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ORIGINAL ARTICLE

PeakPASI as a marker of maximum psoriasis severity: a single-center, cross-sectional retrospective and questionnaire-based study

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Summary

Background: The Psoriasis Area and Severity Index (PASI) is the standard measure for psoriasis severity but reflects only a single time point and may underestimate long-term disease burden. To assess whether the highest-ever recorded PASI (PeakPASI) can serve as a marker of historical disease severity and correlate with treatment burden and comorbidities.

Patients and methods: A cross-sectional analysis of 308 psoriasis patients from a German university hospital was conducted. Data on PASI, PeakPASI, therapies, and comorbidities were obtained from self-report and medical records. Group comparisons used non-parametric tests; Poisson regression assessed PeakPASI as a predictor of systemic therapy use and comorbidity burden.

Results: Median PeakPASI (11.4 [IQR 5.9–17.0]) exceeded current PASI (2.0 [IQR 1.0–5.1]). PeakPASI ≥ 10 was associated with more systemic therapies ($p < 0.001$), phototherapy ($p < 0.001$), smoking ($p = 0.021$), and diabetes ($p = 0.020$). PeakPASI correlated with number of systemic ($\rho = 0.296$), topical therapies ($\rho = 0.367$), and hospital visits ($\rho = 0.186$). It significantly predicted systemic therapy use ($\beta = 0.355$, $p < 0.001$), but not comorbidity burden.

Conclusions: PeakPASI may complement current measures by reflecting historical severity and informing treatment. While not a cumulative burden marker, it may prevent underestimation of long-term disease impact. Prospective validation is warranted.

KEYWORDS
Comorbidities, disease severity, PASI, PeakPASI, psoriasis, systemic therapy

INTRODUCTION

Psoriasis is a chronic, immune-mediated inflammatory skin disease that affects between 0.27% and 11.4% of adults globally, and up to 2.74% in Western Europe.[1] In addition to its visible cutaneous manifestations, psoriasis is associated with substantial psychological distress and an increased risk of cardiometabolic and psychiatric comorbidities.[2–5] The likelihood and severity of these comorbid conditions often rise in parallel with the severity of the skin disease.[3–5]

In clinical practice, psoriasis severity is typically assessed using the *Psoriasis Area and Severity Index* (PASI), a physician-reported tool that evaluates erythema, thickness, scaling, and body surface area at a single point in time.[6,7] Complementary patient-reported outcomes, such as the *Dermatology Life Quality Index* (DLQI), provide additional insight

into the psychosocial burden of disease.[7,8] While PASI is widely used in treatment decision-making and guideline recommendations,[9–11] its cross-sectional nature limits its ability to capture a patient's historical or cumulative disease burden.[12–14] Notably, patients with low PASI scores may still report high DLQI scores, indicating a disconnect between clinical scoring and patient experience.[12,13]

To address this gap, we previously introduced the concept of the "PeakPASI," defined as the highest-ever documented PASI score for an individual patient.[14] In this initial investigation, PeakPASI values were, on average, twice as high as current PASI scores, suggesting that point-in-time assessments may underestimate historical disease severity. However, the clinical implications and utility of PeakPASI remain insufficiently explored.

This study builds upon prior work by evaluating the association between PeakPASI and key clinical outcomes, including systemic treatment use, phototherapy exposure, and comorbidity burden. By analyzing a cohort of patients from a tertiary care setting, we aim to assess whether PeakPASI may serve as a pragmatic historical severity marker that can support more comprehensive disease assessment and inform treatment strategies in psoriasis care.

PATIENTS AND METHODS

Study population

For this cross-sectional, observational and questionnaire-based study, 1,058 patients who were treated for psoriasis at a university hospital department of dermatology in Munich, Germany between January 2019 and July 2020 were contacted via mail. Both inpatients and outpatients above 18 years, diagnosed with psoriasis, and able to understand German were eligible for participation. They received study information (including a consent form), a pseudonymized questionnaire, and a prepaid return envelope. Medical records were reviewed for 320 in- and outpatients who completed a questionnaire, as well as 78 additional inpatients. Ultimately, 308 patients fulfilled the inclusion criteria (a valid PASI value) (Figure 1).

The study was conducted in accordance with the Declaration of Helsinki and received ethics approval from the Medical Faculty Ethics Committee at Technical University of Munich (reference number 436/19 S-SR). All questionnaire patients provided written informed consent for inclusion in the study.

Data collection

Data for this study were obtained through self-administered questionnaires and medical record reviews. The questionnaire included validated and non-validated items to assess lifestyle factors and addiction history, with a particular focus on alcohol consumption, smoking behavior, and drug use. To screen for alcohol addiction, the *CAGE Test for Alcohol Use*, a widely used four-item screening tool, was included. Participants answered yes/no questions, with a total score ≥ 2 indicating alcohol dependence.[15,16] Smoking behavior was assessed with two non-validated questions: one inquiring about current or former smoking status and another about the number of cigarettes smoked per day, with response options ranging from "never" to "more than two packs per day". Individuals who were either current or former smokers were categorized as smokers. Drug use was evaluated using the *Drug Abuse Screening Test* (DAST-10), a validated ten-item screening tool, where a score of ≥ 3 suggested moderate drug abuse.[17,18]

Medical record review

In addition to patient-reported data, comprehensive clinical information was extracted from medical records. Key variables included demographic characteristics such as age and gender, as well as clinical features of psoriasis, including disease duration, frequency of hospital visits, reasons for presentation (relapse, continuation of treatment), affected body areas, and symptoms such as joint pain (psoriatic arthritis), pustular psoriasis, and nail involvement. Furthermore, clinician-recorded disease severity scores such as the PASI (Psoriasis Area and Severity Index) and DLQI (Dermatology Life Quality Index) were collected. PASI assessment is part of routine clinical practice and is recorded at regular outpatient visits as well as during inpatient admissions. PASI scoring is routinely documented by trained dermatologists and is particularly emphasized at baseline visits and at treatment initiation or modification. Data on treatment history included the number and type of topical and systemic therapies, previous phototherapy exposure, and the documented effectiveness of prescribed treatments.

Additionally, comorbidity data were extracted from medical records, with a focus on 21 physician-reported conditions. The analysis specifically examined the five most common comorbidities (smoking, hypertension, alcohol addiction, diabetes, and depression), as well as drug addiction, due to their relevance in psoriasis patients. If alcohol addiction, smoking, or drug addiction was documented either in the questionnaire or the medical records, the condition was considered present for the respective patient.

Data management and statistical analysis

To ensure the integrity and accuracy of the collected data, a structured data management process was implemented. All questionnaire responses were digitized using REDCap, where each questionnaire was double-entered and cross-checked for errors to minimize transcription mistakes. Medical records were documented in REDCap via single-entry digitalization, ensuring efficient and systematic data capture.

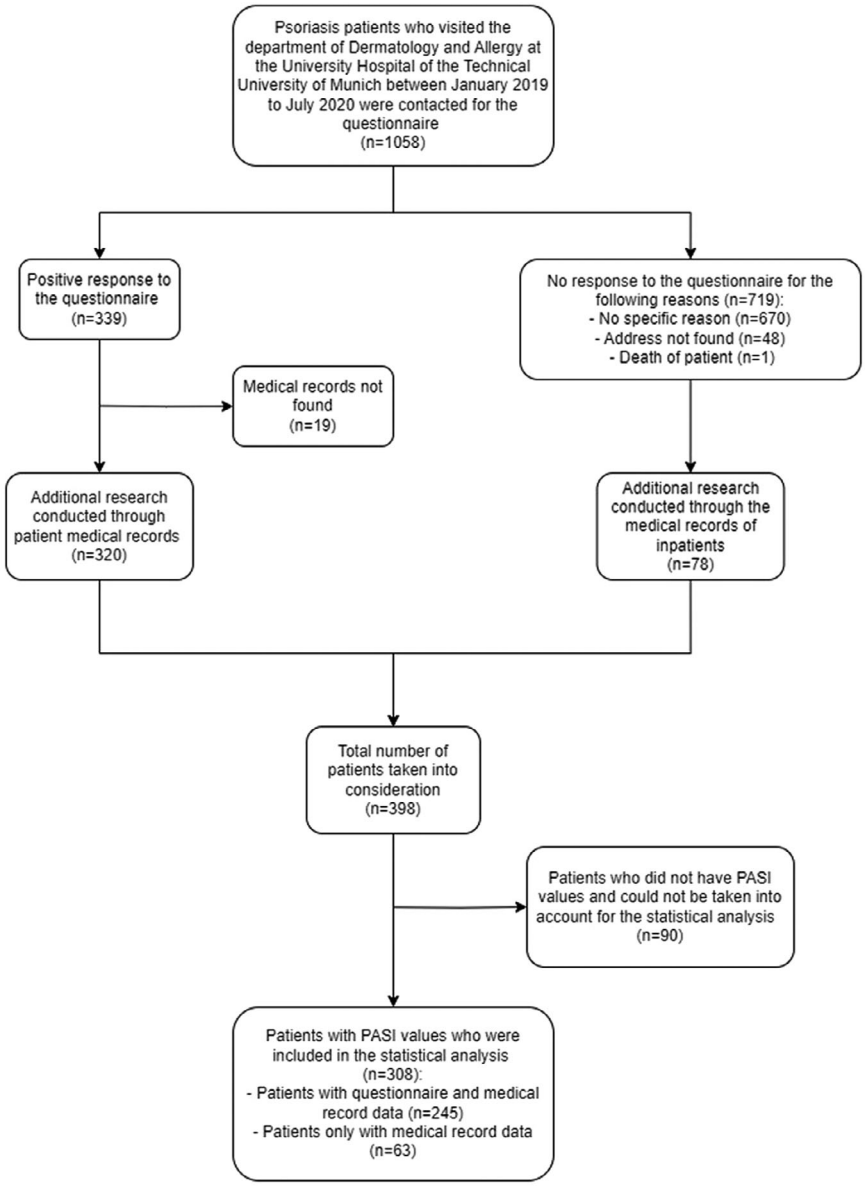

FIGURE 1 Flowchart illustrating patient selection for the statistical analysis.

For statistical analyses, patients were categorized based on their PeakPASI scores, allowing for subgroup comparisons. Three classification schemes were used:

1. Mild (PeakPASI < 10) vs. moderate-to-severe (PeakPASI ≥ 10).
2. Study-specific median split (PeakPASI < 11.4 vs. PeakPASI ≥ 11.4).
3. Tizek et al. median split (PeakPASI < 13.6 vs. PeakPASI ≥ 13.6).[19]

Descriptive statistics, including absolute and relative frequencies and median values with interquartile ranges (IQRs), were calculated for all variables. Variables with missing values, such as the DLQI, were imputed using the mean of that variable. As data distribution was non-normal, non-parametric tests were used for group comparisons:

- Mann-Whitney-U tests assessed differences in continuous variables such as hospital visit frequency, number of therapies, and DLQI scores.
- Chi-squared tests were used for categorical variables, including gender, phototherapy use, and common comorbidities.

To explore the association between PeakPASI and continuous variables, Spearman's rank correlation coefficients were computed. Additionally, Poisson regression models were employed to analyze the relationship between PeakPASI and treatment burden, with one model predicting the number of systemic therapies and another predicting the number of comorbidities.

All statistical analyses were conducted using Jamovi Version 2.3 and RStudio, with an alpha level of 0.05 and a 95% confidence interval (CI) applied to all hypothesis tests.

Microsoft Excel was used for preliminary data organization and preparation.

RESULTS

Study population

The study included 308 patients with a median age of 52.0 years (IQR: 41.0–64.0), of whom 124 (40.3%) were women. The median last documented PASI was 2.0 (IQR: 1.0–5.1), whereas the median PeakPASI was 11.4 (IQR: 5.9–17.0), and the median DLQI was 12.7 (IQR: 8.0–17.0).

Regarding disease severity classifications, 193 patients (62.7%) had PeakPASI ≥ 10, 155 (50.3%) had PeakPASI ≥ 11.4, and 124 (40.3%) had PeakPASI ≥ 13.6. The median number of hospital visits per patient was 12.0 (IQR: 5.0–33.0).

Comorbidities were prevalent, with a median of 2.0 (IQR: 1.0–3.0) per patient. The five most common comorbidities were smoking (27.6%), arterial hypertension (25.6%), positive screening for alcohol addiction (15.3%), diabetes mellitus (12.7%), and depression (8.8%).

The median number of different systemic therapies per patient was 1.0 [1.0; 2.0] (Table 1). Almost all patients (97.4%) received topical therapy, with a median of 6.0 (IQR: 3.0–11.0) different topical treatments. Phototherapy was administered to 57.1%, and 81.8% received at least one systemic therapy, with a median of 1.0 systemic therapy (IQR: 1.0–2.0) per patient (Table 1).

Comparison according to psoriasis severity

Gender differences

More men had a PeakPASI ≥ 10 (40.3% vs. 22.4%, p = 0.037) and PeakPASI ≥ 13.6 (67.7% vs. 32.3%, p = 0.019) compared to women.

Phototherapy use

Patients with higher PeakPASI scores were significantly more likely to have received phototherapy (PeakPASI ≥ 10: 66.3% vs. 41.7%, p < 0.001; PeakPASI ≥ 11.4: 67.1% vs. 47.1%, p < 0.001; PeakPASI ≥ 13.6: 69.4% vs. 48.9%, p < 0.001).

Comorbidities

- Patients with PeakPASI ≥ 10 had a significantly higher prevalence of smoking (32.1% vs. 20.0%, p = 0.021) and diabetes mellitus (16.1% vs. 7.0%, p = 0.020).
- No significant differences in comorbidities were observed for PeakPASI ≥ 11.4 or ≥ 13.6 (p-values: 0.059–0.957) (Figure 2).

Healthcare utilization and therapy burden

- Patients with higher PeakPASI values had more hospital visits (PeakPASI ≥ 10: 16.0 vs. 9.0, p = 0.007; PeakPASI ≥ 11.4: 14.0 vs. 11.0, p = 0.032; PeakPASI ≥ 13.6: 16.5 vs. 11.0, p = 0.025).
- They also required more systemic therapies (PeakPASI ≥ 10: 2.0 vs. 1.0, p < 0.001; PeakPASI ≥ 11.4: 2.0 vs. 1.0, p < 0.001; PeakPASI ≥ 13.6: 2.0 vs. 1.0, p < 0.001).
- Similarly, patients with PeakPASI ≥ 10, ≥ 11.4, and ≥ 13.6 had significantly more topical therapies (all p < 0.001).

DLQI Differences

Only PeakPASI ≥ 13.6 was associated with a higher median DLQI (14.0 vs. 12.7, p = 0.006).

Correlations

PeakPASI demonstrated low to moderate positive correlations with:

- Number of hospital visits ($\rho = 0.186$, p = 0.001).
- Number of systemic therapies ($\rho = 0.296$, p < 0.001).
- Number of topical therapies ($\rho = 0.367$, p < 0.001).
- Number of comorbidities ($\rho = 0.147$, p = 0.010).
- DLQI ($\rho = 0.179$, p = 0.006).

Notably, PASI and PeakPASI were not significantly correlated ($\rho = 0.100$, p = 0.079) (Figure 3).

Regression analyses

A Poisson regression model identified PeakPASI ≥ 10 as a significant predictor of systemic therapy use, with a log count increase of 0.355 (95% CI: 0.159–0.555, p < 0.001) compared to PeakPASI < 10. Additionally, each increase in hospital visits was associated with a rise in systemic therapy count (log increase: 0.022, 95% CI: 0.019–0.026, p < 0.001) (Table 2).

In contrast, PeakPASI did not significantly predict the number of comorbidities (95% CI: −0.068 to 0.314, p = 0.211). However, age (log increase: 0.017, 95% CI: 0.012–0.023, p < 0.001) and number of topical therapies (log increase: 0.039, 95% CI: 0.021–0.056, p < 0.001) were significant positive predictors (Table 3). Additional regression models for PeakPASI cut-offs of 11.4 and 13.6 are available online supplementary tables (Table 1–4).

DISCUSSION

Although the PASI score is widely used in clinical practice to assess current psoriasis severity, it provides only a point-in-time snapshot and may not reflect a patient's historical disease trajectory or overall treatment burden. This limitation is particularly relevant in chronic-relapsing conditions like psoriasis, where disease severity can fluctuate substantially over time and flares can be interspersed with periods

TABLE 1 Patient characteristics stratified by psoriasis severity based on PeakPASI cut-offs of 10, 11.4, and 13.6.

	Total (n = 308)	PeakPASI < 10 (n = 115)	PeakPASI ≥ 10 (n = 193)	PeakPASI < 11.4 (n = 153)	PeakPASI ≥ 11.4 (n = 155)	PeakPASI < 13.6 (n = 184)	PeakPASI ≥ 13.6 (n = 124)
Age (years)							
Median	52.0	53.0	51.0, *p = 0.714*	53.0	51.0, *p = 0.794*	53.5	50.0, *p = 0.292*
Interquartile range	42.0; 64.0	40.5; 63.5	41.0; 64.0	40.0; 63.0	41.0; 64.5	41.0; 65.0	41.0; 63.0
Missing	0	0	0	0	0	0	0
Number of Visits							
Median	12.0	9.0	16.0, *p = 0.007*	11.0	14.0, *p = 0.032*	11.0	16.5, *p = 0.025*
Interquartile range	5.0; 30.0	5.0; 21.5	6.0; 33.0	5.0; 22.0	6.0; 36.5	5.0; 24.0	6.0; 33.8
Missing	0	0	0	0	0	0	0
PASI							
Median	2.0	2.0	1.8, *p = 0.376*	2.0	2.0, *p = 0.305*	2.1	1.6, *p = 0.917*
Interquartile range	1.0; 5.1	1.0; 4.0	1.0; 6.1	1.0; 4.1	1.0; 6.3	1.0; 5.1	1.0; 5.0
Missing	0	0	0	0	0	0	0
PeakPASI							
Median	11.4	4.7	15.0, *p < 0.001*	5.9	17.0, *p < 0.001*	7.5	19.9, *p < 0.001*
Interquartile range	5.9; 17.0	2.3; 7.1	11.7; 22.0	3.1; 9.5	14.0; 23.9	3.5; 10.7	15.0; 25.0
Missing	0	0	0	0	0	0	0
DLQI							
Median	12.7	12.7	12.7, *p = 0.033*	12.7	12.7, *p = 0.031*	12.7	14.0, *p = 0.006*
Interquartile range	8.0; 17.0	9.0; 12.8	8.0; 18.0	9.0; 13.0	7.5; 19.0	8.0; 14.0	8.0; 19.3
Missing	0	0	0	0	0	0	0
Number of comorbidities							
Median	2.0	1.0	2.0, *p = 0.014*	1.0	2.0, *p = 0.039*	1.0	2.0, *p = 0.196*
Interquartile range	1.0; 3.0	0; 2.5	1.0; 3.0	1.0; 3.0	1.0; 3.0	1.0; 3.0	1.0; 3.0
Missing	0	0	0	0	0	0	0
Number of systemic therapies							
Median	1.0	1.0	2.0, *p < 0.001*	1.0	2.0, *p < 0.001*	1.0	2.0, *p < 0.001*
Interquartile range	1.0; 2.0	0; 2.0	1.0; 3.0	0; 2.0	1.0; 3.0	0; 2.0	1.0; 3.0
Missing	0	0	0	0	0	0	0
Number of topical therapies							
Median	6.0	4.0	8.0, *p < 0.001*	4.0	8.0, *p < 0.001*	4.0	9.0, *p < 0.001*
Interquartile range	3.0; 11.0	3.0; 7.5	4.0; 12.0	3.0; 8.0	4.0; 12.0	3.0; 9.0	4.8; 12.0
Missing	0	0	0	0	0	0	0
Phototherapy							
No, n (%)	132 (42.9)	67 (58.3)	65 (33.7), *p < 0.001*	81 (52.9)	51 (32.9), *p < 0.001*	94 (51.1)	38 (30.6), *p < 0.001*
Yes, n (%)	176 (57.1)	48 (41.7)	128 (66.3)	72 (47.1)	104 (67.1)	90 (48.9)	86 (69.4)
Missing	0	0	0	0	0	0	0

Abbr.: DLQI, Dermatology Life Quality Index; IQR, interquartile range; PASI, Psoriasis Area and Severity Index; PeakPASI, peak Psoriasis Area and Severity Index; SD, standard deviation

of low disease activity. In such cases, treatment decisions based solely on current PASI values may overlook the long-term intensity and frequency of disease, potentially leading to under-treatment. To address this, we investigated the potential value of the highest-ever recorded PASI score – PeakPASI – as a complementary marker of maximum experienced disease severity.

Our results show that PeakPASI correlates positively with the number of systemic and topical therapies, phototherapy use, and frequency of hospital visits. These associations suggest that PeakPASI captures clinically relevant aspects of disease burden that align with treatment intensity, reflecting real-world disease management complexity. Importantly, patients with PeakPASI ≥ 10 were significantly

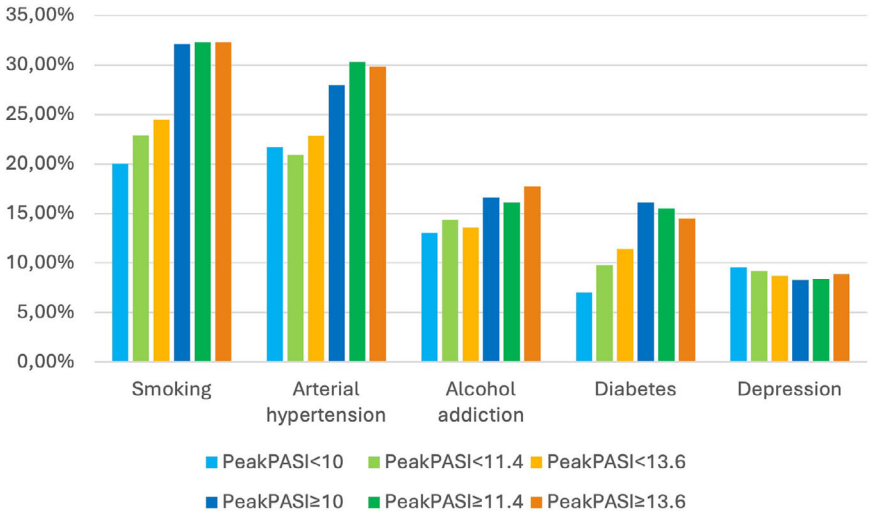

FIGURE 2 Prevalence of the five most common comorbidities according to psoriasis severity based on PeakPASI cut-offs of 10, 11.4, and 13.6.

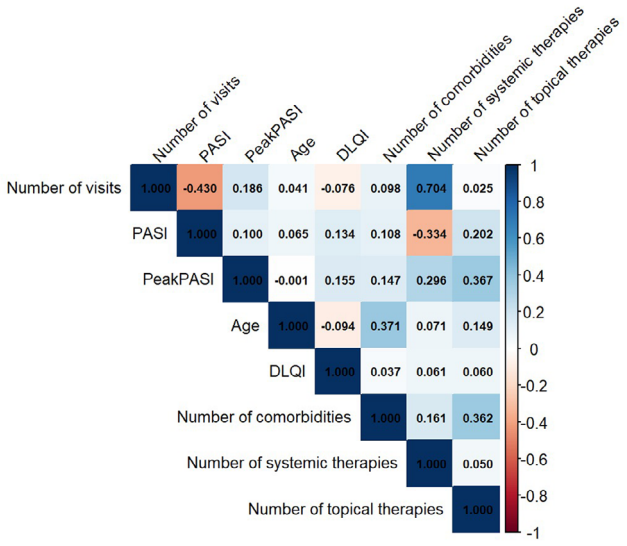

FIGURE 3 Correlation matrix showing associations among number of visits, PASI, PeakPASI, age, DLQI, number of comorbidities, number of systemic therapies, and number of topical therapies. Darker colors indicate strong positive correlations, whereas lighter colors indicate negative correlations. Significance levels: ***p < 0.001, **p < 0.010, *p < 0.050.

more likely to have diabetes mellitus and a history of smoking, both of which are known to be more prevalent among patients with more severe psoriasis.[20–22] This supports earlier research indicating a strong link between severe psoriasis and systemic inflammation, which may contribute to metabolic dysregulation and cardiovascular risk.[3,4]

These findings are consistent with prior studies that have highlighted the gap between current severity scores and broader disease experience. For example, Golbari et al. reported that common severity thresholds such as PASI ≥ 10 do not fully capture the impact of disease on patients' quality of life and healthcare utilization.[13] Similarly, Mattei et al. found a disconnect between PASI scores and DLQI values, particularly in patients whose disease affects sensitive areas or causes stigma.[12] Our results confirm that even when the current PASI score is low (median 2.0 in our cohort), for example under ongoing therapy, the Peak PASI can reveal the prior disease severity. This information on past disease burden can be taken into account when making therapeutic decisions.

However, it is important to acknowledge the limitations of PeakPASI. As a single maximum value, it does not reflect the duration, frequency, or fluctuation of disease severity

TABLE 2 Poisson regression model with the number of systemic therapies as the dependent variable.

	Estimate	95% confidence interval	p value
Intercept	0.416	0.309–0.519	< 0.001
PeakPASI cut-off 10 (≥ 10–<10)	0.355	0.159–0.555	< 0.001
Number of visits	0.022	0.019–0.026	< 0.001
Number of comorbidities	0.051	−0.011–0.111	0.102
Age	0.003	−0.004–0.009	0.996
DLQI	0.006	−0.005–0.018	0.283
Number of topical therapies	−0.005	−0.026–0.015	0.610
Gender (man-woman)	−0.148	−0.343–0.049	0.139
Occurrence of phototherapy (yes-no)	−0.167	−0.370–0.035	0.105

Abbr.: CI, confidence interval; DLQI, Dermatology Life Quality Index; PASI, Psoriasis Area and Severity Index; PeakPASI, peak Psoriasis Area and Severity Index

TABLE 3 Poisson regression model with the number of comorbidities as the dependent variable and the PeakPASI cut-off of 10 as an independent variable.

	Estimate	95% Confidence Interval	p value
Intercept	0.549	0.452–0.643	< 0.001
PeakPASI cut-off 10 (≥ 10–<10)	0.122	−0.068–0.314	0.211
Number of visits	−0.001	−0.007–0.004	0.656
Number of systemic therapies	0.039	−0.024–0.099	0.216
DLQI	0.006	−0.006–0.018	0.332
Age	0.017	0.012–0.023	< 0.001
Number of topical therapies	0.039	0.021–0.056	< 0.001
Occurrence of phototherapy (yes–no)	0.069	−0.124–0.263	0.486
Gender (man–woman)	−0.050	−0.237–0.134	0.789

Abbr.: CI, confidence interval; DLQI, Dermatology Life Quality Index; PASI, Psoriasis Area and Severity Index; PeakPASI, peak Psoriasis Area and Severity Index

and should therefore not be equated with cumulative burden in a longitudinal sense.[14] It also fails to account for disease in special sites (e.g., nails, genitals, face), which are often disproportionately impactful.[23] Furthermore, PeakPASI depends on the accuracy and consistency of historical documentation. While PASI was obtained by trained dermatologists, scoring remains observer-dependent, and inter-rater variability may have contributed to measurement imprecision. Furthermore, although PASI is recorded regularly in clinical routine, the exact timing and frequency of assessments varied across patients and were not standardized by protocol. PeakPASI reflects the maximum documented disease severity rather than guaranteeing capture of the absolute lifetime maximum activity. Patients with limited access to care or fewer visits may therefore have had fewer opportunities for high PASI values to be recorded, potentially leading to an underestimation of PeakPASI in individual cases.

Moreover, PASI documentation outside tertiary care settings may be less consistent, although this did not directly affect our cohort, which was assessed exclusively in a specialized referral center. Nevertheless, variability in documentation practices between institutions may limit the external generalizability of our findings.

In many healthcare systems, PASI scores may not be recorded systematically, particularly in mild cases or outside tertiary care. In our study, the lack of significant correlation between PeakPASI and the most recent PASI score further illustrates the clinical disconnect between historical and current disease status.[14]

From a clinical standpoint, our regression analysis demonstrated that PeakPASI ≥ 10 was a strong predictor of systemic therapy use, even after adjusting for age, DLQI, phototherapy, and other covariates. This finding underscores the potential utility of PeakPASI in informing treatment decisions – particularly in cases where present-day PASI scores may underestimate a patient's therapeutic history or need. Among the three PeakPASI thresholds evaluated (≥ 10, ≥ 11.4, ≥ 13.6), the cut-off of ≥ 10 provided the most consistent and robust associations with relevant clinical parameters, aligning with national and European guidelines that use PASI ≥ 10 as a threshold for systemic therapy eligibility.[9–11] Thus, PeakPASI ≥ 10 may serve as a practical reference point in both clinical care and research.

On the other hand, PeakPASI was not an independent predictor of total comorbidity burden in multivariable models. While weak correlations were observed between PeakPASI and the number of comorbidities, these may be confounded by age and the natural progression of multimorbidity in chronic diseases.[20,24] Moreover, the cross-sectional design of our study limits causal inference, and the analysis may have been underpowered to detect associations with less frequent comorbidities such as depression or substance use disorders. Longitudinal studies are needed to determine whether PeakPASI can predict the future development of comorbid conditions or serve as an early warning sign for systemic disease involvement.

This study has several important limitations. First, we lacked detailed data on disease duration, timing of PeakPASI in relation to treatment changes, and treatment status at the time of scoring. These factors may influence both PeakPASI values and their interpretation. Second, incomplete PASI documentation during flares could result in underestimation of PeakPASI for some patients. Third, the tertiary care setting of this study likely overrepresents patients with moderate-to-severe psoriasis, which may limit generalizability to primary care or community dermatology settings. Fourth several key variables, including lifestyle factors and parts of the treatment history, were assessed by self-report and are therefore subject to recall bias. Smoking status, alcohol screening, and drug use were primarily collected via questionnaire and may therefore be affected by inaccurate recall and social desirability bias, particularly with respect to stigmatized health behaviors. While validated screening instruments were used for alcohol and drug use, underreporting cannot be excluded and may have led to an underestimation of prevalence rates and weakened associations with disease severity. These limitations are inherent to questionnaire-based assessments and should be considered when interpreting associations

between PeakPASI, lifestyle factors, and comorbidity patterns.

Finally, PeakPASI does not incorporate patient-reported outcomes such as itch, stigmatization, or psychological burden, which are increasingly recognized as critical to understanding the full impact of psoriasis.[5,25]

Nevertheless, our findings suggest that PeakPASI can be a valuable addition to routine assessment in dermatology practice. It provides a retrospective anchor that reflects prior disease severity and may support more nuanced decision-making in cases where current disease activity appears low but the treatment history suggests a more severe trajectory. This is particularly relevant in the context of therapeutic de-escalation or when evaluating eligibility for biologics under reimbursement frameworks that require documentation of severe disease. Conceptually, PeakPASI could also contribute to discussions around "upgrade criteria" in psoriasis treatment algorithms, such as those proposed by Mrowietz and Augustin.[23]

Future prospective studies are needed to validate PeakPASI as a longitudinal tool, establish its predictive value for flares, treatment switching, and patient outcomes, and determine optimal integration into severity scoring systems. Incorporating retrospective metrics like PeakPASI alongside traditional PASI and DLQI scores may enable a more complete and patient-centered assessment of psoriasis, ultimately improving long-term disease control and quality of care.

CONCLUSIONS

This study reinforces the limitations of relying solely on current PASI scores to assess disease severity in patients with psoriasis. PeakPASI, defined as the highest-ever recorded PASI, demonstrated consistent associations with treatment intensity, phototherapy use, and select comorbidities such as smoking and diabetes mellitus. These findings suggest that PeakPASI can serve as a practical retrospective indicator of historical disease burden, complementing existing severity measures.

However, PeakPASI should not be interpreted as a comprehensive measure of cumulative disease burden, as it does not account for disease duration, flare frequency, or treatment status at the time of scoring. Its utility is also limited by variability in clinical documentation practices. Despite these constraints, the integration of PeakPASI into clinical workflows may aid in identifying patients with previously severe disease who could benefit from more intensive or sustained treatment strategies.

Future research should focus on validating PeakPASI thresholds in prospective cohorts, assessing their predictive value for treatment response, and exploring their integration into clinical decision algorithms, including severity upgrade criteria. Incorporating such retrospective severity markers into routine practice may help mitigate the risk of disease underestimation and enhance long-term patient outcomes.

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CONFLICT OF INTEREST STATEMENT

E.M. received consulting fees and honoraria for presentations from Novartis Pharma GmbH. S.E. received honoraria for lectures, presentations, or educational events from Janssen Cilag and Novartis. A.Z. received speaker's honoraria for digital dermatology topics from AbbVie, Almirall, Amgen, Beiersdorf Dermo Medical, Bristol Myers Squibb, Celgene, Eli Lilly, Incyte, Janssen Cilag, LEO Pharma, MSD, Novartis, Pfizer, Sanofi-Aventis, and UCB Pharma, and is a member of the board of directors of the German Society of Dermatology and leader of the Digital Dermatology group within this society. T.B. gave advice to or got a honorarium for talks or research grant from the following companies: AbbVie, Alk-Abelló, Almirall, Celgene-BMS, Galderma, Leo Pharma, Lilly Deutschland GmbH, Mylan, Novartis, Phadia-Thermo Fisher, Sanofi, Regeneron, Viatris. H.W., S.Z., and S.W. declare no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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