Preventing Substance Use-Related Harms Among Young People in Scotland

Evidence, Knowledge Gaps, and Systems Solutions

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Contents

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Acknowledgements

Abbreviations

ACMD   The Advisory Council on the Misuse of Drugs

LGBTQ+   Lesbian, gay, bi-sexual, transgender, queer or questioning

PHS   Public Health Scotland

UNOCD   United Nations Office on Drugs and Crime

Executive summary

Young people are a diverse group with distinct developmental stages from childhood to young adulthood. This critical period of growth is marked by identity formation, brain development, social transitions, and increased risk-taking. Early initiation of substance use is linked to poorer health, educational, and social outcomes. While drug-related harms appear relatively high among young people in Scotland, detailed longitudinal data remains limited.

This report explores how Scotland can strengthen its approach to preventing substance use and related harms among young people (defined here as <25 years). While prevention is increasingly recognised as a public health priority, Scotland currently lacks a coordinated, evidence-based prevention system. Public Health Scotland (PHS) is developing a whole-systems approach, and this report aims to contribute by synthesising evidence on effective interventions and conditions for sustainable prevention. The report focuses on non-school-based prevention which includes community, family, digital, and service-based approaches.

Key findings

Non-school based prevention interventions can be categorised into several types including environmental strategies, psychosocial education, family-based interventions, digital tools, and community mobilisation. Family-based interventions, which support family communication and parenting, show the strongest evidence for reducing substance use and improving wellbeing. Psychosocial and educational interventions, typically delivered in group settings, aim to build protective skills such as emotional regulation and decision-making. While they can improve knowledge and attitudes, their long-term behavioural impact is mixed. Digital interventions, including apps and online programmes, offer scalable access to support, but current evidence of effectiveness is limited. Community mobilisation approaches involve coordinated local action across sectors and show promise when locally tailored and collaborative, though they remain under-evaluated. While several approaches show promise, gaps remain in understanding what works best, for whom, and in which contexts.

Recommendations

Developing an effective prevention system for drug use and harms amongst young people in Scotland requires sustained investment, long-term strategy, and strong coordination across sectors. This includes building the structures, processes, and partnerships to plan, deliver, and sustain prevention over time—tailored to local needs and grounded in evidence.

- **Invest in research**: Fund longitudinal studies and embed evaluation in all publicly funded programmes.
- **Strengthen policy**: Improve data collection, ensure stable funding, and encourage cross-sector involvement in prevention planning. Identify opportunities to embed prevention work into existing health and social care infrastructure.
- **Support practice**: Develop a trained, cross-sectoral prevention workforce, scale up family and community-based approaches, and prioritise inclusive, youth-led activities.

Introduction

Drug prevention refers to strategies, programmes or policies that aim to "prevent or delay the onset of psychoactive substance use in individuals and populations" (1). Despite growing recognition of the importance of early intervention, prevention remains under-prioritised relative to treatment and harm reduction. Scotland currently lacks a developed prevention system for substance use, and evaluation of existing initiatives is limited (1).

This report focuses on prevention for young people related to illicit substances, as drug-related harm is a particular priority in Scotland. While alcohol and tobacco related interventions are out with the scope of this work, they are noted as other important forms of substance use and related harm that require systems-based approaches. Prevention interventions aim to address a range of risk and protective factors that influence both the initiation of substance use and the development of more frequent and riskier patterns of use. These factors are shaped by multiple levels of influence, including structural factors and broader societal conditions, community factors, family factors, and individual factors (see **Figure 1** for an overview of risk and protective factors across these levels).
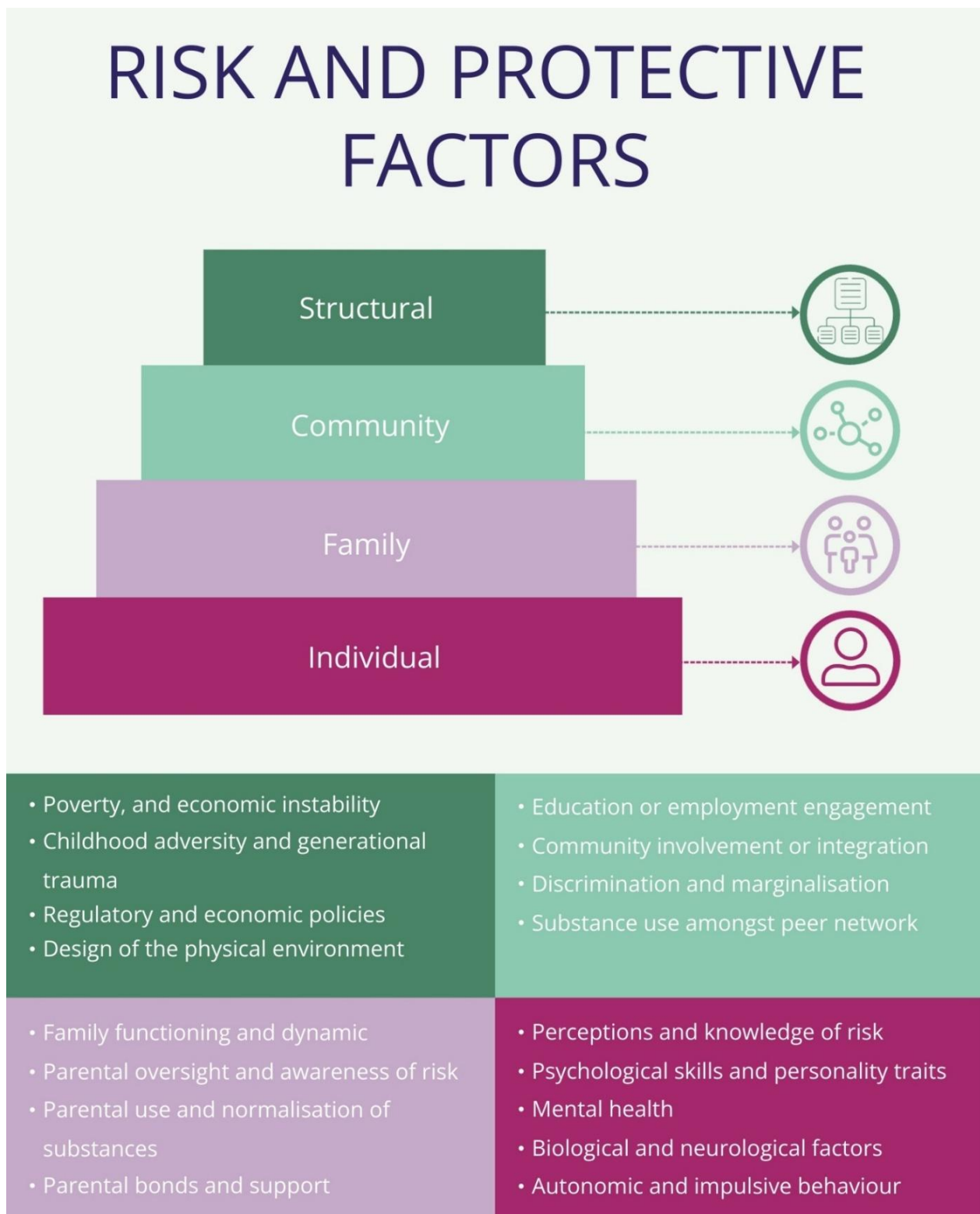
In this report, young people are defined as individuals aged under 25 years. This broad age range reflects evidence of continued brain development into the mid-20s, particularly in areas related to decision-making, impulse control, and risk assessment (2,3).

Drug use and prevention amongst young people

Adolescence (10-19 years) is a critical developmental stage marked by identity formation, neurological and social transitions and risk-taking (2, 4-7). According to global data, substance use is commonly initiated between the ages of 12-17 years, a period during which a significant proportion of young people first try substances and begin early experimentation (2, 4-7), with rates and frequency of use peaking between 18–25 (8). Further, individuals who develop substance use disorders in adulthood often report that their first experiences of problematic use began in late adolescence (8). Earlier initiation of substance use is associated with poorer health, educational, and cognitive outcomes, and a higher risk of problematic use (8, 9).

Most evidence on prevention relates to school-based programmes delivered through the curriculum (1, 10-13). These offer a broad reach and structured delivery, and some have shown positive impacts (1, 12). However, some young people are not in education or are beyond school age. Community-based approaches can offer targeted support, particularly for those in contact with services such as youth justice, health, or social care (14-19). Yet, the evidence base for these approaches is less developed, with knowledge gaps around implementation, reach, and effectiveness (1, 10, 13, 15, 17, 20, 21). This report therefore focuses on non-school-based prevention including community, family, digital, and service-based interventions.

Figure 1. Risk and protective factors for drug use in young people

RISK AND PROTECTIVE FACTORS

Structural

Community

Family

Individual

- Poverty, and economic instability
- Childhood adversity and generational trauma
- Regulatory and economic policies
- Design of the physical environment

- Education or employment engagement
- Community involvement or integration
- Discrimination and marginalisation
- Substance use amongst peer network

- Family functioning and dynamic
- Parental oversight and awareness of risk
- Parental use and normalisation of substances
- Parental bonds and support

- Perceptions and knowledge of risk
- Psychological skills and personality traits
- Mental health
- Biological and neurological factors
- Autonomic and impulsive behaviour

Scottish prevention policy and drug use trends

As noted, Scotland does not yet have a national substance use prevention system, although recent developments – including the planned community prevention framework led by PHS - indicate a growing interest and prioritisation in prevention. A "prevention system" refers to a coordinated set of policies, processes and resources that support the implementation and monitoring of evidence-based prevention interventions at national and local levels (8). In 2023/24, the Scottish Government allocated at least £12 million (7.5%) of total drug spending to prevention (based on itemised spending), though the actual figure is likely higher (22). Scotland appears to have more prevention programmes than other UK nations (1), but investment remains low relative to treatment and harm reduction (22). Evaluation is a key gap, with limited evidence on prevention programmes in Scotland.

Some indicators suggest relatively high levels of drug use and harm among young people in Scotland compared to UK and European averages (23-28), but the lack of comprehensive, long-term data makes it difficult to draw firm conclusions. Hospitalisations among 15–34-year-olds rose steadily from 2010/11 to 2019/20, particularly for cannabis and cocaine. Rates of hospitalisation fell during the COVID-19 pandemic and have since increased, though they remain below expected levels (26). Between 2015 and 2020, drug-related death rates per capita among individuals aged 15–29 increased, following a steady decline from the mid-2000s (see **Figure 2**) (27). However, these rates fell again between 2020 and 2023. Overall, while there have been fluctuations, drug-related death rates in the younger age groups have not seen the sharp increases seen in older age cohorts (those aged 35-54) and remain relatively low compared to rates observed at many timepoints between 2000 and 2010. Despite this, rates of drug-related deaths amongst young people remain high compared to other UK nations (29).

Figure 2. Drug-related deaths per 100,000 population, 15–44 years (2000-23) (27)
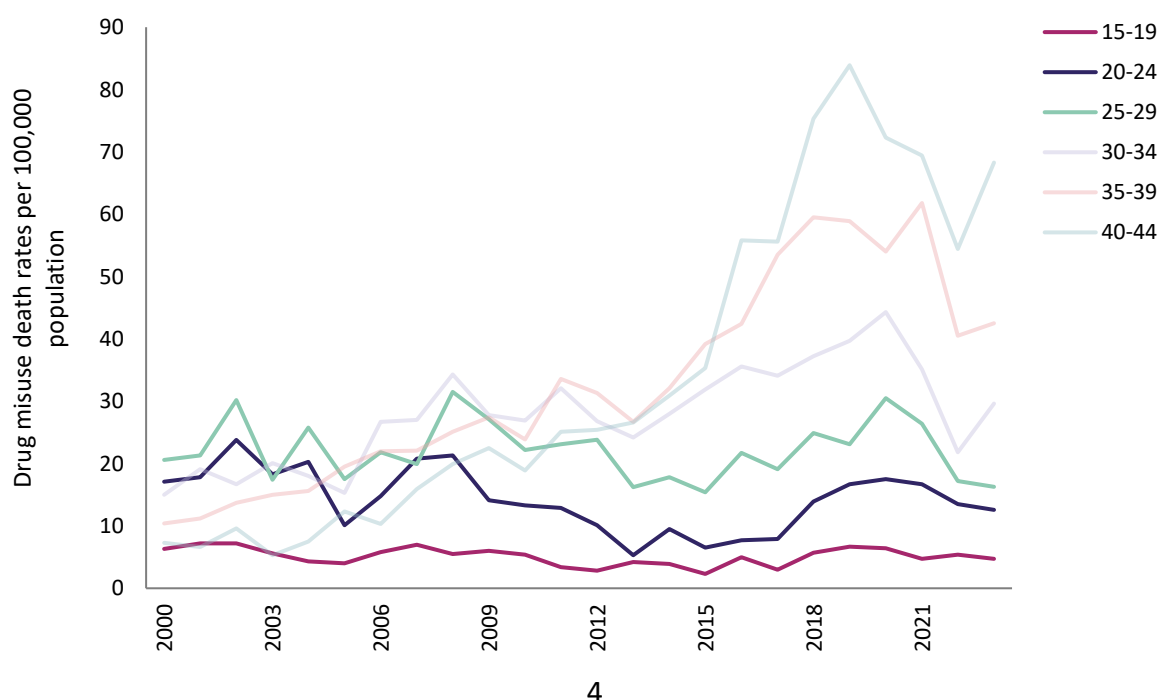
Towards a whole-systems approach to prevention

There is increasing recognition in prevention policy and research that effective prevention requires a whole-systems approach that aligns efforts across health, education, justice, and community services under a shared strategy (1, 8, 30). This demands long-term investment, cross-sector collaboration, and a cultural shift to embed prevention as a policy priority (1, 8, 15). As noted, Scotland is currently developing such an approach, led by PHS. This report contributes to that effort by:

- Analysing Scottish prevention policy and trends in drug use and harm amongst young people
- Synthesising evidence on community (non-school-based) prevention activities; and
- Identifying key considerations for implementing a whole-systems approach.

Report methods

The **Evidence review** section of this report presents a summary of evidence on non-school-based prevention interventions, based on 79 sources identified through systematic search methods. Further methodological details are available in an online supplementary file or on request. A full list of included studies can be found in the Appendix. The **Effective systems-based prevention** section provides an overview of key factors for effective community prevention, using realist methods to explore how and why interventions work in different contexts. While this report shares some similarities with the Advisory Council on the Misuse of Drugs (ACMD) publication *Whole Systems Response to Drug Prevention in the UK* (1), it was developed independently in early 2025, with substantive analysis and drafting completed prior to the ACMD report's release. The ACMD report has since been incorporated into the literature review due to its relevance. Minor adjustments have been made to ensure distinctiveness and avoid duplication.

Evidence review

This section summarises findings from a structured review of 79 sources, utilising systematic search methods. It outlines the types of interventions for young people in community settings, highlighting relevant evidence and gaps in knowledge. Prevention interventions can be categorised according to their target group, with a distinction often made between:

- **Universal prevention:** aimed at all young people.
- **Selective prevention:** targeted at higher-risk groups.
- **Indicated prevention:** for individuals already showing signs of problematic use.

The overall evidence for universal versus selective prevention approaches is summarised in **Box 1.**

Box 1. Evidence on universal vs targeted prevention programmes

- **Selective approaches** often show greater impact for high-risk groups (e.g. care-experienced youth, in contact with the justice system) than universal prevention (15-19).

- **Universal approaches** remain important due to the "prevention paradox" – proportionately greater health harm may come from the larger group of lower-risk individuals, particularly for the most used substances such as cannabis (15, 21).

- There are gaps in tailored provision for specific groups, despite strong rationale (1, 8, 13).

Prevention interventions can be categorised into several types including environmental strategies, psychosocial education, family-based interventions, digital tools, and community mobilisation. The following sections provide a summary of the evidence across different types of interventions and the key points for each. **Table 1** provides a summary of the evidence-reviewed for each of these forms of prevention intervention.

Table 1. Summary of evidence by intervention type

Intervention type	Evidence strength[1]	Key insights for practice	Challenges
Environmental	Inconclusive	Potential for population-level impact through regulation and pricing.	Limited evidence; difficult to apply to illicit substances without legal changes. Need for more evaluation of physical environment prevention.
Information and Media Campaigns	Limited evidence	Scalable and low-cost; best used as part of broader strategies.	Limited behavioural impact; risk of unintended effects. Most effective when delivered by trusted sources (third sector orgs)
Psychosocial/Educational	Mixed/some evidence	Improves knowledge and skills; most effective when skill-based and tailored.	Limited long-term impact data.
Family-Based Interventions	Reasonable evidence	Supports family functioning and wellbeing; effective when involving both parents and children.	Resource-intensive; requires sustained engagement.
Screening	Reasonable evidence	Useful for early identification; can be integrated into routine settings.	Requires follow-up pathways and staff training.
Brief Health Interventions	Mixed/some evidence	Quick and easy to deliver; can support short-term change.	Limited long-term effectiveness.
Digital Interventions	Limited evidence	Scalable and accessible; can reach underserved groups.	Limited behavioural outcome data.
Community Prevention Models	Mixed/some evidence	Promising when locally tailored and well-resourced.	Requires coordination, investment, and long-term commitment.

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[1] The strength of evidence was not formally graded using standard assessment tools and should be viewed as a heuristic summary. Detailed evidence for each intervention type is provided in the sections below. These gradings are broadly consistent with findings from other key sources, including the Advisory Council on the Misuse of Drugs' 2025 report on prevention, the UNODC's 2018 *International Standards on Drug Use Prevention*, and various included systematic reviews (see reference list).

Environmental prevention

Environmental prevention aims to reduce substance use by altering the broader context in which behaviours occur - through laws, pricing, availability, and physical surroundings (13, 14, 21, 30-33). Unlike educational approaches that target individual knowledge or skills, these strategies focus on modifying the conditions that shape behaviour. Regulatory and economic measures—such as advertising restrictions, and pricing strategies - have shown some effectiveness in alcohol and tobacco control (13, 21), but their application to illicit drugs is constrained by prohibition. Cannabis legalisation internationally has enabled some evaluation, though evidence on adolescent use remains limited and contested (13, 32).

Physical environment interventions - such as redesigning nightlife venues or improving access to safe public spaces - are under-researched in prevention, though more common in harm reduction (33). These approaches aim to make healthier choices more accessible and subtly shift social norms (31). Despite their potential, environmental strategies are underutilised in drug policy and the evidence base remains limited. Nonetheless, models like World Health Organisation's Healthy Cities and Marmot Places reflect growing interest in place-based, systems-level approaches (1).

Box 2. Key points on environmental prevention

- Environmental prevention targets the broader context - regulatory, economic, and physical environment - rather than individual behaviour.

- Evidence is limited, especially for physical environment interventions, but regulatory and economic measures have shown effectiveness in other public health areas.

- Illicit drug policy (e.g. prohibition) limits the applicability of many environmental levers.

Information dissemination and media campaigns

Information dissemination includes online content, public health messaging, and mass media campaigns aimed at raising awareness of drug-related risks (3, 13, 14, 17, 21). These approaches are widely used but have limited effectiveness in changing behaviour when used in isolation (8, 14). Scaglione et al., (2021) found that localities in the US relying solely on information campaigns were less successful in reducing prescription drug misuse than those using a broader mix of interventions (14). A distinction is often made between neutral, fact-based messaging and normative campaigns that discourage drug use. While the latter may reinforce anti-drug attitudes among non-users, they can also backfire - provoking resistance or inadvertently normalising use by overstating prevalence (1, 21).

Despite these limitations, information campaigns offer practical advantages. They are relatively low-cost and capable of reaching large numbers of young people with age-appropriate content (3, 17). The United Nations Office on Drugs and Crime (UNODC) highlights

that the most effective campaigns are theory-driven, well-targeted, and integrated into broader prevention strategies (8, 30). There is also growing recognition of the value of harm reduction messaging, particularly for young people already using substances. Trusted organisations such as The Loop and Crew2000 provide evidence-based, non-judgemental information that supports safer decision-making, including the provision of alerts and harm reduction communication in the result of high potency or adulterated drugs in circulation. Many young people actively seek out substance use information online, underscoring the importance of ensuring credible and accessible content (34).

Box 3. Summary of Key points on information dissemination and media campaigns

- Includes online content and public health campaigns aimed at increasing awareness of drug-related risks.

- Evidence suggests these approaches have limited effectiveness when used in isolation. Campaigns may have unintended consequences, such as reinforcing stigma or increasing curiosity among young people.

- These interventions are scalable, low-cost, and useful when integrated with broader prevention strategies.

Psychosocial and educational interventions

Psychosocial and educational interventions are among the most widely implemented forms of drug prevention for young people. Within reviewed studies these were most commonly delivered by health professionals, as well as third sector and youth workers. These programmes aim to increase awareness of substance use risks while building protective factors. They are typically delivered in group settings over multiple sessions, and may also address broader wellbeing topics, including mental health, relationships, and behaviours (4, 17, 35-40). Evidence suggests these interventions can improve knowledge, attitudes, and psychosocial skills. However, their impact on substance use behaviour is mixed, particularly over the long-term (13, 41). The strongest evidence relates to cannabis; there is limited evidence of impact on higher-risk substances such as cocaine or heroin (1, 13). Programmes are most effective when they go beyond information provision and include skill-building elements like coping strategies, emotional regulation, and goal setting. Interventions grounded in therapeutic approaches - such as cognitive behavioural therapy - appear to offer additional benefits (17, 37, 42).

Tailoring content to developmental stage, gender, personality traits, and cultural background also improves effectiveness (19, 39). Two adaptations of psychosocial and educational interventions are increasingly recognised as relevant for groups facing elevated risk, such as care-experienced youth, racially minoritised or migrant communities, LGBTQ+ youth, those involved in the justice system, and young people with neurodevelopmental needs (16, 19, 43-54).

- **Trauma-informed prevention** integrates education on the relationship between trauma, emotional wellbeing and substance use - aiming to build coping skills and emotional literacy (18, 43, 49). However, core components remain unclear, and long-term substance use outcomes are under-evaluated.

- **Culturally appropriate prevention** are interventions designed or adapted to reflect the values and needs of specific ethnic or cultural groups (46, 55). These often address discrimination, identity, and acculturation, and are frequently co-designed with communities. While emerging evidence suggests promise in improving engagement and reducing risk (39, 46, 56-58), challenges remain around balancing cultural specificity and scalability, whilst also maintaining the core evidence-based components of interventions (15).

Box 4. Key points on psychosocial and educational interventions

- Aim to build knowledge and protective skills such as emotional regulation, decision-making, and resistance to peer pressure.

- Evidence shows they can improve attitudes and skills, but their impact on actual substance use - especially long-term - is mixed. Programmes are most effective when developmentally targeted and grounded in therapeutic approaches.

- Trauma-informed and culturally appropriate models are promising adaptations that warrant further exploration.

Family-based and parental interventions

Family-based prevention interventions, which within studies were delivered by healthcare professionals such as psychologists or third sector practitioners, aim to reduce the risk of substance use initiation and escalation by supporting parents, caregivers, and family dynamics (1, 10, 15). These interventions are particularly relevant for families experiencing health, social, or structural challenges, and are included to provide a more comprehensive understanding of early prevention strategies. They typically focus on strengthening parenting skills, improving communication, parental wellbeing, and fostering supportive home environments (5, 13, 54, 59-62). Some also promote protective routines, such as shared family meals (63), or building resilience and coping strategies within the family unit (10). Evidence suggests that family-based interventions can be effective in reducing substance use and improving broader outcomes such as family functioning and parental wellbeing (10, 13, 37, 59), though longer-term outcomes are limited (1, 10). Implementation challenges are also noted - effective programmes are often resource-intensive, requiring sustained engagement from both staff and participants (63).

Programmes vary in structure but commonly include multi-week sessions that address parenting practices, boundary-setting, and emotional support. Most interventions target families with children aged 10–16 years, though some begin earlier (5, 10, 15, 60). While some

interventions are universal, most in the current review were targeted at families where young people are considered at higher risk. None of the included studies described uptake of interventions, or how families were identified or engaged with for support - which are important factors when determining the effectiveness of targeted interventions. A smaller subset of the literature also discussed early intervention during pregnancy or early childhood, though few studies evaluated these approaches (1, 8, 15, 44).

Box 5: Key points on family and parental interventions

- Family-based interventions support parenting, communication, and family dynamics to reduce substance use and wider risk.

- Evidence supports short-term benefits for family wellbeing and reduced substance use, though long-term outcomes remain under-evaluated. Programmes are most effective when interactive and skills-based, focusing on family dynamics.

- Implementation can be resource intensive.

Screening and brief interventions

Screening refers to the process of identifying young people at risk of developing problem substance use, typically in healthcare settings such as primary care (13, 50, 59, 61). Once risk is identified, individuals may be offered a brief intervention - such as motivational interviewing - or referred for further support (15, 50). There is reasonable evidence that screening can support early identification and intervention (8, 30, 59, 61, 64). Some studies suggest that integrating personality profiling into screening may help tailor interventions, as traits like impulsivity, hopelessness, anxiety, and sensation seeking are linked to higher risk (1, 17, 19, 42, 45, 52). Screening may also be particularly relevant for subgroups such as pregnant adolescents or those with co-occurring mental health challenges (44, 65).

Brief Health Interventions

Brief interventions aim to provide personalised feedback and support behaviour change. However, evidence of their effectiveness is limited and more research in this area is required. While some studies suggest motivational interviewing can reduce cannabis use, overall impact on substance use is limited and often short-lived (8, 13, 38).

Referral Following Screening

Although screening is often used as a gateway to further support, few included studies evaluated the effectiveness of referral pathways (61). There is limited evidence on how best to link screening with tailored intervention or treatment (15).

Box 6. Key points on screening and brief interventions

- Screening can identify young people at risk and enable early intervention.

- Personality profiling and mental health screening may enhance targeting.

- Brief interventions show mixed results and have limited long-term impact.

- Referral pathways are under evaluated.

Digital interventions

Digital interventions refer to online programmes designed to prevent or reduce substance use among young people. These can range from simple websites and apps providing information, to more structured, interactive programmes that replicate elements of in-person interventions such as motivational interviewing (4, 49, 66, 67). While the evidence base is still emerging, digital approaches offer several practical advantages. They are highly scalable and can reach large numbers of young people at relatively low cost (4, 49). Their flexibility allows access without the need for travel or scheduled attendance, which may be particularly beneficial in rural or otherwise underserved areas (10, 66). Digital platforms may also reduce staffing and training costs and can be integrated into existing services to supplement in-person support (49). Many prefer the privacy and anonymity that online interventions can offer - particularly where fear of judgement may deter engagement with traditional services (48, 49). However, concerns around data protection and confidentiality remain a barrier for some (66).

Despite these advantages, evidence of effectiveness is limited (67-69). Most studies to date have focused on process evaluation and user acceptability, with few assessing behavioural outcomes. Where evaluated, results are mixed, and interventions often lack the therapeutic intensity or "dose" required to produce sustained change (4, 8, 41)

Box 7. Key points on digital interventions

- Digital interventions are scalable, low-cost, and accessible across settings.

- They may reduce stigma and increase engagement.

- Evidence of effectiveness is limited, with most studies focusing on feasibility and design. Further evaluation is needed to understand long-term impact and optimal implementation. Furthermore, our digital world is constantly and quickly evolving.

Community prevention approaches

Community prevention — also known as "whole community approaches" or "community mobilisation" — involves coordinated local action across sectors and civil society to address risk and protective factors for substance use. Rather than a single intervention, such approaches integrate multiple strategies within a defined locality (1, 8, 14, 70, 71). These models emphasise collaboration between schools, health and social care, youth services, local

government, and community members. This coordination allows prevention to be tailored to local needs and priorities (1, 15, 72-75)

Evidence is limited but promising. Effectiveness depends on clear roles and strong collaboration between sectors (14, 15). Challenges include limited evaluations thus far, and the difficulty of isolating effects in complex, multi-component systems (6, 74). Local areas may need technical support to select and implement evidence-based approaches, and long-term funding is essential to maintain momentum (15, 71). In the UK, the ACMD recommends embedding prevention within existing structures — such as Scotland's Alcohol and Drug Partnerships — rather than creating standalone systems (1). This aligns with Scottish Government efforts to integrate prevention into wider public health and community planning (22). However, it should be noted that embedding prevention into existing structures requires additional funding, resources and capacity to avoid additional work being added to stretched services, without sufficient support.

The Icelandic model

The Icelandic model is the most studied community prevention framework. Developed in response to high adolescent substance use in Iceland in the 1990s, it focuses on reshaping the social environment through long-term, community-led action (6, 70, 71, 76). It targets four domains: family, school, peer groups, and leisure time (6, 71, 74, 77, 78). The model is underpinned by core principles including long-term investment, community ownership, and cross-sector collaboration (74). Implementation involves annual youth surveys, local data analysis, and community coalitions aligning policy and practice. The approach has been linked to long-term reductions in youth alcohol, tobacco, and cannabis use in Iceland, though it is difficult to establish the extent to which this is a direct result of the prevention model (74). It has been adapted in over 30 countries, including Scotland, where it is being trialled in six council areas (22). A Scottish feasibility study found strong support for its emphasis on family and community engagement but also highlighted challenges - including adapting to local drug trends, political short-termism, and resource constraints (72, 73).

Box 8. Key points on community interventions

- Community prevention approaches coordinate local action across sectors to address substance use risk factors. Evidence suggests effectiveness when strategies are multi-faceted, sustained, and locally tailored, involving cross-sector and community collaboration.

Effective systems-based prevention

This section uses a realist-informed approach to outline factors which shape effective whole systems prevention. Rather than asking "what works?", realist methods focus on "what works, for whom, in what circumstances, and why?" This is relevant for designing a whole-systems prevention approach in Scotland, where adaptation to national and local needs, structures, and resources is essential. Realist approaches identify three core elements:

- **Contexts** — conditions that shape how a policy, service, or intervention operates. These may be structural (e.g. funding, legislation), organisational (e.g. service design), or social.
- **Mechanisms** — processes that explain how change happens, such as motivation, trust, communication, or perceived legitimacy. These are activated (or not) depending on the context.
- **Outcomes** — results that occur when mechanisms are activated within a context, such as reduced drug use, improved engagement, or better service coordination.

Figure 3 presents these aspects across macro (national systems), meso (local services and social networks), and micro (individual) levels. Further detail and supporting data are available on request.

Figure 3. Contexts, mechanisms and outcomes for designing an effective whole-system prevention approach

Context

Mechanisms

Outcomes

Macro
- Regulatory policies and enforcement of drug laws
- Policy prioritisation and developing a clear prevention strategy
- Poverty, inequality and quality of life

- Stakeholders prioritise prevention and have capacity and resources to develop a co-ordinated strategy

Meso (systems)
- High quality monitoring data informs decision-making
- Target populations, priorities and methods
- Message communication
- Training and infrastructural capacity
- Local partnership and innovation
- Appropriate/joined up mental health and substance use support

- Trust between source and recipient
- Improved understanding of trends, provision gaps and prevention policies
- Accountability/responsibility for co-ordination, implementation and monitoring
- Prevention aligns with needs, demographics, risks, and are evidence-based
- Prevention is seen as a collective responsibility of the wider system

Meso-social
- Community sites and spaces
- Support for parents and families

- Awareness of alternative and available social activities
- Awareness of risk and skills, knowledge and capacity to support people

Micro
- Individual risk and protective factors

- Improved health, substance use and risk literacy
- Improved coping strategies and psychosocial skills
- Awareness of sources of support and information in relation to substance use and health

Substance use related
- Reductions in the number of young people initiating substance use
- Delayed initiation of substance use
- Reduced frequency of substance use
- Increased psychosocial and practical skills to reduce risk.
- Avoiding use of 'riskier' substances and substance use patterns.
- Reductions in substance related school exclusions.
- Reductions in harm from substance use
- Cohort reductions in rates of substance use dependence
- Substance use-related social norms

Mental health and wellbeing
- Improved emotional regulation
- Improved mental health and wellbeing
- Reduced instances of adverse childhood experiences
- Reduction in exploitation, vulnerability and criminal justice system involvement

Process-based/systems monitoring
- Availability/engagement with early intervention and treatment
- Sufficient intervention reach and coverage to engage key groups
- Implementation/effectiveness monitoring

Economic and social cost
- Economic modelling and cost-benefit analysis assessing social and economic returns

Conclusions and recommendations

This report highlights the need to strengthen Scotland's approach to drug prevention for young people, beyond educational settings. While prevention is recognised as important, current systems remain underdeveloped and unevenly evaluated. The evidence points to the value of multi-component, community-based strategies that are responsive to local needs. However, gaps remain in understanding what works, for whom, and in what contexts—especially for marginalised groups. As noted by the ACMD, developing a whole-systems prevention approach requires long-term strategy, iterative development, and cross-sector commitment (1). The recommendations below are designed to support that process - providing key points for action across research, policy, and practice. See **Figure 4** for a summary of key elements of effective systems-based prevention based on findings from the included literature.

Research

- Increasing evaluation of non-school-based prevention programmes, focusing on longitudinal research. Developing a programme of research related to various types of prevention activity.
- Exploring targeted prevention for varied populations.
- Using implementation and process-based methods to identify the core, evidence-based, practice and the adaptable elements of interventions.
- Focusing on processes and systems and not singular interventions.

Policy

- Improving national and local drug use trends data, disaggregated by age, gender, ethnicity, geography, and socioeconomic status.
- Ensuring clear national and local responsibility for developing, monitoring and implementing prevention activities across the system, and accountability mechanisms.
- Increasing spending on prevention. Setting a minimum percentage of drug policy funding for prevention. Ensuring long-term, stable funding cycles to support sustained delivery and innovation.
- Requirement for all relevant sectors (e.g. health, education, justice, youth services) to contribute to prevention planning and delivery, using existing coordinating structures.
- Ensuring prevention strategies address structural inequalities, including poverty, discrimination, and trauma.
- Supporting culturally adapted and community-led interventions.
- Prioritising investment in accessible, inclusive, and youth-led leisure opportunities, particularly in areas of deprivation, and removing barriers such as cost.
- Using benchmark tools such as the *UNOCD Prevention Systems Review* to assess progress.
- Embedding evaluation in all publicly funded prevention initiatives.

Practice

- Developing training pathways for a prevention workforce across sectors.
- Prioritising interventions with developmentally appropriate to age and stage, focused on skill development and are non-judgemental.
- Tailoring interventions to personality traits, mental health needs, and lived experience.
- Using trusted communicators (e.g. youth workers, peers) to deliver prevention messages, avoiding fear-based/moralistic messaging, focusing on health promotion.
- Scale up family-based interventions/support structures for parenting, communication, and resilience across childhood – including pre- and perinatal support.
- Embedding prevention in everyday community settings (e.g. youth clubs, sports, arts).

Figure 4. Key factors for building a whole-systems prevention approach in Scotland

Defining a whole systems approach

- Clarify responsibilities at the national and local level
- Map existing prevention activities and gaps
- Use a systems map to visualise how interventions, services and policies interact

Local innovation

- Supporting local areas to develop prevention plans
- High quality local data
- Technical assistance

Monitoring processes and outcomes

- Develop a clear, holistic long-term outcome measures
- Track progress - fidelity, collaboration
- Use implementation science to assess what works in a given context

Establishing core components

- Prevention strategy and governance
- Workforce development
- Data and evaluation
- Community co-design
- Cross-sector collaboration mechanisms

Embed prevention in wider social policy

- Align prevention with efforts to reduce poverty improve mental health, and support families
- Recognise prevention as a cross-cutting public health issue

References

1.   Advisory Council on the Misuse of Drugs. *A whole-system response to drug prevention in the UK* [Internet]. London: GOV.UK; 2025 May 28 [cited 2025 Jul 22]. Available from: https://www.gov.uk/government/publications/a-whole-system-response-to-drug-prevention-in-the-uk

2.   Debenham J, Newton N, Birrell L, Askovic M. Alcohol and other drug prevention for older adolescents: It's a no brainer. *Drug Alcohol Rev.* 2019;38(4):327–30. doi: https://doi.org/10.1111/dar.12914

3.   Debenham J, Newton N, Champion K, Lawler S, Lees B, Stapinski L, et al. Neuroscience literacy and substance use prevention: How well do young people understand their brain? *Health Promot J Austr.* 2022;33(2):395-402. doi: https://doi.org/10.1002/hpja.516

4.   Haug S, Paz Castro R, Wenger A, Schaub MP. A Mobile Phone-Based Life-Skills Training Program for Substance Use Prevention Among Adolescents: Cluster-Randomized Controlled Trial. *JMIR Mhealth Uhealth*. 2021;9(7):e26951. doi: https://doi.org/10.2196/26951

5.   Sarani Yaztappeh J, Bakhtiyari M, Bakhshani NM, Mousavi SE, Masjedi-Arani A, Saberi Esfeedvajani M. Effect of selective and family-based prevention on addiction susceptibility, affiliation with deviant peers, risk-taking, and risk and protective factors of substance use in high-risk adolescents: A randomized clinical trial. J Educ Health Promot. 2024;13:361. doi: https://doi.org/10.2196/26951

6.   Libuy N, Ibáñez C, Araneda AM, Donoso P, Contreras L, Guajardo V, et al. Community-Based Prevention of Substance Use in Adolescents: Outcomes Before and During the COVID-19 Pandemic in Santiago, Chile. *Prev Sci*. 2024;25(2):245-55. doi: https://doi.org/10.1007/s11121-023-01539-9

7.   Nock NL, Minnes S, Alberts JL. Neurobiology of substance use in adolescents and potential therapeutic effects of exercise for prevention and treatment of substance use disorders. *Birth Defects Res*. 2017;109(20):1711-29. doi: https://doi.org/10.1002/bdr2.1182

8.   United Nations Office on Drugs and Crime, World Health Organization. *International standards on drug use prevention* [Internet]. 2nd updated ed. Vienna: UNODC; 2018 [cited 2025 Jul 22]. Available from: https://shorturl.at/lcxAM

9.   Ramírez S, Gana S, Godoy MI, Valenzuela D, Araya R, Gaete J. Validation of the European Drug Addiction Prevention Trial Questionnaire (EU-Dap) for substance use screening and to assess risk and protective factors among early adolescents in Chile. *PLoS One*. 2021;16(10):e0258288. doi:https://doi.org/10.1371/journal.pone.0258288

10.   Kempf C, Llorca PM, Pizon F, Brousse G, Flaudias V. What's New in Addiction Prevention in Young People: A Literature Review of the Last Years of Research. *Front Psychol*. 2017;8:1131. doi: https://doi.org/10.3389/fpsyg.2017.01131

11.   Teesson M, Newton NC, Barrett EL. Australian school-based prevention programs for alcohol and other drugs: A systematic review. *Drug Alcohol Rev*. 2012;31(6):731-6. doi: https://doi.org/10.1111/j.1465-3362.2012.00420.x

12.   Dodd S, Widnall E, Russell AE, Curtin EL, Simmonds R, Limmer M, et al. School-based peer education interventions to improve health: a global systematic review of effectiveness. *BMC Public Health*. 2022;22(1):2247. doi: https://doi.org/10.1186/s12889-022-14688-3

13.   Stockings E, Hall WD, Lynskey M, Morley KI, Reavley N, Strang J, et al. Prevention, early intervention, harm reduction, and treatment of substance use in young people. *Lancet Psych*. 2016;3(3):280-96. doi: https://doi.org/10.1016/s2215-0366(16)00002-x

14.   Scaglione NM, Buben A, Williams J, Cance JD, Elek E, Clarke T, et al. A Latent Class Analysis of Prevention Approaches Used to Reduce Community-Level Prescription Drug Misuse in Adolescents and Young Adults. *J Prim Prev*. 2021;42(3):279-96. doi: https://doi.org/10.1007/s10935-021-00631-6

15.   U.S. Department of Health and Human Services. *Strategic Sustainability Performance Plan* [Internet]. Washington (DC): HHS; 2016 [cited 2025 Jul 22]. Available from: https://www.hhs.gov/sites/default/files/2016-sustainability-plan.pdf

16.   Duke K, Thom B, Gleeson H. Framing 'drug prevention' for young people in contact with the criminal justice system in England: views from practitioners in the field. *J. Youth Stud*. 2020;23(4):511-29. doi: https://doi.org/10.1080/13676261.2019.1632818

17.   Flora K. A Review of the Prevention of Drug Addiction: Specific Interventions, Effectiveness, and Important Topics. *Addict Health*. 2022;14(4):288-95. doi: https://doi.org/10.34172/ahj.2022.1348

18.   Bailey S, Newton N, Perry Y, Grummitt L, Tiko R, Baams L, et al. Effectiveness, efficacy, acceptability, and feasibility of trauma-informed depression, anxiety, and substance use prevention programs for young people aged 12-25 years: A mixed-methods systematic review. *J Adolesc*. 2025;97(1):31-72. doi: https://doi.org/10.1002/jad.12407

19.   Edalati H, Conrod PJ. A Review of Personality-Targeted Interventions for Prevention of Substance Misuse and Related Harm in Community Samples of Adolescents. *Front Psychiatry*. 2018;9:770. doi: https://doi.org/10.3389/fpsyt.2018.00770

20. Gorman DM. 'Everything works': the need to address confirmation bias in evaluations of drug misuse prevention interventions for adolescents. *Addiction*. 2015;110(10):1539-40. doi: https://doi.org/10.1111/add.12954

21. Sumnall HR. Encouraging a 'generational shift' in the UKs relationship with drugs. A commentary on the new UK drug strategy. What can be achieved with drug prevention? *Int J Drug Policy*. 2022;109:103841. doi: https://doi.org/10.1016/j.drugpo.2022.103841

22. Scottish Government. *National Mission on Drugs: Annual Monitoring Report 2023-2024*. Edinburgh: Scottish Government; 2025 [cited 2025 Jul 16]. Available from: https://shorturl.at/lbXtv

23. European School Survey Project on Alcohol and Other Drugs (ESPAD). *ESPAD Reports 2015, 2019, and 2024* [Internet]. Lisbon: ESPAD; 2015–2024 [cited 2025 Jul 22]. Available from: https://www.espad.org/

24. Scottish Government. *Substance use - Health and Wellbeing Census Scotland 2021-22* [Internet]. Edinburgh: Scottish Government; 2023 Feb 28 [cited 2025 Jul 22]. Available from: https://www.gov.scot/publications/health-and-wellbeing-census-scotland-2021-22/pages/substance-use/

25. Scottish Government. *Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS): National Overview 2015 and 2018*. Edinburgh: Scottish Government; 2016, 2019 [cited 2025 Jul 22]. Available from: https://www.gov.scot/collections/scottish-schools-adolescent-lifestyle-and-substance-use-survey-salsus/

26. Public Health Scotland. *Drug-related hospital statistics: Scotland 2023 to 2024*. Edinburgh: Public Health Scotland; 2025 Apr 15 [cited 2025 Jul 22]. Available from: https://publichealthscotland.scot/publications/drug-related-hospital-statistics/drug-related-hospital-statistics-scotland-2023-to-2024/

27. National Records of Scotland. Drug-related deaths in Scotland in 2023. Edinburgh: NRS; 2024 Aug 20 [cited 2025 Jul 22]. Available from: https://www.nrscotland.gov.uk/publications/drug-related-deaths-in-scotland-in-2023/

28. Public Health Scotland. *Estimated prevalence of opioid dependence in Scotland: 2014/15 to 2022/23*. Edinburgh: Public Health Scotland; 2025 Mar 18 [cited 2025 Jul 22]. Available from: https://publichealthscotland.scot/publications/estimated-prevalence-of-opioid-dependence-in-scotland/estimated-prevalence-of-opioid-dependence-in-scotland-201415-to-202223/

29. Office for National Statistics. *Deaths related to drug poisoning in England and Wales: 2023 registrations*. Newport: ONS; 2024 Oct 23 [cited 2025 Jul 22]. Available

from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2023registrations

30. Volkow ND, Schaub MP, Busse A, Poznyak V, Krupchanka D, Campello G. Prevention, treatment and care of substance use disorders among adolescents. Statement by the UNODC-WHO Informal Scientific Network, 2024. *World Psychiatry*. 2024;23(3):454-5. doi: https://doi.org/10.1002/wps.21260

31. Burkhart G, Tomczyk S, Koning I, Brotherhood A. Environmental Prevention: Why Do We Need It Now and How to Advance It? *J Prev* (2022). 2022;43(2):149-56. doi: https://doi.org/10.1007/s10935-022-00676-1

32. Guttmannova K, Oesterle S, Skinner ML, Kuklinski MR, Hultgren B, Rhew IC, et al. Substance-Specific Risk Factors among Young Adults: Potential Prevention Targets across Cannabis-Permissive Environments. *Subst Use Misuse*. 2022;57(13):1923-30. doi: https://doi.org/10.1080/10826084.2022.2120363

33. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). *Environmental substance use prevention interventions in Europe*. Lisbon: EUDA; 2018 Feb 21 [cited 2025 Jul 22]. Available from: https://www.euda.europa.eu/publications/technical-reports/environmental-substance-use-prevention-interventions-in-europe_en

34. Moreland AD, Lopez CM, Goodrum N, Goodrum N, Gilmore AK, Borkman AL, et al. Substance Use Prevention Programming for Adolescents and Young Adults: A Mixed-Method Examination of Substance Use Perceptions and Use of Prevention Services. *Subst Use Misuse*. 2020;55(14):2341-7. doi: https://doi.org/10.1080/10826084.2020.1817079

35. Fathian-Dastgerdi Z, Eslami A-A, Ghofranipour F, Mostafavi F. Effects of a community-based substance use prevention program in Iranian adolescents (SUPPIA)-using social cognitive theory. *J Subst Use*. 2024;29(2):300-4. doi: https://doi.org/10.1080/14659891.2022.2157772

36. Franzese AT, Blalock DV, Blalock KM, Wilson SM, Medenblik A, Costanzo PR, et al. Regulatory Focus and Substance Use in Adolescents: Protective Effects of Prevention Orientation. *Subst Use Misuse*. 2021;56(1):33-8. doi: https://doi.org/10.1080/10826084.2020.1833926

37. Ghelbash Z, Alavi M, Noroozi M, Far MM. Prevention and Management of Risky Behaviors in Adolescents, Focusing on Suicide, Substance Use, and Risky Sexual Behaviors through Empowerment Programs: A Narrative Review. *Iran J Nurs Midwifery Res*. 2024;29(5):515-21. doi: https://doi.org/10.4103/ijnmr.ijnmr_218_23

38. Park CL, Russell BS, Fendrich M. Mind-Body Approaches to Prevention and Intervention for Alcohol and Other Drug Use/Abuse in Young Adults. *Medicines (Basel)*. 2018;5(3). doi: https://doi.org/10.3390/medicines5030064

39. Snijder M, Stapinski L, Lees B, Ward J, Conrod P, Mushquash C, et al. Preventing Substance Use Among Indigenous Adolescents in the USA, Canada, Australia and New Zealand: a Systematic Review of the Literature. *Prev Sci*. 2020;21(1):65-85. doi: https://doi.org/10.1007/s11121-019-01038-w

40. Amini Pozveh Z, Saleh Z. The Role of Social Skills in the Prevention of Drug Addiction in Adolescents. *Adv Biomed Res*. 2020;9:41. doi: https://doi.org/10.4103/abr.abr_99_20

41. Kvillemo P, Strandberg AK, Gripenberg J, Berman AH, Skoglund C, Elgan TH. Effects of an automated digital brief prevention intervention targeting adolescents and young adults with risky alcohol and other substance use: study protocol for a randomised controlled trial. *BMJ open*. 2020;10(5):e034894. doi: https://doi.org/10.1136/bmjopen-2019-034894

42. Hulsmans DHG, Otten R, Schijven EP, Poelen EAP. Exploring the role of emotional and behavioral problems in a personality-targeted prevention program for substance use in adolescents and young adults with intellectual disability. *Res Dev Disabil*. 2021;109:103832. doi: https://doi.org/10.1016/j.ridd.2020.103832

43. Grummitt LR, Kelly EV, Barrett EL, Keyes KM, Newton NC. Identifying Targets for Substance Use Prevention in Young People Exposed to Childhood Adversity: Protocol for a Systematic Review. *JMIR Res Protoc*. 2020;9(12):e22368. doi: https://doi.org/10.2196/22368

44. Kimbui E, Kuria M, Yator O, Kumar M. A cross-sectional study of depression with comorbid substance use dependency in pregnant adolescents from an informal settlement of Nairobi: drawing implications for treatment and prevention work. *Ann Gen Psychiatry.* 2018;17:53. doi: https://doi.org/10.1186/s12991-018-0222-2

45. Schijven EP, VanDerNagel JEL, Otten R, Lammers J, Poelen EAP. Take it personal! Development and modelling study of an indicated prevention programme for substance use in adolescents and young adults with mild intellectual disabilities and borderline intellectual functioning. *J Appl Res Intellect Disabil*. 2021;34(1):307-15. doi: https://doi.org/10.1111/jar.12808

46. Bo A, Goings TC, Evans CBR, Sharma A, Jennings Z, Durand B, et al. Culturally sensitive prevention programs for substance use among adolescents of color: A systematic review and meta-analysis of randomized controlled trials. *Clin Psychol Rev*. 2023;99:102233. doi: https://doi.org/10.1016/j.cpr.2022.102233

47. Salas-Wright CP, AbiNader MA, Vaughn MG, Schwartz SJ, Oh S, Delva J, Marsiglia FF. Trends in substance use prevention program participation among adolescents in the US. *J Adolesc Health*. 2019 Sep 1;65(3):426-9. Doi: https://doi.org/10.1016/j.jadohealth.2019.04.010

48. Creasy SL, Sweet S, Myers JJ, Shumway M, Tolou-Shams M, McCaffrey N, et al. eHealth-Enhanced Peer Navigation for Substance Use Treatment and HIV Prevention Service

Linkage for Young Adults Surveilled by the Criminal Legal System: Protocol for a Pilot Randomized Trial Study. *JMIR Res Protoc*. 2024;13:e54815. doi: https://doi.org/10.2196/54815

49. Danielson CK, Moreland A, Hahn A, Banks D, Ruggiero KJ. Development and Usability Testing of an mHealth Tool for Trauma-Informed Prevention of Substance Use, HIV Acquisition, and Risky Sexual Behaviors Among Adolescents: Mixed Methods Study. *JMIR Form Res*. 2024;8:e52835. doi: https://doi.org/10.2196/52835

50. Camenga DR, Hammer LD, Use tCoS, Prevention, Financing CoCH. Improving Substance Use Prevention, Assessment, and Treatment Financing to Enhance Equity and Improve Outcomes Among Children, Adolescents, and Young Adults. *Pediatrics*. 2022;150(1). doi: https://doi.org/10.1542/peds.2022-057992

51. Choi Y, Park M, Pekelnicky DD, Lee M, Kim TY. Prevention of substance use disorders in Asian American adolescents: A review of family-based interventions. Substance use disorders in underserved ethnic and racial groups: Using diversity to help individuals thrive. Cultural, racial, and ethnic psychology. Washington, DC, US: *American Psych Assoc*; 2024. p. 177-216. doi: https://psycnet.apa.org/doi/10.1037/0000384-008

52. López-Ramírez E, Huber MJ, Inozemtseva O. The Positive Effect of the Rational Addiction Prevention Program (RAPP) on Adolescents with High Risk for Drug Consumption. *Child Psychiatry Hum Dev*. 2022;53(2):342-53. doi: https://doi.org/10.1007/s10578-021-01133-6

53. Schijven EP, Engels RC, Kleinjan M, Poelen EA. Evaluating a selective prevention program for substance use and comorbid behavioral problems in adolescents with mild to borderline intellectual disabilities: Study protocol of a randomized controlled trial. *BMC Psych*. 2015;15:167. doi: https://doi.org/10.1186/s12888-015-0563-1

54. Lee TY, Busiol D. *Prevention of Drug Abuse Among Young People: A Conceptual Framework.* In: Lee TY, Shek DTL, Sun RCF, editors. Student Well-Being in Chinese Adolescents in Hong Kong: Theory, Intervention and Research. Singapore: Springer Singapore; 2015. p. 15-30.

55. Baden AL, Sharma SM, Balducci S, Ellis L, Randall R, Kwon D, et al. A trauma-informed substance use disorder prevention program for transracially adopted children and adolescents. *Child Abuse Negl*. 2022;130(Pt 2):105598. doi: https://doi.org/10.1016/j.chiabu.2022.105598

56. Tuitt NR, Wexler LM, Kaufman CE, Whitesell NR, Rink E, Anastario M, et al. Unsettling Settler Colonialism in Research: Strategies Centering Native American Experience and Expertise in Responding to Substance Misuse and Co-occurring Sexual Risk-Taking, Alcohol-Exposed Pregnancy, and Suicide Prevention Among Young People. *Advers Resil Sci.* 2023;4(4):389-400. doi: https://doi.org/10.1007/s42844-023-00100-5

57. Unger JB. Preventing Substance Use and Misuse Among Racial and Ethnic Minority Adolescents: Why Are We Not Addressing Discrimination in Prevention Programs? *Subst Use Misuse*. 2015;50(8-9):952-5. doi: https://doi.org/10.3109/10826084.2015.1010903

58. Tingey L, Larzelere-Hinton F, Goklish N, Ingalls A, Craft T, Sprengeler F, et al. Entrepreneurship education: A strength-based approach to substance use and suicide prevention for American Indian adolescents. *Am Indian Alsk Native Ment Health Res*. 2016;23(3):248-70. doi: https://doi.org/10.5820/aian.2303.2016.248

59. Das JK, Salam RA, Arshad A, Finkelstein Y, Bhutta ZA. Interventions for Adolescent Substance Abuse: An Overview of Systematic Reviews. *J Adolesc Health*. 2016;59(4s):S61-s75. doi: https://doi.org/10.1016/j.jadohealth.2016.06.021

60. Ballester L, Valero M, Orte C, Amer J. An analysis of family dynamics: a selective substance abuse prevention programme for adolescents. *Eur J Soc Work*. 2020;23(1):93-105. doi: https://doi.org/10.1080/13691457.2018.1473842

61. Galán CA, Shaw DS, O'Rourke F, Reynolds MD, Gill A, Bogen DL, et al. Substance Use Screening and Prevention for Adolescents in Pediatric Primary Care: A Randomized Clinical Trial using the Family Check-Up. *Res Child Adolesc Psychopathol*. 2023;51(2):151-63. doi: https://doi.org/10.1007/s10802-022-00978-2

62. Mehri SM, Rohban A, Hashemian M, Joveini H, Mehri A, Rakhshani MH, et al. Development and Validation of an Instrument to Measure Parental Factors Related to Substance Use Prevention in Adolescents. Curr Drug Res Rev. 2020;12(2):158-67. doi: https://doi.org/10.2174/2589977512666200710171905

63. Skeer MR, Sabelli RA, Rancaño KM, Lee-Bravatti M, Ryan EC, Eliasziw M, et al. Randomized controlled trial to test the efficacy of a brief, communication-based, substance use preventive intervention for parents of adolescents: Protocol for the SUPPER Project (Substance Use Prevention Promoted by Eating family meals Regularly). *PLoS One*. 2022;17(2):e0263016. doi: https://doi.org/10.1371/journal.pone.0263016

64. Gilmore AK, Mosley EA, Oesterle DW, Ridings LE, Umo I, Hutchins A, et al. Teen Well Check: an e-health prevention program for substance use, sexual assault, and sexual risk behaviors for adolescents in primary care. *Eur J Psychotraumatol*. 2023;14(1):2157933. Doi: https://doi.org/10.1080/20008066.2022.2157933

65. Vidal C, Yule A, Walkup JT. Substance Use Prevention in Children and Adolescents: Evidence and Recommendations. In *AACAP's 70th Annual Meeting 2023* Oct 28. AACAP. doi: http://dx.doi.org/10.1016/j.jaac.2023.07.546

66. Sarrazin D, Kleinat R. *Click for Support: Guidelines for online selective prevention*. Athens: KPEAY; [cited 2025 Jul 22]. Available from: http://kpeay.com/Portals/0/click_for_support.pdf

67. Champion KE, Newton NC, Teesson M. Prevention of alcohol and other drug use and related harm in the digital age: what does the evidence tell us? *Curr Opin Psychiatry*. 2016;29(4):242-9. doi: https://doi.org/10.1097/yco.0000000000000258

68. Hopson L, Wodarski J, Tang N. The Effectiveness of Electronic Approaches to Substance Abuse Prevention for Adolescents. *J Evid Inf Soc Work*. 2015;12(3):310-22. doi: https://doi.org/10.1080/15433714.2013.857178

69. Greene K, Ray AE, Choi HJ, Glenn SD, Lyons RE, Hecht ML. Short term effects of the REAL media e-learning media literacy substance prevention curriculum: An RCT of adolescents disseminated through a community organization. *Drug Alcohol Depend*. 2020;214:108170. doi: https://doi.org/10.1016/j.drugalcdep.2020.108170

70. Kristjansson AL, Davis SM, Coffman J, Mills R. Icelandic Prevention Model for Rural Youth: A Feasibility Study in Central Appalachia. *Health Promot Pract*. 2022;23(3):397-406. doi: https://doi.org/10.1177/15248399211002827

71. Kristjansson AL, Mann MJ, Sigfusson J, Thorisdottir IE, Allegrante JP, Sigfusdottir ID. Development and Guiding Principles of the Icelandic Model for Preventing Adolescent Substance Use. *Health Promot Pract*. 2020;21(1):62-9. doi: https://doi.org/10.1177/1524839919849032

72. Carver H, McCulloch P, Parkes T. How might the 'Icelandic model' for preventing substance use among young people be developed and adapted for use in Scotland? Utilising the consolidated framework for implementation research in a qualitative exploratory study. *BMC Public Health*. 2021;21(1):1742. doi: https://doi.org/10.1186/s12889-021-11828-z

73. Parkes T, Carver H. *The Youth in Iceland Model in Dundee: Tessa Parkes and Hannah Carver talk to the SSA* [internet]. Addiction-SSA.org. 2021 Apr 26 [cited 2025 Jul 22]. Available from: https://www.addiction-ssa.org/features/interview/the-youth-in-iceland-model-in-dundee-tessa-parkes-and-hannah-carver-talk-to-the-ssa/

74. Koning IM, De Kock C, van der Kreeft P, Percy A, Sanchez ZM, Burkhart G. Implementation of the Icelandic Prevention Model: a critical discussion of its worldwide transferability. *Drugs Educ Prev Policy*. 2021;28(4):367-78. doi: https://doi.org/10.1080/09687637.2020.1863916

75. Wicki M, Kuntsche S, Stucki S, Marmet S, Annaheim B. Outcome evaluation of 'Cool and Clean', a sports-based substance use prevention programme for young people in Switzerland. *Health Ed J*. 2018;77(2):226-40. doi: https://doi.org/10.1177/0017896917745105

76.   Sigfusdottir I, Soriano H, Mann M, Kristjansson A. Prevention Is Possible: A Brief History of the Origin and Dissemination of the Icelandic Prevention Model. *Health Promot Prac*. 2020;21:58-61. doi: https://doi.org/10.1177/1524839919886314

77.   Halsall T, Lachance L, Kristjansson AL. Examining the implementation of the Icelandic model for primary prevention of substance use in a rural Canadian community: a study protocol. *BMC Public Health*. 2020;20(1):1235. doi: https://doi.org/10.1186/s12889-020-09288-y

78.   Kristjansson AL, Lilly CL, Thorisdottir IE, Allegrante JP, Mann MJ, Sigfusson J, et al. Testing risk and protective factor assumptions in the Icelandic model of adolescent substance use prevention. *Health Educ Res*. 2021;36(3):309-18. doi: https://doi.org/10.1093/her/cyaa052

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