Nearly Half of American Children with Atopic Dermatitis Experience Significant Quality of Life Impairment, Often Underestimated by Parents

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Dear Editor, Atopic dermatitis (AD) is a common chronic skin condition in children that can substantially affect their quality of life.[1-4] However, the extent of this impact and how accurately parents perceive it has been rarely evaluated on a nationwide level.[5] This study aims to evaluate the impact of AD on American children aged 6 to 12 years using the Children's Dermatology Life Quality Index (CDLQI)[6] and evaluate associating factors.

A representative sample of the general population of the United States aged 18 years or more was recruited using stratified, proportional sampling with a quota sampling design with replacement. In this design, dyads who did not complete the entire questionnaire were replaced by dyads matched for key characteristics (age, sex, etc.)." Families with children aged 6 to 12 years suffering from AD were identified within this panel. The study was conducted as an online self-administered survey. The overall response rate was 93%.

The study was conducted through an online self-administered survey. The overall response rate was 93%. Data were collected on sociodemographic characteristics, AD severity (Patient-Oriented Eczema Measure, POEM), parental stress (Perceived Stress Scale, PSS)[7], parental burden (Atopic Burden Scale – ABS-A)[8], subjective parental assessment of AD impact, and the Children's Dermatology Life Quality Index (CDLQI). Additional variables included projection into the future (optimism/pessimism), attention disorders, sleep disorders, family history of AD, asthma, and urticaria. These variables were incorporated into the multivariate regression models.

Underestimation was defined as a parental subjective assessment of impact being lower than the child's CDLQI score. Three groups were established based on the severity of CDLQI (mild:0-6, moderate: 7-12, severe >12). The Statistical analysis was performed to assess associations between these variables using multivariate regression models.

In total, there were 500 children with AD: 6–9 years (n=285) and 10–12 years (n=215). According to CDLQI, AD had little effect on the child's life in 20.4% of cases, a moderate effect in 31%, and a significant to very significant effect in 48.6%. Forty two percent (n=210) of parents

underestimated the impact of their child's AD, while 13.4% (n=67) overestimated it, when comparing their subjective assessment to CDLQI.

Multivariate analysis revealed several factors significantly associated with higher CDLQI scores, indicating a greater impact on the child's quality of life. Table 1 These included higher parental income, being in the 10–12 years age group, pessimism about the future , stressed parents,attention disorders, and sleep disorders. Furthermore, moderate and severe AD were linked to higher CDLQI values compared to mild AD. Family history of atopic eczema and asthma were not associated with higher CDLQI scores. Given that almost half of parents underestimate the impact of AD, parental-reported outcomes or assumptions should not be solely relied upon in clinical decision-making, particularly in moderate to severe cases, where the misalignment may lead to under-treatment or insufficient psychosocial support.[9-10]

Several reasons may explain parental underestimation of the impact of AD, including reluctance to use corticosteroids, a tendency to normalize symptoms over time, and the difference in timeframe between child-reported questionnaires (which usually cover one week) and parental evaluation, which may be based on a longer period. This finding reinforces the importance of systematically using child-reported outcome measures, as parental perception alone may not always accurately reflect this burden. Parental assessment can nevertheless provide complementary information during consultations, but it should not replace the child's own evaluation of quality of life. Increasing parents' awareness of the burden of AD is also crucial to avoid the risk of undertreatment.

Multivariate analysis suggests that psychosocial and socioeconomic dynamics may modulate the perceived burden of disease, with older children likely more aware of or impacted by stigma, school demands, or social limitations.

Moreover, interestingly, children from higher-income families reported higher CDLQI scores.". This may reflect heightened expectations regarding appearance, peer acceptance, or participation in activities where visible skin disease becomes more disruptive.

The strongest independent predictors of a high CDLQI score were moderate and severe AD severity, as assessed by POEM, reinforcing the direct link between clinical severity and perceived quality-of-life impairment. In contrast, family history of AD or asthma had no impact on CDLQI scores, suggesting that the lived experience of AD in children is not significantly shaped by familial atopic background.

This nationally representative study demonstrates that AD substantially impairs the quality of life in nearly half of U.S. children aged 6–12 years. Parental assessments often fail to capture the true extent of this burden. Reliance on parental reporting for the diagnosis of AD, the nature of the design, and potential recall bias should be considered as limitations to the interpretation of the results.

These findings advocate for routine use of child-reported outcome measures like the CDLQI in clinical practice to guide management decisions. Furthermore, targeted interventions should address not only the dermatologic symptoms but also associated neurobehavioral conditions and parental stress, which significantly contribute to the child's lived burden of disease.

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Table 1: Children's Quality of Life in Atopic Dermatitis: CDLQI Findings and Multivariate Analysis of Associated Factors

Effect of AD based on CDLQI	NO or Midl [0-6]	Moderate [7-12]	Severe / Very sevre [>12]	P-value
Sex Of Child	N = 102	N = 155	N = 243	
Male	61 (59.8%)	74 (48.05%)	154 (63.64%)	0.008
Female	41 (40.2%)	80 (51.95%)	88 (36.36%)	
ABS-A [Parent burden score]	6.4 (± 8.63)	15.4 (±10.64)	26.43 (± 9.17)	<0.001
[PSS] Parent stress score	11.86 (±7.06)	14.24 (±6.76)	17.27 (± 5.26)	<0.001
Severity According To POEM	8.36 (± 5.07)	10.7 (± 4.97)	13.22 (± 5.46)	<0.001
Mild [3-7]	48 (47.06%)	46 (29.68%)	33 (13.58%)	<0.001
Moderate [8-16]	48 (47.06%)	88 (56.77%)	150 (61.73%)	
Severe / Very severe [17-28]	6 (5.88%)	21 (13.55%)	60 (24.69%)	
Time since disease onset (years)	4.98 (± 2.94)	4.02 (± 2.77)	3.05 (± 2.4)	<0.001
Comorbidities				
Asthma	21 (20.59%)	50 (32.26%)	91 (37.45%)	0.009
Urticaria	23 (22.55%)	41 (26.45%)	80 (32.92%)	0.112
Impact according to the parent				
Mild	53 (51.96%)	27 (17.42%)	19(7.82%)	
Moderate	39 (38.24%)	110 (70.97%)	164 (67.49%)	
High	10 (9.8%)	18 (11.61%)	60 (24.69%)	
Parents underestimate the impact		27 (17.4%)	183 (75.3ù)	
Parents overestimate the impact	49 (48%)	18 (11.6%)		

Variable included in regression model	Modality	Coefficients	P-value
Age group			
	6–9 years (reference)		
	10–12 years	1.96 [0.896;3.02]	0.0003
Parental income			
	Medium (reference)		
	High	1.91 [0.347 ;3.48]	0.0167
AD severity (POEM)			
	Mild (reference)		
	Moderate	3.57 [2.33;4.8]	<0.0001
	Severe	7.11 [5.46;8.76]	<0.001
Projection into the future			
	Optimism about the future (referene)		
	Pessimism about the future	2.18 [1.14;3.22]	<0.001
Parental stress (PSS)	*Score >21*	2.2 [0.76;3.64]	0.0028
Family history of AD	*Yes vs No*	0.082 [-1.01;1.17]	0.883
Attention disorders	*Yes vs No*	2.23 [0.717;3.73]	0.0039
Sleep disorders	*Yes vs No*	2.31 [1.01;3.6]	0.0005
Asthma	*Yes vs No*	0.77 [-0.387;1.92]	0.192
Urticaria	*Yes vs No*	1.46 [0.315;2.61]	0.0126

AD: *Atopic Dermatitis* . POEM : *Patient-Oriented Eczema* : PSS : *Perceived Stress Scale*; ABS-A : *Atopic Burden Scale – Adult*; CDLQI : *Children's Dermatology Life Quality Index*