Atopic Dermatitis
Racial and Ethnic Differences

Adeline Mei-Yen Yong, MRCP (UK)[a], Yong-Kwang Tay, FRCP (Lond)[b,*]

KEYWORDS

• Atopic dermatitis • Eczema • Ethnic • Patterns • Trends

KEY POINTS

- Atopic dermatitis (AD) affects approximately 20% of schoolchildren in developed countries and approximately 3% of adults worldwide.
- Adult-onset AD is not uncommon, with a prevalence of 11% to 13% in some countries, for example, Singapore, Malaysia, and Sweden.
- Although the prevalence of AD is increasing in developing countries, the prevalence has stabilized in the developed countries.
- Erythema is not as pronounced on darker skin and may appear violaceous, which presents an obstacle to a physician making a diagnosis or assessing the severity of disease.
- Follicular or papular eczema and postinflammatory dyspigmentation are common in patients of color.

The severity and prevalence of AD may be increased in certain racial/ethnic populations, especially among blacks/African Americans. Erythema may be difficult to assess in patients with more darkly pigmented skin. Follicular or papular eczema and postinflammatory dyspigmentation are common in patients of color. Variations in the epidemiology of AD between different countries and ethnic groups may be due to differences in genetic predisposition, environmental, and socioeconomic factors.

INTRODUCTION

AD (or eczema) is a common inflammatory skin condition characterized by recurrent episodes of pruritus and a chronic, relapsing course. Having a persistent itch-scratch cycle, AD is associated with numerous complications, including secondary infections as well as significant comorbidities.[1–3] There is an impactful global health care economic burden associated with AD, on which interesting ethnic/racial trends can be observed.[4]

AD affects up to 20% of children and 3% of adults worldwide.[5] Recent data show that the prevalence of AD is still increasing globally, especially in low-income countries. Phase One of the International Study of Asthma and Allergies in Childhood (ISAAC) demonstrated a significant difference in the prevalence and incidence of AD both within countries and between geographic areas.[6] Scandinavia, Northern and Western Europe, Australasia, and urban areas in Africa suffered from the highest prevalence rates, whereas those in Eastern Europe, the Middle East, China, and Central Asia showed the lowest rates of prevalence. The reasons for such striking worldwide geographic variability in the epidemiology of AD are still unclear. Along with

Disclosure Statement: The authors have nothing to disclose.
[a] Department of Dermatology, National University Health System, 5 Lower Kent Ridge Road, Singapore 119074, Singapore; [b] Department of Dermatology, Changi General Hospital, 2 Simei Street 3, Singapore 529889, Singapore
* Corresponding author.
E-mail address: Yong_kwang_tay@cgh.com.sg

Dermatol Clin 35 (2017) 395–402
http://dx.doi.org/10.1016/j.det.2017.02.012

underlying genetic disposition, these variations have been attributed in part to environmental factors, including urbanization, climate, diet, aeroallergens, and infections.[7]

Elucidating the racial disparity and epidemiology of AD will spur efforts to identify modifiable risk factors, which can contribute toward disease prevention. As such, the authors review advancements in AD epidemiology, including interracial and ethnic differences, reasons for such disparity, variability of clinical presentation, and disease severity.

DIAGNOSIS AND DEFINITION

Epidemiologic studies essentially rely on accurate definitions of a disease. AD demonstrates significant clinical variability and has proved a challenge for the establishment of accurate diagnostic criteria. The first set of standardized diagnostic criteria was developed by Hanifin and Rajka in 1980, in which affected patients must possess at least 3 major and 3 minor criteria to satisfy a diagnosis of AD[8] (**Box 1**). The United Kingdom Working Party revision of 1990 furthered the development of a standardized criteria, which revealed a sensitivity of 87.9% and a specificity of 92.8% when evaluated in a hospital outpatient setting[9] (**Box 2**). This was generally limited, however, to those with mild to moderate forms of typical AD. In clinical practice, diagnosis is often established based on a pruritic relapsing condition in typical locations, including the neck, face, and extensor surfaces in children and infants.

RACIAL DISPARITY

The ISAAC, an international multicountry cross-sectional survey of school children, was conducted to investigate the epidemiology, geographic variability, and trends in the prevalence of asthma, rhinitis, and AD.[10] The ISAAC Phase One study was conducted in the early to mid-1990s. The ISAAC Phase Three was carried out approximately 7 years later using the same methodology and survey questionnaire to monitor the evolution in the prevalence of these disorders. This follow-up study involved 193,404 children ages 6 years to 7 years from 66 centers in 37 countries and 304,679 children ages 13 years to 14 years from 106 centers in 56 countries. Odhiambo and colleagues[11] analyzed data from the study and found a wide variation in prevalence values worldwide, from 0.9% in India to 22.5% in Ecuador at ages 6 years to 7 years and from 0.2% in China to 24.6% in Colombia at ages 13 years to 14 years. This study, along with other smaller population-based and community-based studies, suggests an overall higher AD prevalence in wealthier, developed nations compared with poorer, developing nations.[12–15]

Box 1
Hanifin and Rajka's diagnostic criteria for atopic dermatitis

Major criteria (must have at least 3)

Pruritus

Typical morphology and distribution

Adults: flexural lichenification or linearity

Children and infants: involvement of facial and extensor

Surfaces

Chronic or relapsing dermatitis

Personal or family history of atopy

Minor criteria (must have at least 3)

Xerosis

Ichthyosis/keratosis pilaris/palmer hyperlinearity

Immediate (type 1) skin test reactivity

Elevated serum IgE

Early age at onset

Tendency to skin infections (*Staphylococcus aureus*, herpes simplex)/impaired cellular immunity

Hand/foot dermatitis

Nipple eczema

Conjunctivitis

Dennie-Morgan fold

Keratoconus

Anterior subcapsular cataracts

Orbital darkening

Facial pallor/erythema

Pityriasis alba

Anterior neck folds

Itch when sweating

Intolerance to wool and lipid solvents

Perifollicular accentuation

Food intolerance

Course influenced by environmental/emotional factors

White demographic/delayed blanch

From Hanifin JM, Rajka G. Diagnostic features of atopic dermatitis. Acta Derm Venereol (Stockh) 1980;92(Suppl):45; with permission.