Review Article

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SCORING SYSTEM IN DERMATOLOGY TO ASSESS PSORIASIS: A REVIEW

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ABSTRACT

Psoriasis clinical trials have measured challenges in assessing disease severity and prognosis. Clinical trials require more objectively validated tools. To determine the severity of the skin disease, measurement systems should be objective, reproducible, easy to apply and practically useful. To maintain the objectivity of observations, different scoring systems have been developed. Scoring systems are essential to monitor the treatment response and evaluate the effectiveness of new drugs. The article reviews different scoring systems for assessing psoriasis and its strengths and weaknesses, as scores are useful for semi-objective assessment. A comprehensive literature search was performed using books, journals and websites. In this article, different scoring systems and their strengths and weaknesses have been summarized.

Keywords: Psoriasis, Assessment, Scores, Advantages, Limitations

INTRODUCTION

The word psoriasis is formed as “psora”, meaning “itch”, and “iasis”, meaning “action or condition”[1]. It is an inflammatory, autoimmune chronic disorder for which there is no definitive cure. It disfigures and disables the person suffering from it, thus negatively affecting the quality of life. Approximately 2 to 3 % of people worldwide have psoriasis manifested as desquamation, erythema, and induration[2]. The disease has a variable course but is often chronic and relapsing. Extra-cutaneous manifestations may occur in up to 20% of patients, often including nail involvement and psoriatic arthritis[3].

Psoriasis clinical trials have measured challenges in assessing disease severity and prognosis. Clinical trials require more objectively validated tools. The measurement system must be objective, reproducible, easy to apply and practically useful. To maintain the objectivity of observations, different tools have been developed[4]. Scoring systems are essential to monitor the treatment response and evaluate the effectiveness of new drugs. This article focuses on reviewing different scoring systems for assessing psoriasis and its strengths and weaknesses, as scores are helpful for semi-objective assessment.

Psoriasis area and severity index

The most widely used method for determining the severity of the disease condition and the efficacy of treatment regimens is Psoriasis Area and Severity Index (PASI). It is regarded as the gold standard for evaluating severe psoriasis. The PASI score was created in 1978 by ‘Fredrikson’ and ‘Petterson’[4]. PASI is completed by individually assessing the upper extremities, lower extremities, head, neck, and trunk for plaque features and areas of involvement. The three primary characteristics of psoriasis lesions are erythema discolouration/redness), induration (thickness) and desquamation (scaling), measured on a severity scale of 0 to 4. The PASI is a calculation that averages three characteristics and weights them according to area. The most used scale is PASI, yet it has many drawbacks.[5]

The PASI score is a quantitative method used to assess the disease severity based on the area involved and the appearance of skin lesions.

Lesion Score Gradation							
Erythema (E) Induration (I) Scaling (S)	0=No symptoms, 1=Slight, 2=Moderate, 3=Marked, 4=Very Marked						
Area	0	1 %-9 %	10%-29%	30%-49%	50%-69%	70%-89%	90%100%
Area Score	0	1	2	3	4	5	6

Lesion Score	Head (H)	Trunk (T)	Upper Limb (UL)	Lower Limb (LL)
Erythema (E)				

Induration (I)				
Scaling (S)				
(A)=(E+I+S)				
% affected area				
Area Score (B)				
Subtotal:(C) = A×B				
Body surface area: Subtotal × amount indicated	×0.1	×0.2	×0.3	×0.4
Total	H=0.1(Eh+Ih+hS)×Ah	T=0.2(Et+It+St)×At	UL=0.3(Eu+Iu+Su)×Au	LL=0.4(El+Il+Sl)×Al
PASI Score	H+T+UL+LL			

PASI's maximum score is 72. The PASI 75, usually accepted as a satisfactory outcome, is defined as the percentage of patients who improve by at least 75% from their initial PASI score.[6] PASI derives from Psoriasis of Scalp Severity Index (PSSI) and Palmer-Plantar Psoriasis Area and Severity Index (PPASI or PPASI).[7] The only difference is instead of four areas, only scalp or palm and sole areas were assessed.

Advantage	Limitations
Widely used	Physicians do not routinely use it, and it is difficult to interpret
Used for extensive psoriasis	Less sensitive to the changes in relatively small areas and in mild to moderate psoriasis
Accepted by approving agencies	Too complex and time-consuming to implement in clinical practice
Evidence demonstrating 75% improvements in PASI is a 'clinically significant result', and 50% improvement is also meaningful [8].	A full range of scale is not used and does not correlate well with patients' response

Simplified psoriasis area and severity index

SPASI is similar to the PASI score, a quantitative method based on the area involved and plaque appearance. The only difference is that the average of lesion characteristics, redness, thickness and scaling for the entire body can be estimated in this method.[9]

A] Plaque Characteristics		
	Gradation	Total Body
1] Erythema	0	None
2] Induration	1	Slight
3] Desquamation	2	Moderate
	3	Severe
	4	Very severe
B] Body Surface Area Affected		
	0	Absent
	1	1-9%
	2	10-29%
	3	30-49%
	4	50-69%
	5	70-89%
	6	90-100%
SPASI (0-72)	SPASI= BSA× (E+I+D)	

Advantage	Limitations
Provides an approximation of PASI	Physicians' are believed to be able to estimate average redness, scaling and lesion thickness throughout the body's surface lesions
Very similar to the original PASI score, easy to calculate	Relatively less sensitive to change where there is <10 percent body surface area involvement
Primarily for patients with extensive disease	When the disease is localized to one region

Physician's global assessment scale

Erythema(redness), induration, and desquamation(scaling) are assessed individually for each psoriatic lesion. To calculate the PGA score, the severity rating scores are added, the average is calculated, and the average is rounded to the nearest integer.[10-12].

Two types

1. Static assessment- The assessor is instructed to consider all the plaques at once.
2. Dynamic assessment- assesses overall improvement from baseline.

Physician's Global Assessment Scale			
Erythema	Score	Grade	Description
	0	Clear	No evidence of erythema
	1	Almost Clear	Light pink
	2	Mild	Light red
	3	Moderate	Moderate red
	4	Marked	Bright red
	5	Severe	Dark, deep red
Induration	0	Clear	No evidence of plaque elevation
	1	Almost clear	Barely palpable
	2	Mild	Slight but definite elevation, indistinct edge

	3	Moderate	Elevated with distinct edges
	4	Marked	Marked plaque elevation,
	5	Severe	Severe, hard/sharp borders
Scaling/Desquamation	0	Clear	No evidence of scaling
	1	Almost Clear	Occasional fine scale
	2	Mild	Fine-scale predominates
	3	Moderate	Course scale predominates
	4	Marked	Thick, non-tenacious scale
	5	Severe	A very thick course scale predominates
PGA (0-5)			(E+I+D)/3

Advantage	Limitations
Simple	It does not quantify body surface area
PGA score can be used for both localized and extensive plaques	It does not evaluate individual lesion locations

Physician global assessment and body surface area

PGA×BSA (0-500) has been proposed as an easy-to-implement tool in clinical settings and research and thus has the potential to replace PASI. One handprint covers approximately 1% of the body surface area. BSA can be measured by the patient's hand area affected. [13]

PGA × BSA = Percent of body surface area × (E+I+D)/3

Advantage	Limitations
Used for extensive as well as localized plaques and quantifies body surface area.	It does not estimate individual lesion locations
Easy to perform, thus can be used in clinical trials as well as in clinical practice	Correlates weakly with patient response

Dermatology life quality index

Patients with several lesions may not be concerned, but those with a few lesions may be. This viewpoint holds that therapies that just reduce lesions but do not enhance the quality of life are not considered to produce clinically significant benefits.

Determining how much skin issues affect a patient's quality of life is the aim of DLQI. In patients older than 16 years, the DLQI questionnaire is used. The patient can do it without explanation because it is simple to understand. By adding together each question's score, the DLQI is determined. Scores ranged from 30 to 0. A higher score indicates a greater impact on life quality. There are ten questions in it, and they represent the patient's perspective. [14]

Advantage	Limitations
DLQI measure disease impact and treatment efficacy to improve quality of life	Not a direct method to evaluate the efficacy of drugs on disease

The two other quantitative methods for assessing psoriasis are biopsies and photographs.

Nail psoriasis severity index

The NAPSI is the most frequently utilized investigator-measuring nail assessment tool. For assessment purposes, four different quadrants of the nail plate are done with imaginary horizontal and vertical lines. The characteristics of each quadrant's nail are evaluated, which include[15]

Nail plate changes: Nail pitting, red spots in the lunula, Leukonychia (white nails), Crumbling (brittle nails)

Nail bed changes: Onycholysis (nail separation), Oil drop (salmon patch dyschromia), Splinter haemorrhages, subungual hyperkeratosis[15]

Score	Quadrants of nails involved
0	Absent
1	1 quadrant
2	2 quadrants
3	3 quadrants
4	4 quadrants

The total nail score is obtained by adding two scores, the 'nail plate score' and 'nail bed score' (0-8). The NAPSI score is the sum of all the total scores of the involved fingernails of that patient at that time. Limitation: Lacking responsiveness to change.

To address NAPSI's shortcomings, the modified NAPSI was created as a validated nail psoriasis measure. NAPPA, a composite tool for nail assessment in psoriasis and psoriatic arthritis, was developed in 2014[16].

Psoriasis epidemiology screening tool

The Psoriasis Epidemiology Screening Tool is a reliable tool for detecting Psoriatic arthritis[17]. Psoriatic skin lesions, along with the presence of synovitis, dactylitis, enthesitis, and axial features, are the manifestations of psoriatic arthritis. Psoriasis patients are advised to complete the PEST for six months, and those who have Yes to 3 or more questions, or a strong clinical suspicion should be referred to the rheumatologist. The PEST questionnaire is as follows. [18]

1. Have you ever had swollen joint or joints? YES/NO
2. Has a doctor ever told you that you have arthritis? YES/NO
3. Do your fingernails or toenails have holes or pits? YES/NO
4. Have you had pain in your heels? YES/NO
5. Have you had a figure or toe wholly swollen and painful for no apparent reason? YES/NO

DISCUSSION

Various techniques were developed to evaluate the severity of Psoriasis disease and the effectiveness of the treatment. Psoriasis Area and Severity Index (PASI) is the gold standard for moderate–severe psoriasis. It has been developed chiefly for the evaluation of a single case. Though it is the most widely used, it has many limitations. It is complex, takes a lot of time to calculate, is challenging to interpret and less sensitive to change for the small area involved. The Simplified Psoriasis Area Severity Index is identical to PASI and mathematically similar.

SPASI evaluates the average erythema, induration, and desquamation of lesions and the affected area. Compared to PASI, SPASI is easy to calculate, simple and practically helpful in assessing disease severity. When less than 10% of an area is affected by the disease or when it is only present in one place, SPASI is substantially less responsive to change. The PGA×BSA can detect changes in both skin lesions and surface area. It is a simple and sensitive tool being used widely.

The limitation of PASI and SPASI (less sensitive to small areas <10%) is avoided with a continuous area score of PGA×BSA. Therapies that reduce lesions but do not enhance the quality of life are not considered to produce clinically significant benefits. In this regard, the Dermatology Life Quality Index is used with the lesion severity score to quantify the disease impact and treatment efficacy by assessing the quality of life. After reviewing different scoring methods and their advantages and limitations, it was observed that no single "optimal" technique is sufficient to facilitate psoriasis assessment.

Clinical studies require standard evaluation tools that accurately identify modest changes and quality of life. Therefore, considering all the factors, PGA × BSA and DLQI, two scoring systems that assess the quality of life of patients and the severity of the disease, can be used more effectively. [19,20]

CONCLUSION

In evidence-based medicine for psoriasis, different tools are designed to assess and guide clinical decision-making. Still, there is no single optimal validated tool available. Considering the strengths and weaknesses of varying scoring systems, the PGA×BSA score, which measures extensive and localized lesions, can be used.

The Dermatology Life Quality Index (DLQI) complements the lesion severity scores in evaluating the effectiveness of the treatment in enhancing a patient's quality of life.

REFERENCES

1. Ritchlin CT, Fitz Gerald O. Psoriatic and Reactive Arthritis: A Companion to Rheumatology Amsterdam: Mosby, Elsevier; 2007. p. 4
2. Christophers E. Psoriasis epidemiology and clinical spectrum. Clin Exp Dermatol. 2001;26:314-20.
3. Leslie P. Lawley, Calvin O. McCall, Thomas J. Lawley, Eczema, Psoriasis, Cutaneous Infections, Acne, and Other Common Skin Disorders, Harrison's principle of internal medicine, Chapter 53, 20th Edition, P 333
4. Phyllis I. *et al.* How Good Are Clinical Severity and Outcome Measures for Psoriasis?: Quantitative Evaluation in a Systematic Review Spuls, Journal of Investigative Dermatology, 130(4):933 - 943
5. Bhor U, Pande S. Scoring systems in dermatology. Indian J Dermatol Venereol Leprol. 2006 Jul-Aug;72(4):315-21. DOI: 10.4103/0378-6323.26722. PMID: 16880586.
6. S.R Feldman, G.G. Krueger, Psoriasis assessment tools in clinical trials, Annals of Rheumatic Diseases2005;64,ii65-ii68
7. Duffin, K.C. (2018). Outcome Measures in Psoriasis and Atopic Eczema. In: Yamauchi, P. (eds) Biologic and Systemic Agents in Dermatology. Springer, Cham. DOI: https://doi.org/10.1007/978-3-319-66884-0_2
8. Carlin CS, Feldman SR, Krueger JG, Menter A, Krueger GG. A 50% reduction in the Psoriasis Area and Severity Index (PASI 50) is a clinically significant endpoint in the assessment of psoriasis. J Am Acad Dermatol. 2004 Jun;50(6):859-66. DOI: 10.1016/j.jaad.2003.09.014. PMID: 15153885.
9. Louden BA, Pearce DJ, Lang W, Feldman SR. A Simplified Psoriasis Area Severity Index (SPASI) for rating psoriasis severity in clinic patients. Dermatol Online J. 2004 Oct 15;10(2):7. PMID: 15530297.
10. Bożek A, Reich A. The reliability of three psoriasis assessment tools: Psoriasis area and severity index, body surface area and physician global assessment. Adv Clin Exp Med. 2017 Aug;26(5):851-856. DOI: 10.17219/acem/69804. PMID: 29068583.
11. Chow C, Simpson MJ, Luger TA, Chubb H, Ellis CN. Comparison of three methods for measuring psoriasis severity in clinical studies (Part 1 of 2): change during therapy in Psoriasis Area and Severity Index, Static Physician's Global Assessment and Lattice System Physician's Global Assessment. J Eur Acad Dermatol Venereol. 2015 Jul;29(7):1406-14. DOI: 10.1111/jdv.13132. Epub 2015 Apr 27. PMID: 25917315.
12. Simpson MJ, Chow C, Morgenstern H, Luger TA, Ellis CN. Comparison of three methods for measuring psoriasis severity in clinical studies (Part 2 of 2): Uses of quality of life to assess construct validity of the Lattice System Physician's Global Assessment, Psoriasis Area and Severity Index and Static Physician's Global Assessment. J Eur Acad Dermatol Venereol. 2015 Jul;29(7):1415-20. DOI: 10.1111/jdv.12861. Epub 2015 Apr 27. PMID: 25917214.
13. Walsh JA, Jones H, Mallbris L, Duffin KC, Krueger GG, Clegg DO, Szumski A. The Physician Global Assessment and Body Surface Area composite tool is a simple alternative to the Psoriasis Area and Severity Index for assessment of psoriasis: post hoc analysis from PRISTINE and PRESTA. Psoriasis (Auckl). 2018 Oct 8;8:65-74. DOI: 10.2147/PTT.S169333. PMID: 30324088; PMCID: PMC6181091.
14. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)- A simple practical measure for routine clinical use. Clin Exp Dermatol 1994;19;210-16
15. Phoebe Rich, Richard K Scher, Nail psoriasis severity index: a useful tool for evaluation of nail psoriasis, Journal of the American Academy of Dermatology, 2003;49(2): 206-212, DOI: https://doi.org/10.1067/S0190-9622(03)00910-1.
16. Augustin M, Blome C, Costanzo A, Dauden E, Ferrandiz C, Girolomoni G, Gniadecki R, Iversen L, Menter A, Michaelis-Wittern K, Morita A, Nakagawa H, Reich K. Nail Assessment in Psoriasis and Psoriatic Arthritis (NAPPA): development and validation of a tool for assessment of nail psoriasis outcomes. Br J Dermatol. 2014 Mar;170(3):591-8. DOI: 10.1111/bjd.12664. PMID: 24117393.
17. Ibrahim GH, Buch MH, Lawson C, Waxman R, Helliwell PS. Evaluation of an existing screening tool for psoriatic arthritis in people with psoriasis and the development of a new instrument: the Psoriasis Epidemiology Screening Tool

(PEST) questionnaire. Clin Exp Rheumatol. 2009 May-Jun;27(3):469-74. PMID: 19604440.
18. Alenius GM, Stenberg B, Stenlund H, Lundblad M, Dahlqvist SR. Inflammatory joint manifestations are prevalent in psoriasis: prevalence study of joint and axial involvement in psoriatic patients, and evaluation of a psoriatic and arthritic questionnaire. J Rheumatol. 2002 Dec;29(12):2577-82. PMID: 12465155.
19. Ashcroft DM, Wan Po AL, Williams HC, Griffiths CE. Clinical measures of disease severity and outcome in psoriasis: a critical appraisal of their quality. Br J Dermatol. 1999 Aug;141(2):185-91. DOI: 10.1046/j.1365-2133.1999.02963.x. PMID: 10468786.
20. Oji V, Luger TA. The skin in psoriasis: assessment and challenges. Clin Exp Rheumatol. 2015 Sep-Oct;33(5 Suppl 93):S14-9. Epub 2015 Oct 15. PMID: 26472560.

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