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Childhood atopic dermatitis and risk of problematic substance use:

Atopic dermatitis and substance use

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To the Editor

Atopic dermatitis (AD) has been associated with smoking;¹ associations with other harmful substances including alcohol and illicit drugs are inadequately studied.²⁻⁴ We hypothesized that AD would be associated with an increased risk of using harmful substances in the Growing Up Today Study (GUTS), a longitudinal cohort. GUTS participants (9,039 girls, 7,843 boys) are children aged 9-14 in 1996 whose mothers are nurses who participate in Nurses' Health Study 2 (NHS2).⁵ GUTS and NHS2 are approved by the Human Subjects Committee at Brigham and Women's Hospital.

In each of 1997 and 1999, mothers were asked whether their child had been diagnosed with "eczema (atopic dermatitis)" by a doctor. On subsequent questionnaires, participants were asked whether they ever smoked 100 cigarettes in their life, the frequency in the past year of drinking four (for girls) or five (for boys) or more drinks over a few hours and whether they had used any of the following in the past year: cocaine, crack, heroin, ecstasy, PCP, GHB, LSD, mushrooms, Ketamine, crystal meth, Rohypnol, amphetamines or prescription drugs without a prescription. Frequent binge drinking was defined as six or more episodes in the

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past year. Because cannabis use was common and is now legal in many states, we did not include it in our definition of illicit substance use. We followed participants up to 2010.

For each primary outcome (smoking 100 cigarettes, frequent binge drinking and illicit substance use), we used generalized estimating equations to calculate multivariate adjusted odds ratios (OR) and 95% confidence intervals (CI) for their association with AD. We used multivariate ordinal logistic regression for the association between AD and the number of primary outcomes experienced by participants (none, one, two or three). For each primary outcome, we performed analyses stratified by the other two primary outcomes and by history of being bullied. Mean age to smoking 100 cigarettes was compared between participants with and without AD using multivariate linear regression. Statistical analysis was performed with SAS, version 9.2 (SAS Institute, Inc., Cary, NC). All tests were 2-tailed with $P < 0.05$.

After excluding participants missing AD or substance use data for all time points, we included 16,240 participants (characteristics in online supplement). AD was not associated with smoking 100 cigarettes or frequent binge drinking (Table 1). AD was associated with illicit drug-use in the age- and sex-adjusted analysis, but this was not significant in other models. There were non-significant positive associations between AD and having one (OR 1.15, 95% CI 0.98-1.35), two (OR 1.04, 95% CI 0.87-1.23) or three (OR 1.20, 95% CI 0.99-1.46) primary outcomes. AD was associated with illicit drug use among participants who had smoked 100 or more cigarettes (OR 1.39, 95% CI 1.04-1.86); there were no other significant associations in stratified analyses. Mean $\pm$ SD age to reporting smoking 100 cigarettes was similar for those with (20.0 ± 2.7 years) and without (19.9 ± 2.9 years) AD ($p=0.15$).

Our generally null findings in this study do not support the hypothesis that AD in childhood is associated with subsequent substance use.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Association between atopic dermatitis (AD) in childhood and the risk of smoking 100 cigarettes, frequent binge drinking and illicit drug use other than marijuana. Results are presented as odds ratios with 95% confidence intervals.

Outcome	AD status	Does not have outcome (n)	Has outcome (n)	Age and gender-adjusted model	Multivariate-adjusted model 1*	Multivariate-adjusted model 2 [†]
Lifetime history of ever smoking 100 cigarettes	No AD	10,039	3,769	Ref	Ref	Ref
	AD	1,769	663	1.09 (0.98, 1.22)	1.08 (0.96, 1.21)	1.06 (0.94, 1.19)
6 or more episodes of binge drinking in 1 year	No AD	7,191	6,617	Ref	Ref	Ref
	AD	1,248	1,184	1.04 (0.95, 1.14)	1.02 (0.92, 1.13)	1.07 (0.95, 1.20)
Illicit drug use other than marijuana	No AD	5,681	8,127	Ref	Ref	Ref
	AD	923	1,509	1.16 (1.06, 1.28)	1.15 (0.98, 1.35)	1.13 (0.95, 1.33)

* adjusted for age, gender, hayfever, asthma, food allergy, BMI, physical activity, maternal AD and depressive symptoms.

[†] adjusted for age, gender, hayfever, asthma, food allergy, BMI, physical activity, maternal AD, depressive symptoms and for each outcome, adjusted for the other 2 outcomes.