGillicuddy (2001) [7]; Redmond (1999)[8]; Spoth (2004) [9]; Wolchik (2002) [10]; Wu (2003) [11]
Multi-component community interventions	A range of community involvement in the preventive intervention such as workshops for community leaders, youth action teams and media advocacy	Biglan (2000) [12]; Flay (2004) [13]; Perry (2003) [14]; Schinke (2000) [15]; Wu (2002) [16]
Brief intervention or motivational interviewing	Brief intervention or single session motivational interviewing at primary care setting	McCambridge (2004) [17]; Ollansky [18]

Efficacy

As noted previously, the overall evidence of efficacy is not compelling. Most of the studies reported non-statistical significant differences between the intervention and the control groups in terms of drug use at follow-up. The follow-up period varied substantially from 8 weeks to 6 years. The following section provides a summary of findings for each group of interventions. The key components of each intervention are described in Table 2 on page 6.

Education and skills training

There were only two non-school-based interventions that focused on education and skills training. These interventions were delivered to at-risk young adults in group format. Both trials failed to demonstrate any evidence of efficacy [2, 3].

Family intervention

Although interventions with a focus on family functioning or parenting skills comprised the largest group of studies, most trials showed no differences between the groups in terms of drug use. One exception is the study by Spoth and colleagues [9], which examined the efficacy of two programs: “Preparing for the Drug-Free Years Program” and the “Iowa Strengthening Families Program” (ISFP).

This study showed significant effect on cannabis use in the past years for participants who received ISFP at 6-year follow-up (RR= 0.44, 95% CI: 0.20-0.96). The ISFP involved 7 weekly sessions of curricula, the first six sessions of which included 1 hour of skills training delivered to parent and child in separate concurrent sessions, and were followed by 1 hour of family session. The seventh session only involved the 1 hour family session. However, less than 70% of the initial samples were followed up at 6 years. The authors stated that the attrition rates were comparable to other studies and differential attrition was ruled out [9].

Another family intervention of potential benefit was the 'Mother Program' delivered to families with divorced parents [10]. This program focused on mother-child relationship quality, effective discipline, as well as increasing father's access to the child. This clinician-led program involved 11 group sessions and 2 individual sessions. With a remarkably low attrition rate of 9% at 6-year follow-up, the program demonstrated lower level of cannabis use ($p=0.02$) than control program for those children who reported problems at baseline. However, similar results were not observed in the more extensive 'Mother plus Child program', which comprised the 'Mother Program' plus 11 group sessions for children.

Multi-component community interventions

This group of interventions generally reported more favourable results than other types of non-school based interventions. Three [13, 15, 16] of the five interventions were designed to target at-risk ethnic groups in areas with high drug use prevalence in the US and in China. For instance, the study by Flay and colleagues [13] involved African American youths in inner city Chicago. The intervention combined both school and community-based components. At approximately 3.5 year follow-up, the study demonstrated a reduction in substance use amongst participants receiving the intervention, compared to those receiving health enhancement curriculum (Prevalence difference= 34%, $p=0.05$, effect size=0.45). The community intervention by Wu and colleagues [16] aimed to address substance use problem in rural China. Although a substantial drug use reduction amongst participants allocated to receive the intervention was observed, Gate and colleagues [1] found irregularity in the reported findings and have cast doubt on the overall strength of findings. The study by Schinke and colleagues [15] examined the effectiveness of a community intervention delivered to Native Americans. This study found that adding community intervention components appeared to have no additional beneficial influence on youths' substance use.

Perry and colleagues [14] reported the effectiveness of the 'D.A.R.E. Plus' program. This program was based on the much known 'D.A.R.E.' program that involved 10-session of curriculum materials delivered by members from the police force. The 'D.A.R.E plus' program added a classroom-based,

peer-led, parental involvement component to the original program. The expanded version was shown to be more effective than delayed program control ($p=0.05$) and the original program ($p=0.01$). Note that the original program was not found to be effective in this trial comparing to the control ($p=0.26$). The study by Biglan and colleagues [12] found statistically significant reduction in self-reported cannabis use in the group receiving community program in addition to the school-based program ($p=0.043$). However, the difference in the number of users at 4 years was small.

Brief intervention or motivational interviewing

There were two studies that were delivered through the primary care setting [17, 18]. These studies examined the efficacy of brief Intervention or motivational interview and have found significant reduction in the scores on the Substance Use Screening Instrument [18] or frequency of self-reported cannabis use [17].

Cost

Information about cost and cost-effectiveness of the abovementioned interventions is scant. Some studies (e.g. [13]) mentioned about the *potential* cost-benefit of the interventions but formal analysis was not presented. Only two of the interventions have been formally tested for their cost-effectiveness [4, 19]. Although both studies found the interventions to be cost-effectiveness, these studies examined the cost-effectiveness in terms of reduced crimes [4] and alcohol-use disorder cases prevented [19].

By nature of the intervention and the mode of program delivery, it is anticipated that some of these interventions (e.g. [9, 14]) will require significant resource inputs if adopted. This may pose significant issues to the feasibility of delivering the intervention in Australia, especially on a national scale.

Summary

Drug prevention programs delivered in non-school settings represent a diverse group of interventions. These interventions have been categorised as education and skills training, family interventions, multi-component community interventions, and brief interventions or motivational interviewing. Some of the interventions have been demonstrated to be efficacious in reducing substance use amongst the participants. However, the overall strength of evidence was generally weak. The transferability of evidence to the Australian context should also be considered because none of the studies reviewed were implemented in the Australian setting. The cost-effectiveness of the interventions was largely unexplored, although some interventions would require intensive

resource commitment if adopted. In summary, further evidence is required to support the implementation of non-school based drug prevention in Australia.

Table 2: Descriptions of studies included in the systematic review by Gates and colleagues

Author (year) Country	Study population	Intervention	Comparison	Outcomes	OR (95% CI)
Palinkas (1996) San Diego, US	<p>N= 296 female adolescents Age: 14-19 years Ethnicity: Multiethnic Other characteristics: pregnant or parenting and/or at risk of drug use Recruitment source: clinics and medical centers, schools, staff outreach, other professionals, parents and self-referrals</p>	<p>Both intervention and control groups attended a 90-minute class that met once a week for 16 weeks – “Facts of Life”</p> <p>Positive Adolescents Life Skills (PALS)</p> <ul style="list-style-type: none"> - Cognitive and behavioural training - in a group of 8-12 for an additional 90 minutes following their attendance of the Facts of Life class each week - moderated by Master’s level social workers 	<p>No skill training other than “Facts of Life”</p>	<p>Self-reported Marijuana use at 3 months</p> <p>*Note that drug use verification using urinalyses were conducted only selectively</p>	<p><u>Logistic regression</u></p> <p>All (n=289) <i>OR = 1.4 (0.7-2.8)</i></p> <p>No drug use at baseline (n=210) <i>OR = 2.9 (1.2-6.9)</i></p> <p>Reporting drug use prior to intervention (n=79) <i>OR = 0.4 (0.1-2.9)</i></p>
Lindenberg (2002) Georgia, US	<p>N= 50 young women Age: 15-24 years Ethnicity: predominantly Mexican-American Other characteristics: low-income Recruitment source: convenience voluntary sample recruited from 7 public & private primary care clinics serving predominantly indigent persons, local Spanish language newspapers, radio advertising</p>	<p>Each participants received financial remuneration at the completion of both the baseline and follow-up interviews</p> <p>Risk and resilience</p> <ul style="list-style-type: none"> - curriculum delivered in workshops - 2x per week over 2.5 weeks - Held in Spanish led by trained health workers 	<p>Health information</p> <ul style="list-style-type: none"> - Selected health education Spanish language pamphlets specific to three preventive topics: substance use, teen and unintended pregnancy and STDs and HIV/AIDS 	<p>Self-reported information at 3 months</p>	<p><u>Pre-post test</u></p> <p>No behavioural changes were reported in terms of substance use among either intervention groups.</p> <p>Other information was not presented</p>
Dembo (2002) Florida, US	<p>N= 277 arrested youths Age: 11-17 years Ethnicity: 39% African American + 61% others (predominantly white) Other characteristics: charged with burglary or theft Recruitment source: Hillborough county juvenile assessment center, who entered NIDA funded service delivery project</p>	<p>Family Empowerment Intervention (FEI)</p> <ul style="list-style-type: none"> - Empowering parents - Served by field consultants trained by licensed clinicians - Delivered at home - All household members were expected to be present - 3x per week for 1 hour over 10 weeks - Had 24 hour access to proeject staff 	<p>Extended Services Intervention (ESI)</p> <ul style="list-style-type: none"> - Families received monthly phone calls to maintain contact with project research assistants - Had 24 hour access to project staff 	<p>Self-reported information collected during cofidential in-depth interview</p> <p>*Baseline interviews lasting an average of 2 hours</p>	<p><u>Stepwise linear growth regression</u></p> <p>Youth completing FEI reported significantly fewer occasions of getting very high/drunk on alcohol over time..</p>

<p>Catalano (1997) Seattle, US "Focus on Families"</p>	<p>N= 144 methadone-treated parents (130 families and 178 children) Age: 3-14 years Ethnicity: 77% white Other characteristics: must have participated in the methadone program for a minimum of 90d Recruitment source: Two methadone clinics</p>	<p>Supplement methadone treatment with 33 sessions of family training combined with 9 months home-based case management Skill trainings: Total of 53 hours of training in small groups of 6-10 families (an initial 5-hour family retreat and 32 90-minute meetings twice weekly). Children attended 12 of the sessions Family case management: following a standardised manual; one home visit and 2 phone calls per week for about 9 months Monetary reinforcers and transportation were provided to participants</p>	<p>No supplemental services</p>	<p>Parent measures at 6 months and 12 months: relapse and problem-solving skills, family management practices, deviant peer networks, domestic conflict and drug attachment and misbehaviour, negative peers, substance use and delinquency. Self-reported data</p>	<p><u>ANCOVA</u> Parent outcomes: No significant reduction in cannabis use at both 6 and 12 month assessments Children outcomes: No significant reduction at both time points Post-hoc analysis suggested significant changes ($p < 0.05$)</p>
<p>Lochman (2002) Alabama, US</p>	<p>N= 245 children from 60 fifth-grade classes Age: fifth-grade children Ethnicity: n/a Other characteristics: moderate to high risks indicated children Recruitment source: 17 elementary schools in Durham public schools</p>	<p>Universal intervention – to all children Coping with the Middle School Transitions (CMST). Parent meetings and teacher in-service meeting, designed to promote home-school involvement and to address parents' upcoming concerns about the transition to middle school. Indicated intervention – to high risk children Coping power child component (16 month program, with 22 groups sessions scheduled for the fifth grade and 12 group sessions for the sixth grade). Coping power parent component (16 parent group sessions over the same 16-month period. 11 sessions in the 5th grade year and 5-session in the 6th grade year</p>	<p>No intervention</p>	<p>Composite measure of Alcohol, tobacco, marijuana use</p>	<p>Non-statistical intervention effects observed for both Universal and Indicated intervention</p>
<p>McGillicuddy (2001) US</p>	<p>N= 22 families Age: (child) 12-21 years Ethnicity: predominantly whites Other characteristics: - Recruitment source: respondents to flyers, newspaper advertisements, and radio and television commercials</p>	<p>Skill-training program 8 session treatment program: Session 1: Introduction Session 2-8: Review of previous week; Individualised Problem-solving; Individualised Modelling and rehearsal; skill training in Specific PSI topic area, homework, wrap-up and good-byes</p>	<p>Wait-list control</p>	<p>Cannabis use – Pre treatment and Post-treatment</p>	<p>ANCOVA Cohen's effect size = 0.08</p>

<p>Redmond (1999) Spoth (2004) Iowa, US</p>	<p>N= 238 families from 33 schools Age: six-graders Ethnicity: 98% whites Other characteristics: - Recruitment source: from 19 contiguous counties in Iowa</p>	<p>Preparing for the Drug-Free Years Program (PDFY) 5 weekly sessions lasting 2 hours on average 1 session requires the child to attend; parents attend all sessions Iowa Strengthening Families Program (ISFP) 7 weekly sessions; the first 6 sessions include 1 hour of separate parent and child training and 1 family hour; the last session includes only 1 family hour Both children and parents attend each session</p>	<p>No intervention but with the same data collection procedures as in the intervention arms i.e. in house interviews/observations, recorded with videotape lasting 2.5 hours</p>	<p>Self-reported cannabis use In the past year At 4 year followup At 6 year followup *Note that less than 70% of the participants were followed up at 4 and 6 years</p>	<p>PDFY vs control No statistically significant differences in cannabis use in the past year and, at 4- and 6-year follow-up for cannabis lifetime use ISFP vs control Cannabis use in the past year – no stat significant Cannabis lifetime use: <i>at 4 years</i> - RR=0.50 (95% CI: 0.24, 1.05). <i>at 6 years</i> -RR=0.44 (95% CI: 0.20, 0.96).</p>
<p>Wolchik (2002) Maricopa county, US</p>	<p>N= 218 families with adolescents Age: 15-19 years Ethnicity: >60% whites Other characteristics: children with divorced parents Recruitment source: computerised court records of randomly selected divorce decrees of families with children between 9-12 years. Letters and telephone</p>	<p>‘Manualised’ program: Mother program (MP): 11 group sessions and 2 individual sessions. Program focused on mother-child relationship quality and effective discipline, increasing father’s access to child. Clinician-led Mother plus child program (MPCP): Mother program <u>PLUS</u> 11 groups sessions for children</p>	<p>Control program Books on post divorce adjustment</p>	<p>Self-reported alcohol and marijuana use by adolescents whose mother participated in the program on a 7-point scale of times used (1=0 to 7 ≥40) in the past year. Pretest, 3 months, 6 months and 6 years post intervention</p>	<p>Drug dependence or abuse symptom count MP vs control Non-significant; however, there is a statistical significant effects on cannabis(p=0.02) and alcohol (p=0.005) for those having problems at baseline MPCP vs control Non-significant</p>
<p>Wu (2003) Maryland, US</p>	<p>N= 817 youths Age: 12-16 years Ethnicity: African american Other characteristics: low income communities Recruitment source: from 35 housing developments, community centers, and recreational centers</p>	<p>“Focus On Kids” (FOK) + “Informed Parents and Children Together” (ImPACT) i.e. FOK+ImPact <i>Alone:</i> 20-minute video emphasising several concepts of parental monitoring and communication and is followed by 2 instructor-led role-play vignettes. The intervention was delivered in the youth’s home <i>With boosters for “FOK”:</i> Boosters at 7 months and 10 months</p>	<p>“FOK” only 1 small group (5 to 10 youths), face-to-face HIV adolescent risk reduction intervention. Delivered in 8 sessions over 2 months.</p>	<p>Self-reported marijuana use at Baseline 6 months 12 months *6-months and 12 months adjusted for baseline use</p>	<p>FOK vs FOK+ImPACT Prevalence of lifetime cannabis use Baseline: 0.18 vs 0.20; ns 6 months: 0.23 vs 0.19; ns 12 months*: 0.24 vs 0.18 *p=0.04 FOK+ImPACT vs FOK+ImPACT+booster 12 mo: 0.20 vs 0.16; ns</p>

<p>Biglan (2000) Oregon, US (Project SixTeen)</p>	<p>N= 8 pairs of small communities (1700-13500 population) Age: 12-15 years Ethnicity: predominantly white Other characteristics: - Recruitment source: high schools</p>	<p>School based program + community program Community program (CP)</p> <ul style="list-style-type: none"> - Media advocacy - Youth anti-tobacco activities - Family communications about tobacco use - Reduction of youth access to tobacco 	<p>School based program alone Project Programs to advance Teen Health (PATH)</p> <ul style="list-style-type: none"> - 9 levels of instruction – first 4 levels were developed for grade 6-9 and others for high schools 	<p>5 annual surveys of seventh and ninth grade</p>	<p>CP vs PATH Significantly lower effects on the prevalence of cannabis use in the prior week: $p=0.043$ Baseline: 1.3% vs 2.5% Year 3: 4.6% vs 4.6% Year 5: 6.7% vs 8.5%</p>
<p>Flay (2004) Chicago, US (Aban Aya Youth Project)</p>	<p>N= 12 schools Age: grade 5 through grade 8 Ethnicity: Inner city African American youths Other characteristics: - Recruitment source: high risk sample of 12 poor, african american metropolitan Chicago between 1994-1998</p>	<p>Social Development Curriculum (SDC) Classroom based, consisting of 16 to 21 lessons per year in grades 5 through 8. It aims to teach CBT skills to build self-esteem and empathy, manage stress and anxiety, develop inter personal relationships, resist peer pressure and develop decision-making, problem-solving, conflict resolution, and goal setting skills.</p> <p>School/community (SCI) Included SDC plus parental support, school climate, and community components to impact all social domains of influence on children. The parent support program reinforced skills and promoted child-parent support program. The community program forged linkages amongst parents, schools and local businesses. Each SCI form a local taskforce consisting of school personnel, students, parents, community advocates, and project staffs.</p>	<p>Health Enhancement Curriculum (HEC) It consisted of the same number of lessons as SDC and taught with the same skills but with a focus on promoting healthy behaviours related to nutrition, physical activity, and general health care. It also integrated the importance of cultural pride and communalism.</p>	<p>Beginning and end of year 5 and at the end of each subsequent year</p>	<p>Substance use SDC vs HEC Diff=32% $p=0.05$, Effect size = 0.42</p> <p>SCI vs HEC Diff=34% $p=0.05$ Effect size= 0.45</p> <p>SCI vs SDC Diff=4%, $p=0.89$ Effect size=0.03</p>
<p>Schinke (2000) 10 reservations in North and South Dakota, Idaho, Montana and Oklahoma, US</p>	<p>N= 27 elementary schools, 1,396 children Mean age: 10.28 years Ethnicity: Native Americans Other characteristics: Recruitment source: from 5 states</p>	<p>Skills: Fifteen 50-minute weekly sessions- Instruction, modelling, and rehearsal in cognitive-behavioural skills</p> <p>Community: Series of awareness-raising activities involving the youth's family, teachers and school guidance counselors, neighbourhood residents, law enforcement officials, and commercial establishment frequented by youths. Flyers, posters and Informational meetings with community grps</p>	<p>No intervention</p>	<p>Pre intervention test 6 months after the intervention and every 12 months thereafter for 3 years, all youths were re-tested with measures employed at pretest i.e. at pretest; 6-; 18-; 30-; 42-months</p>	<p>Prevalence of marijuana use (>4 use in past week) Skills*: 7.11%; 9.17%; 5.39%; 4.93%; 7.03% Skills+community*: 5.68; 8.34; 5.44; 6.12;10.15 Control*: 5.54; 7.73; 7.27; 5.85; 14.84 $F(2, 1186)=7.63, P<.0001$</p>

<p>Perry (2003) Minnesota, US</p>	<p>N= 24 schools, 7000 students Age: seventh grade Ethnicity: 67.3% whites Recruitment source: urban, suburban, and rural areas of Minnesota, with most from the Minneapolis-St Paul metropolitan</p>	<p>D.A.R.E (Delivered by Police) 10-session curriculum provided skills in resisting influences to use drugs and in handling violent situations. Also focused on character building and citizenship test D.A.R.E Plus (partly delivered by police) Classroom-based, peer-led, parental involvement program, entitled "On the VERGE". VERGE is a 4-session program implemented by trained teachers once a week for 4 weeks. The program was designed as teen magazine, and the classroom activities focused on influences and skills related to peers, social groups, media and role models. The last part of the magazine was "home team" activities for students to complete with their parents. The <u>second component</u> involved extra-curricular activities for students. Youth action teams were organised to involve the students in determining the types of EC activities that would be created and in their planning and implementations.</p>	<p>Delayed program control</p>	<p>Self-reported cannabis, tobacco and alcohol use, multidrug use, violence and victimization, assessed at the beginning and end of seventh grade and at the end of eighth grade. Growth curve analytic methods were used to assess changes over time by condition</p>	<p>Drug use: Mean baseline score (SD) DARE plus: 36.02 (1.14) DARE: 34.96 (1.14) Control: 35.94 (1.15) Growth rate DARE plus: 3.28 (0.54) DARE: 5.07 (0.54) Control: 4.56 (0.55) D.A.R.E plus vs control p=0.05 D.A.R.E vs control P=0.26 D.A.R.E plus vs D.A.R.E P=0.01</p>
<p>Wu (2002) Yunnan, China</p>	<p>N= 38 villages, 19 schools, 1,307 males Age: 15-49 years Ethnicity: multiethnicity Recruitment source: Longchuan government and department leaders, village leaders, health workers, and school teachers</p>	<p>Workshops and regular meetings for village leaders and others were organised, games and videos with drug prevention messages were provided, and classes to improve literacy and agricultural yield were conducted. School programs were implemented, including didactic works, visit to detoxification centers and participation in drug prevention activities</p>	<p>NO intervention Control villages matched on prevalence of drug use</p>	<p>17-month period from May 1997-Sep 1998 was used to indicate incidence after the intervention</p>	<p>Incidence of new drug users Intervention: From 3.47% to 1.88% Control: From 2.10% to 1.5% OR=2.7 p=0.048</p>
<p>McCambridge (2004) Inner London, UK</p>	<p>N= 200 young people Age: 16-20 years Ethnicity: 61% Black; 32% White Other characteristics: current illicit drug users Recruitment source: 10 further education colleges across London</p>	<p>Motivational Interview - 1 hour single session face-to-face interview structured by a series of topics</p>	<p>Education-as-usual control Complete baseline and followup surveys only</p>	<p>Self-reported cannabis use at 3 months post intervention</p>	<p>Changes in weekly cannabis use (pre; post) Int: 15.7 times; 5.4 times Ctr: 13.3 times; 16.9 times Abstinence Int: 16/97 (16%) Ctr: 4/82 (5%) p=0.014</p>

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