Global, regional and national burdens of atopic dermatitis in adolescents and young adults aged 10-24 years from 1990 to 2021: a trend analysis

Zhixuan LI[1], Guangwen YIN[1]

1.Department of Dermatology, The First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Email: zhixuan-li@foxmail.com

Key point: This study presents a comprehensive trend analysis of the atopic dermatitis burden in adolescents and young adults, based on the Global Burden of Disease (GBD) Study.

Background

- Atopic dermatitis (AD) imposes a substantial burden on adolescents and young adults aged 10-24 years, a critical period of psychosocial development.
- Data on its long-term burden trends for this specific transitional age group remain limited.

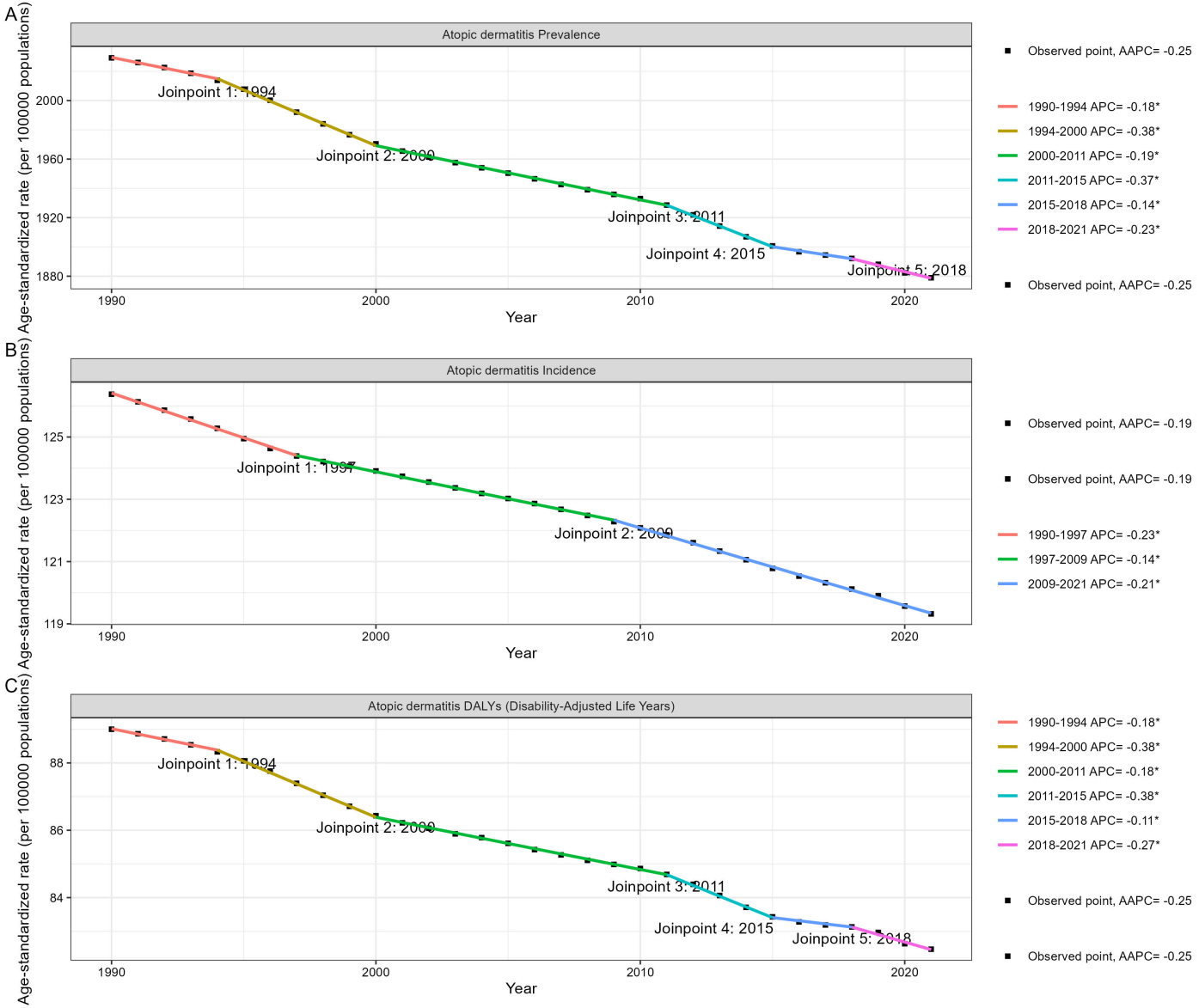
Objective

- To investigate trends in the burden of AD among adolescents and young adults aged 10-24 years at global, regional, and national levels.

Method

- Data on prevalence, incidence, and disability-adjusted life years (DALYs) for AD aged 10-24 years from 1990 to 2021 were extracted from the Global Burden of Disease Study (GBD) 2021.
- Numbers, age-standardized rates and average annual percentage changes (AAPC), stratifying by age, gender, and Socio-demographic Index (SDI) were analyzed.

Results - Joinpoint regression analysis



- The number of prevalent cases of AD among adolescents and young adults rose from 311.4 million (95% UI 284.2–339.9) in 1990 to 353.2 million (322.9-386.1) in 2021.
- While the age-standardized prevalence rate (ASPR) slightly decreased (AAPC=-0.25, 95% CI -0.25 to -0.25).
- Incidence and DALYs showed similar trends.

Figure 1. Joinpoint regression analysis of global age-standardized prevalence, incidence, and DALYs rate of atopic dermatitis in adolescents and young adults aged 10-24 years from 1990 to 2021

Results - Prevalence of atopic dermatitis

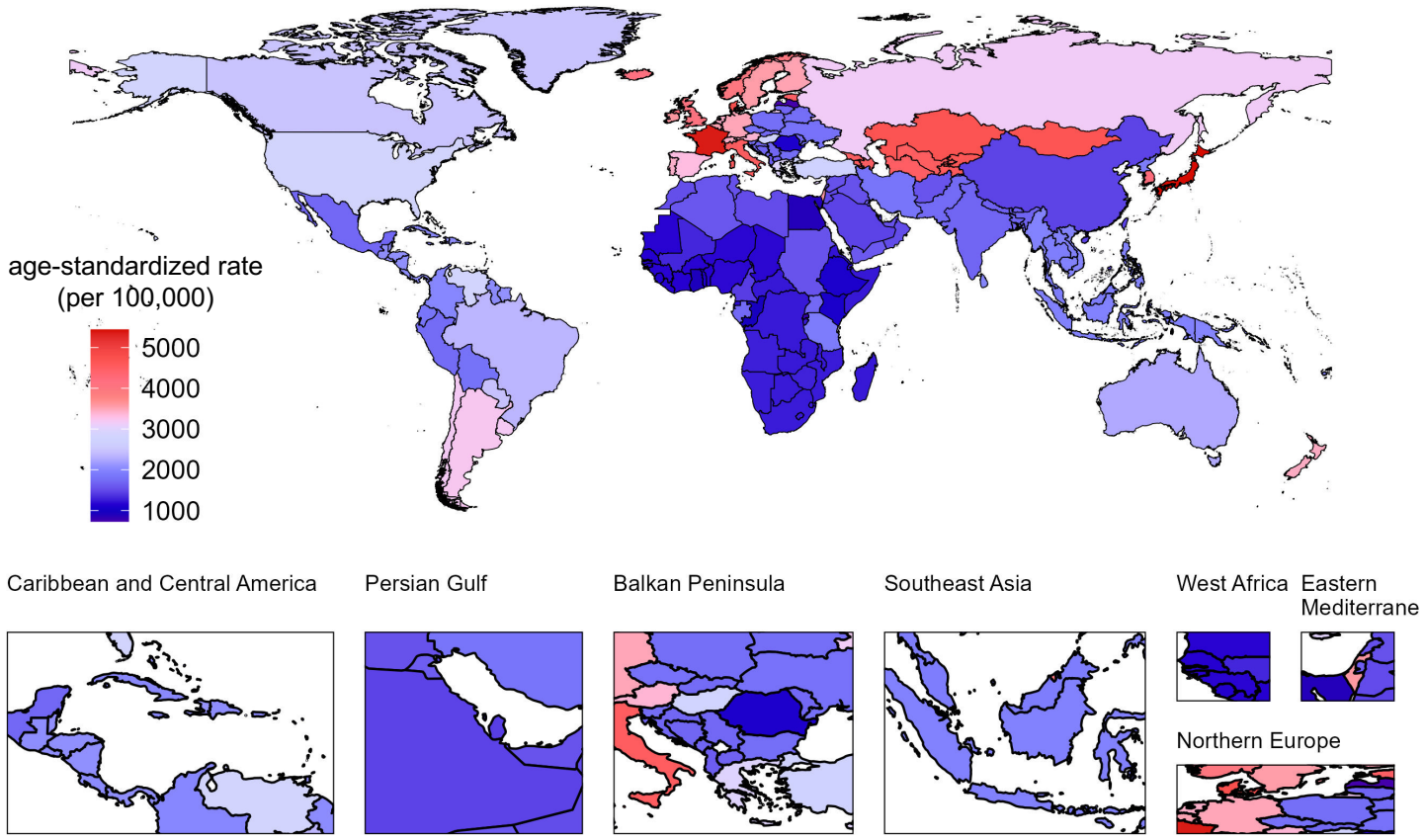


Figure 2. The global of prevalence atopic dermatitis among adolescents and young adults aged 10-24 years in 204 countries and territories.

- Regionally, High-income Asia Pacific and High SDI region had the highest age-standardized prevalence rates, whereas low SDI region had the lowest burden.
- Middle SDI region showed a unique increase in prevalence rates (AAPC=0.03, 0.03 to 0.03).
- Nationally, Japan had the highest ASPR in 2021, while Kenya showed the most rapid increase (AAPC=0.22, 0.22 to 0.23).

Results - Incidence of atopic dermatitis

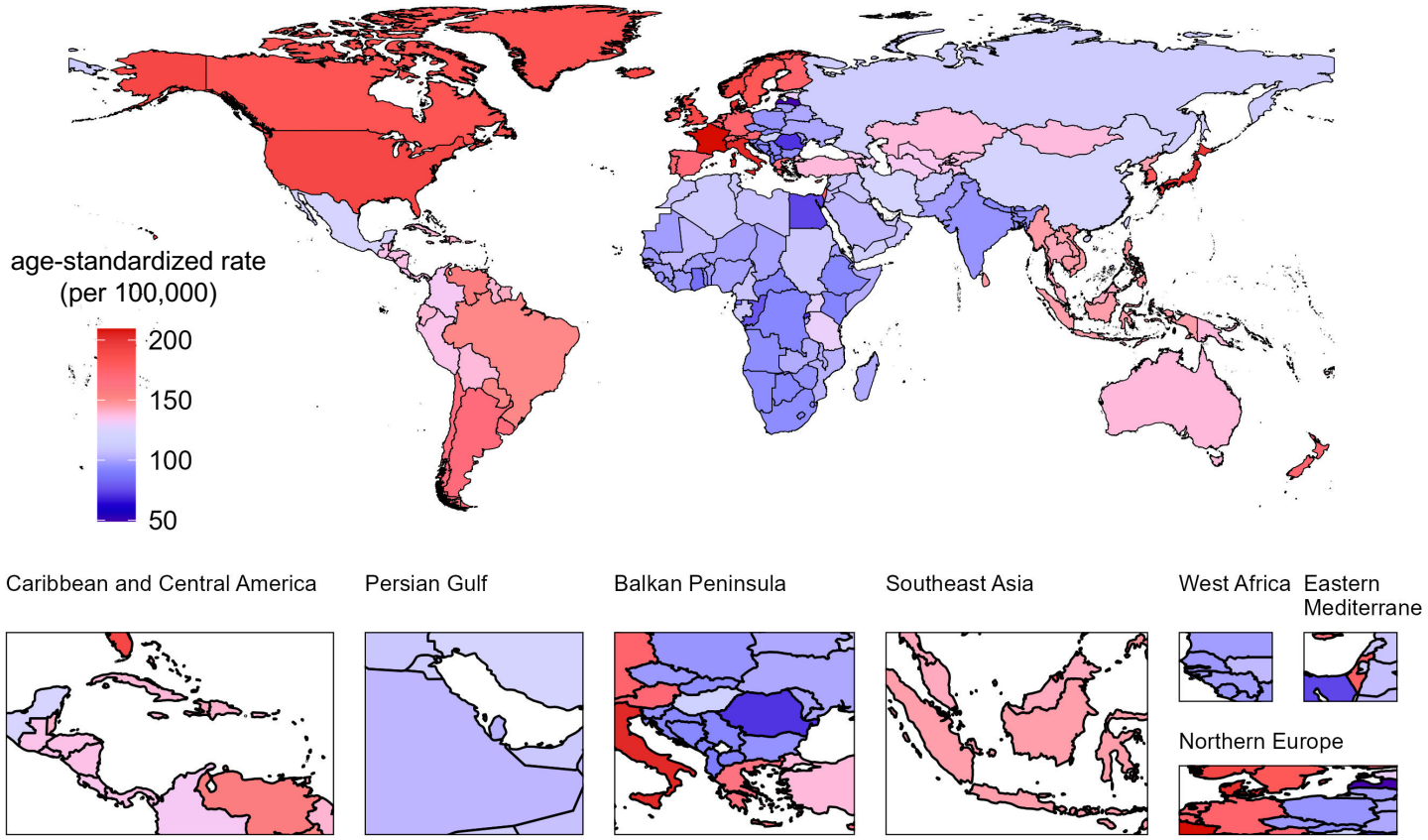


Figure 3. The global incidence of atopic dermatitis among adolescents and young adults aged 10-24 years in 204 countries and territories.

- Regionally, High-income Asia Pacific and High SDI region had the highest age-standardized incidence rates, whereas low SDI region had the lowest burden.
- Nationally, France had the highest age-standardized incidence rates in 2021, while United States of America showed the most rapid increase (AAPC=0.05, 0.04 to 0.06).

Results - DALYs of atopic dermatitis

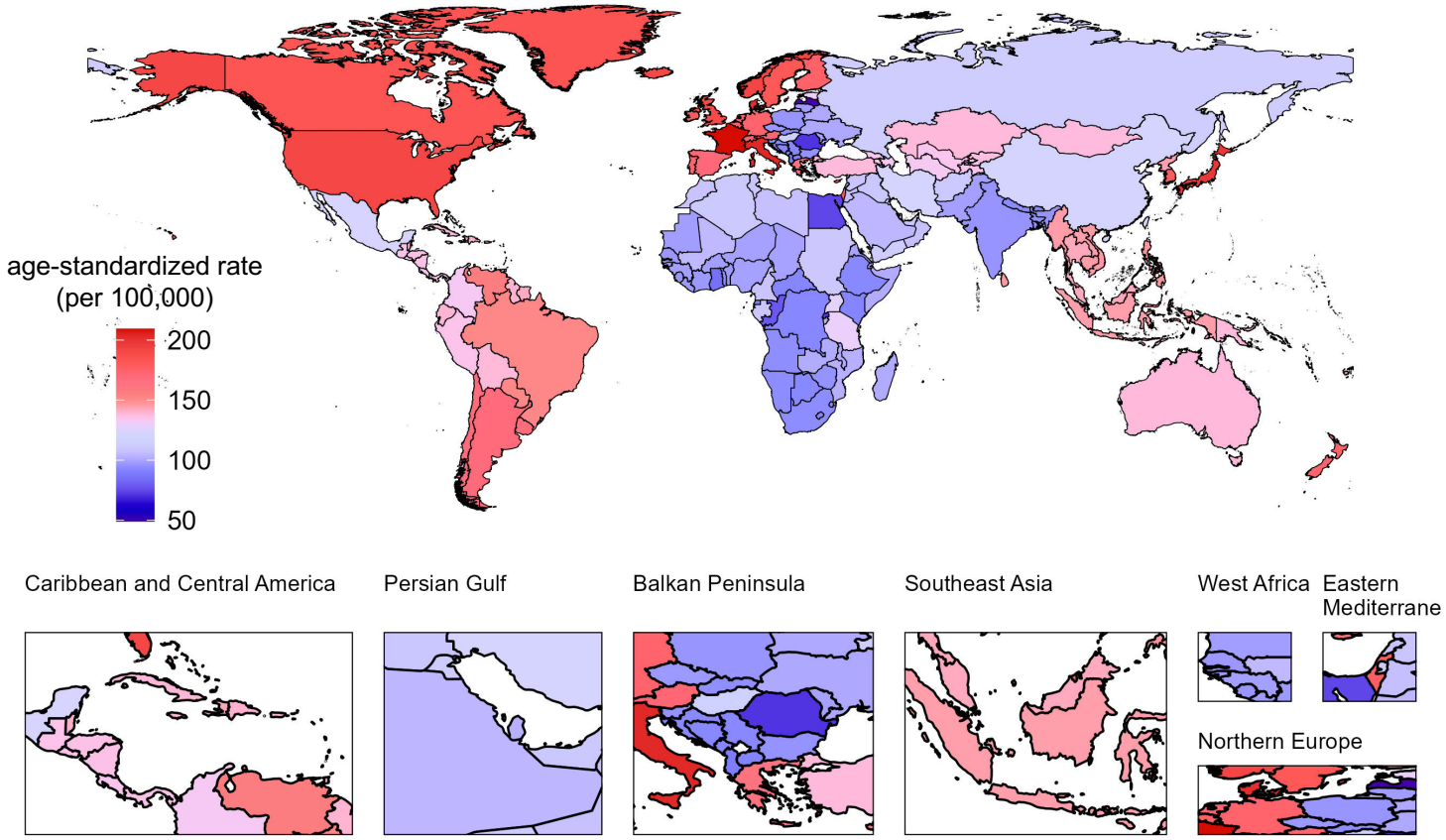


Figure 4. The global DALYs of atopic dermatitis among adolescents and young adults aged 10-24 years in 204 countries and territories.

- Regionally, High-income Asia Pacific and High SDI region had the highest age-standardized DALY rates, whereas low SDI region had the lowest burden.
- Middle SDI region showed a unique increase in DALY rates (AAPC=0.03, 0.03 to 0.03).
- Nationally, Japan had the highest age-standardized DALY rates in 2021, while Kenya showed the most rapid increase (AAPC=0.23, 0.22 to 0.23).

Results - Age-specific prevalence, incidence, and DALYs of atopic dermatitis

Table 1. Age-specific prevalence, incidence, and DALYs of atopic dermatitis in adolescents and young adults aged 10-24 years at global level, 1990-2021

Age group (years)	Cases in 1990 (million)	Age-specific rate in 1990 (per 100 000)	Cases in 2021 (million)	Age-specific rate in 2021 (per 100 000)	AAPC (95% CI)
	Prevalence (95% UI)				
10-14	15.33 (14.06-16.66)	2860.90 (2625.12-3110.67)	17.69 (16.28-19.27)	2653.69 (2442.27-2891.12)	-0.24 (-0.25 to -0.24)
15-19	9.52 (8.65-10.41)	1831.91 (1666.12-2004.10)	10.59 (9.63-11.58)	1697.14 (1543.52-1855.98)	-0.25 (-0.25 to -0.24)
20-24	6.30 (5.71-6.92)	1279.98 (1159.68-1405.31)	7.04 (6.38-7.76)	1178.92 (1068.78-1298.84)	-0.26 (-0.27 to -0.26)
	Incidence (95% UI)				
10-14	0.88 (0.70-1.10)	164.74 (129.94-205.49)	1.06 (0.84-1.32)	158.63 (125.69-197.92)	-0.12 (-0.13 to -0.12)
15-19	0.59 (0.47-0.72)	113.64 (90.65-139.48)	0.66 (0.53-0.81)	106.26 (84.76-130.11)	-0.22 (-0.22 to -0.21)
20-24	0.47 (0.38-0.57)	95.68 (76.27-115.34)	0.52 (0.42-0.64)	87.87 (69.87-106.50)	-0.28 (-0.28 to -0.27)
	DALYs (95% UI)				
10-14	0.68 (0.34-1.15)	126.10 (63.85-215.50)	0.78 (0.39-1.34)	117.11 (59.20-200.79)	-0.24 (-0.24 to -0.23)
15-19	0.42 (0.22-0.69)	80.11 (41.49-133.76)	0.46 (0.24-0.77)	74.25 (38.59-123.50)	-0.25 (-0.25 to -0.24)
20-24	0.27 (0.14-0.45)	55.68 (28.71-92.14)	0.31 (0.16-0.51)	51.26 (26.68-85.73)	-0.27 (-0.27 to -0.26)

- The burden peaked in early adolescence (10-14 age group) and was consistently higher in females.

Conclusions

- The absolute burden of AD in adolescents and young adults is rising globally despite a slight decline in age-standardized rates, with a concerning stabilization of burden in middle-income nations.

- The highest impact is focused in early adolescence, highlighting a critical window for intervention, demanding tailored public health strategies to address the growing challenge.