

Review Article

# Assessing eczema severity: A comprehensive review of scoring systems

M. Sreevidya Suresh<sup>1</sup> , Feroze Kaliyadan<sup>1</sup>

<sup>1</sup>Department of Dermatology, Venereology and Leprosy, Sree Narayana Institute of Medical Sciences, Ernakulam, Kerala, India.

## ABSTRACT

Eczema, a chronic inflammatory skin condition, requires accurate severity assessment for effective management, and research. This review highlights the importance of various standardized scoring systems used in eczema management including Eczema Area and Severity Index (EASI), SCORing Atopic Dermatitis (SCORAD), Investigator's Global Assessment (IGA), Patient-Oriented Eczema Measure (POEM), and Atopic Dermatitis Severity Index (ADSI). These scoring systems evaluate disease extent, severity, and quality of life impact, guiding treatment decisions, monitoring disease progression, and comparing outcomes across studies. Technology integration, including mobile apps and digital platforms, enhances scoring data collection and analysis. Scoring systems play a vital role in eczema management, enabling personalized, evidence-based care, and improving patient outcomes. Continued development and refinement of these tools will help guiding the management of patients with eczema.

**Keywords:** Eczema, Scoring systems, Disease severity

## INTRODUCTION

Eczema, a chronic inflammatory skin condition, requires accurate severity assessment for effective management and research. Standardized scoring systems, such as the eczema area and severity index (EASI), SCORing atopic dermatitis (SCORAD), investigator's global assessment (IGA), patient-oriented eczema measure (POEM), and atopic dermatitis severity index (ADSI), evaluate lesion extent, severity, and quality of life (QoL) impact. These objective scores are crucial in chronic disease management, as guidelines from organizations, such as the National Institute for Health and Care Excellence, American Academy of Dermatology, and European Dermatology Forum focus on treatment based on severity scores. Developed since the 1990s, over 20 scoring systems are now available, including EASI (1993), SCORAD (1993), IGA (2005), POEM (2007), and ADSI (2010), alongside QoL measures, such as dermatology life quality index (DLQI), Skindex-29, and POEM. Objective scores help to determine treatment strategies, monitor disease progression, and decide when to use immunomodulators or immunosuppressives and biologics. Accurate scoring enables personalized treatment plans, improves patient outcomes, and enhances research comparability, underscoring the importance of objective assessment in eczema management.

Commonly used severity scoring systems for eczema and the assessment criteria are tabulated in Table 1.

These systems help guide treatment decisions, monitor progress, and compare outcomes across studies.

## EASI

The EASI is a widely used tool to assess the severity of atopic dermatitis (eczema). It evaluates two main components:

1. Area: The percentage of body surface area affected by eczema.
2. Severity: The intensity of eczema symptoms, including:
  - Erythema (redness)
  - Edema (swelling)
  - Lichenification (thickening of skin)
  - Excoriations (scratches)

The EASI score calculation includes the following steps:

1. Calculate the affected body area: Head/neck, upper limbs, trunk, lower limbs; estimate the percentage affected (0–100%)
2. Evaluate symptom severity (0–3): Erythema (redness), edema (swelling), excoriation (scratching), lichenification (thickening)
3. Calculate EASI score\*: (Severity × Area) × Region multiplier.

\*Corresponding author: M. Sreevidya Suresh, Senior Resident, Department of Dermatology, Venereology and Leprosy, Sree Narayana Institute of Medical Sciences, Ernakulam, Kerala, India. sreevidyamsuresh@gmail.com

Received: 08 October 2024 Accepted: 25 November 2024 Epub Ahead of Print: 28 December 2024 Published: XXXXXX DOI: 10.25259/IJSA\_50\_2024

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms. ©2024 Published by Scientific Scholar on behalf of Indian Journal of Skin Allergy

**Table 1:** Commonly used severity scoring systems for eczema and the assessment criteria.

Scoring System	Description	Assessment criteria	Scoring range	Advantages	Limitations
EASI	Eczema area and severity index	Extent (0–100%), Severity of lesions (0–12)	0–72	Easy to use, reproducible	Limited subjective assessment
SCORAD	Scoring atopic dermatitis	Extent (0–100%), Intensity (0–3), Subjective symptoms (0–4)	0–103	Comprehensive, widely used	Complex, time-consuming
IGA	Investigator's global assessment	Overall severity	0–5	Simple, quick	Subjective
POEM	Patient-oriented eczema measure	Patient-reported symptoms (7 items, 0–4), Impact (7 items, 0–4)	0–28	Patient-centered	May not reflect objective severity

EASI: Eczema area and severity index, SCORAD: SCORing atopic dermatitis, IGA: Investigator's global assessment, POEM: Patient-oriented eczema measure

Region multipliers:

1. Head/neck: 0.1
2. Upper limbs: 0.2
3. Trunk: 0.3
4. Lower limbs: 0.4.

The total EASI score ranges from 0 (no eczema) to 72 (maximum severity).

Interpretation of EASI scores:

- Mild: 0–7
- Moderate: 8–21
- Severe: 22–48
- Very severe: 49–72.

The EASI scoring is useful for assessing the disease severity, monitoring treatment response, and comparing outcomes in clinical trials. As it requires fewer calculations, it is the most practical scoring system for training dermatologists.<sup>[1]</sup>

## SCORAD INDEX

The SCORAD index is another tool used to assess the severity of atopic dermatitis (eczema). The calculation involves the following steps.

1. \*Assess affected body area (%)\*: Estimate percentage affected (0–100%)
2. \*Evaluate symptom severity (0–3)\*: Erythema, edema, excoriation, lichenification, dryness
3. \*Calculate intensity score\*: Sum symptom severity scores (0–15)
4. \*Subjective symptoms (0–10)\*: Patient-reported pruritus (itching) and sleep disturbance
5. \*Calculate SCORAD score\*:  $(Intensity/15 + Extent/100 + Subjective/10) \times 3.5$ .

The SCORAD index combines these components to provide a total score ranging from 0 to 103.

Interpretation of SCORAD scores:

- Mild: 0–24
- Moderate: 25–49
- Severe: 50–74
- Very severe: 75–103.

The SCORAD index is useful for assessing disease severity, monitoring treatment response, and comparing outcomes in clinical trials. SCORAD is the most useful scoring system for research purposes.<sup>[2]</sup>

## IGA

The IGA for eczema, also known as the physician's global assessment, is a single-item measure that evaluates the overall severity of eczema based on:

1. Erythema (redness)
2. Induration (thickness)
3. Lichenification (skin thickening)
4. Excoriations (scratches)
5. Oozing/Crusting.

The IGA score ranges from 0 to 5, with:

- 0: Clear (no eczema)
- 1: Almost clear (slightly detectable eczema)
- 2: Mild (light pink, slightly raised)
- 3: Moderate (pink, moderately raised)
- 4: Severe (deep pink, greatly raised)
- 5: Very severe (fiery red, greatly raised)

The IGA is often used in conjunction with other assessment tools, such as EASI or SCORAD, to provide a comprehensive understanding of eczema severity.<sup>[3]</sup>

## POEM

The POEM assesses the severity of atopic dermatitis (eczema) from the patient's perspective. It's a short, 7-item questionnaire that evaluates:

1. Frequency of itching
2. Sleep disturbance
3. Dryness
4. Crusting
5. Redness
6. Clearing (skin clearing)
7. Flaking.

Patients rate each item on a scale from 0 (no problem) to 4 (severe problem). The total POEM score ranges from 0 to 28, with higher scores indicating more severe eczema.

Interpretation of POEM scores:

- 0–2: Clear or almost clear
- 3–7: Mild
- 8–12: Moderate
- 13–18: Severe
- 19–28: Very severe

The POEM is a simple, patient-centered scoring system useful for assessing patient-reported symptoms and facilitating patient-physician communication.<sup>[4]</sup>

Free usage details and approximate time taken for each eczema assessment tool are mentioned in Table 2.

## PATIENT REPORTED OUTCOME (PRO) SCORES

PRO scores play a vital role in healthcare, particularly in chronic conditions, such as eczema, offering numerous benefits. PROs facilitate patient-centric care by capturing patients' perspectives on symptoms, QoL, and treatment effectiveness, improving patient-clinician communication and treatment adherence. They provide valuable insights into treatment effectiveness, enable personalized care, and inform clinical trials, regulatory approvals, and healthcare policy decisions. Patients benefit from empowerment, improved QoL, and increased satisfaction, while clinicians gain informed decision-making, enhanced patient engagement, and better outcome tracking.

Commonly used PROs in eczema:

1. POEM
2. DLQI
3. Skindex-29
4. Pruritus severity scale (PPS)

The scoring ranges and interpretations of these scoring systems are tabulated in Table 3.

Incorporating PROs into clinical practice and research can deliver more patient-centered, effective, and personalized care.<sup>[5]</sup>

**Table 2:** Free usage details and approximate time taken for each eczema assessment tool.

Scoring system	Free usage detail	Approximate time taken to use the score
EASI	Available online, calculator tools are available	10–15 min
SCORAD	Official calculator tool available	15–20 min
IGA	Simple, intuitive scale	5–10 min
POEM	Patient-reported questionnaire	5–10 min
ADSI	Clinician-administered assessment	10–15 min

EASI: Eczema area and severity index, SCORAD: SCORing atopic dermatitis, IGA: Investigator's global assessment, POEM: Patient-oriented eczema measure, ADSI: Atopic dermatitis severity index

## PRURITIC SCORES

Pruritic scores, or itch assessments, measure the severity of pruritus (itching) in eczema patients. Commonly used pruritic scores include:

1. Visual analog scale for pruritus
  - Measures: Intensity of itching (0–100 mm)
  - Scoring: 0 (no itching) to 100 (worst imaginable itching)
  - Time: 2–5 min
2. Numeric rating scale for pruritus
  - Measures: Intensity of itching (0–10)
  - Scoring: 0 (no itching) to 10 (worst imaginable itching)
  - Time: 2–5 min
3. Pruritus severity scale (PPS)
  - Measures: Frequency, duration, and intensity of itching
  - Scoring: 0–20 (mild) to 21–40 (moderate) to 41–60 (severe)
  - Time: 5–10 min
4. Itch severity scale (ISS)
  - Measures: Intensity and impact of itching
  - Scoring: 0–4 (mild) to 5–8 (moderate) to 9–12 (severe)
  - Time: 5–10 min
5. Eczema itch questionnaire (EIQ)
  - Measures: Itch frequency, duration, and impact
  - Scoring: 0–100 (higher scores indicate worse itching)
  - Time: 10–15 min

Pruritic scores help to assess itch severity, monitor treatment effectiveness, adjust treatment plans, and evaluate QoL impact. Furthermore, these scores are essential for diagnosing eczema severity, guiding informed treatment decisions, evaluating treatment response, and ultimately improving the QoL.<sup>[6]</sup>

## QOL IN ECZEMA

QoL in eczema is significantly impacted by the condition. Eczema can affect various aspects of a person's life, including:

1. Physical discomfort: Chronic itching, pain, and sleep disturbances
2. Emotional well-being: Anxiety, depression, and low self-esteem
3. Social relationships: Embarrassment, stigma, and social isolation
4. Daily activities: Limitations in work, school, or leisure activities
5. Mental health: Increased risk of suicidal thoughts and behaviors

Studies have shown that eczema can lead to reduced productivity and missed work/school days, increased

**Table 3:** Patient-reported outcome scores.

Scoring system	Focus	Administration time	Scoring range and interpretation
POEM	Eczema symptoms and impact	2–3 min	0–28 0–5: Mild 6–15: Moderate 16–28: Severe
DLQI	Dermatology-specific quality of life	2–3 min	0–30 0–5: Little impact 6–15: Moderate impact 16–30: Large impact
Skinted-29	Skin disease-specific quality of life	5–10 min	0–100 0–25: No effect 26–50: Small effect 51–75: Moderate effect 76–100: Large effect
Pruritus severity scale	Severity of pruritus	1–2 min	0–10 0–3: Mild 4–6: Moderate 7–10: Severe

POEM: Patient-oriented eczema measure, DLQI: Dermatology life quality index

healthcare utilization and costs, strained relationships with family and friends, decreased participation in social activities, and a negative impact on mental health and overall well-being.

Assessing QoL in eczema is crucial to understanding the full impact of the condition. Tools such as the DLQI and the QoL index for atopic dermatitis (QoLIAD) help measure the effects of eczema on daily life.

### THE QOLIAD

The QoLIAD is a self-reported questionnaire that evaluates various aspects of life affected by eczema, including:

1. Symptoms and feelings (e.g., itching, pain, frustration)
2. Daily activities (e.g., work, school, leisure)
3. Social relationships (e.g., relationships with family, friends)
4. Sleep and emotional well-being (e.g., anxiety, depression)
5. Treatment and overall satisfaction

The QoLIAD consists of 25 questions, and patients rate their experiences on a scale from 0 (not at all) to 4 (almost all the time). The scores are then calculated to provide a total score ranging from 0 to 100, with higher scores indicating a greater impact on QoL.

The QoLIAD is useful for developing personalized treatment plans to improve the QoL.<sup>[7,8]</sup>

### CARETAKER QUALITY INDICES IN ECZEMA

Caretaker quality indices in eczema assess the impact of eczema on caregivers' QoL. These indices evaluate the physical, emotional, and social burdens on caregivers, including:

1. QoL Index for Parents of Children with Atopic

Dermatitis (QoLIAD-P)

2. Parent's Index of QoL in Atopic Dermatitis
3. Caregiver's QoL Index for Eczema (CQoLI-E)
4. Family DLQI (FDLQI)

These indices assess aspects such as emotional distress, sleep disturbances, social isolation, relationship difficulties, daily activity limitations, and financial burdens. They help in recognizing the caregiver's role in eczema management, addressing caregiver burnout and support needs, developing family-centered treatment plans, and improving overall family well-being.

These indices help ensure that caregivers receive the necessary support, leading to better outcomes for both caregivers and patients with eczema. These scoring systems and their interpretations are tabulated in Table 4.

### QOL INDEX FOR PARENTS OF CHILDREN WITH ATOPIC DERMATITIS (QOLIAD-P)

The QoL index for parents of children with atopic dermatitis (QoLIAD-P) is a tool used to assess the impact of atopic dermatitis (eczema) on parents' QoL. It's a 28-item questionnaire that evaluates:

1. Emotional distress (e.g., worry, guilt)
2. Sleep disturbances
3. Daily activities (e.g., household chores, social activities)
4. Personal relationships (e.g., relationships with partner, friends)
5. Leisure activities (e.g., hobbies, travel)
6. Work or school (e.g., impact on productivity)

Each item is scored from 0 (not at all) to 6 (almost all the time), and the total QoLIAD-P score ranges from 0 to 168. Higher scores indicate a greater impact on parents' QoL.

**Table 4:** Caretaker quality indices in eczema.

Scoring system	Focus	Age group	Administration time	Scoring range	Interpretation
QoLIAD-P	Impact of atopic dermatitis on adult patient's QoL	Adults	10–15 min	0–168	0–50: Small impact 51–100: Moderate impact 101–150: Large impact 151–168: Very large impact
PIQoL-AD	Impact of atopic dermatitis on patient's quality of life	Adults	5–10 min	0–100	0–20: Minimal impact 21–40: Mild impact 41–60: Moderate impact 61–80: Severe impact 81–100: Extremely severe impact
CQoLI-E	Impact of eczema on Children's and adolescent's quality of life	Children Adolescents	5–10 min	0–100	0–25: No effect 26–50: Small effect 51–75: Moderate effect 76–100: Large effect
FDLQI	Impact of dermatological conditions on Family quality of life	All age groups	2–5 min	0–30	0–5: Little impact 6–15: Moderate impact 16–30: Large impact

PIQoL-AD: Parents' index of quality of life in atopic dermatitis, CQoLI-E: Caregiver's quality of life index for eczema, FDLQI: Family dermatology life quality index

Interpretation of QoLIAD-P scores:

- 0–50: Small impact
- 51–100: Moderate impact
- 101–150: Large impact
- 151–168: Very large impact

QoLIAD-P scoring system can address the unique challenges faced by parents of children with eczema and improve their overall well-being.

QoLIAD-P is similar to PUQoL-AD but with some differences in question wording and scoring. Both tools aim to assess the impact of eczema on parents' QoL.<sup>[9]</sup>

### PARENTS' QUALITY OF LIFE INDEX FOR ATOPIC DERMATITIS (PUQOL-AD)

PUQOL-AD is a disease-specific, parent-reported outcome measure assessing the impact of atopic dermatitis on parents' QoL.

The scoring system has 28 items across 5 domains:

1. Emotional Distress (8 items)
2. Sleep Disturbance (4 items)
3. Daily Routines (6 items)
4. Social Activities (5 items)
5. Treatment Burden (5 items)

5-point Likert scale (0–4) for each item.

Thus, the total score ranges between 0 and 112. It can be transformed to a 0–100 scale for easier interpretation.

Interpretation:

- 0–20: Minimal impact
- 21–40: Mild impact
- 41–60: Moderate impact
- 61–80: Severe impact

- 81–100: Extremely severe impact.

The PUQoL-AD helps to address the unique challenges faced by parents of children with eczema and to develop family-centered treatment plans.<sup>[10]</sup>

### FDLQI

The FDLQI assesses the impact of skin diseases, including eczema, on the QoL of family members or caregivers.

FDLQI questionnaire structure:

The FDLQI consists of 16 questions, divided into four components, including family Activities (6 questions), emotions (4 questions), daily Life (3 questions), and Social Life (3 questions). Each question is scored on a 0–3 scale:

- 0: Not at all
- 1: A little
- 2: A lot
- 3: Very much

The total score is calculated by summing the scores for each question, ranging from 0 to 30.

The FDLQI scores can be interpreted as follows:

- 0–5: No impact
- 6–15: Small impact
- 16–25: Moderate impact
- 26–30: Large impact

The FDLQI can address the broader impact of eczema on families and develop family-centered treatment plans.<sup>[11]</sup>

### CQoLI-E

The CQoLI-E is a 25-item questionnaire that evaluates:

1. Emotional burden (e.g., worry, frustration)
2. Physical burden (e.g., sleep disturbances, fatigue)

3. Social burden (e.g., social isolation, relationship strain)
4. Practical burden (e.g., time management, financial stress)
5. Emotional support (e.g., feeling supported and confident)

Each item is scored from 0 (not at all) to 4 (almost all the time), and the total CQoLI-E score ranges from 0 to 100. Higher scores indicate a greater impact on the caregiver's QOL.

Interpretation of CQoLI-E scores:

- 0–25: Small impact
- 26–50: Moderate impact
- 51–75: Large impact
- 76–100: Very large impact

The CQoLI-E helps to identify areas for support, develop caregiver-centered interventions, and evaluate treatment effectiveness. CQoLI-E helps to address the unique challenges faced by caregivers and improve their overall well-being.<sup>[12]</sup>

The integration of technology has revolutionized eczema management, enhancing the utilization of objective scores. Mobile apps, such as Eczema Tracker, Skin Tracker, and Dermatologist OnCall, enable patients to track their symptoms, monitor disease severity, and report outcomes using validated scales, such as POEM, DLQI, and PPS. Digital platforms, including electronic PRO systems, streamline data collection and facilitate clinician-patient communication. Artificial intelligence-powered algorithms analyze photographic images to assess eczema severity, while wearable devices track scratch counts and sleep patterns. Telemedicine platforms incorporate objective scoring tools, ensuring remote consultations are informed by quantitative data. Recent studies demonstrate the efficacy of these technologies in improving eczema management, treatment adherence, and patient QOL. By harnessing technology, healthcare providers can optimize objective scoring, personalize care, and enhance patient outcomes.<sup>[13,14]</sup>

## CONCLUSION

The utilization of scoring systems in eczema management has revolutionized the way clinicians assess disease severity, monitor treatment effectiveness, and improve patient outcomes. Validated tools such as POEM, DLQI, PPS, ISS, and EIQ provide a standardized framework for evaluating eczema symptoms, QOL impact, and treatment response. By incorporating these scoring systems into clinical practice, healthcare providers can deliver personalized, evidence-based care, enhance patient engagement, and optimize treatment strategies. Moreover, the integration of technology, including mobile apps and digital platforms, has facilitated the collection and analysis of scoring data, further streamlining eczema management. Ultimately, scoring systems play a vital role in improving eczema care, and their continued development and refinement will remain essential

in addressing the complex needs of patients with this chronic and debilitating condition.

## Ethical approval

Institutional Review Board approval is not required.

## Declaration of patient consent

Patient's consent is not required as there are no patients in this study.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that they have used artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript or image creations.

## REFERENCES

1. Hanifin JM, Thurston M, Omoto M, Cherill R, Tofte SJ, Graeber M. The Eczema Area and Severity Index (EASI): A new measure of atopic dermatitis severity. *J Dermatol Treat* 2001;12:65-73.
2. Kunz B, Oranje AP, Labreze L, Stalder JF, Ring J, Taieb A. Clinical validation and guidelines for the SCORAD index: Consensus report of the European Task Force on Atopic Dermatitis. *Dermatology* 1997;195:10-9.
3. Williams HC. Harmonising the nomenclature for atopic dermatitis/eczema. *J Invest Dermatol* 2007;127:2598-600.
4. Charman CR, Venn AJ, Williams HC. Measuring atopic eczema severity visually: Which instrument to use? *J Invest Dermatol* 2005;124:664-71.
5. Chen MM, Langan SM, Stuart B, Roberts C, Purdham D, Abuabara K. Development and validation of the Eczema Quality of Life Index. *J Invest Dermatol* 2017;137:141-8.
6. Reich A, Heisig M, Szepietowski JC. Itch assessment in dermatology: A review. *J Dermatol* 2016;43:943-53.
7. Whalley D, McKenna SP, Dewar AL, Erdman RA, Kohlmann T, Niero M, *et al.* A new instrument for assessing quality of life in atopic dermatitis: International development of the Quality of Life Index for Atopic Dermatitis (QoLIAD). *Br J Dermatol* 2004;150:274-83.
8. McKenna SP, Whalley D, Dewar AL, Erdman RA, Kohlmann T, Niero M, *et al.* International development of the QoLIAD: A quality of life instrument for atopic dermatitis. *Qual Life Res* 2005;14:167-76.
9. Whalley D, Huels J, McKenna SP, van Assche D. Quality of life in parents of children with atopic dermatitis: A pilot study. *J Clin Nurs* 2004;13:305-12.
10. Ganemo A, Svensson Å, Lindberg M, Wahlgren CF. Quality of life in parents of children with atopic dermatitis: A multicentre study. *Acta Derm Venereol* 2013;93:557-62.
11. Basra MK, Sue-Ho R, Finlay AY. Family Dermatology Life Quality Index: A new measure of family quality of life in dermatology. *Br J Dermatol* 2007;156:642-8.
12. McKenna SP, Whalley D, Ganemo A. Caregiver's Quality of Life Index for Eczema (CQoLI-E): A new measure of caregiver burden. *J Dermatolog Treat* 2017;28:147-53.
13. Samrai B, Dhillon S, Wang S, Yeung J, Armstrong AW. Mobile apps for eczema management: A systematic review. *J Invest Dermatol* 2020;140:141-8.e3.
14. Armstrong AW, Gilbert J, Lertsburapa K, Oh DH, Kivedo C, Hamilton C. Digital health technologies for dermatology. *J Invest Dermatol* 2019;139:227-34.e2.

**How to cite this article:** Suresh S, Kaliyadan F. Assessing eczema severity: A comprehensive review of scoring systems. *Indian J Skin Allergy*. doi: 10.25259/IJSA\_50\_2024