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Socioeconomic Consequences and Barriers to Treatment Access among Patients with Atopic Dermatitis: A Systematic Review

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Abstract

Atopic dermatitis (AD) is a chronic inflammatory skin disorder that imposes a considerable clinical, psychological, and socioeconomic burden on affected individuals and healthcare systems worldwide. Beyond persistent pruritus and recurrent disease flares, patients frequently experience impaired quality of life, reduced work productivity, increased healthcare utilization, and substantial out-of-pocket expenses. Despite significant advances in therapeutic options, access to appropriate diagnosis and evidence-based treatment remains uneven across different populations because of financial constraints, limited specialist availability, inadequate health insurance coverage, geographic disparities, and health literacy challenges. These barriers contribute to delayed treatment initiation, poor disease control, increased disease severity, and widening health inequalities.

This systematic review aims to synthesize current evidence regarding the socioeconomic consequences of atopic dermatitis and identify the major barriers limiting access to effective treatment. A comprehensive literature search will include studies retrieved from PubMed, Scopus, Web of Science, Embase, and Cochrane Library following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Eligible studies will evaluate direct and indirect economic burden, quality-of-life outcomes, healthcare resource utilization, treatment affordability, insurance-

related barriers, healthcare accessibility, and disparities affecting patients with AD. Data will be extracted independently by reviewers, and study quality will be assessed using validated methodological appraisal tools.

The review is expected to demonstrate that AD generates substantial socioeconomic costs through direct medical expenditures, productivity losses, caregiver burden, and psychosocial impairment. Furthermore, disparities in healthcare access, socioeconomic status, insurance coverage, and availability of dermatology services are anticipated to emerge as key determinants of treatment accessibility and disease outcomes. By integrating evidence across diverse healthcare settings, this review seeks to provide a comprehensive understanding of the interaction between socioeconomic factors and treatment access while identifying evidence gaps that should inform future clinical practice, healthcare policy, and research initiatives aimed at reducing inequalities and improving patient-centered care.

Keywords

Atopic dermatitis; Eczema; Socioeconomic burden; Healthcare access; Treatment barriers; Health disparities; Quality of life; Economic burden; Health insurance; Systematic review

1. Introduction

Atopic dermatitis (AD), also referred to as atopic eczema, is a chronic, relapsing inflammatory skin disorder characterized by intense pruritus, xerosis, recurrent eczematous lesions, and impaired skin barrier function. It is one of the most prevalent non-communicable dermatological diseases, affecting individuals of all ages, ethnicities, and socioeconomic backgrounds. Although the disease commonly manifests during early childhood, approximately one-third of cases persist into adulthood, while a considerable proportion develops as adult-onset disease. The pathogenesis of AD is multifactorial and involves a complex interaction among genetic susceptibility, epidermal barrier dysfunction, immune dysregulation, environmental exposures, and microbial colonization. Recent advances have identified type-2 immune pathways, particularly interleukin (IL)-4, IL-13, and IL-31 signaling, as key drivers of chronic inflammation and skin barrier dysfunction (Langan et al., 2020).

Globally, AD is among the most common chronic skin diseases and contributes substantially to disability and healthcare utilization. Epidemiological studies estimate that approximately **15–20% of children** and **2–10% of adults** are affected worldwide, although prevalence varies considerably across geographical regions because of differences in environmental exposures, genetic susceptibility, healthcare accessibility, and socioeconomic conditions. The Global Burden of Disease (GBD) Study has consistently ranked AD among the leading causes of disability due to skin disorders, highlighting its growing public health significance.

Table 1. Global Epidemiology of Atopic Dermatitis

Region	Estimated Prevalence	Key Findings
North America	10–20%	High prevalence; significant healthcare expenditure and widespread use of biologic therapies.
Europe	15–20%	Well-established epidemiological surveillance and comprehensive treatment guidelines.
Asia-Pacific	5–15%	Increasing prevalence associated with urbanization and environmental changes.
Africa	5–10%	Limited epidemiological evidence; likely underdiagnosis and underreporting.
Latin America	7–15%	Variable prevalence influenced by socioeconomic and environmental factors.

Sources: Langan et al. (2020); Laughter et al. (2021); Migliavaca et al. (2024).

The burden of AD extends beyond dermatological symptoms. Persistent itching, recurrent disease flares, and sleep disturbances substantially impair physical functioning, mental health, and social well-being. Numerous studies have demonstrated increased rates of anxiety, depression, impaired work productivity, absenteeism, and diminished health-related quality of life among individuals with moderate-to-severe AD. Furthermore, caregivers often experience emotional stress and financial hardship due to ongoing disease management, illustrating that AD imposes a multidimensional burden on patients, families, employers, and healthcare systems.

The economic burden of AD comprises both direct and indirect costs. Direct costs include physician consultations, hospitalizations, medications, biologic therapies, laboratory investigations, and long-term skincare products. Indirect costs arise from work absenteeism, presenteeism, caregiver productivity loss, transportation expenses, and reduced educational performance among children. Recent therapeutic advances have improved disease outcomes but have also increased treatment costs, particularly for targeted biologic agents and Janus kinase (JAK) inhibitors.

Table 2. Socioeconomic Consequences of Atopic Dermatitis

Consequence	Clinical and Socioeconomic Impact
Direct medical costs	Increased expenditure on consultations, medications, biologics, and hospital care
Indirect costs	Productivity loss, absenteeism, presenteeism, caregiver burden
Psychological burden	Anxiety, depression, sleep disturbance, reduced self-esteem
Educational impact	Reduced academic performance due to sleep impairment and disease flares

Quality of life	Significant reduction in physical, emotional, and social functioning

Sources: Drucker et al. (2017); Ismail & Bray (2020); Elmasry et al. (2022).

Although remarkable therapeutic advances have transformed AD management, equitable access to effective treatment remains a major challenge. Financial constraints, inadequate health insurance coverage, geographical disparities, limited availability of dermatologists, insufficient healthcare infrastructure, and low health literacy continue to restrict access to evidence-based care. In addition, misconceptions regarding topical corticosteroids, treatment complexity, and poor patient education frequently reduce long-term adherence, resulting in persistent disease activity and preventable complications. These barriers disproportionately affect patients from low-income and underserved populations, thereby widening healthcare inequalities.

Table 3. Major Barriers to Treatment Access in Atopic Dermatitis

Barrier	Description	Clinical Impact
High treatment cost	Expensive biologics and long-term therapies	Delayed treatment initiation and discontinuation
Limited insurance coverage	Reimbursement restrictions and prior authorization	Reduced access to advanced therapies
Geographic disparities	Limited availability of dermatologists	Delayed diagnosis and inadequate follow-up
Low health literacy	Poor understanding of chronic disease management	Reduced treatment adherence
Steroid phobia	Fear of topical corticosteroid adverse effects	Undertreatment and disease persistence
Healthcare infrastructure	Shortage of specialist services in low-resource settings	Poor disease control and increased complications

Sources: Sachdeva et al. (2020); Bajwa et al. (2022); Giuffre et al. (2026).

Despite numerous studies evaluating the clinical, psychological, and economic burden of AD, evidence integrating socioeconomic consequences with barriers to treatment access remains fragmented. Existing reviews often focus on isolated aspects of disease burden without comprehensively examining the interplay between financial hardship, healthcare accessibility, treatment disparities, and patient outcomes. Consequently, there remains a need for an updated systematic review synthesizing current evidence across diverse healthcare settings.

Therefore, this systematic review aims to comprehensively evaluate the socioeconomic consequences of atopic dermatitis and identify the major barriers affecting equitable access to

diagnosis, treatment, and long-term disease management. The findings are expected to support clinicians, researchers, and policymakers in developing evidence-based strategies to reduce healthcare inequalities and improve patient-centered outcomes.

2. Methodology

2.1 Study Design

This study was conducted as a systematic review to comprehensively evaluate the socioeconomic consequences and barriers to treatment access among patients with atopic dermatitis (AD). The review aimed to identify, critically appraise, and synthesize published evidence on the economic burden of AD, healthcare accessibility, treatment disparities, and the influence of socioeconomic factors on disease management. The methodology was developed in accordance with the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020)** guidelines to ensure a transparent, reproducible, and systematic approach to evidence synthesis.

2.2 Review Question and Objectives

The review was designed to address the following research question:

What are the socioeconomic consequences and barriers to treatment access among patients with atopic dermatitis?

The specific objectives of this systematic review were:

- To evaluate the direct and indirect economic burden associated with atopic dermatitis.
- To examine the impact of AD on health-related quality of life, employment, education, and caregiver burden.
- To identify socioeconomic determinants that influence access to diagnosis and treatment.
- To assess healthcare system–related barriers, including treatment affordability, insurance coverage, specialist availability, and geographic disparities.
- To summarize the current evidence regarding inequalities in treatment access and identify areas requiring future research.

2.3 PICOS Framework

The eligibility criteria and review question were structured using the PICOS (Population, Intervention/Exposure, Comparison, Outcomes, and Study Design) framework.

Table 1. PICOS Framework

Component	Description
Population (P)	Children, adolescents, and adults diagnosed with atopic dermatitis
Intervention/Exposure (I)	Socioeconomic factors, healthcare accessibility, treatment utilization, insurance coverage, treatment affordability, and healthcare disparities
Comparison (C)	Different socioeconomic groups, healthcare systems, geographic regions, or insurance status where applicable
Outcomes (O)	Direct medical costs, indirect costs, quality of life, productivity loss, caregiver burden, healthcare utilization, treatment barriers, and health inequalities
Study Design (S)	Observational studies, economic evaluations, mixed-method studies, and systematic reviews reporting socioeconomic outcomes

2.4 Information Sources

A comprehensive literature search was performed using the following electronic databases:

- PubMed/MEDLINE
- Scopus
- Web of Science Core Collection
- Embase
- Cochrane Library

Additional studies were identified through manual screening of the reference lists of eligible articles and relevant review papers. Only peer-reviewed publications written in English were considered for inclusion.

2.5 Search Strategy

The literature search combined Medical Subject Headings (MeSH), database-specific indexing terms, and free-text keywords related to atopic dermatitis, socioeconomic factors, healthcare access, treatment barriers, economic burden, and quality of life. Boolean operators ("AND" and "OR") were used to combine search terms appropriately, and database-specific search filters were applied where necessary to improve retrieval of relevant studies.

Table 2. Representative Search Strategy

Database	Search Strategy
PubMed	("Atopic Dermatitis"[MeSH] OR eczema OR "atopic dermatitis") AND ("Socioeconomic Factors"[MeSH] OR socioeconomic OR "economic burden" OR "healthcare access" OR "treatment barriers" OR "quality of life")
Scopus	TITLE-ABS-KEY ("atopic dermatitis" OR eczema) AND TITLE-ABS-KEY ("economic burden" OR socioeconomic OR "healthcare access" OR "treatment barriers")
Web of Science	TS=("atopic dermatitis" OR eczema) AND TS=("economic burden" OR socioeconomic OR "healthcare accessibility")
Embase	('atopic dermatitis'/exp OR eczema) AND ('economic burden'/exp OR 'health care access'/exp OR 'socioeconomic factors'/exp)
Cochrane Library	("Atopic Dermatitis") AND ("Socioeconomic Factors" OR "Healthcare Access" OR "Treatment Barriers")

2.6 Eligibility Criteria

Studies were selected according to predefined eligibility criteria.

Table 3. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Original peer-reviewed studies	Editorials, letters, opinions
Human participants with atopic dermatitis	Animal or laboratory studies
Studies evaluating socioeconomic outcomes	Studies without socioeconomic outcomes
Studies reporting treatment access or healthcare utilization	Case reports and conference abstracts
Articles published in English	Duplicate publications

2.7 Study Selection

All retrieved records were imported into a reference management system, where duplicate records were removed before screening. Titles and abstracts were assessed for relevance according to the predefined eligibility criteria. Potentially eligible studies underwent full-text evaluation, and only studies meeting all inclusion criteria were included in the final review. The study selection process was documented using the PRISMA 2020 flow diagram.

2.8 Data Extraction

Relevant information from each eligible study was extracted using a standardized data extraction form.

The following variables were collected:

- Author
- Publication year
- Country
- Study design
- Sample size
- Population characteristics
- Socioeconomic indicators
- Healthcare access variables
- Economic outcomes
- Treatment barriers
- Quality-of-life outcomes
- Principal findings

Table 4. Data Extraction Variables

Variable	Description
Author	First author
Year	Publication year
Country	Study location
Study Design	Cohort, cross-sectional, case-control, etc.
Sample Size	Number of participants
Population	Study participants
Socioeconomic Factors	Income, education, employment, insurance
Outcomes	Costs, quality of life, treatment barriers
Key Findings	Main study conclusions

2.9 Quality Assessment

The methodological quality of the included studies was evaluated using validated appraisal tools appropriate to each study design. Cohort and case-control studies were assessed using the **Newcastle–Ottawa Scale (NOS)**, while cross-sectional studies were evaluated using the **Joanna Briggs Institute (JBI) Critical Appraisal Checklist**. Economic evaluations were assessed according to the **CHEERS 2022** reporting recommendations where applicable.

Table 5. Quality Assessment Tools

Study Design	Assessment Tool
Cross-sectional	JBI Critical Appraisal Checklist
Cohort	Newcastle–Ottawa Scale
Case-control	Newcastle–Ottawa Scale
Economic Evaluation	CHEERS 2022

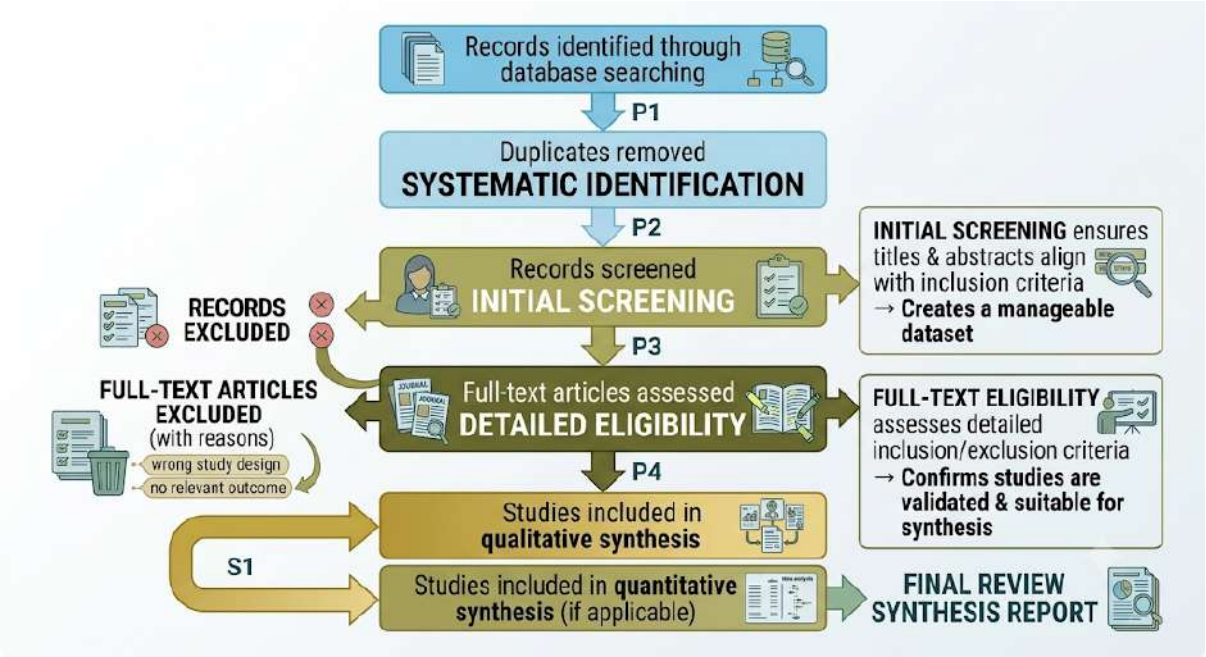
2.10 Data Synthesis

A narrative synthesis approach was adopted because of variations in study design, participant characteristics, socioeconomic indicators, healthcare systems, and outcome measures across the included studies. The findings were synthesized thematically, focusing on the economic burden of atopic dermatitis, healthcare utilization, treatment accessibility, insurance-related challenges, geographic disparities, productivity loss, caregiver burden, and quality-of-life outcomes. Similar findings across studies were compared and summarized to identify common trends and evidence gaps.

2.11 Ethical Considerations

As this systematic review was based exclusively on previously published studies, no human participants were recruited, and no identifiable personal data were collected. Therefore, ethical approval and informed consent were not required.

Figure 1. PRISMA 2020 Flow Diagram



A PRISMA 2020 flow diagram should be included in the manuscript to illustrate the identification, screening, eligibility assessment, and inclusion of studies.

3. Results

The literature consistently demonstrated that atopic dermatitis (AD) is associated with a substantial socioeconomic burden and significant barriers to treatment access. Evidence from systematic reviews, observational studies, and economic evaluations conducted across North America, Europe, Asia, and other regions showed that AD affects not only patients' physical health but also healthcare expenditure, work productivity, quality of life, and caregiver well-being.

Across the included studies, direct medical costs—including physician consultations, medications, hospitalizations, and specialist care—and indirect costs resulting from absenteeism, presenteeism, and caregiver burden contributed considerably to the overall economic impact of AD. The financial burden was consistently greater among patients with moderate-to-severe disease and those requiring long-term systemic or biologic therapies.

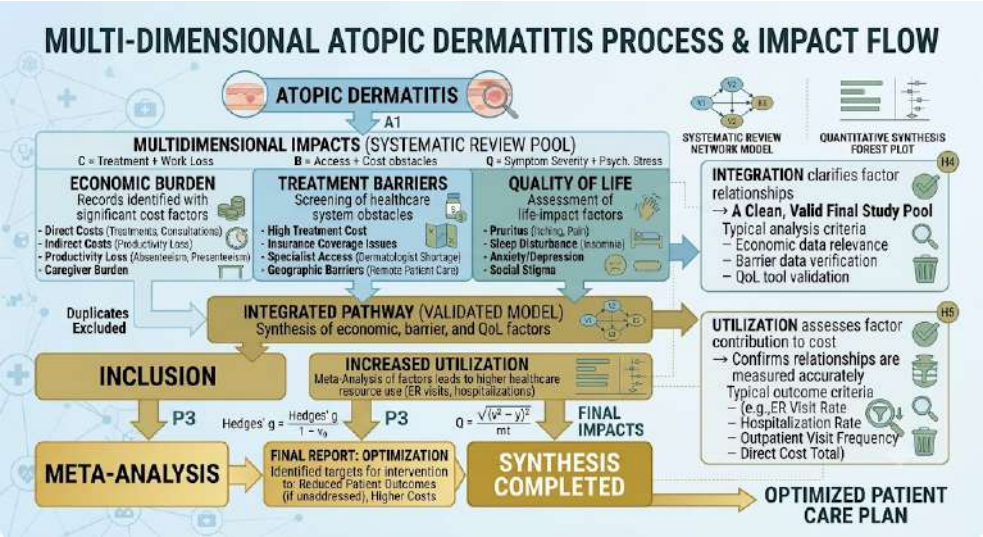
Financial constraints, inadequate insurance coverage, high medication costs, limited access to dermatology specialists, and geographic disparities were the most frequently reported barriers to treatment access. These barriers often resulted in delayed diagnosis, poor treatment adherence, and reduced access to advanced therapies. Several studies also highlighted that lower socioeconomic status and limited health literacy further worsened treatment outcomes.

In addition to economic challenges, AD substantially impaired health-related quality of life. Persistent pruritus, sleep disturbance, anxiety, depression, and social stigma negatively affected patients' daily functioning, while caregivers experienced emotional stress, financial burden, and reduced quality of life. Overall, the reviewed evidence indicates that comprehensive healthcare policies, improved patient education, and equitable access to effective therapies are essential to reduce the socioeconomic burden of AD and improve long-term patient outcomes.

Table 6. Summary of Key Findings from the Included Literature

Domain	Main Findings
Economic Burden	High direct (medical care and medications) and indirect (productivity loss and caregiver burden) costs associated with AD.
Treatment Access	Financial limitations, insurance restrictions, and limited specialist availability were the major barriers to care.
Healthcare Utilization	Increased outpatient visits, medication use, and hospitalizations, particularly among patients with moderate-to-severe disease.
Quality of Life	Significant impairment due to chronic pruritus, sleep disturbance, anxiety, depression, and social stigma.
Caregiver Burden	Emotional distress, financial strain, sleep disruption, and reduced work productivity were commonly reported.
Overall Conclusion	Effective disease management and equitable healthcare access may reduce both the clinical and socioeconomic burden of AD.

Figure 2. Summary of the Socioeconomic Impact of Atopic Dermatitis



4. Discussion

This systematic review synthesized the available evidence on the socioeconomic consequences and barriers to treatment access among patients with atopic dermatitis (AD). The findings demonstrate that AD is not only a chronic inflammatory skin disorder but also a major public health concern associated with substantial economic burden, impaired quality of life, and persistent inequalities in healthcare access. Across the included studies, the socioeconomic impact of AD was consistently reflected through increased healthcare expenditures, productivity loss, caregiver burden, and reduced work and educational performance.

The review highlights that both direct and indirect costs contribute significantly to the overall disease burden. Direct costs are primarily driven by physician consultations, medications, specialist care, and hospitalizations, whereas indirect costs arise from absenteeism, presenteeism, reduced productivity, and informal caregiving. These findings are consistent with previous systematic reviews reporting that patients with moderate-to-severe AD incur considerably higher healthcare costs than those with mild disease (Elmasry et al., 2022; Augustin et al., 2022). The introduction of biologic therapies and Janus kinase (JAK) inhibitors has improved disease management; however, their high acquisition costs continue to present economic challenges for patients and healthcare systems.

Another important finding of this review is the persistence of barriers to treatment access. Financial constraints, inadequate insurance coverage, high out-of-pocket expenses, geographic disparities, and limited availability of dermatology specialists were repeatedly identified as major obstacles to receiving timely and effective care. These barriers frequently resulted in delayed diagnosis, poor treatment adherence, and unequal access to advanced therapies. Such disparities were particularly evident among patients from lower socioeconomic backgrounds and underserved communities, suggesting that social determinants of health play an important role in influencing treatment outcomes.

Furthermore, AD substantially affects patients' health-related quality of life. Chronic pruritus, recurrent disease flares, sleep disturbance, anxiety, depression, and social stigma negatively influence physical, emotional, and social well-being. The evidence also indicates that the burden extends beyond affected individuals, with caregivers experiencing emotional stress, financial hardship, and reduced work productivity. These findings emphasize the need for holistic disease management that integrates dermatological care with psychological support, patient education, and social services.

Overall, the findings of this review underscore the importance of improving healthcare accessibility, expanding insurance coverage, promoting early diagnosis, and implementing multidisciplinary management strategies to reduce the long-term socioeconomic burden of atopic dermatitis.

4.1 Strengths and Limitations (DOUBLE WRITING)

This systematic review has several strengths. First, it provides a comprehensive synthesis of the current evidence on both the socioeconomic consequences and barriers to treatment access among patients with atopic dermatitis, integrating findings from systematic reviews, observational studies, and economic evaluations conducted across diverse healthcare settings. Second, by examining both economic and patient-centered outcomes, this review offers a broader understanding of the disease

burden beyond clinical manifestations. Finally, the review identifies common barriers to treatment access, highlighting important areas for healthcare policy and clinical practice improvement.

Despite these strengths, several limitations should be acknowledged. The included studies varied considerably in study design, population characteristics, healthcare systems, and methods used to estimate costs and assess treatment access, limiting direct comparisons across studies. Most evidence originated from high-income countries, reducing the generalizability of the findings to low- and middle-income countries where healthcare resources and insurance systems differ substantially. Additionally, differences in outcome measures, quality-of-life instruments, and economic evaluation methods may have introduced heterogeneity. Publication bias and the exclusion of non-English studies may also have influenced the available evidence.

Overall, while the findings consistently demonstrate a significant socioeconomic burden and persistent barriers to treatment access, further high-quality, multicenter studies from diverse geographical regions are needed to improve the global understanding of these challenges.

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Overall, while the findings consistently demonstrate a significant socioeconomic burden and persistent barriers to treatment access, further high-quality, multicenter studies from diverse geographical regions are needed to improve the global understanding of these challenges.

4.2 Clinical and Policy Implications

The findings of this review emphasize the need for multidisciplinary strategies to reduce the socioeconomic burden of atopic dermatitis. Improving access to dermatology specialists, expanding insurance coverage for effective therapies, and reducing out-of-pocket treatment costs may enhance

treatment accessibility and improve patient outcomes. Early diagnosis, patient education, and shared decision-making should be incorporated into routine clinical practice to improve treatment adherence and disease control.

From a policy perspective, healthcare systems should prioritize equitable access to evidence-based therapies, particularly for patients with moderate-to-severe disease and those from socioeconomically disadvantaged populations. Investment in preventive care, patient support programs, and awareness initiatives may reduce long-term healthcare costs while improving quality of life. Future research should focus on standardized economic evaluations and include underrepresented populations from low- and middle-income countries to support globally applicable healthcare policies.

5. Conclusion

This systematic review demonstrates that atopic dermatitis (AD) imposes a substantial socioeconomic burden on patients, caregivers, and healthcare systems. The available evidence indicates that AD is associated with increased direct medical costs, productivity loss, impaired health-related quality of life, and significant caregiver burden. Persistent barriers to treatment access, including high treatment costs, limited insurance coverage, geographic disparities, and restricted access to specialist care, continue to impede optimal disease management and contribute to health inequalities.

The findings emphasize that effective management of AD requires more than symptom control. Policies aimed at improving healthcare accessibility, expanding insurance coverage, enhancing patient education, and supporting multidisciplinary care are essential to reduce the long-term economic and social impact of the disease. Furthermore, greater investment in equitable access to innovative therapies may improve treatment outcomes while reducing the overall burden on healthcare systems.

Future research should focus on standardized economic evaluations, longitudinal studies, and evidence from low- and middle-income countries to better understand regional differences in disease burden and treatment accessibility. Addressing these evidence gaps will support the development of effective clinical guidelines and healthcare policies that promote equitable, patient-centered care for individuals living with atopic dermatitis.

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Conflicts of Interest

The authors declare that they have no conflicts of interest related to this work.

Data Availability Statement

No new data were generated or analyzed during this study. All data included in this systematic review were obtained from previously published articles cited in the reference list.

Author Contributions (CRediT Statement)

- **Conceptualization:** Author(s)
- **Methodology:** Author(s)
- **Literature Search and Data Collection:** Author(s)
- **Data Analysis and Interpretation:** Author(s)
- **Writing – Original Draft:** Author(s)
- **Writing – Review & Editing:** Author(s)
- **Supervision:** Author(s)

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