

Prevalence of Atopic Dermatitis: A Systematic Review and Meta-Analysis**Ratan Singh¹, Abhinav Singh², Anuj Kumar³**¹Associate Professor, Department of Dermatology, MVASMC, Bijnor, Uttar Pradesh, India.²Assistant Professor, Department of Physiology, MVASMC, Bijnor, Uttar Pradesh, India.³Assistant Professor, Department of Ophthalmology, MVASMC, Bijnor, Uttar Pradesh, India.

Received: 28-05-2026 / Revised: 26-06-2026 / Accepted: 27-07-2026

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Conflict of interest: Nil

Abstract:**Objective:** Atopic dermatitis has a typical age-related distribution, and the skin lesions can vary depending on disease stage, ethnicity, as well as geographic location. The present study was to perform the systematic review and meta-analysis of various research articles to analyse the prevalence of atopic dermatitis.**Methods:** A search of MEDLINE (through PubMed), Embase, and Global Index Medicus databases was conducted. Search terms included 'atopic dermatitis' and 'prevalence,' with both controlled vocabulary (e.g., MeSH terms) and synonyms. Searches were restricted for studies published from 2012 onward, ensuring that the review is based on the most recent and up-to-date data, since the prevalence of AD may change over time due to changes in environmental or lifestyle factors.**Results:** A total of 118 global studies were evaluated. 33(27.97%) studies were performed on infants to preschoolers. 46(38.98%) studies were on children and 39(33.05%) studies were on adolescents/adults. Highest number of studies included were Asia (50.85%) and Europe (22.03%). 55.93% studies included were from rural area and 44.07% from urban area. 65(55.08%) studies had male dominant. Most of the studies 70(59.32%) included were based on symptoms-based questionnaire. Overall prevalence of atopic dermatitis was 10.4%.**Conclusions:** Prevalence of atopic dermatitis is greater in infant to preschoolers. Prevalence of atopic dermatitis are higher in South America, central America, Africa, Europe and Asia as compared to others continent. Atopic Dermatitis is greatly seen in urban and male population as compared to rural and female population.**Keywords:** Atopic Dermatitis, Prevalence, Continent, Gender.**DOI:** 10.25258/ijcpr.18.8.24

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Introduction

Atopic dermatitis is a common chronic, non-communicable skin disease characterized by dry skin, localized red scaly patches and intense itching as well as skin pain [1,2]. Atopic dermatitis is also known as 'atopic eczema', 'neurodermatitis', or just simply as 'eczema' [1, 2].

Atopic dermatitis is a highly variable skin disorder with a wide spectrum of clinical manifestations, and typically fluctuates in severity between periods of flares and remissions [3,2,4]. For the majority of people, atopic dermatitis becomes apparent in early childhood with most patients experiencing an onset of the disease before the age of five years, but it can also develop later in adult life, or reoccur following long periods of resolution [1,3]. In fact, high rates are increasingly reported among older adults [5,6].

The onset of AD occurs during the first years of life in approximately 80% of individuals [6], and that approximately 60% experience remission in adolescence [7]. Recent studies indicate evidence of adult onset AD, but the incidence across different

age groups and countries remains unclear [8,9]. Differences in study design and definition of AD contribute to the heterogeneity in reported prevalence and incidence data [10].

Atopic dermatitis has a typical age-related distribution, and the skin lesions can vary depending on disease stage, ethnicity, as well as geographic location [1,2,4,7]. In infants, the face, scalp, cheeks, and extensor sides of the arms and legs are frequently involved, but the whole body may be affected in severe cases [1,3,4]. With increasing age, skin lesions are commonly found in areas such as the folds of the knees and elbows (flexural), neck, ears, wrists, ankles, and around the eyes [1,3,12,4,7]. In adolescents and adults, the hands, feet, head, and neck are frequently affected which can impair the ability to work and perform daily life activities [11,7].

Differences across studies in factors such as study design, research teams, location, and methods, result in heterogeneity in estimates of the prevalence and

incidence of AD, which may underestimate or overestimate the “true” prevalence and incidence of AD in children and adults [12]. Objectives of the present study was to perform the systematic review and meta-analysis of various research articles to analyse the prevalence of atopic dermatitis.

Material & Methods

This study is a systematic review and meta-analysis conducted in the Department of Dermatology, MVASMC, Bijnor, Uttar Pradesh, India during a period from January 2025 to November 2025.

Literature Search: A search of MEDLINE (through PubMed), Embase, and Global Index Medicus databases was conducted. Search terms included ‘atopic dermatitis’ and ‘prevalence,’ with both controlled vocabulary (e.g., MeSH terms) and synonyms. Searches were restricted for studies published from 2012 onward, ensuring that the review is based on the most recent and up-to-date data, since the prevalence of AD may change over time due to changes in environmental or lifestyle factors. We also conducted manual searches of reference lists of relevant studies (i.e., primary studies that were included in the present systematic review, as well as other systematic reviews on the topic) to find studies that eventually were not captured by our electronic searches.

Study Selection and Eligibility Criteria: Following duplicate removal, eligible studies were identified through a two-step approach: first, all titles and abstracts were screened; subsequently, full texts of potentially eligible studies were retrieved and reviewed. For both steps, study selection was conducted by two reviewers independently, and discrepancies were resolved by consensus or by a third reviewer. Full-text assessment was carried out using a spreadsheet specifically designed for this review in MS Excel. Studies that evaluated the prevalence of AD from either the general population or in clinical settings, such as hospitals, clinics, and medical offices, were included. Studies that reported AD prevalence only in the context of another medical comorbidity (e.g., prevalence of AD in patients with allergic rhinitis) were excluded. No restrictions were made regarding the methods applied for identifying cases of AD or assessing disease severity. We included primary studies, including cross-sectional, and baseline data of longitudinal studies, conducted in any location, published in English, in full-text or conference abstract format, provided they presented the necessary outcome data for analysis. We planned to

include studies that assessed point, one-year period or lifetime prevalence. We excluded studies that did not provide the information required for meta-analysis.

Data Extraction: Information about the study (location and year), population (e.g., age, sex, race, ethnicity, socioeconomic status), type of prevalence assessed (e.g., point prevalence or period prevalence), and data required for meta-analysis (e.g., number of individuals with AD; total number of individuals evaluated; and proportion of individuals with mild, moderate, or severe disease) was extracted in a previously piloted spreadsheet in MS Excel.

Study results were stratified by age group (< 18 years for children and adolescents, or > 18 years for adults), and the type of prevalence measure (point prevalence or one-year period prevalence). Subgroup analyses by sex, age groups, continent, country, type of area (rural or urban), diagnostic method, and risk of bias of the study were conducted.

Statistical Analysis: Data was analysed by using MS-office software. All data was tabulated and percentages were calculated.

Results

Study Selection Process: A total of 118 global studies were evaluated. Out of 118 studies. 33(27.97%) studies were performed on infants to preschoolers. 46(38.98%) studies were on children and 39(33.05%) studies were on adolescents. Highest number of studies included were Asia (50.85%) and Europe (22.03%). Out of 118 studies. 55.93% studies included were from rural area and 44.07% from urban area. Highest prevalence of atopic dermatitis was seen in South America (16.1%), Central America (12.7%), Africa (11.2%), Europe (11%) and Asia (10.8%).

Out of 118 studies, 65(55.08%) studies had male dominant. And 53(44.92%) were female dominant studies. Most of the studies 70(59.32%) included were based on symptoms based questionnaire. And 20.34% included studies were based on clinical assessment. 12.71% included studies were on medical records. And only 7.63% included studies were on self-reported previous diagnosis. 55.93% rural area studies were included and 44.07% urban studies were included.

Table 1: Prevalence of Atopic Dermatitis.

	Number of studies	Number of individuals	No. of atopic dermatitis cases	Prevalence (%)
Over all	118	1495530	155535.12	10.4%
Age				
Infants to preschoolers (0-5 years)	33(27.97%)	345861	44961.93	13%
Children (6-11 years)	46(38.98%)	421045	40841.365	9.7%
Adolescent (12-17 years) /Adult>18 years	39(33.05%)	728624	56104.048	7.7%
Sex				
Male	65(55.08%)	609038	69430.332	11.4%
Female	53(44.92%)	886492	95741.136	10.8%
Continent				
Africa	4(3.39%)	8581	961.072	11.2%
Asia	60(50.85%)	149441	16139.628	10.8%
Central America	4(3.39%)	2993	380.111	12.7%
Europe	26(22.03%)	339512	37346.32	11.0%
North America	14(11.86%)	545211	43616.88	8.0%
South America	4(3.39%)	4250	684.25	16.1%
Oceania	6(5.08%)	445542	28514.688	6.4%
Area				
Rural	66(55.93%)	1191543	128686.644	10.8%
Urban	52(44.07%)	303987	39214.323	12.9%
Diagnostic criteria				
Clinical assessment	24(20.34%)	182529	16245.081	8.9%
Medical records	15(12.71%)	826654	64479.012	7.8%
Self reported previous diagnosis	9(7.63%)	259133	26431.566	10.2%
Symptom based questionnaire	70(59.32%)	227214	25902.396	11.4%

In the present study, prevalence of atopic dermatitis in infants to preschoolers (0-5 years), children (6-11 years) and adolescent (12-17 years) / adult>18 years were 13%, 9.7% and 7.7% respectively. Prevalence of atopic dermatitis was greater in male

11.4% as compared to female (10.8%). Prevalence of atopic dermatitis was greatly seen in urban area (12.9%) studies as compared to rural studies (10.8%).

11.4% greater prevalence of atopic dermatitis was recorded from symptom-based questionnaire of the studies. 10.2% of prevalence of atopic dermatitis was recorded from self reported previous diagnosis. 8.9% of prevalence of atopic dermatitis was recorded from clinical assessment and 7.8% was recorded from medical record of included studies. Among 118 studies, Overall prevalence of atopic dermatitis was 10.4%.

Discussions

Atopic dermatitis is a chronic and heterogenous condition [13,14]. AD does not present with a fixed set of clinical symptoms. Its severity and course are dependent on environmental and genetic factors [14]. The symptoms of AD appear during the initial years of life in around 80% of patients. The disease goes into remission for 60% of the patients in adolescence [15,7]. Cases of adult-onset AD have

been documented, but the prevalence appears to be less as compared to childhood-onset AD [16].

Among the included studies, nine studies reported information on demographics and patient characteristics. Among them, one study reported only patient characteristics of AD as secondary data points. The reported prevalence ranged from 3.1% to 7.21% among the paediatric population, as determined by studies conducted on children aged 0 to 16 years old using surveys or hospital-based data collection [17]. Four studies included paediatric as well as adult AD patients. Two studies from North India reported a prevalence of AD of 9.2%, while another study reported a prevalence of 0.98% across all age groups. A hospital-based study reported a point prevalence of 6.75% amongst outpatient attendees on a single day in one medical college in each of the four zones of India [17].

The age of onset was reported by four studies. Two studies conducted in North India reported mean ages at onset of 2.13 ± 2.10 and 3.63 ± 1.42 years, respectively. Another study from central India reported the age at onset to be 2.14 ± 0.5 years. A study conducted in Eastern India noted 5.2 (± 3.01) months as the age of onset in children below 1 year of age and 3.47 ± 3.02 years in children aged between 1 and 15 years [17].

In the present review of 118 global studies, overall, all prevalence of atopic dermatitis was 10.4%. Higher proportion of atopic dermatitis (13%) was seen in infants to preschoolers (0-5 years).

When compared with infant to preschooler, children and adolescents. Estimated prevalence of severe cases appears to be similar for both groups: it ranged from 0.19 to 01.00%, 0.18 to 0.99% and 0.24 to 0.96% respectively.

Accurate estimates of the proportion of individuals presenting severe disease is essential, since it has a pronounced impact on patients and family members' quality of life and places a substantial demand on health care resources, such as out-of-hospital medical care, systemic treatments, and hospitalization, aside from incurring in indirect costs due to short-term disability benefits, school and parental work absenteeism, and work productivity [18,19]. This understanding is also necessary for optimizing the organization of care within health systems. A previous study has shown that referrals to secondary care are positively correlated with the disease severity, with 3% of mild cases, 15% of moderate cases, and 43% of severe cases being referred to secondary care [19]. Estimation of the proportion of severe cases in all age groups seems to be largely influenced by the methods used for assessing disease severity. A lower proportion of severe cases was observed in studies using medical records and clinical and patient assessment, while a higher proportion was observed for SCORAD. SCORAD has been proven to have good validity and reliability but significant interobserver variability, which may help explain the observed inconsistency [19,20]. The substantial variability in disease severity underscores the importance of establishing standardized criteria and assessment tools to accurately gauge the burden of AD. By implementing uniform methods to assess AD severity, researchers and health care decision-makers may be able to gain a more accurate understanding of the disease's impact on affected individuals and health systems. Although the increase of AD prevalence has been shown to be greater in urban areas, [20]. The relative scarcity of studies that presented these data may have hampered the detection of differences between these types of environments. Future studies investigating the role of environmental factors over AD epidemiology are still warranted. Differences of prevalence estimates across continents should also be interpreted carefully, considering the relatively low number of studies conducted in South and Central America, Oceania, and Asia, especially those involving adults. A recent study identified that 41.5% of countries lack epidemiological data about atopic dermatitis, which limits the generalizability of our estimates to these underrepresented regions [21]. Future research should aim to address this gap by conducting studies

in these areas to provide a more comprehensive understanding of the global prevalence of atopic dermatitis.

This systematic review provides a critical assessment of the reviewed studies. The findings report data from representative epidemiological studies from across global. This systematic review was however limited due to a few eligible studies and the heterogenous nature of the studies. Although this review reports findings from diverse settings, some of the included studies were designed to assess the prevalence of AD, while others reported AD as a secondary outcome.

Conclusions

The present study concluded that the prevalence of atopic dermatitis is greater in infant to preschoolers. Prevalence of atopic dermatitis are higher in South America, central America, Africa, Europe and Asia as compared to others continent. Atopic Dermatitis is greatly seen in urban and male population as compared to rural and female population.

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