Original Article

Frequency of pruritus and its impact on quality of life in psoriasis: A cross-sectional study

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Abstract

Background Psoriasis represents a long-term inflammatory skin disorder that commonly presents with itching symptoms, significantly impacting patients' daily functioning and well-being. Epidemiological data indicates prevalence rates ranging from 0.1-1.4% among pediatric populations and 0.5-11.4% in adult cohorts.

Objective To establish the occurrence rate, severity levels and quality-of-life consequences of pruritus (itch) symptoms in patients with psoriasis.

Methods Cross-sectional analysis conducted in Dermatology Unit, Tertiary Care Hospital Gujranwala, from 01.01.2023 to 31.05.2024. A total of 132 patients with psoriasis constituted the study sample. Pruritus intensity was assessed with three validated scales: VAS, NRS and VRS. Disease severity was quantified using the Psoriasis Area and Severity Index (PASI) and Quality-of-life impact was measured via the Dermatology Life Quality Index (DLQI). Data was analyzed using SPSS version 23.

Results Among our study participants, 118 individuals (89.4%) experienced itching. Patients with pruritus demonstrated notably elevated median PASI score (7.00) when compared to those without pruritus (3.00) (p=0.001). We identified positive associations between PASI score and pruritus severity (VAS: r=0.788, NRS: r=0.743, p<0.01). Patients experiencing pruritus exhibited considerably higher DLQI values (median 10.0) versus no pruritus participants (median 5.5) (p=0.001). Pruritus was more frequently observed in patients with higher body weight affecting 37 patients (31.35% vs. 7.14%, p=0.02). Cutaneous dryness emerged as the primary exacerbating element in 65 cases (49.2%).

Conclusion Our findings demonstrate that pruritus is common in psoriatic patients and shows strong association with disease severity and diminished life quality. Comprehensive management of pruritus, incorporating body mass index considerations and environmental factor identification, remains essential for optimizing patient care outcomes.

Keywords Psoriasis, Pruritus, Quality of Life, Disease severity.

Article Received on 29.06.2025

Revised on 19.01.2026, 05.02.2026, 10.02.2026

Accepted on 19.03.2026

Published on 30.03.2026

Citation: Irshad L, Mubashar H, Falak A, Mughal R, Javaid S, Jabeen S. Frequency of pruritus and its impact on quality of life in psoriasis: A cross-sectional study. *J Pak Assoc Dermatol*. 2026;**36(1)**:46-52.
Doi- https://doi.org/10.66344/jpad.v36i1.3215

Introduction

Psoriasis manifests as a long-standing inflammatory disorder of the skin, presenting with sharply demarcated, scaly and red plaques. Beyond the skin, it often involves systemic inflammatory processes and is linked to various comorbid conditions. Ul Haq Approximately 0.2-4.8% of people worldwide are affected by psoriasis.[1,2] Among older adults, it ranks as the sixth most prevalent dermatological condition. Epidemiological studies report prevalence rates between 0.5% and 11.4% in adults.[3] Psoriasis patients commonly experience symptoms such as itching, burning and stinging which can significantly affect daily functioning. Pruritus (itch) is one of the most frequently reported symptoms of psoriasis. Recent studies indicate that pruritus is not only

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common but can also be severe, affecting patients' daily activities and psychological well-being.

The pathophysiology of pruritus is complex and multifactorial. Altered cutaneous innervations, neuropeptide imbalance and inflammatory mediators in psoriatic skin are implicated.[6] Upregulation of neuropeptides in psoriasis may lead to severe pruritus.

A prospective study conducted by Haroon *et al*. in 200 patients of Mayo Hospital Lahore, concluded that 81% of psoriatic patients experienced pruritus at varying severity levels and 86% had pruritus primarily localized to psoriatic plaques.[4] Pruritus has been reported in 86.1% of participants, in another study.[5]

Pruritus causes significant psychological issues such as suicidal thoughts, deteriorates the quality of life and cause sleep deprivation.[7] The present study aims to determine frequency of pruritus (itch) in psoriasis and its impact on quality of life (QoL). This study was planned to generate local data on frequency of pruritus and its impact of QoL in psoriasis.

Methods

A six-month, cross-sectional investigation was conducted in the Dermatology Department of Tertiary Care Hospital Gujranwala from December 1, 2023, to May 31, 2024, with ethical approval granted by the hospital's Review Board (ERB Cert. 16-2023).

Using non-probability consecutive sampling after obtaining informed consent, we enrolled 132 participants, an enrollment target calculated via the WHO sample size calculator based on a presumed 86.1% prevalence, 90% confidence level, and 5% margin of error.[5]

Inclusion criteria encompassed adults aged 18-70 years of any gender with a clinical diagnosis of psoriasis. We excluded individuals presenting solely with nail psoriasis or psoriatic arthritis, as well as those where pruritus was attributable to other dermatologic or systemic conditions like diabetes, renal disease, scabies, or dermatophyte infections. Participants completed a structured questionnaire capturing demographic data (age, gender, height, weight, marital status), duration of pruritus, its effects on QoL, and identified aggravating factors.

- Psoriasis severity and extent were assessed through clinical examination PASI.
- The involvement of body surface area (BSA) was also measured.
- PASI scores vary from 0 (indicating no disease) to 72 (indicating maximum severity).
- Scores of 10 or lower are categorized as mild psoriasis, 10 to 20 as moderate while scores above 20 are considered severe psoriasis.[8]

Pruritus intensity was measured via three scales as shown in **Figure 1**:

- ***Visual Analogue Scale (VAS)****:* 10-cm line, left end "no itch," right end "worst imaginable itch"; score = distance (cm) from left.[9]
- ***Numerical Rating Scale (NRS)****:* 0-10 number selection; 0 = no itch, 10 = worst possible itch.[10]
- ***Verbal Rating Scale (VRS)****:* five verbal levels-none (0), mild (1), moderate (2), severe (3), very severe (4).

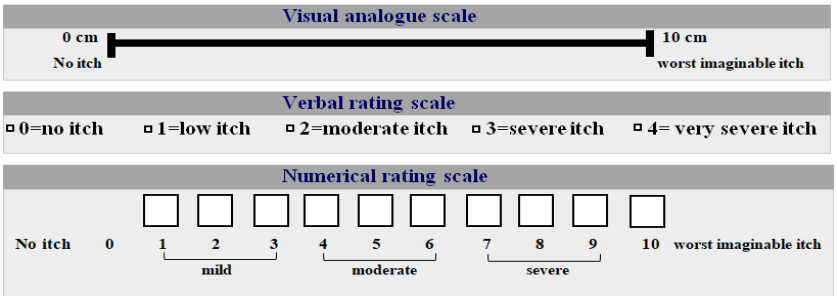

Figure 1 Various scales of assessment: visual analogue scale (VAS), verbal rating scale (VRS) and numerical rating scale (NRS).

The QoL of patients was measured using DLQI.[11] DLQI consists of 10 items divided into seven categories:

- Symptoms (Question 1)
- Emotional impact (Question 2)
- Daily activities (Questions 3-4)
- Leisure and exercise (Questions 5-6)
- Work or study (Question 7)
- Social relationships (Questions 8-9)
- Treatment burden (Question 10)

› Respondents rate each item on a scale from 0 to 3, where 0 indicates "not at all" and 3 indicates "extremely severe."

› The total score ranges from 0 to 30, with a score of 30 indicating greater impairment.

As shown in **Figure 2**, VAS scores could be translated as follows based on previous studies: >0 but <3 points-mild itch, ≥3 but <7-moderate itch, ≥7 but <9 points-severe itch and ≥9 points-very severe.[12]

› IBM SPSS 23 handled all statistical procedures.

› Non-normal continuous data were (age, PASI, DLQI) summarized as median (IQR) and compared with the Mann-Whitney U test.

› Categorical variables (sex, BMI category, pruritus type, aggravating factor) reported as frequencies and percentages n (%) were analyzed with Chi-square test or Fisher's exact test, as appropriate.

› Spearman's rank correlation coefficient assessed the relationship between PASI and pruritus intensity (measured by VAS and NRS).

› All tests were two-tailed; significance set at $p<0.05$.

Results

132 psoriasis patients were enrolled. There were 107 males (81.1%) and 25 females (18.9%) with 118 (89.4%) in the pruritus group and 14 (10.6%) in the non-pruritus group. Gender distribution was comparable between the groups ($p=0.68$).

Table 1 summarizes the comparison of clinical characteristics between psoriatic patients with and those without pruritus.

The pruritus group had significantly higher median PASI score compare to the non-pruritus group [7.00 (IQR: 3.55-10.55) vs. 3.00 (IQR: 2.20-3.80), $p=0.00$] and higher DLQI scores in pruritus group [10.0 (IQR: 7-13) vs. 5.5 (IQR: 3.5-7.5), $p=0.001$] **(Table 2)**.

Analysis of body mass index revealed a greater frequency of pruritus among patients with increased body weight (31.35% vs. 7.14%; $p=0.02$).

A strong positive correlation was observed between PASI and VAS (r=0.788, $p<0.01$).

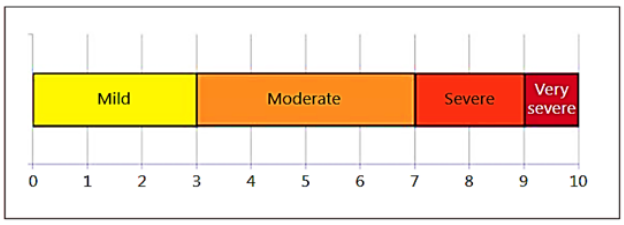

Figure 2 Values for the VAS cutoff points.

Table 1 Clinical characteristics of psoriatic patients with and without pruritus.

	Itch	*No itch*	*Total*	*P value*
	118 (89.4%)	14 (10.6%)	132	
AGE median (IQR)	35 (32-38)	33 (30-36)	-	0.108
BMI N (%)				
Obese >30	37 (31.35%)	1 (7.14%)	38	0.02
Over weight 25-29.9	55 (46.61%)	4 (28.57%)	59	
Normal 18.5-24.9	26 (22.03%)	9 (64.28%)	35	
Gender				
Male	95/107 (88.7%)	12/107 (11.21%)	107 (81.1%)	0.68
Female	23/25 (92%)	2/25 (8%)	25 (18.93%)	

Table 2 Clinical score comparison (PASI and DLQI) in psoriatic patients with and without pruritus.

	Itch	*No itch*	*P value*
PASI score Median (IQR)	7 (3.55-10.55)	3 (2.20-3.80)	0.001
DLQI Median (IQR)	10 (7-13)	5.5 (3.5-7.5)	0.001

P value: (Mann-Whitney U)

Similar correlation was observed between PASI and NRS scores (r=0.743, $p<0.01$). This shows that higher psoriasis severity was associated with increased pruritus intensity.

Pruritus was classified as persistent in 58 patients (43.9%) and intermittent in 60 patients (45.5%). In terms of aggravating factors of pruritus, skin dryness was the most common aggravating factor (n=65, 49.2%), others included sweating (n=24, 18.2%), stress (n=5, 3.8%), hot weather (n=10, 7.6%) and sunlight (n=14, 10.6%).

As shown in **Table 3**, pruritus severity was moderate in 37.9% of patients on the VAS, 38.6% on the VRS and 39.4% on the NRS.

Discussion

Despite pruritus being a well-known symptom of psoriasis, there are limited data on pruritus' severity, pattern and impact on quality of life at a regional level. This study highlights patient-reported outcomes to assist in more comprehensive clinical management by combining local epidemiological evidence with patient-reported outcomes.

This study included 132 psoriatic patients with different types and severities of diseases. This confirms the high prevalence of pruritus among psoriatic patients, with 118 (89.4%) of psoriatic patients experienced pruritus, consistent with previous studies both globally and within Pakistan.

Similar to a study by Kamilia Jaworecka *et al*; in which 86.1 % of psoriatic patients reported pruritus, while Konrad Janowski *et al.* found pruritus prevalence of 98.3% among 174 psoriasis patients, which highlighted Psoriasis patients may experience intense or frequent pruritus as a result of psychological stress, emotional distress, and genetic predisposition.[5,13] In contrast, Gil Yosipovitch *et al.* study reported a lower prevalence of 63.0%.[14]

In our population, pruritus was more frequent observed among patients with higher body weight.

In our study, association of with pruritus age was not statistically significant ($p=0.108$) similar to study by Anil Gulsel Bahali *et al.* but contrary to Gil Yosipovitch *et al.* study which found age related association with pruritus.[14,15]

Gender distribution showed a male predominance (81.1%) which aligns with other studies suggesting that males in Asian countries have greater access to healthcare.[16] According to our research, pruritus frequency was slightly higher in female (92%) compared to males (88.7%) but the difference was not statistically significant ($p=0.68$).

The PASI score and pruritus frequency were significantly correlated, suggesting that presence of pruritus is associated with severity of psoriasis (median 7.00, $p=0.001$). Studies conducted by Bahali *et al.*[15] and Junsuwan *et al.*[17] confirmed this finding but it differs from the study published by Prignano *et al.*[18]

The most common severity level of pruritus among

Table 3 Severity of pruritus in psoriasis.

Scale	*(n=132)*	*Median (IQR)*
Visual analogue scale (VAS)		
Mild (>0,<3 points)	16 (12.1%)	2
Moderate (≥3,<7 points)	50 (37.9%)	(1.5-2.5)
Severe (≥7,<9 points)	39 (29.5%)	
Very severe (≥9 points)	13 (9.8%)	
Verbal rating scale (VRS)		
Low	15 (11.4%	
Moderate	51 (38.6%)	2
Severe	34 (25.8%)	(1.5-2.5)
Very severe	18 (13.6%)	
Numerical rating scale (NRS)		
Mild (1-3)	17 (12.9%)	
Moderate (4-6)	52 (39.4%)	2
Severe (7-9)	39 (29.5%)	(1.5-2.5)
Worst (10)	10 (7.6%)	

patients was moderate (37.9% on VAS, 38.6% on VRS, and 39.4% on NRS) similar to Teyateeti's study[19] but contrary to REMROD study in which a significant number of patients reported mild pruritus, with no significant correlation found between the severity of pruritus and psoriasis severity measured by the Psoriasis Area and Severity Index (PASI).[20] A significant portion of patients, 39.3 % and 9.8 %, reported severe and very severe pruritus on VAS respectively highlighting the intense pruritus experienced by many psoriasis patients.

In addition, the PASI score positively correlated with the intensity of pruritus by VAS (r=0.788, $p<0.01$) and NRS scores (r=0.743, $p<0.01$) indicating that pruritus intensity increases with psoriasis severity. This matches Junsuwan's study[17] but differs from the study conducted by Phurichaya Teyateeti and Yosipovitch's study, which found no significant relationship.[19,21] These variations may result from geographical variables, patient clinical characteristics, and different study methodologies.

Frequency of pruritus and BMI were correlated. 46.61% of psoriasis patients with pruritus were overweight and 31.35% were obese which matches the study by Juliette Bollemeijer who highlighted BMI as a contributing factor to psoriasis severity and associated symptoms which differs from Radomir Reszke study.[22,23]

In obese patients, sweating and elevated body temperature may exacerbate pruritus which may explain the increased intensity of pruritus in overweight or obese individuals. Patients who were overweight or obese experienced more intense pruritus, which may have contributed to the tendency for anatomical folds to rub together (several of our patients with psoriasis have also had inverse psoriasis in the past)

The results demonstrated that patients experiencing pruritus had significantly higher DLQI scores (median 10.0, IQR: 6) compared to those without pruritus (median 5.5, IQR: 4; $p=0.001$) indicating greater daily life impairment and emotional distress. This finding aligns with the study by Jaworecka and Mrowietz which reported that pruritus significantly affects the daily functioning and emotional well-being of psoriasis patients leading to elevated DLQI scores.[24,25] In contrast, the study by Teyateeti found a moderate effect of itching on quality of life.[19]

In our study, skin dryness was the most common aggravating factor of pruritus 65 (49.2%) followed by sweating 24 (18.2%), sunlight 14 (10.6%), hot weather 10 (7.6%) and stress 5 (3.8%). These findings suggest that both environmental and psychological factors play a role in worsening pruritus. This emphasizes the importance of comprehensive management of pruritus.

This was a cross-sectional study with a smaller sample size; limiting its ability to establish cause and effect. We relied on self-reported assessment of pruritus which may add bias. And VAS scale is unidimensional, does not capture the complexity of itch. Lastly, the sample size which we collected for our study was from a single center of Pakistan which may limit its applicability to other populations or environments.

In future research should be conducted on a larger population, including psoriasis with metabolic syndrome and with a longitudinal design to gain deeper insights into how pruritus correlates with the severity and complications of psoriasis.

Conclusion

This study demonstrates that psoriasis patients in Pakistan have a significant prevalence of itching. Common aggravating factors were skin dryness and sweating. To improve patient outcomes and quality of life, our findings emphasize how important it is to diagnose and treat pruritus as part of a comprehensive management strategy for psoriasis, taking into account factors such as body mass index and environmental conditions.

Declaration of patient consent The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship None.

Conflict of interest No conflict of interest.

Author's contribution

LI: Substantial contribution to manuscript writing, study design.

HM: Substantial contribution to manuscript writing, critical review.

AF, RM: Substantial contribution to manuscript writing, critical review, acquisition of data.

SJd: Substantial contribution to manuscript writing, critical review.

SJn: Substantial contribution to study design, critical review of manuscript.

Every author has given final approval of the manuscript version to be published and agreed to be accountable for all aspects of the work.

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