SYSTEMATIC REVIEWS ON INTERVENTIONS FOR ADOLESCENT SUBSTANCE ABUSE

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ABSTRACT:
Adolescent substance abuse is recognized as a risk factor for the emergence of adult neuropsychiatric and substance use disorders. This is partly because drug use can affect important stages of brain development that happen in adolescence. Globally, initiation among adolescents persists despite extensive efforts to educate youngsters about the possible negative implications of substance use. In addition, despite a great deal of research on the subject, there are still a lot of unanswered concerns concerning the causes and indicators of teenage drug use. With an emphasis on alcohol, cannabis, nicotine, and their interactions, we will examine some of the most recent research on the behavioral and neurobiological impacts of teenage drug use in rodents, non-human primates, and humans in the review that follows. All things considered, the use of these drugs during adolescence can result in long-term alterations to a range of networks and structures, which can have a lasting impact on behavior, feeling, and thought.

Keywords:
Adolescent health, Substance abuse, Drug abuse

INTRODUCTION:
It is acknowledged that adolescence marks the beginning of circumstances and behaviors that not only impact health during that stage but also pave the way for diseases that manifest in adulthood. Adolescence is a time when unhealthy habits like drinking, smoking, and using illegal drugs commonly start. These habits are linked to higher rates of morbidity and mortality and pose serious problems for public health. Substance abuse is a significant contributing cause to many issues, including unemployment, poor health, accidents, suicide, mental illness, and a shortened life expectancy.

Due to the cumulative nature of substance abuse's effects, which include expensive social, physical, and mental health issues, it has a significant negative influence on people as individuals, families, and communities. A number of factors, such as parenting style, peer pressure, biological or innate susceptibility to drug addiction, and socioeconomic situation, might increase the likelihood of beginning or sustaining substance usage. This leads to a vicious cycle in which these people become engulfed by their addictions rather than functioning as productive members of society. Tobacco use is the primary preventable cause of premature death worldwide, and the majority of adult smokers started when still in their teens. In different nations, smoking rates among girls and boys between the ages of 13 and 15 are different. In girls, 1 in 10 and in boys, 1 in 5 use tobacco.

METHODOLOGY:
In order to find systematic evaluations of therapies for substance abuse in the teenage population, we conducted a thorough assessment of the literature published up until December 2023. The definition of the adolescent population for the purposes of this overview was 11–19 years old; however, since many reviews focused on youth (aged 15–24) in addition to adolescents, exceptions were made to include research that addressed both youth and adolescents. Every accessible published systematic review on therapies for teenage substance abuse was taken into consideration. The third reviewer arbitrated any disputes between the two principal abstractors over the selection of reviews. The full texts of every review that satisfied the inclusion and exclusion criteria were retrieved, and then each review's data were separately extracted and put into a uniform format. Data on the following topics

were extracted: (1) features of the included studies; (2) methodology, participants, interventions, and outcomes description; (3) treatment effect assessment; (4) methodological concerns; and (5) risk of bias tool. The pooled effect size for the outcomes reported by the review authors was calculated using 95% confidence intervals (CIs). The 11-point methodological quality of systematic review assessment was used to evaluate and report on the included reviews' quality.

THE INTERVENTIONS FOR ADOLESCENT SUBSTANCE ABUSE:
School-based alcohol prevention treatments, such as individualized feedback, moderation tactics, expectancy challenges, risk identification, goal setting, and BAIs, have been linked to decreased drinking frequency. Family-based interventions had a minor but permanent effect on teenage alcohol usage, whereas CDIs for alcohol have been shown to lower the quantity and frequency of drinking among college students. There is insufficient evidence for or against supporting the establishment of alcohol advertising bans and multi-component therapies. School-based interventions based on a combination of social competency and social influence techniques have been demonstrated to be effective in avoiding drug and cannabis use.

Table 1: Summary estimates for substance abuse interventions

Substance abuse	Interventions	Outcomes and estimates
Smoking/tobacco use	School-based interventions	**Smoking uptake (pure prevention; RR: .88; 95% CI: .82–.96)** **Smoking at follow-up (smoke-free class competition; RR: .86; 95% CI: .79–.94)** **Smoking prevalence (at long-term follow-up) (RD: −.61; 95% CI: −4.22 to 3.00)**
	Family-/community-based interventions	**New smoking at follow-up (baseline never-smokers; RR: .76; 95% CI: .68–.84)** *Smoking at follow-up (baseline smoking not restricted; RR: 1.04; 95% CI: .93–1.17)* *Weekly smoking (RR: .83; 95% CI: .59–1.17)* *Monthly smoking (RR: .97; 95% CI: .81–1.16)* **Smoking prevention (RR: .81; 95% CI: .70–.93)** *Smoking cessation (RR: .96; 95% CI: .90–1.02)*
	Policy interventions	**30-day smoking prevalence (−1.5% [95% CI: −6.0% to −2.9%])**
	Incentives	*Smoking uptake at longest follow-up (RR: 1.00; 95% CI: .84–1.19)*
	Multicomponent interventions	**Lifetime smoking (RR: .73; 95% CI: .64–.82)** *30-day smoking (RR: .79; 95% CI: .61–1.02)* **Regular smoking (RR: .59; 95% CI: .42–.83)** **Smoking cessation (RR: 1.55; 95% CI: 1.16–2.06)** **Smoking cessation (RR: 1.56; 95% CI: 1.21–2.01)**
Alcohol use	School-based interventions	**Alcohol consumption (quantity/week/month; SMD: .13; 95% CI: .07–.19)** **Frequency of drinking days (SMD: .07; 95% CI: .02–.13)** *Frequency of heavy drinking (SMD: .07; 95% CI: −.01 to .14)* *Alcohol-related problems (SMD: .06; 95% CI: −.03 to .15)* *Alcohol use (>13 months) (RR: .94; 95% CI: .85–1.04)* **Alcohol consumption (RR: .34; 95% CI: .11–.56)**

Substance abuse	Interventions	Outcomes and estimates
Drug use	Digital platforms	*Frequency of heavy drinking (<5 weeks; effect size: −.01; 95% CI: −.15 to .14)* *Alcohol-related problems (<5 weeks; effect size: .14; 95% CI: −.24 to .51)* *Frequency of heavy drinking (>6 weeks; effect size: −.07; 95% CI: −.27 to .13)* **Alcohol-related problems (>6 weeks; Effect size: .16; 95% CI: .03–.30)**
	Policy interventions	**Total alcohol consumption (low alcohol content movies vs. high; MD: −.65; 95% CI: −1.23 to −.07]** **Total alcohol consumption (Nonalcohol commercials vs. alcohol commercials; MD: −.73; 95% CI: −1.30 to −.16)** *Volume of alcohol sales (Total advertising ban vs. partial advertising ban; MD: −11.11; 95% CI: −27.56 to 5.34)*
	School-based interventions	*Marijuana use (<12 months; RR .79; 95% CI: .59–1.05)* **Marijuana use (>12 months; RR .83; 95% CI: .69–.99)** *Hard drug use (<12 months; RR .85; 95% CI: .63–1.14)* *Hard drug use (>12 months; RR .86; 95% CI: .39–1.9)* **Any drug use (<12 months; RR: .76; 95% CI: .64–.89)** *Cannabis use (RR: .58; 95% CI: .55–.62)*
Combined substance abuse	School-based interventions	**Alcohol frequency (brief intervention vs. assessment only; SMD −.91; 95% CI: −1.21 to −.61)** *Cannabis dependence (brief intervention vs. assessment only; SMD −.26; 95% CI: −.57 to .36)* *Alcohol frequency (brief intervention vs. information provision; SMD: −.01; 95% CI: −.20 to .18)* *Cannabis dependence (brief intervention vs. information provision; SMD: −.09; 95% CI: −.27 to .09)*
	Mentoring	*Alcohol use (SMD: −.09; 95% CI: −.32 to .14)* *Marijuana use (SMD: −.20; 95% CI: −.43 to .03)*
	Multicomponent intervention	**Alcohol and other drugs aggregate outcomes (RR: .24; 95% CI: .11–.37)** **Alcohol frequency outcomes (RR: .44; 95% CI: .12–.77)** **Alcohol quantity outcomes (RR: .05; 95% CI: .02–.08)** **Heavy/binge drinking (RR: .14; 95% CI: .05–.22)** *Marijuana use (RR: .22; 95% CI: −.09 to .52)*

Bold indicates significant impact. Italics indicates non-significant impact.

CI = confidence interval; RR = relative risk; SMD = standard mean difference.

Adolescent marijuana and alcohol use can be effectively reduced by school-based primary prevention programs that combine antidrug knowledge with skills for refusal, self-management, and social skills training. These programs are among the interventions that target combined substance misuse. The usefulness of mentoring and the media when it comes to co-occurring substance dependence is not well established. We used an overview of review methodology to compile the body of research on drug addiction among adolescents. There are certain possible limits to an overview of systematic reviews, despite the fact that it saves work duplication and enables a much faster review process by building on the findings of thorough evaluations of studies conducted in various settings and of diverse quality.

The interventions that haven't been the subject of a systematic review but for which primary data are available won't have been. Moreover, selective reporting biases may have an impact on an overview of systematic reviews since it depends on the review authors' characterizations of the findings rather than on specific research. It also overlooks studies that aren't covered by the reviews that are included. To be transparent, we have given the current reviews a quality rating.

The results of our analysis demonstrate that the most highly regarded platforms for addressing teenage substance misuse are those that target school-based delivery. HICs provide the majority of the current evidence for drug-misuse therapies. Data on the varying effects of interventions by population density, gender, and socioeconomic level are lacking. The majority of the included evaluations did not lend themselves to meta-analysis because of differences in the therapies' reported results, follow-up times, and levels of intensity. Moreover, not all the data in reviews that underwent meta-analysis contributed to the estimation of the pooled effect. Rigid evidence on the long-term viability and efficacy of drug misuse treatment programs aimed at teenagers is lacking.

CONCLUSION:

Subsequent studies must concentrate on assessing the efficacy of certain intervention elements using standardized intervention and outcome metrics. It is necessary to assess the relative cost- and effectiveness-effectiveness of different drug abuse treatment delivery systems aimed at teenagers. Further research is needed to determine whether different delivery platforms, such as digital platforms and legislative initiatives, can improve the outcomes of substance addiction among teenagers. Since the effects of these behavior change interventions may differ among different population categories, future trials should concentrate on reporting distinct data for gender and socioeconomic divisions. Finally, there is an urgent need for thorough, high-quality research on successful interventions to stop and treat teen substance misuse, particularly in low- and middle-income nations.

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