THE URBAN-RURAL GRADIENT OF ATOPIC DERMATITIS: AN EXPLORATION OF THE GLOBAL EPIDEMIOLOGY AND HEALTH DETERMINANTS

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Literature Review Objectives:

1. Define the global epidemiology of Atopic Dermatitis (AD) and the urban-rural gradient
2. Identify key environmental determinants that differ by geography
3. Appraise the role of social determinants in shaping severity and care

Conclusions:

- The prevalence of AD is higher in urban compared with rural areas
- Environmental factors and social determinants impact AD prevalence and severity
    - Rural populations are typically exposed to less pollution, warmer climates and protective microbial profiles
    - Low SES, low health literacy, and travel distance affect care and outcomes
- The psychosocial impact of AD may vary depending on degree of residential remoteness, warranting further investigation

No conflict of interest declared

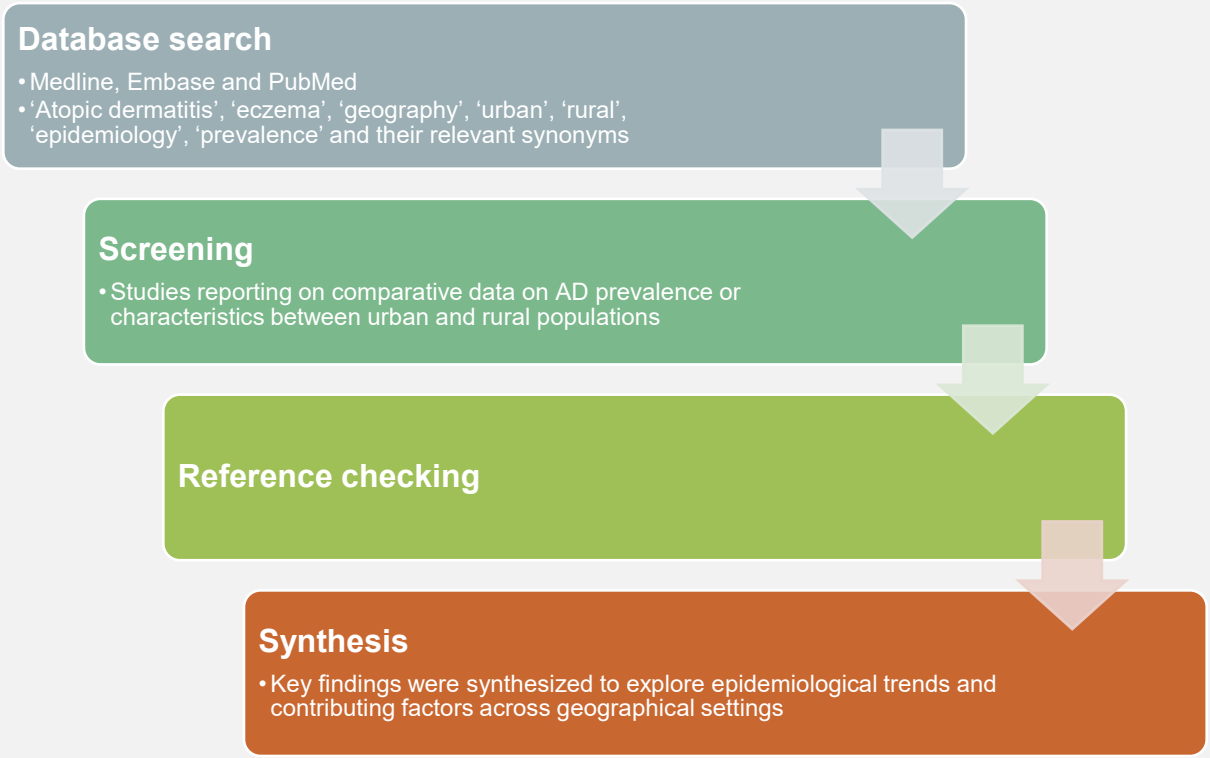
Contact details:

BACKGROUND

- AD has a higher prevalence in urban areas
- Environmental exposures, lifestyle factors, and disparities in healthcare infrastructure all contribute to a variable disease burden depending on geographic setting, coined the **rural–urban gradient**
- Rural communities face distinct environmental, socioeconomic, lifestyle, and healthcare access factors

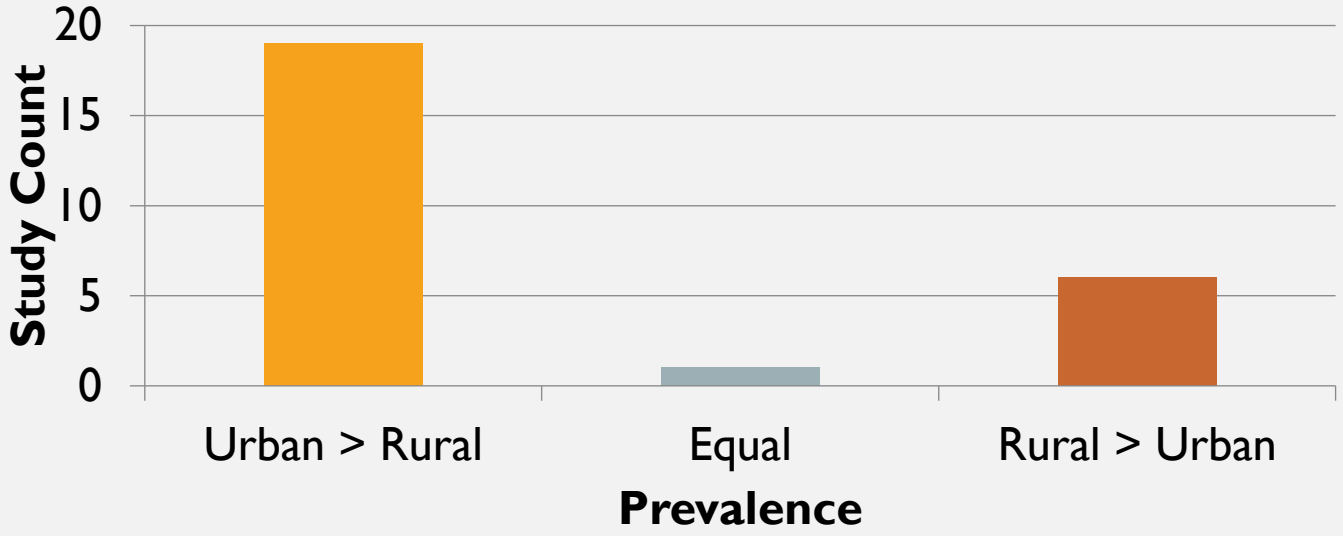
Tian J et al., Br J Dermatol 2024;190:55–61.

METHODS


Database search
• Medline, Embase and PubMed
• 'Atopic dermatitis', 'eczema', 'geography', 'urban', 'rural', 'epidemiology', 'prevalence' and their relevant synonyms
Screening
• Studies reporting on comparative data on AD prevalence or characteristics between urban and rural populations
Reference checking
Synthesis
• Key findings were synthesized to explore epidemiological trends and contributing factors across geographical settings

URBAN VERSUS RURAL PREVALENCE

Is there a rural/urban gradient in the prevalence of eczema? A systematic review



Schram ME et al., Br J Dermatol 2010;162:964–73.

RESULTS: ENVIRONMENTAL DETERMINANTS

Determinant	Urban	Rural
Pollution	Urban air pollution strongly correlates with higher prevalence and severity	Reduced industrialisation leads to ↓ air pollutants
Climate	Cold, dry climates → worsen skin dryness and barrier dysfunction → ↑ severity	Warm, humid climates → enhance hydration and barrier function → ↓ flares
Allergen exposure	Greater exposure to indoor allergens exacerbates severity	Broader exposure to animal and environmental allergens = ↓ incidence in 1st year of life
Microbial exposure	S. aureus colonisation 55% versus rural 34%	Rural environments show protective microbial profiles (e.g. Romboutsia associated with ↓ risk)

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RESULTS: SOCIAL DETERMINANTS

Determinant	Urban	Rural
Home environment	Limited early-life microbial exposure & more frequent hand washing → skewed Th2 response → ↑ risk	Higher rates of poor water quality, sanitation, and overcrowding → ↑ severity
Economic burden	Median out-of-pocket cost ≈ USD $600/year	
Smoking	Tobacco exposure worsens AD, particularly among low-income and urbans groups	-
Diet	-	Energy and nutrients typically lower
Healthcare access	-	↑ skincare product costs, longer travel, and limited access to phototherapy/clinical trials
Health literacy	-	Poorer adherence, higher stress, smoking rates and worse mental health outcomes
Mental health	-	↑ prevalence of depression and decreased quality of life

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BRIDGING THE GAP: TARGETED SOLUTIONS

Strategies

- Tele-dermatology networks
- Rural nurse and allied health education
- Emollient subsidies
- Access to phototherapy
- Health literacy tools

Future research

- Define urban/rural consistently
- Include indigenous and rural cohorts
- Psychosocial outcomes
- Culturally appropriate care
- Patient-centred goals

REFERENCES