

Atopic dermatitis epidemiology: moving beyond cross-sectional studies

DOI: 10.1111/bjd.18440

Linked Article: Irvine et al. *Br J Dermatol* 2019; DOI: 10.1111/bjd.17766.

This issue of the *BJD* includes a timely narrative review of the different trajectories of childhood atopic dermatitis (AD).¹ AD is a complex disorder with a heterogeneous clinical course, including variable age of onset, disease persistence, severity and development of comorbid atopic disease. Each of these different aspects of AD may differentially impact quality of life and overall health status. Yet, only a precious few studies have explored the complexity of the longitudinal course of AD.

Irvine and Mina-Osorio performed a narrative review of the heterogeneous trajectories of childhood AD.¹ This review did an excellent job summarizing the extant studies of, evidence for and controversies about different disease trajectories. While this area of inquiry is still in its infancy, a number of important lessons have emerged from multiple studies. At least three classes of disease trajectories exist: early-onset resolving, late-onset resolving and early-onset persistent. Early-onset persistent disease was consistently found to be the least-common subset among the studies included in the review, ranging from approximately 10% to 30% of children with AD.¹ This range is consistent with a recent systematic review and meta-analysis that found only 20% of childhood AD persisted by 8 years and < 5% persisted by 20 years after diagnosis.²

Late-onset disease occurred commonly across studies, and in some studies occurred as commonly, or even more commonly than early-onset disease. These findings are important because they provide clear evidence to refute the false dogma that childhood AD always starts early in life. In addition, a recent systematic review and meta-analysis found that 26.1% of adults with AD report adult-onset of disease.³ Of course, some cases of late-onset childhood or adult-onset AD may be due to recall bias and forgetting active disease earlier in life. However, many of these are likely true cases of late-onset disease. This begs the question: what is different about late-onset vs. early-onset patients? Do they have the same mechanisms, clinical characteristics, outcomes, etc.? Interestingly, one study found that *FLG* null mutations were present only in patients with AD onset during infancy or early childhood, but not during adolescence or adulthood.⁴ In addition, multiple studies found differences of AD severity, and rates of atopic disease, e.g. asthma, hay fever, food allergy and atopic multimorbidity among children with different AD trajectories.¹ More research is needed to understand the drivers and outcomes of different AD trajectories.

The insights of this review underscore the need for AD epidemiology research to move beyond cross-sectional studies.

Most of our knowledge about the epidemiology of AD comes from cross-sectional studies, e.g. National Survey of Children's Health or National Health Interview Survey in the U.S.A. and the International Study of Asthma and Allergies in Childhood worldwide.⁵ Such studies have been used to estimate the lifetime, 1-year and/or point prevalences of AD and their associations. Prevalence estimates provide an aggregated proportion of the population with AD at a specific time period or interval. However, they encompass a heterogeneous group of people with AD that have different trajectories, persistence and phenotypes.

Previous findings of cross-sectional AD epidemiology studies should be re-evaluated through the lens of different disease trajectories. For example, multiple previous studies found the U.S. prevalence of childhood AD to be significantly higher in black vs. white or Hispanic children and in those with higher household income and socio economic status.⁵ However, a recent U.S. population-based longitudinal study found that black children had both increased early-onset and more persistent AD, whereas, higher household income was associated with transient and intermittent AD, and lower household income was associated with early-onset, persistent AD.⁶ Taken together, higher AD prevalence among different subsets of children appears to be attributable to different disease trajectories. The complexities of AD epidemiology can only be sorted out using longitudinal studies that account for disease trajectory.

In conclusion, there is a growing body of literature supporting the occurrence of multiple disease trajectories in AD and their relationship with AD severity and atopic comorbidities. The future of AD epidemiology research requires moving beyond cross-sectional studies. As Irvine and Mina-Osorio suggest,¹ more longitudinal studies are needed that consider disease trajectories and phenotypes, and their impact on comorbidities and other health outcomes.

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2 Commentary

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Conflicts of interest: none to declare.