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Drug prevention programmes for young people: where have we been and where should we be going?

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ABSTRACT

Aim Substance use by young people has long been a concern of western society, but opinion is mixed as to which prevention approach offers the greatest benefit, and whether indeed there is any benefit at all. This paper reviews the nature of prevention programmes, the research evidence that underpins these programmes and the prevention objectives against which effectiveness is measured. The aim of this is to create better understanding of the elements that maximize programme effectiveness, what can be achieved by prevention programmes and how programmes can be improved. **Findings** There is a range of prevention approaches for which there is evidence of effectiveness. Some are classroom-based; some focus upon parenting; some have substantial whole-of-school and community elements; and some target risk and protective factors in early childhood. All, however, are based substantially on the social influence model. In an attempt to improve practice lists of effective programmes have been developed, but there are concerns about the science behind selection. On balance, there is consistent evidence that social influence prevention programmes do have a small, positive effect on drug use, but this then raises the question as to whether harm, rather than use, would be the more worthwhile target for prevention. Prevention that seeks to reduce harm has been demonstrably effective, but has found little support in some jurisdictions. **Conclusion** Research has created a progressively better understanding of how to optimize programme effectiveness and what can be achieved realistically by even the most effective programmes. However, further research is required to identify which, if any, particular approach offers greater promise. The effectiveness of harm reduction should be compared with more traditional abstinence and the additional effects of whole of school, parent and community elements need to be measured more accurately. Contemporary social influence prevention programmes are flawed, but the approach is still the best way of influencing drug use behaviour in young people as a whole. Evidence-based refinement is the best option for greater benefit.

Keywords Drug use, prevention programmes, young people.

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THE DEVELOPMENT OF PROGRAMMES TO PREVENT DRUG USE BY YOUNG PEOPLE

Substance misuse by young people has been a major community concern in most western industrialized nations since the 1960s. Initially, the focus of concern was on illicit drugs, because of the rapid rise in use by young people. This was centred in the United States, where the trend originated, but concern soon spread to other western countries, as in turn their young people increased use of illicit drugs. Over time this community concern has also come to encompass the legal drugs of alcohol and tobacco, as scientific evidence showed increasingly that it was these substances that caused the great bulk of drug-related harm experienced by young people.

In response to this community concern, governments sought ways to protect young people comprehensively and saw education as the best deterrent [1]. In the United States this approach was articulated by the President's Advisory Commission on Narcotic and Drug Abuse [2]:

> The teenager . . . should be made aware that, although the use of a drug may be a temporary means of escape from the world about him, in the long run these drugs will destroy him and all he aspires to (p. 17–18).

In the main, these programmes were school-based, targeted all young people and sought to prevent drug use by providing information on their harmful effects. Contemporary reviews, however, indicated consistently that these information-based programmes did not change drug use behaviour [3,4]. The school-based programmes developed in the 1970s responded to this failure by taking a fundamentally different approach that sought to prevent drug use by enhancing personal development: affective education. Here, the theory was that if young people were emotionally stronger and had better decision-making skills they would be better able to resist drug use [5]. Once again, however, contemporary reviews indicated clearly that these programmes did not change drug use behaviour [6,7].

Despite these earlier failures, the universal approach to preventing drug misuse use by young people is still favoured, albeit with a different set of conceptual underpinnings. A new generation of school drug education programmes, based on social learning theory, started appearing in the 1980s. These were theoretically and methodologically more rigorous, and for the first time prevention programmes demonstrably changed drug-using behaviour [8]. The core model is based on the assumption that young people are susceptible to social influences to use drugs. Accordingly, prevention needs to make students aware of these influences and equip them with the skills to resist. This approach has been elaborated subsequently by research that identified the benefits of two additional components: a more general social-skills component, such as in the Life Skills Training (LST) programme developed by Botvin and colleagues [9]; and a component providing normative information on drug use by young people, first added by Hansen & Graham [10].

Prevention programmes for young people are still based predominantly on social influence concepts. However, there have been a number of extensions to the model. Parenting programmes have been developed on the basis that parents can have a major influence on their children's drug use behaviour through modelling, attitudes and family relationships, and there has been increasing support for this approach as effective primary prevention for young people [11]. The Strengthening Families Program: For Parents and Youth 10–14 (SFP 10–14) developed by Spoth and colleagues showed that brief family skills training increased parenting skills, strengthened family relationships and reduced drug use by young people [12,13]. Kumpfer and colleagues reported that family-focused interventions were the most effective interventions for preventing drug use by young people, with an average effect size two to nine times the size of school-based interventions that focused solely upon young people [14]. These researchers acknowledged, however, that the two approaches could be complementary, as in combination they produce an additive effect.

Whole-of-school and community elements have been added in recognition that the messages about drug use delivered in a classroom benefit from broader reinforcement. Taking a more holistic approach to prevention has good theoretical support from social learning theory and is logically compelling, in that what occurs within the limited time-span of a formal prevention programme is unlikely to have lasting effects if it is not reinforced by ongoing contextual influences [15]. Accordingly, a supportive school and community environment should enhance what occurs in the classroom.

The Gatehouse project in Australia, which took a whole-school approach to the emotional and behavioural wellbeing of students, had some success in reducing alcohol, tobacco and cannabis use [16,17]. However, the results are not compelling, as most failed to reach significance. Flay was cautious about the benefits of a whole-school approach to drug education [18]. He reviewed all known drug education studies that combined school curriculum with whole-school support and concluded that there is little evidence of an added effect. However, he did note that this is mainly because few study designs allowed for the measurement of component contributions.

Programmes such as Project Northlands combined classroom and parent interventions, designed to influence young people not to use alcohol, with community-based strategies, designed to reduce alcohol availability and change community attitudes as to the acceptability of youth drinking [19]. Findings from the latter stages of the programme indicated that this multi-component, community-wide approach was effective in reducing the rate of growth in alcohol use in the intervention communities [20]. Biglan and colleagues added further understanding about the benefits of community support. They compared the effects of an anti-smoking school programme with the effects of the school programme plus community intervention that comprised media advocacy, family communication and reduced youth access to tobacco. They found that the combined school and community programme was more effective than the school programme alone [21]. These and other studies suggest that prevention interventions for young people that contain a community component are more effective, and that the combination may be more effective than each component in isolation [22]. However, the extra benefit needs to be weighed against the considerable extra cost and effort involved.

In addition to programmes for young people that focus directly upon preventing drug use there are intervention programmes that target risk and protective factors in early development, prior to the onset problem behav-

iours. Here, the theory is that certain factors in a child's life predict a range of health and social problems, including problems with drug use. Accordingly, if risk factors are reduced sufficiently and protective factors enhanced sufficiently, drug use problems can be reduced or prevented. The Communities That Care (CTC) programme identified 20 risk and nine protective factors across the domains of community, school, family and peer/individual that predicted drug use [23]. The authors indicated that these findings will allow prevention programmes to be more focused by addressing those risk and protective factors that affect the target population most negatively. Such programmes are likely to add to the prevention effort for young people by giving them the resilience to make better choices about drug use. However, can they be considered stand-alone drug prevention, given that they target mediating variables, which improve general prosocial behaviour, rather than drug use *per se*, and seek to have their effect years ahead of when young people are exposed to choices about drug use?

DEVELOPING AN EVIDENCE-BASED APPROACH

The development of prevention programmes for young people has been influenced by two major, and generally incompatible, forces: political and ideological dictates as to how young people should behave and evidence of effectiveness. Over time, governments have gradually come to the view that prevention for young people has to be underpinned by demonstrably effective programmes, rather than approaches whose appeal relies more upon strong, non-controversial messages and good marketing. The community may feel good about delivering a strong anti-drug message, but any programme that does not change behaviour beneficially is a waste of resources and ultimately a failure of responsibility towards young people.

Dusenbury & Falco led the search to identify the key elements of effective practice in prevention programmes for young people. They reviewed school-based programmes undertaken between 1989 and 1994 and interviewed 15 leading researchers in the area. From this they identified 11 elements that were critical for programme effectiveness [24]. The US Government's Department of Education took up this approach in 2001, when it set out criteria that it expected school-based drug prevention programmes to meet if they were to receive federal funding [25]. In order to assist schools in identifying which programmes met these criteria, this agency produced the *List of Exemplary and Promising Prevention Programs*, which in its initial form identified nine exemplary and 33 promising programmes. Since then many other lists identifying effective school-based prevention programmes have been produced by US government agencies and academic bodies, and some of these also influence funding decisions [25]. This approach is commendable in terms of both sound scientific and financial practice and should lead to better prevention. However, the recommendations are only as good as the evidence from which they derive, and it is here that concerns have been raised by a number of researchers [25–27].The criteria used most commonly for listing a programme as effective were use of an experimental or rigorous quasi-experimental design and positive, statistically significant effects on drug use behaviour [26]. If these criteria are accepted as valid, and there could be some debate on this, does that mean they are sufficient for designating a programme as effective? A number of other concerns have been raised as to the science that underpins prevention programme research [25,26]. Some studies have adjusted their outcome measures so that change is demonstrated more readily. *P*-values of 0.1 have been used, instead of the more traditional level of 0.05, which doubles the chance of finding a statistically significant result. Using a one-tailed test of significance similarly increases the chance of finding a significant effect, as this tests only for change in a positive direction. Studies often delivered their prevention programme to a group, typically a class or school, but then had the individual student as their unit of analysis, which does not account for the clustering effect of students being more like others in their group than in other groups. Many studies had large numbers of outcome measures, which means a greater likelihood that significant effects occurred by chance. Some studies relied upon findings from subgroups in their sample, where the programme was implemented in an optimum manner, to indicate effectiveness. There were few independent studies where the evaluation was undertaken by researchers other than those associated with development of the programme. Follow-up periods were usually short (1 or 2 years), and typically, as the follow-up periods grew longer, the positive effects were less evident and high attrition became a problem.

Foxcroft and colleagues, in their systematic review of primary prevention alcohol programmes for young people, found that while some programmes were effective in the short and medium term the findings were unconvincing, because there were both significant and non-significant effects in the one programme, effects sizes were small, and where change was significant in the short term it tended to disappear at medium-term follow-up [11]. In the longer term, the only programme considered promising was the SFP 10–14, developed by Spoth and colleagues [12]. The effectiveness of this programme seemed to increase over time, and 'number needed to treat' was relatively low for positive outcomes on a number of alcohol use measures.

However, should parent/family programmes be considered primary prevention? A classroom, and even a whole-of-school programme, can be delivered in a consistent manner to all students because they have to participate in the curriculum set by the school, but this obligation does not apply to the parents of students. Dusenbury found that that universal parent programmes had difficulty recruiting and retaining participants, which raises questions about selection bias [28]. Typically, 40–50% of eligible parents participate in such programmes and a similar percentage of those who participate fail to complete all sessions [29]. The implementation of the SFP 10–14 with families of children in 36 rural schools in the Midwest of the United States, already receiving a classroom drug education programme, is a case in point. Fewer than half of the 541 eligible families were chosen to receive the SFP 10–14 component and only 115 participated in more than half the sessions [30].

All this suggests that even those prevention programmes for young people considered best of their type are flawed methodologically in various ways, achieve limited universal change in drug-using behaviour or can only reach a select population. Does this, then, lead to a conclusion that primary prevention of drug misuse for young people is a waste of time and effort: a poor use of resources that cannot achieve the goals set for it? Babor and colleagues condemn school programmes unequivocally as ineffective on the basis of the research evidence [31]. Are there more positive perspectives, which can be justified both in conceptual and empirical terms?

Craplet was particularly concerned about support for school programmes if it became accepted wisdom that such an approach to prevention was not effective [32]. He saw preventive education as a responsibility towards young people, particularly in terms of providing a bulwark against consumption marketing by the alcohol industry. Jernigan, among other researchers, has expressed concern about assessing school programmes in isolation rather than as a component within a broader community response that shapes normative use [33]. Foxcroft is more concerned that prevention programmes for young people are judged ineffective on the basis of evidence that is simply not of sufficient quality to support such a decision [34]. Rather than an issue of 'evidence of absence', he considered that the issue is one of 'absence of evidence', and even here he concedes that this has to be tempered by the findings from several meta-analyses, which showed that school-based prevention programmes did have a small, but measurable, effect on levels of use [35,36]

There are other meta-analyses that have made similar findings of a small positive effect [37,38]. White & Pitts found that 10 of 11 methodologically robust interventions with a 1-year follow-up were associated with a reduction in drug use, with a combined effect size of 0.037, which means that 3.7% of young people exposed to those programmes delayed use or never used [38]. They compared this with trials of pharmaceutical drugs that were terminated when effect sizes were even smaller because the evidence of effect was considered sufficiently compelling for it to be unethical to continue giving a placebo. Further support for the public health benefit of universal prevention programmes for young people is provided by Caulkins and his colleagues, who modelled the social benefit savings produced by the most effective school drug education programmes [39]. They reported that such programmes produced a social benefit saving from reduced drug use of at least US$840 per participant. These savings (US$150) considerably exceeded programme costs. The findings, that modern drug education results consistently in a reduction in drug use, albeit small, and produces a saving of $5.60 for every dollar spent, suggest that a universal approach to prevention for young people is of benefit to society. Such an approach will not eliminate drug use swiftly or comprehensively, but it does contribute to incremental reduction across the whole youth population. On balance, prevention programmes for young people, as part of a broader public health approach to drug use, seem to be a wise use of public funds.

WHAT SHOULD PREVENTION PROGRAMMES PREVENT?

The other issue that has to be considered in any assessment of the effectiveness of drug prevention programmes for young people is: what is the programme trying to prevent? Most programmes have some form of abstinence as their criteria for success, but is this realistic for drugs where use is highly prevalent, such as alcohol and possibly tobacco and cannabis? Also, the great majority of drug prevention programmes are predicated on the individual deficit model, which holds that use occurs because something is lacking in the individual. This could be some combination of knowledge, social competence and refusal skills, and the programme seeks to prevent uptake by remedying these deficits. Again, is this an appropriate approach when some forms of drug use are normative? Alcohol is consumed by between 66% (United States) and 97% (Denmark) of the adult population of western industrialized countries and is interwoven into most adult social activities [40]. Is it any wonder, then, that the young people of these countries seek to drink when they are on the threshold of adulthood? Should our prevention strategies be based on a conceptualization of this behaviour as deficient and in need of remediation? Ideally, parents, politicians, policy makers and prevention scien-

tists alike would prefer to prevent all drug use because of the inherent risks involved, but this is not realistic and programmes with such a singular aim may be actually be counterproductive. Dietze, among others, has made the point that curiosity, experimentation and definition of personal boundaries are all part of the psychosocial development of young people. Often this involves drug use, which needs to be taken into account by prevention programmes rather than pathologized [41].

Prevention programmes need to acknowledge why drug use is attractive to young people; programmes need to acknowledge that drug use is not necessarily drug abuse; and programmes need to be part of a broader approach that addresses the systemic factors such as advertising and sale strategies that encourage underage and inappropriate use of legal drugs. In general terms, programmes need to target problematic use more effectively than simply being satisfied with reduced use as the measure of success. As Roona and colleagues pointed out, an intervention may be very effective at reducing binge drinking by teaching how to drink in moderation, but have no effect on the uptake or prevalence of alcohol consumption. In terms of the usual measures of programme effectiveness such an intervention would be considered ineffective, even though it had produced a beneficial outcome [42].

Setting realistic goals for a prevention programme and selecting outcomes measures that are related directly to programme activities is important in setting up a meaningful evaluation, and it is here that harm reduction concepts are important. With harm reduction, the measurable objective is a reduction in harm, whereas with abstinence or use reduction the measurable objective is no or reduced use. This does not mean that a harm reduction programme cannot use abstinence or use reduction strategies, but these are not ends in themselves. An intervention strategy should be chosen on the balance of evidence that is it likely to prevent harm, and its effectiveness should be evaluated in terms of the reduced harm, or risk of harm, achieved, even if consumption remains unchanged [43]. Put simply, if a prevention programme fails to convince a 17-year-old boy not to drink a six-pack of beer at a party, but succeeds in convincing him to sleep over and not drive home, it would be considered ineffective in traditional abstinence/use reduction terms but effective in harm reduction terms. The School Health and Alcohol Harm Reduction Project (SHAHRP) provided research evidence of this differential effectiveness. When surveyed 17 months subsequent to programme completion, students who received this harm reduction intervention were only 4.2% less likely to consume alcohol at risky levels, but they were 22.9% less likely to experience alcohol-related harm [44].

Having harm reduction as the goal of prevention programmes for young people is not new. In Australia harm reduction has been a guiding principle of government policy, as outlined in successive national drug strategy documents dating back to 1985 [45]. However, the application of a harm reduction approach has been resisted strongly in some jurisdictions. Beck reported that in the late 1970s the United States briefly shifted its prevention emphasis from abstinence to misuse or abuse prevention, but this was reversed in the early 1980s in the face of strong pressure from the parent power movement, and since 1989 federal guidelines mandate that prevention programmes emphasize 'zero tolerance' and abstinence [46,47]. Williams & Perry specifically outlined that Project Northlands did not take a harm reduction approach with alcohol, because use is illegal for their target group of high school students and the approach would consequently be condoning illegal behaviour [19]. It should be noted, however, that in most western jurisdictions, including most states in the United States, what is illegal is the supply of alcohol to a minor, not consumption by a minor. Even where consumption is proscribed it is permitted in a variety of situations, such as on private premises or with parental permission [48]. Putting aside the 'illegal' argument against providing harm reduction education on alcohol, the important consideration is that most young people have started drinking well before they reach the legal purchase age and abstinence-orientated prevention is likely to be irrelevant to them.

Taking a harm reduction approach to alcohol use by young people is in many ways the easiest to justify, because it is a drug that is legally available, socially acceptable, readily accessed and problems tend to be acute and associated with binge consumption. Having harm reduction as a goal for tobacco or illicit drug use is more problematic, because many of these attributes do not apply: for instance, tobacco may be available legally, but it is less socially acceptable than alcohol and problems emerge in the longer term; illicit drugs, by definition, are illegal, which also makes them less socially acceptable and harder to access. There is some research on harm reduction approaches to smoking by young people, and one school-based study found that a harm reduction intervention was superior to a conventional abstinence-orientated programme on some measures. Students in the harm reduction group were less likely to experiment and less likely to smoke heavily, while not initiating smoking at a greater rate than the abstinence group [49]. There is very little research on harm reduction approaches to illicit drug education because of the potential for misrepresenting motives. Here, however, the emphasis need not be on personal drug use, but rather on generic personal safety skills, keeping safe in situations where others are taking drugs or obtaining help for friends who have taken drugs.

Even in officially supportive jurisdictions such as Australia, the approach is handled very carefully because of the potential for misunderstanding and public backlash. In Australia, research suggests that teachers are very supportive of having harm reduction as the goal of prevention programmes, with more than 90% of a national sample considering it a relatively or critically important principle for effective practice [50]. Typically, however, teachers also express concern that the approach can be represented as condoning or even encouraging drug use, thus undermining both their professional judgement and the credibility of school-based prevention programmes. The approach can also be seen as a pragmatic, value-neutral response, which ignores the moral dimensions of drug use, but there is a strong argument against this. Harm reduction does have a strong moral dimension because it values the health and welfare of the individual over an ideological position opposed to all drug use. This allows harm reduction programmes the flexibility to select strategies, which on the basis of evidence are most likely to reduce harm, whereas programmes with a basis in an abstinence ideology cannot move away from abstinence goals no matter how strong the evidence that they are not working.

IMPROVING FUTURE PREVENTION PROGRAMMES

Contemporary prevention programmes for young people have flaws both in concept and methodology. However, on balance there is growing evidence that those with the greatest rigour do have a small, but consistently beneficial, influence on drug-using behaviour. This suggests that the substantial amount of research and development that has occurred over the past four decades has created a progressively better understanding of what elements are needed to optimize programme effectiveness and what can be achieved realistically. The implication of this is that the best prevention programmes for young people have some merit, but could be improved if what is already known was incorporated into their further development.

Cuijpers, in a review of the ingredients of effective school-based drug prevention programmes, stated unequivocally that programmes based on the social-influence approach are the most effective available, and should be considered the intervention of choice [51]. However, it is important to disentangle what actually constitutes the approach because the term is used to describe a variety of drug education programmes. There can be up to four elements in social influence programmes: information on the consequences of drug use combined with the development of decision-making skills and self-efficacy through participation and practice; resistance training to counter pressures to use drugs; normative information on the acceptability and prevalence of use among age peers as a validation of conservatism; and broader social skills training to improve self-esteem and social competence, so drug use is less attractive. Interestingly, Cuijpers found that drug resistance skills training and general social skills training were not significant mediators of changed drug use. Roona and colleagues found similarly that at the middle school level, inclusion of comprehensive life skills did not improve social-influence programmes and interactive programmes that taught resistance skills were no more effective than interactive education programmes that did not teach resistance skills [42]. McBride also questioned the effectiveness of resistance skills training, as it has been effective only with subgroups of students [52]. She also examined, specifically, the effectiveness of the LST programme and referred to the considerable methodological flaws identified by Stothard & Ashton [53]. Stothard & Ashton did concede that LST could reduce drug use, but considered that the comprehensive social competency elements of the programme were not mediating variables. Rather, the elements that brought about change focused directly upon drug use.

With regard to the mix of social influence elements that go to making an effective programme, the intervention research by McBride and colleagues is illustrative [44]. The intervention did not provide any general social skills training. It also focused upon developing skills that pertained to harm reduction broadly, rather than skills that pertained solely to use refusal. In other respects, it incorporated many elements of the social-influence approach. In particular, it provided local normative information on the prevalence of drug use by young people, used interactive methods to engage students in the learning process and created a supportive peer environment to foster the development of practical implementation skills. Using this combination of social-influence elements, the programme achieved significant behavioural change. Therefore, while school drug education programmes based on the social-influence approach have been shown consistently to be more effective than programmes based on any other approach, not all social influence programmes are effective, and not all elements within social-influence programmes contribute to behaviour change.

Further research is required to identify those elements that maximize the effectiveness of universal social influence prevention programmes, and that research should not be constrained by political and ideological agendas. In particular, research should compare the effectiveness of taking a harm reduction approach to prevention with the more traditional abstinence approach. There should also be further research as to the additional effects of whole of school, parent and community support components, so as to understand more clearly the contribution of contex-

tual support. Holistic, multi-element programmes seem to offer considerable advantages, but the respective contribution of each element needs to be quantified in terms of additional benefit and measured against the resources involved.

Universal social influence drug prevention for young people can be an important mechanism for transmitting societal norms on the use of both licit and illicit drugs and for developing skills to make and implement safer decisions about own use, or in situations where others are using. Prevention programmes that engage young people have the best chance of achieving and maintaining benefit in their own right. They also offer the potential, over the longer term, of creating a more sympathetic environment for complementary systemic strategies, such as restrictive advertising of legal drugs. There are flaws in contemporary social influence prevention programmes, but it is important to both build the evidence base and understand what such programmes can achieve. If results do not meet expectations intrusive and coercive approaches, such as drug testing, mandatory treatment and expulsion from school, may seem more attractive, despite their inherent risks. No other prevention approach offers more to the great majority of young people: improvement rather than abandonment has to be the way of the future.

Declaration of interest

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