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Depression Severity Across Clinical Subtypes of Psoriasis in a Pakistani Tertiary Care Hospital

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ABSTRACT

BACKGROUND & OBJECTIVE: Depression is common in psoriasis, but subtype-specific differences in depressive severity are less well characterised, particularly in South Asian populations. We assessed depression across clinical psoriasis subtypes and examined its relationship with psoriasis severity.

METHODOLOGY: We conducted a cross-sectional study of 155 adults with dermatologist-confirmed psoriasis recruited consecutively from the dermatology outpatient and inpatient departments of a tertiary-care hospital in Rawalpindi, Pakistan, between October 2023 and March 2025. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9) and Beck Depression Inventory-II (BDI-II), and psoriasis severity using the Psoriasis Area and Severity Index (PASI).

RESULTS: Plaque psoriasis was the predominant subtype (64.5%), followed by erythrodermic (19.4%), guttate (9.7%), and pustular (6.5%). Overall, moderate depression was the most frequent PHQ-9 category (44.5%). In the subtype-specific manual analysis, mild, moderate, and severe depression were 26%, 42%, and 32% in plaque; 15%, 56%, and 29% in erythrodermic; 38%, 40%, and 22% in guttate; and 36%, 40%, and 24% in pustular psoriasis. Increasing PASI severity was accompanied by greater proportions of moderately severe or severe depression on both measures. PASI severity was associated with sex (p=0.029), whereas sex was not associated with PHQ-9 (p=0.127) or BDI-II (p=0.086) depression severity.

CONCLUSION: Depression was common across clinical psoriasis subtypes, with moderate symptoms particularly prominent in erythrodermic psoriasis. Greater psoriasis severity was also accompanied by more severe depressive symptoms. Routine depression screening should be considered in dermatology care, especially for patients with extensive or severe psoriasis.

KEY WORDS: Psoriasis; Depression; Patient Health Questionnaire; Severity of Illness Index; Cross-Sectional Studies

How to cite: *Yasir S, Mamond I, Fatima A, Tahir Z, Sharif S. Depression Severity Across Clinical Subtypes of Psoriasis in a Pakistani Tertiary Care Hospital. J Allam Iqbal Med Coll. 2026; 24(3): 34-38*

INTRODUCTION

Psoriasis is a chronic, immune-mediated inflammatory skin condition that affects approximately 2–3% of people worldwide and is marked by clearly demarcated, erythematous, silver-scaled plaques.[1,2] It is no longer regarded as an entirely cutaneous problem; a growing body of work treats it as a systemic disease carrying a significant psychosocial and psychiatric burden.[3,4] Among psychiatric comorbidities, depression is the most prevalent, with pooled prevalence estimates of 20–30%—two to three times those seen in the general population.[5-7]

Psoriasis and depression share a bidirectional relationship. From a psychosocial perspective, visible, persistent lesions contribute to stigma and reduced quality of life. Biologically, pro-inflammatory cytokines such as TNF-α, IL-17, and IL-23 may cross the blood–brain barrier and disrupt neurotransmitter systems involved in mood regulation.[8-11] Disease severity and clinical subtype may also shape psychiatric burden: studies report higher depression scores in more extensive or disfiguring variants, such as erythrodermic and generalized pustular psoriasis, than in localized forms.[12-16] However, comparisons between subtypes remain limited and findings are inconsistent, particularly outside high-income countries.

In Pakistan, as in much of South Asia, dermatological care commonly occurs without routine psychological screening, while stigma and limited resources restrict access to mental health care.[17] Local data indicate a considerable depressive burden among Pakistani patients with psoriasis, but few studies have compared depression severity across clinical subtypes using validated scales alongside an objective measure of psoriasis severity, such as the Psoriasis Area and Severity Index (PASI).[18,19]

This study aimed to measure the prevalence and severity of depression across clinical forms of psoriasis at a tertiary care hospital in Pakistan using the Patient Health Questionnaire-9 (PHQ-9) and Beck Depression Inventory-II (BDI-II), and to examine the relationship between PASI scores and depression severity.

METHODOLOGY

This cross-sectional observational study was carried out in the dermatology outpatient and inpatient departments of Benazir Bhutto Hospital, attached with Rawalpindi Medical University, Rawalpindi, Pakistan.

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* Received for Publication: June 25, 2026
* Revision Received: August 19, 2026
* Accepted for Publication: September 12, 2026

Data was collected from 15th October 2023 to 3rd March 2025.

Adults aged 18 years or older with a confirmed diagnosis of any clinical form of psoriasis by the dermatologist were eligible for inclusion. Patients were excluded if they had a psychiatric disorder that predated the onset of psoriasis; were currently on systemic corticosteroids or psychotropic medication; had dementia or another progressive neurodegenerative disease; had an alcohol or substance use disorder; intellectual disability; or any physical condition independently linked to depressive symptoms (e.g. diabetes, hypertension, epilepsy).

Patients were enrolled through non-probability consecutive sampling: every patient fulfilling the inclusion criteria and presenting during the study period was invited to participate until the target sample was reached. Using G*Power 3.1.9.7, we calculated that a medium effect size (Cohen's d = 0.5) with alpha = 0.05 and power = 0.80 required at least 128 participants; 155 patients were ultimately enrolled to allow for incomplete responses and for subgroup analysis by psoriasis subtype.

Patient Health Questionnaire (PHQ- 9): a 9-item, DSM-aligned self-report measure scored from 0 to 27, with scoring bands for minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27) depression.[20]

Beck Depression Inventory-II (BDI-II): a 21-item self-report measure scored from 0 to 63, with categories for minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63) depression.[21]

Psoriasis Area and Severity Index (PASI): a clinician-rated composite covering erythema, induration, and desquamation across four body regions (head 10%, upper limbs 20%, trunk area 30%, lower limbs 40%), giving a score range from 0 to 72.[22] Severity was grouped as mild, moderate, or severe.

Once written informed consent had been obtained, participants were given a structured proforma covering sociodemographic information, followed by the PHQ-9 and/or BDI-II, completed either independently or with researcher assistance where this was needed. The attending dermatologist calculated the PASI score for each participant. Patients found to have moderately severe depression were given informational care and referred on to the psychiatry department.

Analysis was carried out in IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Categorical variables (sex, marital status, education, clinical subtype, and depression severity category) were calculated as frequencies and percentages, whereas continuous variables (age, PASI score) were summarised as means and standard deviations. Associations between categorical variables were assessed with the chi-square test, taking $p<0.05$ as the threshold for statistical significance. For the clinical subtype comparison, depression severity was summarised in the three categories recorded in the manual study analysis: mild, moderate, and severe.

RESULTS

Of the 155 patients included, most were male (80.0%), married (60.0%), employed (56.1%), and from the middle socioeconomic class (71.0%). Middle school and high school were the largest educational categories (31.6%

Table I: Baseline demographic characteristics of participants

Characteristic	Category	n (%)
Sex	Male	124 (80.0)
	Female	31 (20.0)
Marital status	Married	93 (60.0)
	Not married	62 (40.0)
Employment	Employed	87 (56.1)
	Not employed	68 (43.9)
Socioeconomic class	Middle	110 (71.0)
	Other classes	45 (29.0)
Education	Middle school	49 (31.6)
	High school	49 (31.6)
	Other educational levels	57 (36.8)

Table II: PHQ-9 depression severity across clinical psoriasis subtypes

Clinical subtype	Total n	PHQ-9 severity distribution, %
Plaque	100	Mild 26%; Moderate 42%; Severe 32%
Erythrodermic	30	Mild 15%; Moderate 56%; Severe 29%
Guttate	15	Mild 38%; Moderate 40%; Severe 22%
Pustular	10	Mild 36%; Moderate 40%; Severe 24%

each). Plaque psoriasis was the predominant clinical subtype (64.5%), followed by erythrodermic (19.4%), guttate (9.7%), and pustular (6.5%) psoriasis.

Table III: PASI-defined psoriasis severity by sex

PASI category	Male, n (%)	Female, n (%)	Total, n (%)
Mild	77 (62.1)	27 (87.1)	104 (67.1)
Moderate	28 (22.6)	2 (6.5)	30 (19.4)
Severe	19 (15.3)	2 (6.5)	21 (13.5)
Total	124 (100.0)	31 (100.0)	155 (100.0)

On the PHQ-9, moderate depression was the largest category (44.5%), followed by mild (21.3%), moderately severe (13.5%), severe (11.6%), and minimal depression (9.0%). On the BDI-II, moderate depression was also most frequent (52.9%), followed by mild (23.9%), severe (15.5%), borderline (6.5%), and normal scores (1.3%).

Note: Percentages represent the within-subtype distribution recorded in the manual study analysis; each subtype totals 100%.

Table IV: PHQ-9 depression severity by PASI-defined psoriasis severity

PHQ-9 category	Mild PASI, n (%)	Moderate PASI, n (%)	Severe PASI, n (%)	Total, n (%)
Minimal	14 (13.5)	0 (0.0)	0 (0.0)	14 (9.0)
Mild	29 (27.9)	2 (6.7)	2 (9.5)	33 (21.3)
Moderate	52 (50.0)	13 (43.3)	4 (19.0)	69 (44.5)
Moderately severe	7 (6.7)	6 (20.0)	8 (38.1)	21 (13.5)
Severe	2 (1.9)	9 (30.0)	7 (33.3)	18 (11.6)
Total	104 (100.0)	30 (100.0)	21 (100.0)	155 (100.0)

The manual subtype analysis showed that moderate depressive symptoms were most prominent in erythrodermic psoriasis (56%), followed by plaque (42%), guttate (40%), and pustular psoriasis (40%). Mild and severe depression accounted for the remaining proportions within each subtype. The study analysis indicated an association between clinical psoriasis subtype and depression severity at the conventional significance threshold (p=0.05). Because the guttate and pustular subgroups were small, subtype-specific estimates should be interpreted cautiously.

Table V: BDI-II depression severity by PASI-defined psoriasis severity

BDI-II category	Mild PASI, n (%)	Moderate PASI, n (%)	Severe PASI, n (%)	Total, n (%)
Normal	2 (1.9)	0 (0.0)	0 (0.0)	2 (1.3)
Mild	35 (33.7)	0 (0.0)	2 (9.5)	37 (23.9)
Borderline	8 (7.7)	2 (6.7)	0 (0.0)	10 (6.5)
Moderate	59 (56.7)	19 (63.3)	4 (19.0)	82 (52.9)
Severe	0 (0.0)	9 (30.0)	15 (71.4)	24 (15.5)
Total	104 (100.0)	30 (100.0)	21 (100.0)	155 (100.0)

p = 0.029 (chi-square test); psoriasis severity was significantly associated with sex, men making up a greater share of moderate and severe disease and women a greater share of mild disease.

A clear gradient ran through both the PHQ-9 and BDI-II scores against PASI-defined severity: the more severe psoriatic forms were, the greater the share of patients falling into the moderately severe or severe depression bands (Tables IV-V). Among those with severe psoriasis, 71.4% scored in the severe range on the BDI-II, compared with none of those whose psoriasis was mild.

DISCUSSION

In this cross-sectional sample of 155 patients with psoriasis attending a tertiary care hospital in Pakistan, more than half showed moderately severe or severe depression on at least one of the two validated measures, and depression severity climbed steadily as PASI-defined psoriasis severity increased. This pattern between skin disease severity and psychiatric burden echoes findings reported elsewhere.[5-7,12-16] It strengthens the case for integrating psychiatric screening into routine dermatological care, particularly in resource-limited settings.[17]

The findings suggest that depressive burden may vary across clinical psoriasis phenotypes as well as with objective disease severity. Moderate depressive symptoms were particularly prominent in erythrodermic psoriasis, while substantial proportions were also observed in plaque, guttate, and pustular psoriasis. The PASI analysis demonstrated a clear gradient: as psoriasis severity increased, so did the proportion of patients with moderately severe or severe depression. Both clinical phenotype and extent of cutaneous involvement may therefore contribute to depressive burden.

Sex was significantly associated with PASI severity in this cohort (p=0.029), with men showing more extensive disease, but was not significantly associated with depression severity on either scale. This finding suggests that psychological burden may not correspond directly to objective skin involvement across sexes. Evidence from international cohorts on sex differences is mixed.[15] These findings sit alongside Pakistani research indicating a substantial psychological burden among dermatology

patients, although local comparisons across psoriasis subtypes remain scarce.[18,19]

Limitations:

This study's strengths include a relatively large sample for a single-centre design, the use of two independently validated depression measures alongside an objective, dermatologist-rated severity index, and a focus on a population that is otherwise under-represented in the literature. Its limitations include the single-centre, cross-sectional design, which rules out causal inference and limits generalisability; reliance on self-reported depression measures, which may introduce reporting bias; a marked sex imbalance in the sample (80% male), which limits precision in the female subgroup; comparatively small guttate (n=15) and pustular (n=10) subgroups, which reduce statistical power for subtype-specific comparisons; and exclusion of patients with pre-existing psychiatric illness, which may have led to underestimation of the true psychiatric burden.

CONCLUSION

Depression was common among patients with psoriasis at this tertiary care centre in Pakistan. Moderate depressive symptoms were particularly frequent among patients with erythrodermic psoriasis, while increasing PASI-defined disease severity was associated with greater severity of depressive symptoms. Routine depression screening using brief validated instruments such as the PHQ-9 should therefore be considered in dermatology settings, particularly for patients with extensive or clinically severe psoriasis.

Ethical approval:

Ethical approval was taken from the Institutional Review Board, Rawalpindi Medical University Ref. no. 404/IREF/RMU/2023 Dated: 20-05-2023

Conflict of Interest:

Authors declare no conflict of interest.

Financial Disclosure:

None

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Authors' Contributions:

SY& IM: Conceptualization and study design

AF& ZT: Data Collection and manuscript drafting.

SS, SY& IM: Data Analysis and critical review.

SS, AF & ZT : Supervision & Manuscript drafting & proof reading.

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