Discussion | As the first study, to our knowledge, of the association between participation in an existing large-scale preschool program and adult BMI, we found CPC participation was associated with significantly lower rates of adult BMI. This was especially apparent for high-risk groups, where reductions in obesity prevalence were up to 29%.

Increased priority on preventing obesity through early childhood programs[3] can address health disparities exacerbated by existing socioeconomic inequities, such as multilevel poverty and segregation.[6] The 20% to 30% reduction in obesity for those growing up in high-poverty neighborhoods suggests that comprehensive programs that engage families in multiple systems of education and care, such as CPC programs, can promote health across domains of well-being.[4,6] The scope of this study, along with longer duration and an existing school-based structure, distinguish it from prior obesity prevention programs.[3] A possible advantage is the focus on educational attainment,[5] the leading social determinant of health in the US Department of Health and Human Service's Healthy People initiative.

This study had limitations. As the study analyzed a comprehensive and high-quality program, results may not generalize to individuals who attended less advanced and comprehensive programs. BMI was self-reported, although examination scores correlated highly with self-reported data. In conclusion, a comprehensive school-based early childhood program showed evidence of improving healthy body mass for an urban and predominately Black cohort at a time of growing national need.

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Prevalence of Substance Use Disorders by Time Since First Substance Use Among Young People in the US

Earlier age at drug initiation has been shown to be associated with faster transition to substance use disorder (SUD).[1] However, prevalence of specific SUDs as a function of time since first substance use among young people has not, to our knowledge, been investigated. We examined the prevalence of specific SUDs since first drug use (including tobacco, alcohol, cannabis, cocaine, methamphetamine, and heroin) or prescription misuse (including opioids, stimulants, and tranquilizers) in adolescents aged 12 to 17 years and young adults aged 18 to 25 years.

Methods | Data were from participants aged 12 to 25 years in the 2015 to 2018 National Surveys on Drug Use and Health (NSDUH) of the Substance Abuse and Mental Health Services Administration,[1,2] excluding prescription drug data from 2005 to 2014 because not all initiation dates were collected in 2015

Table. Prevalence of Specific Substance Use Disorders Among Individuals With Lifetime Substance Use Aged 12 to 25 Years by Time Since First Substance Use[a]

Measure	Weighted % (95% CI)					*P* value
		Time since initiation, mo				
	Total	≤12	>12-≤24	>24-≤36	>36	
Lifetime cigarette use, age 12-17 y						
No.	8200	1900	2200	1200	2800	NA
Past-month nicotine dependence						
Unadjusted	9.2 (8.4-10.0)	5.7 (4.4-7.3)	5.3 (4.2-6.7)	12.8 (10.7-15.2)	13.1 (11.6-14.7)	<.001
Adjusted	NA	6.6 (5.2-8.5)	6.0 (4.8-7.5)[b]	11.6 (9.7-13.7)[b]	11.7 (10.4-13.1)[b]	.03
Lifetime cigarette use, age 18-25 y						
No.	34 100	2000	2700	2800	26 500	NA
Past-month nicotine dependence						
Unadjusted	19.5 (19.0-20.2)	6.0 (4.9-7.4)	9.4 (8.1-10.9)	13.5 (12.0-15.2)	22.4 (21.7-23.1)	<.001
Adjusted	NA	6.4 (5.2-7.8)	9.6 (8.3-11.2)	14.1 (12.6-15.8)	22.2 (21.5-22.9)	<.001
Lifetime alcohol use, age 12-17 y						
No.	18 800	3500	3300	2000	2100	NA
12-mo Alcohol use disorder						
Unadjusted	7.2 (6.7-7.7)	3.9 (3.3-4.6)	6.3 (5.5-7.1)	9.6 (8.4-11.0)	12.6 (11.3-14.0)	<.001
Adjusted	NA	5.6 (4.7-6.3)	6.8 (6.0-7.6)[b]	7.9 (6.9-9.0)[b]	9.1 (8.2-10.2)[b]	<.001
Lifetime alcohol use, age 18-25 y						
No.	54 500	4300	5900	6100	38 200	NA
12-mo Alcohol use disorder						
Unadjusted	12.9 (12.5-13.3)	3.1 (2.4-3.8)	6.1 (5.3-7.0)	9.2 (8.3-10.2)	15.7 (15.2-16.2)	<.001
Adjusted	NA	5.1 (4.1-6.3)	8.4 (7.4-9.6)	10.9 (9.9-12.0)	14.2 (13.8-14.7)	<.001
Lifetime cannabis use, age 12-17 y						
No.	10 800	3500	3300	2000	2100	NA
12-mo Cannabis use disorder						
Unadjusted	15.1 (14.3-16.0)	8.5 (6.2-7.4)	14.0 (12.5-15.5)	18.7 (16.6-20.9)	25.1 (22.8-27.6)	<.001
Adjusted	NA	10.7 (9.3-12.3)[b]	14.6 (13.2-16.2)[b]	16.8 (15.0-18.8)[b]	20.1 (18.0-22.3)[b]	<.001
Lifetime cannabis use, age 18-25 y						
No.	35 100	2100	3300	3800	26 000	NA
12-mo Cannabis use disorder						
Unadjusted	10.2 (9.8-10.7)	4.8 (3.8-6.1)	7.8 (6.7-9.0)	9.4 (8.2-10.7)	11.1 (10.6-11.7)	<.001
Adjusted	NA	6.4 (5.2-7.9)	8.5 (7.4-9.8)	9.1 (8.0-10.4)	10.9 (10.3-11.4)	<.001
Lifetime cocaine use, age 18-25 y						
No.	7600	1400	1200	3700	1200	NA
12-mo Cocaine use disorder						
Unadjusted	5.6 (5.0-6.3)	6.2 (4.6-8.2)	4.6 (3.5-6.1)	4.6 (3.3-6.3)	6.2 (5.3-7.3)	.56
Adjusted	NA	5.6 (4.2-7.4)	4.7 (3.5-6.3)	4.7 (3.4-6.4)	6.4 (5.4-7.6)	.28
Lifetime methamphetamine use, age 18-25 y						
No.	2000	200	300	300	1200	NA
12-mo Methamphetamine use disorder						
Unadjusted	15.9 (13.9-18.1)	27.7 (19.4-37.9)	14.9 (10.3-21.0)	15.6 (11.1-21.5)	14.5 (12.0-17.4)	.02
Adjusted	NA	24.8 (16.8-34.9)	13.3 (9.4-18.6)	15.4 (11.3-20.7)	15.3 (12.7-18.3)	.03
Lifetime heroin use, age 18-25 y						
No.	1100	100	200	200	700	NA
12-mo Heroin use disorder						
Unadjusted	25.9 (22.6-29.4)	30.6 (20.8-42.6)	26.7 (19.3-35.7)	24.3 (17.4-32.9)	25.3 (21.1-30.1)	.71
Adjusted	NA	30.9 (20.6-43.4)	44.4 (32.0-57.5)	36.9 (26.7-46.2)	42.5 (35.4-49.9)	.30

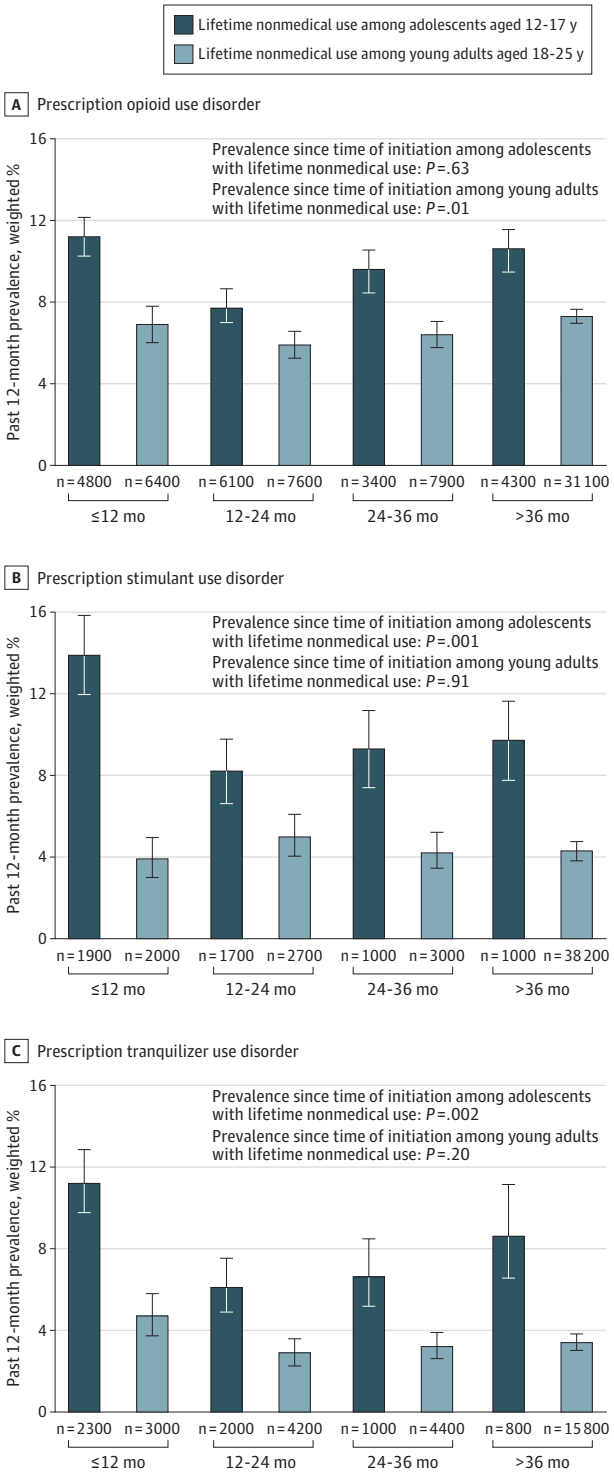
Abbreviation: NA, not applicable.

[a] Data from 2015 to 2018 National Surveys on Drug Use and Health (NSDUH). Prevalence controlled for age, sex, race/ethnicity, family income, age at first tobacco use (excluded from nicotine dependence analysis), age at first alcohol use (excluded from alcohol use disorder analysis), nicotine dependence (excluded from nicotine dependence analysis), major depressive episode, alcohol use disorder (excluded from alcohol use disorder analysis), cannabis use disorder (excluded from cannabis use disorder analysis), cocaine use or disorder (excluded from cocaine use disorder analysis), hallucinogen use or disorder, prescription tranquilizer/sedative use disorder, prescription stimulant use disorder, and prescription opioid or heroin use disorder (heroin use disorder analysis: entered prescription opioid use disorder).

[b] Adjusted estimate for adolescents was significantly different from adjusted estimate for young adults within the same period ($P < .05$).

to 2018. Data were analyzed in July 2020. The NSDUH collects nationally representative data on substance use according to lifetime use, use in the past 12 months, and initiation date as well as SUDs (using *Diagnostic and Statistical Manual*

Figure. Adjusted Past 12-Month Prevalence of Prescription Drug Use Disorder by Time Since First Nonmedical Use



Estimates adjusted for age, sex, race/ethnicity, family income, major depressive episode, nicotine dependence, other substance use disorder, age at first alcohol use, and age at first tobacco use.

of Mental Disorders [Fourth Edition] criteria) among noninstitutionalized civilian populations. This research was approved by the institutional review board at RTI International. Due to the sensitive contents of the NSDUH, the US Office of Management and Budget and the IRB at RTI International only require verbal informed consent. For respondents aged 12 to 17 years, verbal consent was received from each participant and their parent or legal guardian, or participants alone for those aged 17 years and living independently (eg, in a dormitory). Multivariable logistic regressions were conducted using SUDAAN version 11.0.1 (RTI International) to account for complex sample design and sampling weights. Two-tailed *t* tests were conducted, and significance was set at $P < .05$.

Results | Alcohol, cannabis, and tobacco were the most commonly used substances. The prevalence of lifetime substance use among adolescents in 2018 was 26.3% (95% CI, 25.4-27.2) for alcohol, 15.4% (95% CI, 14.7-16.1) for cannabis, and 13.4% (95% CI, 12.7-14.1) for tobacco; among young adults in 2018, prevalence of lifetime substance use was 79.7% (95% CI, 78.9-80.5) for alcohol, 51.5% (95% CI, 50.4-52.6) for cannabis, and 55.0% (95% CI, 53.9-56.1) for tobacco. Prevalence of SUDs differed by substance, age group, and time since initiation. Adjusted prevalence of cannabis use disorder was higher among adolescents than among young adults within 12 months of initiation (10.7%; 95% CI, 9.3-12.3 vs. 6.4%; 95% CI, 5.2-7.9) and at more than 36 months (20.1% [95% CI, 18.0-22.3] vs. 10.9% [95% CI, 10.3-11.4]) (**Table**). Prevalence of alcohol use disorder and nicotine dependence did not differ between the 2 groups within 12 months of initiation but was higher for young adults in subsequent periods.

Among young adults, prevalence of lifetime cocaine, methamphetamine, and heroin use in 2018 was 11.4% (95% CI, 10.7-12.1), 2.5% (95% CI, 2.2-2.8), and 1.3% (95% CI, 1.1-1.5), respectively. Within 12 months of initiation, adjusted prevalence was higher for methamphetamine use disorder (24.8% [95% CI, 16.8-34.9]) and heroin use disorder (30.9% [95% CI, 20.6-43.4]) than for cocaine use disorder (5.6% [95% CI, 4.2-7.4]). Estimates for adolescents were not reported owing to limited samples.

Prevalence of lifetime misuse of prescription drugs in 2014 was 9.2% (95% CI, 8.7-9.7) among adolescents and 26.3% (95% CI, 25.4-27.2) among young adults. Among the population with lifetime misuse, adjusted prevalence of prescription opioid use disorder, prescription stimulant use disorder, and prescription tranquilizer use disorder were consistently higher for adolescents than for young adults (**Figure**). Prevalence since time of initiation for adolescents was stable for prescription opioid use disorder and decreased for prescription stimulant use disorder and prescription tranquilizer use disorder, whereas for young adults, prevalence increased for prescription opioid use disorder and was stable for prescription stimulant use disorder and prescription tranquilizer use disorder.

Discussion | Using nationally representative data, we observed higher prevalence of SUD within 12 months of cannabis and prescription misuse initiation among adolescents than among young adults (eg, cannabis use disorder: 10.7% vs 6.4% within 12 months; 20.1% vs 10.9% at more than 36 months), consistent with the association of faster transition to SUDs with younger age at drug initiation. Although the American Academy of Pediatrics recommends screening for substance use among

adolescents,[3] the US Preventive Services Task Force recommends such screening in primary care settings only among adults.[4] Our results underscore the vulnerability of adolescents to SUDs and the importance of screening for substance misuse among adolescents.

For young adults with lifetime use, prevalence within 12 months of drug initiation was high for heroin use disorder (30.9%) and methamphetamine use disorder (24.8%). Considering the high rates of opioid fatalities and rising numbers of methamphetamine deaths,[5] these results highlight the urgency of prevention, screening, and treatment of SUDs in this age group.

This study has limitations. Prevalence of SUDs may have been underestimated because NSDUH excludes incarcerated individuals and homeless individuals not living in shelters and is subject to recall and social biases. Nevertheless, our results identified adolescents as highly vulnerable to SUDs, supporting the need for research to evaluate the efficacy of screening for substance use and SUDs in primary care settings and the timely treatment thereof.

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COMMENT & RESPONSE

Methodologic and Reporting Issues in Published Meta-analysis

To the Editor Fraguas et al[1] report a meta-analysis of school-based antibullying interventions for prevention of bullying. We have several concerns regarding the methodology and reporting.

Almost all included trials (85%) evaluated universal prevention and should have ideally included a measure of risk reduction, such as incident or recurrent cases.[2] The authors did not report any such outcomes. Effects were transformed from standardized mean differences to numbers needed to treat.[3] For continuous outcomes (the majority in the meta-analysis), the transformation requires defining a threshold for response,[3] an aspect that was not reported. Moreover, outcomes were averaged across heterogeneous categories combining instruments of variable psychometric properties and indexing very diverse constructs. For example, the "mental health problems" category included depression and social anxiety, but also empathy and self-efficacy, among others. The adjudication of instruments to outcome categories was sometimes contradictory, eg, empathy measurements were tallied in one instance at "mental health problems" and in another at "attitudes discouraging bullying"[1] (eTable 2 in the Supplement). Predictably, effect estimates for these categories had very large heterogeneity, further limiting clinical relevance.

Furthermore, most trials (53 of 69) were cluster randomized trials (CRTs), with outcomes evaluated individually. Meta-analyses combining CRTs and individually randomized trials must allot special consideration to risk of bias assessment and data synthesis. In CRTs, individuals might be recruited into clusters after clusters have already been allocated to interventions, allowing knowledge of the cluster's allocation to influence recruitment or selection into the analysis (ie, "identification/recruitment bias").[2] Identification bias should be considered explicitly in risk of bias assessment, as underscored by the Cochrane Collaborations' dedicated tool.[2] Fraguas et al[1] give no details about how sources of bias specific to CRTs were assessed. Moreover, no information was provided about estimating effect sizes from CRTs. Effect estimates that ignore clustering can result into overly small standard errors that, when used in a meta-analysis, further influence meta-analytic weights and could inappropriately increase precision of the pooled effect.[5] To address this, meta-analysists should either extract effect estimates from an analysis accounting for clustering or use an adjustment based on the intracluster correlation coefficient to correct trial sample size.[5] Fraguas et al[1] did not describe any such procedure and probably computed effects as if CRTs were individually-randomized trials. This approach likely affected the precision of study-level estimates and consequently meta-analytic weights. For most findings, the confidence interval of the summary effect closely bordered zero, thus potential changes in meta-analytic weights resulting from correctly estimating CRT effects could affect statistical significance.