Epidemiology of Atopic Dermatitis (AD) in Children Aged 6–11 Years: A Cross-Sectional Study in the United States (US), Canada, Europe, and Japan

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BACKGROUND

- Atopic dermatitis (AD) is a chronic inflammatory skin disease characterized by intense pruritus and eczematous lesions, symptoms that are driven by T helper 2 (Th2)-mediated skin inflammation.[1,2]
- The symptoms of AD present persistently or as a fluctuating course of flares in between spontaneous apparent remission[3,4] and cause significant burden, especially in those with moderate-to-severe disease.[5,6]
- AD typically appears in early infancy or childhood, and in approximately 50% of cases, AD can extend into a chronic lifelong condition.[2,7]
- Moderate AD has been reported in 20–37% of adult patients and severe AD in 10–34%;[8,9] however, currently, there are limited data on severity strata in children.

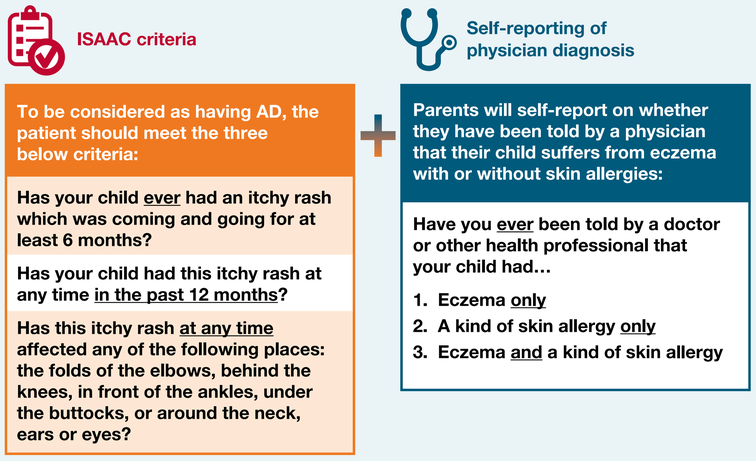
OBJECTIVE

- **This study aimed to estimate the prevalence and severity of AD in children 6–11 years of age in the United States (US), Canada, Europe (EU5: France, Germany, Italy, Spain, the United Kingdom [UK]), and Japan.**

METHODS

- A cross-sectional, web-based, parent-report survey was administered in the US, Canada, France, Germany, Italy, Spain, the UK, and Japan.
  - The study was conducted in accordance with the British Healthcare Business Intelligence Association, European Pharmaceutical Market Research Association, Marketing Research Association, and additional local country codes of conduct, as well as data protection legislation.
- In each country, members of online consumer panels (LightSpeed Health, all countries; Research Now/SSI, all countries; Toluna, all countries except Japan; AIP, Japan)who met the inclusion criteria (parents/guardians of children aged 6–11 years) received an e-mail invitation to participatein the study.
  - Each panel was responsible for sending the e-mail invitation to panel members; the e-mail invitations were consistent among each panel and did not mention skin disease or AD.
  - Members of online panels were recruited through broad-reach portals, special interest sites, and direct e-mailing campaigns that were not specifically related to AD.
  - All members:
    - agreed to be part of the online panel and their e-mail address was confirmed through a double opt-in registration process
    - registered with demographic information, passed quality checkpoints, and agreed to country-specific terms and conditions and privacy policies.
- The parent/guardian provided consent and participated in a 30-min online survey.
  - Patients (ie, the children) were not required to respond to any items of the survey related to prevalence and severity, but rather all were answered by the parent/guardian.
- Quotas were set for numbers of respondents in specific categories relating to age and sex,[10–12] and residence (urban/suburban/rural).[10,12,13]
  - When quota objectives were not met, a weighting adjustment was applied to obtain a representative population with respect to sociodemographic characteristics for each country.
- Prevalence of AD was estimated using responses to survey questions based on the International Study of Asthma and Allergies in Childhood (ISAAC) criteria and self-reported physician diagnosis (**Figure 1**). Children were categorized as having AD if they met the ISAAC criteria and self-reported ever being told by a physician that they suffer from eczema.

Figure 1. Assessment for the prevalence of AD



AD, atopic dermatitis; ISAAC, International Study of Asthma and Allergies in Childhood.

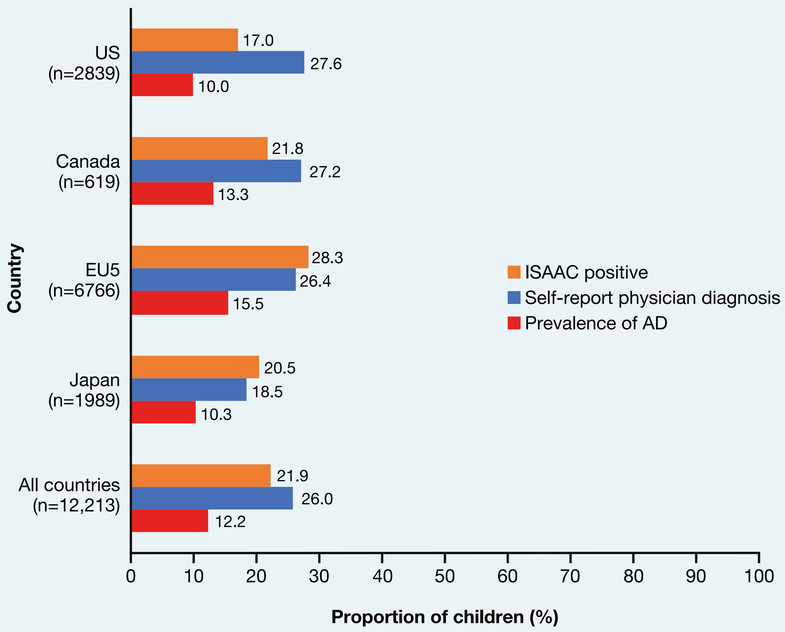
METHODS

- Among children with AD treated with a prescription medication in the past 12 months, AD severity (mild, moderate, severe) was determined using the Patient-Oriented Eczema Measure (POEM; score ranging from 0–28, higher score indicating greater severity of symptoms, with the following severity bandings: 0–7 = mild, 8–16 = moderate, and >16 = severe) and patient global assessment (PtGA; mild, moderate, or severe) in the past week.
- The following descriptive statistics were obtained by country for the US, Canada, Japan, the EU5 region, and an aggregation across all countries:
  - One-year diagnosed AD prevalence rates.
  - Percent of children categorized as having mild, moderate,and severe AD, respectively, based on the POEM.
  - Percent of children categorized as having mild, moderate,and severe AD, respectively, based on the PtGA.

RESULTS

- The samples were representative of the general population in each country with respect to age, gender, regions, and urban/rural split (**Table 1**).
- One-year diagnosed AD prevalence estimates were: US, 10.0%; Canada, 13.3%; EU5, 15.5%; Japan, 10.3%; and all countries, 12.2% (**Figure 2**).
- Across countries, 84.4–91.0% of children with diagnosed AD were treated with prescription medication in the past 12 months (data not shown).
- Of these treated children, 43.6–60.1%, 35.0–45.4%, and 3.5–13.0% were categorized as having mild, moderate, and severe AD, respectively, based on POEM (**Figure 3**).
- Based on the PtGA, 61.5–73.2%, 24.5–34.6%, and 2.3–8.4% of treated children were categorized as having mild, moderate, and severe AD, respectively (**Figure 4**).

Figure 2. Prevalence of AD in children aged 6–11 years



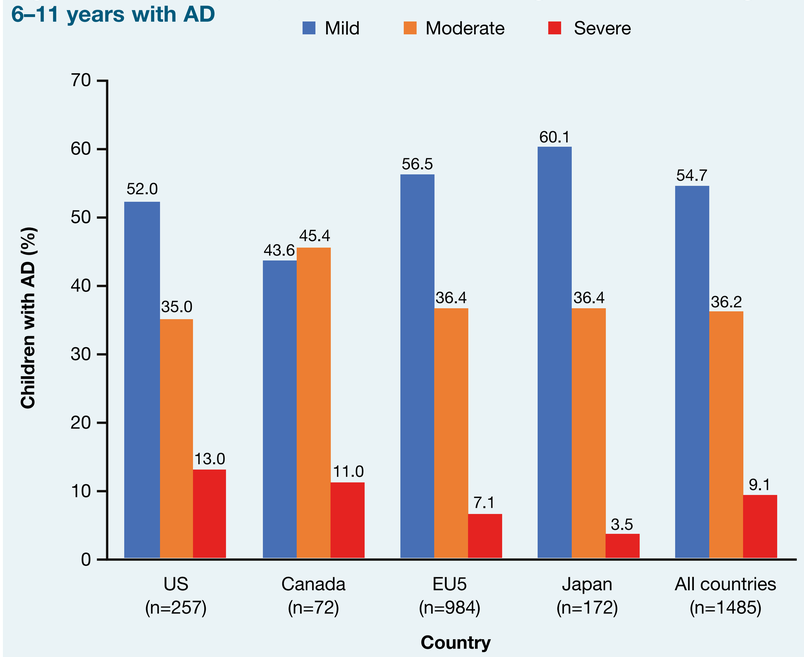
AD, atopic dermatitis; EU5, 5 European countries: France, Germany, Italy, Spain, the United Kingdom; ISAAC, International Study of Asthma and Allergies in Childhood; US, United States.

Table 1. Baseline demographics for survey respondents (country, n)

	US	Canada	EU5	Japan	All countries
	2839	619	6766	1989	12,213
Male, %	51.9	53.4	54.2	50.4	52.7
Age, mean (SD), years	9.0 (1.7)	9.2 (1.7)	9.1 (1.7)	9.1 (1.7)	9.1 (1.7)
Weight, mean (SD), kg	33.3 (11.6)	33.6 (11.9)	33.7 (11.0)	30.5 (9.5)	33.1 (11.2)
Residence, %					
Urban	33.7	45.0	53.0	52.3	43.8
Suburban	48.1	36.2	25.5	41.3	38.2
Rural	18.1	18.8	21.5	6.4	18.0
Parent/caregiver employment status, %					
Employed	55.6	68.3	72.0	73.4	64.5
Unemployed	16.7	10.4	8.3	12.2	12.8
Retired	2.1	1.3	1.4	0.5	1.6
Student	2.5	2.1	1.3	0.6	1.8
Other	23.1	17.9	17.0	13.3	19.3

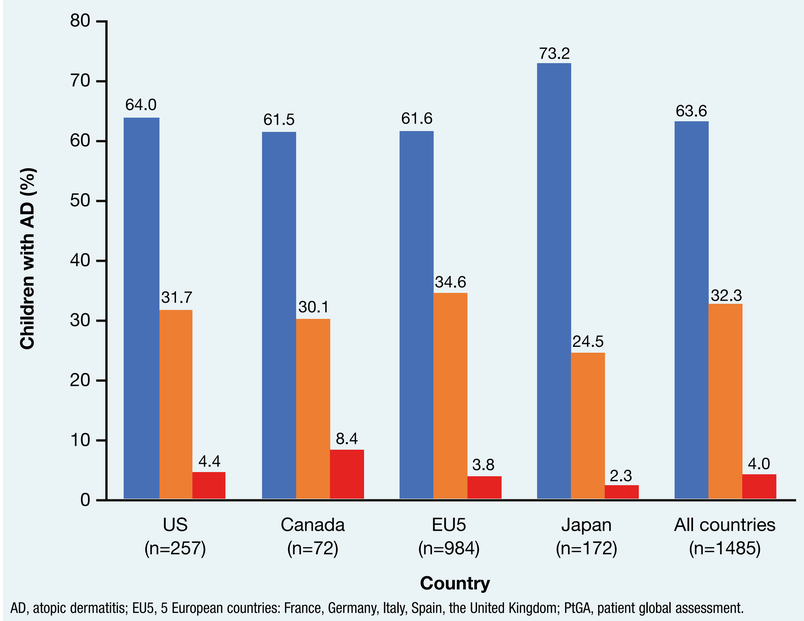
EU5, 5 European countries: France, Germany, Italy, Spain, the United Kingdom; SD, standard deviation; US, United States.

Figure 3. Disease severity based on POEM among treated children aged 6–11 years with AD



AD, atopic dermatitis; EU5, 5 European countries: France, Germany, Italy, Spain, the United Kingdom; POEM, Patient-Oriented Eczema Measure.

Figure 4. Disease severity based on PtGA among treated children aged 6–11 years with AD



AD, atopic dermatitis; EU5, 5 European countries: France, Germany, Italy, Spain, the United Kingdom; PtGA, patient global assessment.

CONCLUSION

- **This international study of the prevalence of childhood AD in children 6–11 years of age estimated that prevalence of AD varied from 10.0% in the US to 15.5% in the EU 5 region.**
- **Severe AD by POEM and PtGA varied in children treated with prescription medication, from 3.5% (on POEM) and 2.3% (on PtGA) in Japan to 13.0% (on POEM) in the US and 8.4% in Canada (on PtGA).**
- **Strengths of this study included its inclusion of ISAAC criteria for identifying AD, which enabled a consistent method of evaluating AD prevalence across countries, large sample sizes, and selection of subjects that provided broad representation of the populations and regions of each country.**
- **Limitations included observed variability, which may be due to misclassification, especially as outcomes were based on self-report by parents; such self-report may additionally have introduced the potential for recall bias. The online survey may also represent a form of selection bias, as this method of data collection presupposes computer literacy and internet access.**

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