FROM THE DERMATOLOGY FOUNDATION

Association of family structure with atopic dermatitis in US children

Costner McKenzie, BA,[a] and Jonathan I. Silverberg, MD, PhD, MPH[a,b,c,d]
Chicago, Illinois

Background: Children from families without 2 married biologic parents have an increased risk of poverty and poor health. The relationship between family structure and atopic dermatitis (AD) has not been elucidated.

Objectives: To determine the prevalence of AD and related outcomes in children from different family structures.

Methods: Data on 13,275 children (age ≤17 years) and their parents from the 2012 National Health Interview Survey were analyzed.

Results: In multivariable logistic regression models adjusting for sociodemographic groups, children from single-adult households (adjusted odds ratio [aOR], 1.272; 95% confidence interval [CI], 1.050-1.542), families with 2 or fewer members (aOR, 1.413; 95% CI, 1.079-1.852), families with a mother but no father present (aOR, 1.402; 95% CI, 1.179-1.667), nonbiologic fathers (aOR, 1.464; 95% CI, 1.089-1.969), or unmarried mothers (aOR, 1.508; 95% CI, 1.017-2.237) had increased odds of AD. Among children with AD, there were significantly increased odds of having only good, fair, or poor versus very good or excellent overall health (aOR, 1.545; 95% CI, 1.262-1.893) and greater odds of depression (aOR, 2.287; 95% CI, 1.523-3.434), anxiety (aOR, 2.001; 95% CI, 1.543-2.595), and stress (aOR, 2.013; 95% CI, 1.499-2.704).

Limitations: Cross-sectional study.

Conclusions: Children in the United States who are from families with single adults, single mothers, nonbiologic fathers, or unmarried mothers may have increased odds of AD. Family structures were associated with poorer overall health, depression, anxiety, and stress in children with AD. (J Am Acad Dermatol https://doi.org/10.1016/j.jaad.2018.05.039.)

Key words: atopic dermatitis; disparities; divorce; food security; fragile homes; poverty.

Atopic dermatitis (AD) is a chronic inflammatory skin condition associated with itch, pain, and sleep disturbance. The prevalence of eczema in children in the United States is 12.97%, with considerable variation across states and sociodemographic groups.[1] AD can be triggered or worsened by emotional factors such as anxiety and stress; these are in fact among the minor diagnostic criteria for AD.[2] Childhood AD can also have a profound emotional and financial burden on parents

From the Department of Dermatology,[a] Department of Preventive Medicine,[b] and Department of Medical Social Sciences, Northwestern University Feinberg School of Medicine, Chicago,[c] and Northwestern Medicine Multidisciplinary Eczema Center, Chicago.[d]

Funding sources: Supported by the Agency for Healthcare Research and Quality (grant K12 HS023011), and the Dermatology Foundation.

Conflicts of interest: None disclosed.

Dr Silverberg is responsible for the study concept and design; he had full access to all the data in the study and takes responsibility for the integrity of the data and accuracy of the data analysis. Dr Silverberg and Mr McKenzie are both responsible for acquisition, analysis, and interpretation of the data; drafting of the manuscript; critical revision of the manuscript for important intellectual content; and statistical analysis.

Presented in part as an oral presentation at the 2018 International Investigative Dermatology Meeting, Orlando, FL, May 16-19, 2018.

Accepted for publication May 16, 2018.

Reprints not available from the authors.

Correspondence to: Jonathan I. Silverberg, MD, PhD, MPH, Department of Dermatology, Suite 1600, 676 N St. Clair St, Northwestern University Feinberg School of Medicine, Chicago, IL 60611. E-mail: JonathanISilverberg@Gmail.com.

Published online August 17, 2018.

0190-9622/$36.00

https://doi.org/10.1016/j.jaad.2018.05.039

and other family members.[3-6] However, little is known about the relationship between childhood AD and familial instability.

Families that deviate from the family structure of 2 married biologic parents are at greater risk of breaking up and experiencing poverty than their counterparts.[7] Recent research also suggests that children living in patterns of familial instability have worse physical health outcomes, including asthma, obesity, and overall health.[8] We hypothesized that children from family structures without 2 married biologic parents have a higher prevalence of AD and that children with AD who are from such families have poorer health outcomes. We sought to determine the prevalence of AD and related outcomes in children in the United States who were born to families with various structures.

CAPSULE SUMMARY

- The relationship between family structure and atopic dermatitis (AD) has not been elucidated previously.
- Children from family structures without 2 married biologic parents have increased odds of AD and poorer overall health outcomes.
- Children from family structures without 2 married biologic parents may benefit from increased surveillance, closer follow-up, and optimized treatment for incident AD.

METHODS

Data source

The 2012 National Health Interview Survey is a cross-sectional household interview survey conducted by The National Center for Health Statistics of the US Centers for Disease Control and Prevention. The survey collects data on a broad range of health topics and serves to monitor the health of the US population. A complex, multistage probability design that involves stratification, clustering, and oversampling of specific population subgroups was used to sample 54,603 households throughout the United States. Personal interviews were conducted in each household in either English or Spanish. Data were collected for each family and person within a household. Subsequently, 1 sample adult and 1 sample child were randomly selected from each family for additional data collection. Sample weights were created by using data from the US Census Bureau to adjust for age, sex, race/ethnicity, household size, and educational level of the most educated household member. The complex weighting has been incorporated into all estimates presented in this study to yield estimates that are representative of the civilian noninstitutionalized population of the United States. This study was approved by the institutional review board at Northwestern University Feinberg School of Medicine.

Definition of AD and family structure

Childhood AD was determined by caregiver report of health care provider–diagnosed AD. The questions used to assess AD and mental and overall health are presented in Supplemental Table I (available at http://www.jaad.org).

Family type, family size, relationship to each parent in the household, and parents present in the family were each used as variables to assess family structure. Measures of poverty were also assessed, given their strong association with both family structure and health outcomes.

Data processing and statistical methods

All data processing and statistical analyses were performed with SAS software (version 9.4, SAS Institute, Cary, NC). Analyses were performed by using SAS SURVEY procedures, which accounted for study strata, clusters, and weights. Bivariable and multivariable logistic regression models were constructed with history of AD as the binary dependent variable and variables pertaining to family structure as the independent variables. Multivariable models included sex (male or female), age (continuous), educational level of the most educated household member (less than high school, high school or the equivalent, or more than high school), race/ethnicity (white or nonwhite), imputed ratio of family income to poverty threshold (<1, 1-2, or >2), and parental history of AD (yes or no). Crude odds ratios (ORs) and adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were estimated. Complete case analysis was performed (ie, persons with missing data were excluded from analyses). The variables relationship to mother and relationship to father were limited to children with a mother or father in the household, respectively. If a mother or father was not in the household, the variables relationship to mother relationship to father were not applicable.

RESULTS

Population characteristics

Data were collected on 13,275 children and adolescents representing all pediatric age, sex, race/ethnicity, educational level of the most educated household member, and family income–to–poverty