Children's Mental Health Research
Quarterly
Children's Health Policy Centre
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Preventing Substance Abuse in Children and Youth

Overview

From typical use to problem abuse

Review

Saying more than no to reduce abuse

Feature

Why kids turn to alcohol and drugs

Letters

Parenting for health, leading by example

Next Issue

Treating substance abuse in children and youth

When prevention is not possible there is still much that we can do. In our Summer 2010 issue we examine the research on treating substance abuse and dependence in young people.

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About the Children's Health Policy Centre

As an interdisciplinary research group in the Faculty of Health Sciences at Simon Fraser University, we aim to connect research and policy to improve children's social and emotional well-being, or *children's mental health*. We advocate the following public health strategy for children's mental health: addressing the determinants of health; preventing disorders in children at risk; promoting effective treatments for children with disorders; and monitoring outcomes for all children. To learn more about our work, please see www.childhealthpolicy.sfu.ca

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Quarterly

This Issue

About the Quarterly

In each issue of the *Quarterly*, we try to capture the "best available" research evidence on interventions relevant to a specific topic in children's mental health. In doing so, we use systematic methods adapted from the Cochrane Collaboration. However, because the quality of evidence varies by topic, we retain flexibility in setting our acceptance criteria to ensure we are able to provide helpful information for policy-makers and practitioners. As well, we always provide details on the strengths and weaknesses of the research evidence.

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How to Cite the *Quarterly*

We encourage you to share the *Quarterly* with others and we welcome its use as a reference (for example, in preparing educational materials for parents or community groups). Please cite this issue as follows:

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From typical use to problem abuse

"You're just hanging out with your friends in the basement. And you think… 'How can we possibly get in trouble?' So they'll just bring a bottle down and you start drinking."

"Well, I think the biggest prevention with some of my friends is probably they won't do anything with drugs or alcohol while they're in sports, a varsity sport."

"One of the things that helps stop people from drinking is when parents wait up for you. My mom always waits up for me to come home, and she'll usually talk to me so, obviously, I'm not gonna come home super drunk."

— Comments from high-school students[1]

When prevention is an integral and well-funded part of a public health strategy, there is great potential to reduce the number of young people who develop substance use problems.

What is "normal"?

Many young people experiment with drugs and alcohol. Numerous studies have found that most youth try alcohol[2] and many also try marijuana.[3] In a representative survey of 29,440 British Columbia (BC) students, including some as young as Grade 7, more than half had used alcohol and nearly a third had smoked marijuana.[3] In contrast, the use of other substances was much less common (as shown in Table 1).

Table 1: Substance use in Grade 7 to 12 BC students[3]

Substance	Ever Used (%)
Alcohol	54
Marijuana	30
Prescription pills*	15
Hallucinogens	9
Mushrooms	8
Cocaine	4
Inhalants	4
Amphetamines	2
Steroids	2
Heroin	1

* Without doctor's consent.

When the line gets crossed

For some young people, what begins as an experiment turns into a problem. The current *Diagnostic and Statistical Manual of Mental Disorders* recognizes two types of serious substance use disorders: *abuse* and *dependence*.[4] *Abuse* indicates maladaptive use leading to clinically significant impairment and distress. *Dependence* indicates progression to a greater number of serious symptoms, including tolerance, withdrawal, increased use despite mounting problems, and cessation of important activities due to substance use.

Large-scale epidemiological surveys have found that an estimated 0.8% of children and youth ages 9 to 17 years may have one of these disorders at any given time. This means that nearly 4,000 children and youth in BC may be affected.[5] While many young people decrease or stop using by early adulthood, those who meet diagnostic criteria for substance *dependence* are significantly more likely to continue using problematically into adulthood.[2]

> *"To ensure that money spent on prevention is well invested, policy-makers and practitioners need information on the effectiveness of prevention programs."*

What protects, what increases risk?

The causal pathways for substance use disorders are the subject of much ongoing research. As with most mental disorders, it is thought that gene-environment interactions influence the development of substance use.[2] Numerous variables — at the individual, family and community levels — affect children and youth as they grow and develop over time. Table 2 outlines some of the variables that have been correlated to better and worse outcomes for young people.

Table 2: Substance use protective and risk factors in children and youth[6–13]

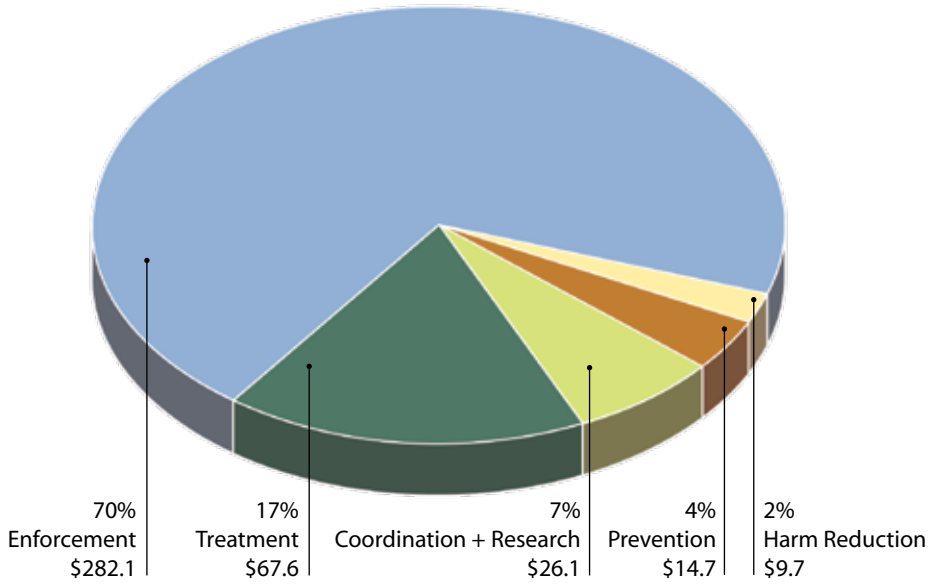
Level	Individual	Family	Community
Protective	• Favourable attitude toward restricting use • Acceptance of + respect for parents' positive values	• Warm + affectionate parent-child relationships • Shared family activities • Parents encouraging of positive social activities • Parents providing appropriate supervision/discipline	• Substances unavailable • Law/norms discouraging use • Positive peer affiliations • Positive school climate • Opportunities for positive social involvement • High community cohesion
Risk	• Favourable attitudes toward use • Use perceived as low risk • Other mental disorders, such as conduct disorder + depression • Low self-esteem • Limited social skills	• Parents providing substances, favouring substance use • Substance problems in family • Positive family attitudes toward antisocial behaviour • Neglectful parenting • Unstructured home environment	• Substances readily available • Substance using friends • Antisocial friends

Learning from history

Substance use has long been part of human history, as have efforts to control it. Yet despite the failure of early prohibition efforts, policies banning substance use — including America's "War on Drugs" — have continued in many nations.[14] In October 2007, the Canadian federal government launched the *National Anti-Drug Strategy*. According to a recent analysis, as much as 70% of the funding for this program has been allocated to law enforcement.[15] Many have criticized this approach, noting that law enforcement interventions have not been proven to reduce the harms associated with substance use.[15]

Other components of the national strategy received far less funding. For example, treatment received only 17% of these funds. Prevention, which aims to stop problematic use before it begins, received even less — just 4%. Harm reduction, which attempts to reduce the health, social and economic costs of substance use,[14] received the least funding, as depicted in Figure 1.

Figure 1: Funding for Canada's *National Anti-Drug Strategy*, 2007–08 (in $ million)[15]



When prevention is an integral and well-funded part of a public health strategy, there is great potential to reduce the number of young people who develop substance use problems. However, to ensure that money spent on prevention is well invested, policy-makers and practitioners need information on the effectiveness of prevention programs. To aid in this process, we conducted a systematic review of substance abuse prevention programs.

Saying more than no to reduce abuse

Emphasizing prevention is especially warranted with young people, who often can be reached before problems become entrenched.

Given the high costs associated with substance use disorders — emotional, social, physical and financial — more effective prevention needs to be considered. Emphasizing prevention is especially warranted with young people, who often can be reached before problems become entrenched. We therefore conducted a systematic review to identify effective programs for preventing substance abuse or reducing substance use, particularly those programs that could be delivered to whole populations of children and youth before risks were severe, i.e., universal programs. (Our next issue will feature a review of programs targeted toward young people with elevated levels of substance use.)

Finding the best studies

Of the 101 articles initially identified and retrieved for assessment, four randomized controlled trials (RCTs) met our inclusion criteria. (For a full description of our methods, please see the Appendix.) These four RCTs evaluated five different prevention programs:

- *Life Skills Training*[16, 17]
- *Parents Who Care*[18]
- *Preparing for the Drug Free Years*[13, 19]
- *Strengthening Families*[13, 16, 17]
- *Computer-Mediated Prevention for Girls*[20]

Table 3: Program and participant descriptions

Program	Average Age Sex Number of Participants	Intervention Description	Length and Delivery
Computer-Mediated Prevention for Girls[20]	13 years 100% female 591	Self-administered parent training + self-administered child skills training	9 sessions delivered via computer in homes
a: ***Iowa Strengthening Families*** OR b: ***Preparing for the Drug Free Years***[13]	11 years 51% female 667	a: Group parent training + group child skills training (both separate + joint components) b: Group parent training (with children attending 1 session)	a: 7 sessions delivered by trained implementers in communities b: 5 sessions delivered by group leaders in communities
a: ***Life Skills Training (LST)*** OR b: ***LST + Strengthening Families***[16]	12 years 47% female 1,654	a: Group child education + skills training b: a + group parent training + child skills training	a: 20–24 sessions delivered by teachers in classrooms b: a + 11–12 sessions delivered by facilitators in schools
Parents Who Care[18] a: group format OR b: self-administered format	14 years 49% female 331	a: Group parent training (with child attending) b: Self-administered parent training with weekly telephone support by family consultant	a: 7 sessions delivered by workshop leaders in schools b: 10 weeks of parents completing workbook + video in homes

All programs were delivered in the United States. Most included both parent and child training. As well, most were brief, typically delivered weekly for approximately two months.[13, 18, 20] One program — *Life Skills Training* (delivered both independently and in conjunction with *Strengthening Families*) — was delivered over one school year, with booster sessions provided in the subsequent school year for all participants and additional booster sessions a year later for a random selection of participants[16] As well as focusing on substance use, *Strengthening Families* and *Parents Who Care* also aimed to prevent behaviour problems.[16, 18] All programs were evaluated after a period of long-term follow-up, ranging from one to ten years. All evaluations were based on child or youth self-reports. The evaluation of *Preparing for the Drug Free Years* (currently called *Guiding Good Choices*) also included clinical interviews.[19] Table 3 describes the RCTs.

What were the outcomes?

All programs — except *Parents Who Care* — resulted in intervention children reporting significantly lower use or less problematic use of alcohol[13, 19, 20] and/or other drugs[13, 16, 17, 20] compared to control children (see Table 4). Notably, 10 years after participating in *Preparing for the Drug Free Years*, young women (but not young men) were also significantly less likely to have an alcohol disorder (6% versus 16%).[19]

Table 4: Substance use outcomes

Program	Follow-up	Outcomes*
Computer-Mediated Prevention for Girls[20]	1 year	• Significantly less alcohol, marijuana + non-medical drug use in the past 30 days
Iowa Strengthening Families[13]	9 years	• Significantly less polysubstance use + fewer episodes of drunkenness • No difference in alcohol-related problems or illicit drug use
Life Skills Training[16, 17]	1 year	• Significantly lower rates of ever using marijuana + methamphetamine • No difference in ever using alcohol, ever being drunk or methamphetamine use in the past year • Significantly less alcohol, marijuana + polysubstance use + fewer drunkenness episodes among "high-risk"** children
Life Skills Training + Strengthening Families[16, 17]	1 year	• Significantly lower rates of ever using marijuana + methamphetamine • No difference in ever using alcohol, ever being drunk or methamphetamine use in the past year • Significantly less marijuana + polysubstance use but no difference in alcohol use or drunkenness episodes among "high-risk"** children
Parents Who Care[18]	2 years	• No significant differences in alcohol or drug use
Preparing for the Drug Free Years[13, 19]	9–10 years	• Significantly fewer alcohol-related problems • Significantly lower incidence of alcohol abuse disorders among girls (but not boys) based on clinical interview • No difference in drunkenness episodes, illicit drug use or polysubstance use

* All reported outcomes compare children in the intervention condition to those in the control condition.
** "High-risk" children included the 20% of participants who reported using at least two substances (alcohol, cigarettes or marijuana) at least once before the intervention began.

Although *Life Skills Training* was provided to all children in participating classrooms, separate outcomes were reported for "high-risk" children (those who had used two substances — alcohol, cigarettes or marijuana — at least once before beginning the intervention). These young people made significantly more gains than their lower-risk counterparts, including using less alcohol and experiencing fewer episodes of drunkenness.[16]

Two evaluations also compared the relative effectiveness of two different programs. In one evaluation, a randomly selected sample of children and their parents concurrently participated in *Strengthening Families* to augment *Life Skills Training*. Doing so did not produce better outcomes than participation in only *Life Skills Training*.[16] The other evaluation compared *Strengthening Families* to *Preparing for the Drug Free Years*.[13] Here, *Strengthening Families* outperformed *Preparing for the Drug Free Years*.[13] Specifically, when examining the number of control children who could have been prevented from developing substance use problems had they received an intervention, *Strengthening Families* had substantially better outcomes than *Preparing for the Drug Free Years* (e.g., 23% versus 11% potentially prevented cases of alcohol-related problems).[13]

Putting research into practice

These results suggest that parent and child skills training programs have the potential to effectively prevent substance misuse. Particularly encouraging is the finding that program benefits appeared to be long-lasting, over 9 to 10 years in some cases. There is also evidence that substance prevention programs may be cost-effective. For example, both *Strengthening Families* and *Preparing for the Drug Free Years* were delivered in the United States with net cost savings. Based on averting potential costs associated with alcohol abuse, conservative estimates found *Strengthening Families* yielded net savings of $9.60 for every dollar invested, while *Preparing for the Drug Free Years* saved $5.85.[24] More research is needed to determine whether these same benefits can be achieved with Canadian youth. Rigorous evaluations of the most promising programs would help address this important question.

Unintended benefits: A prevention success

A significant overlap exists between the risk and protective factors for substance abuse and other mental disorders.[21] Because of this, prevention programs aimed at reducing one concern can sometimes have unplanned and far-reaching benefits for other concerns. This is highlighted in a recent evaluation of the *Classroom-Centred Intervention*[22] — a program designed to reduce early problem behaviours. (Because this intervention was not intended to be a substance abuse prevention program, it was excluded from our systematic review.)

The *Classroom-Centred Intervention* trains teachers in behaviour management and instructional skills in order to improve children's learning and behaviour.[22,23] When delivered to 678 Grade 1 students in nine American schools, not only did the program significantly improve boys' learning and behaviour,[23] it also reduced substance use seven years later for both boys and girls. Specifically, significantly fewer program participants went on to try tobacco, cocaine or heroin.[22] These unanticipated findings highlight the importance of carefully assessing the potential benefits of interventions. They also highlight the potential for scarce prevention dollars being maximized when programs prevent the development of multiple rather than single concerns.

Feature

Why kids turn to alcohol and drugs

With this issue of the Quarterly *we introduce a new feature — an interview with a public health practitioner. In future issues, we may from time to time also include interviews with youth. In either case our objective is the same: we want to show how research and policy intersect to have a real impact on children and youth.*

"When I think about prevention, I think, *Let's talk about creating healthy families and building strong human beings.*"

— Elaine Jones, public health nurse

As a public health nurse, based on the streets of downtown Vancouver, Elaine Jones doesn't officially work at either preventing or treating substance abuse. But she deals with the fallout every day.

"Part of my mandate is to work with high-risk young people who wouldn't normally access health care," she says. "So I end up spending time with marginalized people who use [drugs or alcohol]. That's how those worlds cross over with each other."

And what a crossover it is. Jones recalls meeting with a young teen who had started smoking "dope" in Grade 7 or 8. "He thought I was going to give him a 'Don't do drugs' lecture, but instead I asked him what he got out of the drugs." The boy's answer? They made him feel "dreamy and calm." It turns out he had severe learning disabilities and was labelled a "bad kid" at school. Drugs temporarily gave him an escape. As well, because he was socially isolated, using drugs gave him an instant connection to a set of peers.

Says Jones: "You wonder, if some of that had been figured out earlier and if he'd gotten more help with his learning disability, whether all this could have been prevented. I asked the boy, 'Is there any other way you could get that dreamy and calm feeling?' While I didn't expect an answer, I hoped he might start to think about it."

The bottom line, according to Jones, is that some kids *learn* to self-medicate to deal with their problems. And they're doing it for a whole range of specific problems — including hearing "voices," chaotic home situations, anxiety, poverty and learning disorders.

Creating healthy families

Because of what she sees on the streets, Jones believes addiction needs to be looked at from a larger social perspective. "There are so many factors that play into why people get addicted," she says. "When I think about prevention, I think, *Let's talk about creating healthy families and building strong human beings so they have the resilience to deal with whatever life throws at them.*"

Jones also notes that the real issue is often ideological. "For example, why do we persist in using DARE [a police-delivered anti-drug program], which we know doesn't work?" Indeed, a recent systematic review found that DARE is ineffective.[25] (Note that none of the evaluations of DARE met the criteria for our own systematic review.)

Is "scaring" kids effective?

Jones believes that the "scare kids off drugs" approach may work for youth who are low risk but is ineffective for the higher-risk ones. "The reasons they use are way more complicated," she says. "For every drug there's something it does for you that can be beneficial. Many of the youth I see use 'crystal meth' to self-medicate their ADHD [attention-deficit/hyperactivity disorder] and it helps them to focus. The problem is they start using more and more and they no longer get that benefit and they often don't recognize that."

To anyone who might argue that her approach — of focusing on the root causes of substance abuse — is either overly optimistic or unrealistic, Jones responds: "We spend so much money on enforcement and, instead, we could choose to reallocate those funds to prevention — not just because it's the right thing but also because it's the *economically smart* thing to do." She adds, "If you think about the impact of addiction, which perhaps leads to HIV, and the cost of it to our system, then you'll understand that it's economically smart to create healthy communities."

> *"We spend so much money on enforcement and, instead, we could choose to reallocate those funds to prevention — not just because it's the right thing but also because it's the* economically smart *thing to do."*

Parenting for health, leading by example

To the Editors:
When my children were younger I worked hard to explain the importance of exercise and the value of healthy "fuel" for the body and the mind. Now, as they reach adolescence and I see their sudden preoccupation with appearance, I worry. Where before I might have said, "Hey, maybe you should have a piece of fruit instead of that cookie," I fall silent. My first thought is *Oh no, I don't want her to think she's fat*. It feels as if the right messages are suddenly the wrong messages. As parents, how do we balance the concern for healthy eating and healthy lifestyle with not wanting to push our children into an unhealthy obsession with their bodies?

Jodine Chase
Edmonton, AB

You raise a concern that many parents share. As young people reach puberty, they start to become increasingly concerned about their bodies and appearance. At the same time, their autonomy increases substantially, including over diet and activity. Nonetheless, parents can still encourage a positive lifestyle without fostering an unhealthy focus on appearance. Having shared meals can be one important step. When families eat dinner together, often teenagers' consumption of fruit, vegetables and whole grains increases while their consumption of fatty foods and soft drinks decreases.[26] As well, when parents stock their homes with fruits and vegetables and themselves eat these foods, children's and teens' consumption typically increases, too.[26] In contrast, parents should avoid encouraging their children to diet. Teens whose parents pushed them to diet report engaging in more unhealthy dieting behaviour, not less.[26]

Parents can also encourage physical activity by being active themselves and by supporting their teens to be active as well. One study found that when parents watch more than two hours of television a day, children are almost twice as likely to be inactive, compared with parents who watch less television.[26] By modelling positive behaviours and encouraging them for their health benefits — rather than as a strategy for fitting into really tight jeans — parents can help their children to engage in healthy behaviours that last a lifetime.

Appendix

Research methods

For our review, we used systematic methods adapted from the *Cochrane Collaboration*.[27] We limited our search to randomized controlled trials published in peer-reviewed scientific journals.

To identify high-quality evaluations of substance abuse prevention programs, we first applied the following search strategy:

Sources	• Medline, PsycINFO, CINAHL, ERIC and the Campbell Collaboration Library
Search Terms	• Substance-related disorders, substance abuse, drug abuse, drug addiction, addiction *or* drug abuse prevention *and* prevention
Limits	• English-language articles published from 2004 through October 2009* • Child participants (ages 0 to 18 years)

* We limited our search to five years given that our previous report *Preventing Substance Use Disorders in Children and Youth*[28] included RCTs published up to October 2004.

Next, we applied the following criteria to ensure we included only the highest-quality pertinent studies:

- Clear descriptions of participant characteristics, settings and interventions
- All interventions were universal
- Random assignment of participants to intervention and control groups at study outset
- Follow-up of 12 months or more (from end of intervention, including booster sessions)
- Maximum attrition rates of 20% at post-test *or* use of intention-to-treat analysis
- Outcome measures included both alcohol and drug use
- Reliability and validity of all primary measures discussed or documented
- Levels of statistical significance reported

Two different team members then assessed each retrieved study to ensure accuracy of interpretations. Any differences were discussed until consensus was reached. Data were then extracted and summarized by the team.

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BC government staff can access original articles from BC's Health and Human Services Library.

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Links to Past Issues

2010/ Volume 4

1 - The Mental Health Implications of Childhood Obesity

2009/ Volume 3

4 - Preventing Suicide in Children and Youth

3 - Understanding and Treating Psychosis in Young People

2 - Preventing and Treating Child Maltreatment

1 - The Economics of Children's Mental Health

2008/ Volume 2

4 - Addressing Bullying Behaviour in Children

3 - Diagnosing and Treating Childhood Bipolar Disorder

2 - Preventing and Treating Childhood Depression

1 - Building Children's Resilience

2007/ Volume 1

4 - Addressing Attention Problems in Children

3 - Children's Emotional Wellbeing

2 - Children's Behavioural Wellbeing

1 - Prevention of Mental Disorders