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Commentary

The global atopic dermatitis atlas: Addressing international gaps in the disease burden

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Atopic dermatitis (AD) is a highly prevalent non-communicable disease affecting an estimated 204 million people worldwide.[1] It ranks 15th among non-fatal diseases and holds the top position among all skin diseases globally measured by disability-adjusted life-years.[2] AD is most well-known for its prevalence in children but there is increasing awareness of its bi-modal distribution, with a second (although smaller) peak in older adults. Hallmarks of the disease are erythema and skin surface change, in particular fine scaling, acute swelling (edema/papulation) and lichenification, often with secondary skin infections (oozing/crusting), in part due to the itch-scratch cycle of AD. Distinct clinical phenotypes have been described. Flexural involvement (eyes, neck, antecubital, and popliteal fossae as well as ankles) is common but follicular prominence and discoid (nummular) patterns are often seen in those with skin of color. This complexity makes its management and treatment particularly challenging. Beyond the physical symptoms such as itching, dry skin, and rashes, AD has profound psychological, social, and financial impacts on patients' lives that are often not fully accounted for in conventional burden assessments.

In recognition of the significant burden that AD places on patients, their families, and healthcare systems, the global AD atlas (GADA) was founded under the auspices of the International League of Dermatological Societies (ILDS) in 2022. The primary aim of GADA is to consolidate all available burden data on AD into a comprehensive global resource while addressing critical gaps in our understanding of the prevalence and impact of the disease. Through collaboration with the ILDS, the International Eczema Council (IEC), the International Society of AD, and the International Alliance of Dermatology Patient Organizations (GlobalSkin), the inaugural global report on AD was published.[3] This report played a pivotal role in enabling GADA to continue advancing its mission and expanding its efforts by securing funding from the LEO Foundation in 2023.

The inaugural report established a 5-year plan for GADA described in Figure 1 with the following objectives:

- Initiate a sustainable living systematic review that will provide regular updates on the current epidemiological data on the global burden of AD
- Conduct an international consensus exercise to improve and standardize population-based epidemiological study designs
- Develop the digital ecosystem and research (e-) tools for more efficient fieldwork
- Conduct epidemiological surveys in those geographical areas where data are insufficient and ensure that the data generation is produced through a standardized methodology and a unified data capture platform.

At present, there is no sustainable resource offering long-term data on the prevalence and incidence of AD. To address this gap, GADA has initiated a living systematic review designed to deliver reliable epidemiological data, freely accessible through the GADA website. The first iteration of this review builds on the work of Tian *et al.* (2023)[1] and covers the period from March 2022 to February 2023. Combined these reviews have consolidated the available epidemiological data on AD prevalence between 1992 and 2023. Despite this, considerable gaps remain. Figure 2 shows the number of data sources included in either of these reviews by country. We aim to expand our review of the prevalence and incidence of AD to gain a deeper understanding of its association with allergic diseases. We are now broadening the scope to include allergic comorbidities such as allergic rhinitis, atopic asthma, and allergic conjunctivitis. This expansion will provide a

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more comprehensive understanding of the interconnected burden of these conditions, given their known associations. Over the years, significant contributions to the field have been made by the Global Burden of Disease (GBD) project,[4] which maps the global morbidity and mortality for 369 diseases and conditions, including AD. Despite this, an evidence-based map of AD burden data encompassing prevalence, incidence, and temporal trends across all countries remains elusive. In addition, the GBD project has increasingly been relying on insurance claim database analyses, rather than regular systematic reviews of epidemiological literature.

However, with the emergence of more robust epidemiological data spawning from GADA and its living systematic review alongside advanced statistical analysis using Bayesian hierarchical regression models, we aim to deliver this critical resource to users worldwide within the coming years.

Upon commencement of the living systematic review, it was clear that the current epidemiology studies of AD lack standardization and that this was hindering efforts to understand the global burden of AD. As such, GADA has launched an international consensus exercise to improve and standardize population-based epidemiological study designs by reaching a consensus on which domain items should be recommended for future population-based epidemiological studies on AD and how they should be assessed. As with all GADA projects, we are proud to have collaborators who are dedicated to supporting our efforts. The first steering group meeting for the international consensus exercise took place in December 2024, with representatives from 14 countries across five continents.

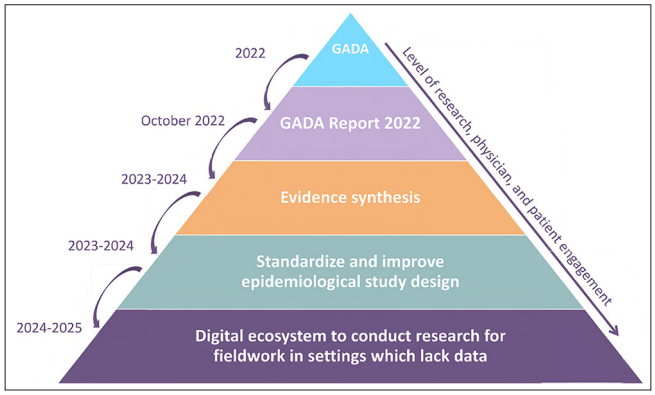

Figure 1: The start and future of the global atopic dermatitis atlas.

Collecting useful data can be challenging without a data entry tool and standardization, particularly for studies conducted in middle- and low-resource countries. To address this, GADA has developed a standardized data entry platform. This platform is offered free of charge and is specifically targeting areas lacking data on AD. This platform is designed for web use, with plans to expand to mobile browser/application-based access. It integrates both physician and patient data entry and was developed in alignment with the treatment of atopic eczema (TREAT) register task force recommendations to ensure its comparability with other AD registries. These registries aim to provide data-driven insights into the global burden and epidemiology of AD.

In collaboration with colleagues at the Lebanese American University, the first register utilizing the GADA standardized data entry platform has been launched, successfully recruiting its first patients in November 2024. The Lebanese Register of AD is an inter-university collaboration supported by the Lebanese Dermatology Society. This groundbreaking program in a low-resource country during a time of enhanced political instability will offer the first epidemiological data on AD in Lebanon. It will encompass the adult population, representative sampling of the pediatric population, and longitudinal data across both groups. This initiative sets

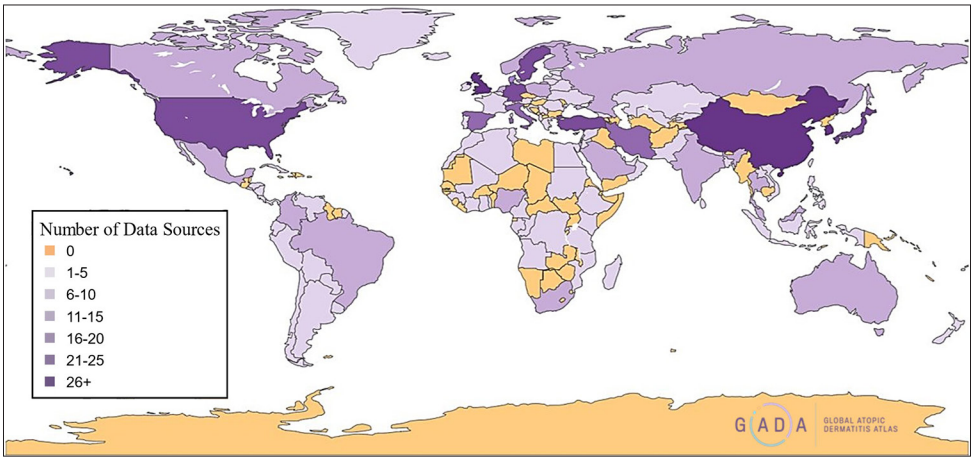

Figure 2: The number of data sources for atopic dermatitis burden between 1992 and 2023. Countries where no data has been published to date are shown in orange.

the stage for other countries to establish national AD registries using a similar approach under the GADA register framework.

The final objective of GADA within the first 5 years is to conduct epidemiological surveys in those geographical areas where data are insufficient or absent. To do this, GADA plans to utilize the methodological approach developed by the Global Hidradenitis Suppurativa Atlas.[5] This will allow GADA to efficiently conduct prevalence studies that can be carried out in multiple countries simultaneously generating robust prevalence estimates in settings that otherwise lack data on the burden of AD. GADA will enhance the standardized data entry tool created for registries to support epidemiological fieldwork, ensuring it aligns with the recommendations from the ongoing international consensus exercise.

Existing efforts to map the global burden of AD [1,2] are limited by the availability of representative epidemiological data collected following standardized definitions. Consequently, GADA hopes that with a consensus on recommended domain items for epidemiological studies and a supporting web-based data entry platform, future studies will not only address gaps in the global burden map but also provide robust data that can be incorporated into large-scale mapping of AD.

In addition to its core workstreams, GADA is advancing three supplementary initiatives. The first, GADA-omics, investigates whether interactions between cutaneous immune pathways and shifts in the skin microbiome-metabolome contribute to the heterogeneity in AD phenotypes and treatment responses across different geographic regions and ethnic groups. The second initiative, in partnership with the University of Manchester Skin Images and Nomenclature in Diverse Populations (SkIN DP, "skin deep"), is a mixed-method, international multi-center study that examines patients' perceptions of their dermatological conditions and explores how ancestry may shape the appearance and morphology of common dermatological presentations. Finally, GADA focuses on the lived experiences and unique burden of AD among women of childbearing age. This project will be conducted in close collaboration with GlobalSkin, the IEC, and their broader networks.

The success of the GADA project relies heavily on close collaboration with national and international organizations that support, promote, and facilitate our efforts. As GADA is still in its early stages, ongoing and increased engagement with both patients and physicians will be essential. If you are interested in conducting epidemiological research in your setting and require assistance, we encourage you to connect with the GADA team through our website.

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