

Reports

Self-Harm, Suicidality, and Psychiatric Visits in Children with Atopic Dermatitis: a TriNetX Cohort Study

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Background

Atopic dermatitis (AD) is a chronic skin condition associated with impaired psychosocial functioning and an elevated risk of mental health issues, with potential psychiatric symptoms emerging in early childhood.

Method

Using TriNetX medical record data, AD youth (n = 408,916) were matched to an equal number of non-AD controls. Psychiatric outcomes of self-harm, suicide attempts, psychotherapy, and psychiatric diagnostic evaluations were followed for 3 years. Outcomes were compared between ages 5–9, 10–14, and 15–18.

Results

Compared to controls, AD youth had a greater risk of all psychiatric outcomes. Across cohorts, AD youth exhibited a 1.26-fold increased risk of self-harm (95% CI, 1.10, 1.45) and a 1.45-fold risk of suicide attempts (95% CI, 1.26, 1.66). They also had a higher risk of utilizing psychiatric resources, as the relative risk for psychotherapy was 1.28 (95% CI, 1.11, 1.46) and 1.33 for psychiatric evaluations (95% CI, 1.17, 1.54). However, absolute risk reductions for each correlate were small (<1%).

Conclusion

Rather than separate screening protocols for atopic dermatitis, existing mental health screenings should consider AD-related distress. Clinician and caregiver education may help provide targeted support for this population.

INTRODUCTION

Atopic dermatitis (AD), or eczema, is a chronic inflammatory skin condition characterized by intense itching, affecting 1 in 5 children globally.¹ Beyond its physical symptoms, AD imposes significant psychosocial and emotional challenges. Emerging literature has begun to explore the associations between pediatric AD and mental health conditions.¹

The impact of AD on children and adolescents extends far beyond the skin. Persistent itching disrupts sleep and impairs focus, while the visibility of skin lesions can lead to emotional distress from social exclusion and embarrassment.² Stress, as a mediator of atopic symptoms, creates a bidirectional relationship between AD and psychiatric

symptoms, forming a cycle of skin inflammation and psychological distress.

Despite growing awareness of the psychosocial burden of AD in children and adolescents, the timeline and extent of mental health outcomes remain unclear. While previous studies have linked pediatric AD to anxiety, depression, ADHD, sleep disorders, and autism spectrum disorder, self-harm and suicidal tendencies have been less frequently reported, particularly in school-aged children.³ Furthermore, psychiatric outcomes may vary by patient age.

Approximately 60% to 80% of pediatric AD is resolved by adolescence, with immune system maturation playing a critical role in the disease's natural history. Younger children often experience more widespread and severe eczema, whereas adolescent AD tends to be more localized, with lichenified plaques affecting the flexural areas.⁴ Given the



increased AD severity in younger children, it is reasonable to hypothesize a heightened risk of adverse psychiatric outcomes compared to adolescents. However, few studies have examined the risks of mental health conditions across different ages within pediatric AD populations.

This study aims to analyze psychiatric outcomes in children with AD as young as 5 years old, using the TriNetX database. We also compare the risk of mental health outcomes between early childhood, early adolescence, and teenage years.

METHODS

DATA SOURCE

TriNetX is an online global health research network of approximately 250 million de-identified patient medical records. The data span from 2004–2024, with records from 84 health care organizations represented in the Research with Natural Language Processing (NLP) network.

COHORTS AND PROPENSITY SCORE MATCHING

Cohorts were created with the International Classification of Disease (ICD)-10 diagnostic codes. The AD cohort was defined as having a diagnosis of AD (ICD-10 L20) and having at least one ambulatory (outpatient) visit (HL7V3.0). Using an outpatient visit as the starting point for tracking patients may reduce bias from differences in how often or why patients seek health care, attempting to ensure everyone begins at a similar point. The control group was defined as having at least one ambulatory visit but no previous diagnosis of AD. Comparisons were made across the following age subgroups: early childhood (5–9), early adolescence (10–14), and teenage years (15–18).

Propensity score matching (PSM) was utilized to account for potential confounding variables: age at index, sex, race, ethnicity, and atopic conditions such as asthma (ICD-10 J45), vasomotor and allergic rhinitis (ICD-10 J30), and allergy or anaphylaxis due to food (ICD-10 Z91.01 & T78.0).

OUTCOMES

Psychiatric outcomes were identified using ICD-10 or Current Procedural Terminology (CPT) codes. Outcomes included intentional or history of self-harm (ICD-10 X71-X83 & Z91.5), psychotherapy services (CPT 1021137, 1012716, 90832, 90834, 90837 & 1021138), suicide attempts (ICD-10 T14.91), and psychiatric diagnostic evaluations (CPT 90791 & 90792). Outcomes were tracked for 3 years following the index event, excluding patients if they had relevant outcomes before the index.

STATISTICAL ANALYSIS

The analyses were conducted using TriNetX's built-in software and MedCalc calculator tools. Baseline characteristics after matching were calculated for each age group (5–9,

10–14, 15–18). Age groups were combined to create an overall AD cohort and an overall control cohort for demographic comparisons, and standardized differences were computed. For psychiatric outcomes, relative risks (RR) and 95% confidence intervals (CI) were calculated.

RESULTS

After PSM matching, 408,916 patients with AD and an equal number of matched controls were identified. The cohorts were well-matched for demographics and atopic comorbidities (standardized difference <0.1) within and between age subgroups (Table 1). The mean ages (SD) at index event for the 5–9, 10–14, and 15–18 AD groups were, respectively, 6.5 (1.4), 11.5 (1.4), and 16.0 (1.1).

Compared to non-AD controls, AD youth had greater RR of all psychiatric outcomes. Across cohorts, AD youth exhibited a 1.26-fold risk of self-harm (95% CI, 1.10, 1.45) and a 1.45-fold risk of suicide attempts (95% CI, 1.26, 1.66). Notably, there were 1566 total suicide attempts, with 926 (59.13%) occurring in the AD group. The AD group also had a greater utilization of psychiatric resources, as the RR for psychotherapy visits was 1.28 (95% CI, 1.11, 1.46), and the RR for psychiatric diagnostic evaluations was 1.33 (95% CI, 1.17, 1.54). Finally, RR for all psychiatric outcomes were significant within age subgroups, and absolute risk reduction was calculated for each outcome (Table 2).

DISCUSSION

This study expands on the literature by investigating self-harm, suicidality, and psychiatric visits in AD youth, comparing between early childhood (5–9), early adolescence (10–14), and teenage years (15–18). We observed an increased risk of all psychiatric outcomes in AD youth compared to controls, with overlapping CI between age subgroups, suggesting a similar risk. Among the study population there were 1566 suicide attempts, 926 (59.13%) of which occurred in the AD group. Given that suicide is now the second highest cause of death in 10- to 24-year-olds and the eighth-leading cause in 5- to 11-year-olds, monitoring psychological well-being in all youth is crucial.^{5,6}

While RR were significant for all outcomes, absolute risk reduction (ARR) values were only slightly increased (0.07%–0.47%) across age cohorts. These values were highest in psychotherapy (0.37%) and diagnostic evaluations (0.47%), suggesting a slight increase in mental health resource utilization. However, the low ARRs for suicide attempts (0.07%) and self-harm (0.09%) indicate that the overall clinical impact may be limited. Given these findings, while the distress associated with AD should be considered in mental health screening, the data do not suggest a greater overall need for psychiatric screening in AD youth compared to the general pediatric population. Instead, all children should be routinely screened for mental health concerns, with attention to AD-specific stressors being integrated into existing screening approaches. Additionally, the similar ARRs across age groups suggest that the psychi-

Table 1. Baseline Characteristics After Propensity Score Matching

		Atopic dermatitis cohort (n = 408,916)	Control cohort (n = 408,916)	Standardized difference
Sex	Female	51.34%	51.34%	0.03
	Male	46.22%	46.12%	0.03
Ethnicity	Hispanic	17.67%	17.74%	0.03
	Non-Hispanic	67.39%	67.30%	0.03
Race	White	38.88%	38.99%	0.03
	Black	29.44%	29.17%	0.03
	Asian	5.63%	5.71%	0.02
Diagnoses	Vasomotor and allergic rhinitis	24.50%	24.36%	0.03
	Asthma	22.84%	22.62%	0.03
	Food allergy status	7.12%	7.69%	0.02
	Anaphylactic reaction due to food	0.92%	1.01%	0.00

Table 2. Psychiatric Correlates by Age Group

Age group		Atopic dermatitis cohort prevalence	Control cohort prevalence	Relative risk (95% CI)	Absolute risk reduction
Overall	Self-harm	0.40%	0.32%	1.26 (1.10, 1.45)	0.09%
	Suicide attempt	0.23%	0.16%	1.45 (1.26, 1.66)	0.07%
	Psychotherapy	1.72%	1.35%	1.28 (1.11, 1.46)	0.37%
	Psychiatric evaluation	1.88%	1.40%	1.33 (1.17, 1.54)	0.47%
5–9	Self-harm	0.16%	0.11%	1.45 (1.22, 1.72)	0.05%
	Suicide attempt	0.08%	0.05%	1.66 (1.29, 2.14)	0.03%
	Psychotherapy	1.51%	1.08%	1.40 (1.32, 1.47)	0.43%
	Psychiatric evaluation	1.69%	1.25%	1.35 (1.28, 1.42)	0.44%
10–14	Self-harm	0.59%	0.48%	1.24 (1.12, 1.38)	0.12%
	Suicide attempt	0.35%	0.23%	1.48 (1.28, 1.71)	0.11%
	Psychotherapy	1.92%	1.59%	1.21 (1.14, 1.28)	0.32%
	Psychiatric evaluation	1.99%	1.49%	1.34 (1.26, 1.42)	0.50%
15–18	Self-harm	0.74%	0.61%	1.20 (1.06, 1.36)	0.12%
	Suicide attempt	0.43%	0.32%	1.33 (1.12, 1.57)	0.10%
	Psychotherapy	1.94%	1.66%	1.17 (1.09, 1.27)	0.29%
	Psychiatric evaluation	2.19%	1.68%	1.30 (1.21, 1.40)	0.50%

atric risks associated with AD remain relatively stable over time.

Strengths of this study include the large sample size of 408,916 AD patients and an equal number of matched controls, along with a diverse participant population (29.44% Black, 17.67% Hispanic/Latino, and 5.63% Asian). Additionally, we attempted to minimize variations in health care utilization by defining cohorts to have at least one outpatient visit within the study period. For example, if some patients had more regular health care interactions than others, this could lead to differences in the types of diagnoses or treatments they received, which could promote bias. However, the study is limited by the inability of large epidemiological databases to provide a comprehensive clinical picture through ICD codes alone. Variations in clinician coding practices may not capture disease severity or pa-

tient-centered factors, such as treatment nonadherence. Additionally, socioeconomic status could not be accounted for through TriNetX functionality or ICD codes due to low clinician utilization. Future research should explore how AD severity, treatment adherence, and socioeconomic factors influence mental health outcomes in this population.

This study highlights the association between pediatric AD and increased risk of psychiatric outcomes, including self-harm, suicidality, psychotherapy services, and psychiatric evaluations. The findings emphasize the importance of addressing AD-related distress within routine mental health screenings rather than implementing separate screening protocols for AD youth. Challenges faced by these youth can include distress during peer interactions due to visible skin lesions, which can be particularly impactful during a developmental stage when self-concept is still

forming. Given the chronicity of AD and its capacity to exacerbate mental health issues, ongoing monitoring and integrated care approaches are essential in managing both the dermatological and psychological needs of these patients. Educating parents and caregivers about the potential mental health risks associated with AD may also help ensure critical support.

Take Home Summary

We found that childhood atopic dermatitis is associated with slightly higher risks of suicidality, self-harm, psychotherapy, and psychiatric evaluations. Routine mental health screening is essential for all children, and attention to AD-related distress should be integrated into existing screening approaches.

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DISCLOSURES

The authors have reported no biomedical financial interests or potential conflicts of interest.

AUTHOR CONTRIBUTIONS

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