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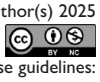

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Psychological Comorbidities in Palmoplantar Psoriasis and Psoriatic Arthritis: A Systematic Review

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Abstract

Psoriasis, a chronic inflammatory skin disorder, is often accompanied by psychological comorbidities. While the psychological effects of plaque psoriasis are well-documented, other psoriasis subtypes, such as guttate, erythrodermic, pustular, and palmoplantar psoriasis (PPP), remain less studied. This review aimed to examine psychological comorbidities in less-studied psoriasis variants. However, the available literature was limited to PPP and psoriatic arthritis (PsA). A comprehensive search of Medline, Embase, PsycINFO, and PubMed was conducted up to February 2025. Data were extracted on psychological comorbidities, disease severity, and patient demographics in patients with PPP and/or PsA. Seventeen studies (76,567 patients) were included. Depression prevalence in PsA ranged from 7.1% to 41%. In PPP, depression prevalence ranged from 5.7% in Japan to 17.1% in the United States. Anxiety prevalence ranged from 5.1% to 61.4%. Both depression and anxiety were more severe in patients with higher disease activity, with depressed patients being over 4 times more likely to report higher disease severity (AOR: 4.43, $P = .001$). Additional psychological comorbidities included sleep disturbances (38%) and mood disorders in PPP patients (19.6%). Functional impairment ranged from mild to moderate, with moderate but variable discomfort reported in pain assessments. Current evidence on psychological comorbidities in non-plaque psoriasis is limited to PsA and PPP. PsA and PPP can potentially be associated with an elevated risk for psychological comorbidities, particularly depression, anxiety. These findings highlight the need for comprehensive mental health screening and management in these patient populations. Further research is needed to characterize the psychological burden in other non-plaque psoriasis subtypes.

Keywords

psoriasis, psychological comorbidities, psoriatic arthritis, palmoplantar pustular psoriasis, depression, anxiety

Introduction

Psoriasis is a chronic, immune-mediated skin condition that affects ~60 million individuals worldwide.[1] The average age of onset is around 33 years, with lower prevalence observed in children compared to adults. Psoriasis is highly heritable, with its pathogenesis involving T-cell dysregulation and overexpression of pro-inflammatory cytokines, particularly IL-17 and IL-23, which contribute to persistent inflammation and epithelial hyperproliferation.[2]

Psoriasis can be classified into several subtypes, including plaque, guttate, erythrodermic, and pustular psoriasis. Plaque psoriasis is the most prevalent form, while the rarer subtypes collectively account for ~10% of cases.[3] Guttate psoriasis, characterized by small, scaly, monomorphic papules in a centripetal distribution, affects about 2% of individuals with psoriasis.[4]

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Erythrodermic psoriasis is a potentially life-threatening complication of psoriasis involving widespread erythema and exfoliation of more than 75% of the body surface area, occurring in 2% to 3% of psoriasis patients.[5]

All forms of psoriasis are associated with psychological comorbidities, though some have been more extensively studied than others. Depression and anxiety are particularly common comorbidities of psoriasis, affecting up to 58% of patients.[6] In addition, increased rates of other psychiatric comorbidities, including bipolar disorder, schizophrenia, and psychosis, have been reported in psoriasis patients. Sexual dysfunction is also prevalent, often linked to reduced self-esteem and body dysmorphia.[7]

There is substantial evidence assessing the relationship between plaque psoriasis and psychological comorbidities; however, no comprehensive analysis specifically focusing on rarer psoriasis subtypes or psoriatic arthritis (PsA) currently exists. This systematic review aims to identify and characterize the psychological comorbidities associated with rare psoriasis subtypes to better understand their impact on mental health and inform future research and clinical management strategies.

Materials and Methods

This systematic review (PROSPERO: CRD420251007370) was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Supplemental Figure S1).[8]

Eligibility Criteria

Studies were eligible for inclusion if they involved patients with clinically confirmed non-plaque psoriasis subtypes, including guttate, inverse, erythrodermic, pustular, or palmoplantar psoriasis (PPP), and reported on the prevalence of psychological comorbidities. Only original research articles published in English were considered, including both observational and interventional studies. Exclusion criteria included studies that focused solely on plaque psoriasis without separate analysis of other subtypes, unpublished or ongoing research, editorials, duplicate cohort studies, non-English or inaccessible full-text articles, and systematic reviews or meta-analyses.

Search Strategy

A comprehensive literature search was performed in Medline, Embase, and PsycINFO from database inception to February 20, 2025, to identify eligible articles. Detailed search strategies are available in Supplemental Table S1.

Study Selection and Data Extraction

After duplicate records were removed using EndNote, the remaining citations were imported into Covidence, a web-based platform for systematic review management. Two reviewers independently screened titles, abstracts, and full-text articles for eligibility. Discrepancies were resolved through discussion, with input from a senior reviewer when necessary. Data extraction was performed independently by 2 reviewers using a standardized form. Extracted information included study characteristics, design, patient demographics, as well as data on psoriasis subtype, disease severity, and the prevalence and severity of psychological comorbidities. Study quality was assessed using the Joanna Briggs Institute critical appraisal tool appropriate for each study design.[9]

K.P. and E.A.I. screened for title and abstract. K.P. and J.V.H.T. screened for full text. K.P. and J.Q.A.B. extracted data. E.A.I. and J.Q.A.B. assessed risk of bias. K.P. conducted the search and analyzed data. K.P., M.M., and A.S.A. drafted the original manuscript. E.A.-A. led methodology, validation, and supervised the project. I.M. contributed to the generation of the study idea, reviewed data, edited the manuscript, and supervised the project as lead supervisor.

Results

Study Characteristics

Seventeen studies involving 76,567 patients (52.8% female; mean age: 46.8 years) met the inclusion criteria. Two studies (n = 12,568) focused on PPP, while 15 studies (n = 63,999) examined PsA. The average disease duration was 9.7 years. Five studies reported on initial disease assessment, with mean physician and patient global disease activity scores of 5.1 and 5.7, respectively (n = 1225) for PsA.[10-14] Mean physician and patient global assessments for PsA were 36.7 and 46.1, respectively (n = 135; Supplemental Table S2).

Functional impairment was assessed using multiple instruments, including the Health Assessment Questionnaire (HAQ), HAQ Disability Index (HAQ-DI), Modified HAQ, and Visual Analogue Scale (VAS). The mean HAQ and HAQ-DI scores were 0.9 (n = 1225) and 0.93 (n = 490), respectively. The mean Modified HAQ score was 0.5 (n = 2390), while the mean VAS score was 34.8 (n = 137). Pruritus was assessed in 1 study, with 23.1% of 121 patients reporting itching (Supplemental Table S1).

Across 14 studies including 66,062 individuals with PsA or PPP, depression and anxiety were frequently reported, though prevalence varied widely (Supplemental Table S2). In PsA, depression rates ranged from 7.1% to 41%. Lower prevalence was reported in large database studies (9.0%-29.1%),[11,15,16] while smaller cohorts yielded higher estimates[12,17] (35.9%-41%). For PPP, depression prevalence ranged from 5.7% in Japan to 17.1% in the United States.[18]

Anxiety prevalence ranged from 5.1% to 61.4%, with most studies clustering between 17.8% and 38%.[10,14,16] U.S.-based studies reported higher anxiety rates, while lower estimates appeared in Japan (4.1%). Studies assessing both

depression and anxiety reported combined prevalence ranging from 17.8% to 44.8%, with broader screening tools detecting higher rates.[17]

Beyond prevalence, severity assessments revealed that 13% to 35% of patients experienced moderate-to-severe symptoms. Mean scores on the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) indicated mild to moderate levels of distress[13,19] (Supplemental Table S2). Additional measures such as *T* scores corroborated the presence of psychological burden.[20] Poorer physical health scores were associated with greater symptom severity.[21] Notably, psychological distress was linked to higher perceived disease severity: patients with depression were over 4 times more likely to report greater disease activity than their physicians (AOR: 4.43, $P = .001$), with similar trends observed in patients with anxiety (Adjusted Odds Ratio: 3.95, $P = .001$).[13]

Apart from anxiety and depression, several other psychological comorbidities were identified in psoriasis patients. One study reported a 38% prevalence of sleep disturbance, showing a significant association with PsA.[10] Mood disorders were more prevalent in PPP patients (19.6%) compared to controls (13.1%), though the difference was not statistically significant ($P = .08$, OR: 1.423, 95% CI: 0.953-2.124).[22]

In a large pediatric PsA cohort, the average mood score was 11 on the Moods and Feelings Questionnaire (scale: 0-68, with scores >27 suggesting possible depression).[23] Median psychosocial health was 50.0 (range: 39.9-55.7).[23] Suicidality was assessed in 1 study, which found similar rates of suicidal ideation, attempts, and deaths between PsA and non-PsA patients (Incidence Rate Ratio[IRR]: 0.99, 1.07, and 0.34, respectively).[24] However, PsA patients undergoing treatment showed slightly higher rates of suicidal behaviours. In addition, treated depression was more common in PsA patients compared to non-PsA patients (IRR: 1.38), with the highest rates seen in those on PsA medications (IRR: 1.59).[24]

Discussion

This review demonstrates that ~15.5% of patients with non-plaque psoriasis experience anxiety and depression, with symptom severity often reaching moderate to severe levels (PHQ-9 ≥ 10, 19.2% scoring ≥ 10 on the GAD-7 scale). Sleep disturbances and suicidality, though assessed in fewer studies, were also notable—38% reported sleep issues, and mood disorders were more prevalent in PPP than in controls (19.6% PPP vs 13.1% control). While suicidality rates were generally comparable between PsA and non-PsA patients, those undergoing PsA treatment exhibited slightly higher rates of suicidal behaviours and treated depression (IRR: 1.59). These findings underscore the importance of integrated mental health support in the care of psoriasis.

Overall, the disease burden was moderate, with patients perceiving their condition as more severe than physicians did.[13] This perceived discrepancy in disease severity may contribute to psychological distress and further supports the need for patient-centred disease assessment tools. Functional impairment ranged from mild to moderate, and skin involvement was generally limited, though itching remained a concern for some patients. Pain assessments indicated moderate but variable discomfort.

Our findings align with prior research in plaque psoriasis. In a cross-sectional study of 140 patients with plaque psoriasis, 49.3% experienced moderate-to-severe depression, and 28.6% reported moderate-to-severe anxiety.[25] Importantly, 70% reported a marked decline in quality of life, 16.4% reported alcohol use, and 7.8% endorsed suicidal ideation. A recent review identified that patients with psoriasis and comorbid anxiety disorders were more likely to have a substance use disorder (tobacco, alcohol, opioids, cannabis, stimulants, sedatives, hypnotics, and anxiolytics).[26] Pruritus is a significant contributor to the psychological distress in patients with psoriasis. A study of 101 patients found that patients with high levels of pruritus and pain (VAS >7) were 4 times more likely to experience depression [Beck Depression Inventory-II (BDI-II) ≥ 20; OR: 4.82, 95% CI: 1.12-20.80, $P = .035$] and twice as likely to report sleep disturbance (OR: 2.85, 95% CI: 1.00-8.14, $P = .05$).[27] Although limited, our review similarly identified pruritus as a driver of reduced quality of life. The severity of depressive symptoms can be significant in patients with plaque psoriasis. A prospective study reported that 16.3% of plaque psoriasis patients experienced moderate-to-severe depression.[28] Our review identified that depression, anxiety, and sleep disturbance are also prevalent in subtypes of psoriasis other than plaque.

Recent evidence suggests a potential physiological link between psoriasis and depression. Elevated levels of pro-inflammatory cytokines such as TNF-α, IL-12, IL-17, IL-23, and IFN-γ are found in both psoriasis and depression, as well as in other immune-mediated conditions associated with mental health disorders.[29,30] Biologic treatments targeting these cytokines not only reduce skin symptoms but may also alleviate depressive symptoms. TNF-a inhibitors like etanercept, adalimumab, and infliximab have been shown to improve mood in patients with elevated inflammatory markers.[31] Patients with ankylosing spondylitis (AS) and concomitant depression and anxiety treated with infliximab at 5 mg/kg had decreased scores on the BDI-II and Hospital Anxiety and Depression Scale, despite symptoms of AS not improving.[32] Infliximab also reduced levels of inflammatory markers (a1 and a2 globulin fractions) in patients with Crohn's disease.[33] Notably, biologics against pro-inflammatory cytokines appear more effective than non-biologic treatments in addressing depression, further supporting an inflammation-linked mechanism.[34] In a randomized controlled trial (COMET), patients with rheumatoid arthritis and depression treated with etanercept had significantly lower depression and anxiety scores than those treated with methotrexate ($P < .001$).[35] These findings suggest a potential biologic link between depression, anxiety, and psoriasis, further empha-

sizing the importance of screening processes or psychological care for these patients.

Despite the growing recognition of psychological comorbidities in psoriasis, formal screening remains limited. The All-Party Parliamentary Group on Skin in the United Kingdom reported that 98% of psoriasis patients experience psychological burden, yet only 18% seek help.[36] The American Academy of Dermatology recommends that physicians ask patients how psoriasis affects their daily life, emotions, and relationships.[37] A large multi-stage study further informed this by identifying aspects of psoriasis linked to psychological distress. It found visibility of lesions, perceived social judgment, and concealment behaviours as key contributors to distress.[38] High scores on health-related quality of life tools should prompt psychological evaluation.

Importantly, skin clearance was identified by patients with psoriasis and the British Association of Dermatologists as an essential goal of treatment.[39]

Cognitive-behavioural therapy, when added to standard treatment, improved psoriasis by 75%.[40] Mindfulness-based therapy significantly reduced Dermatology Life Quality Index and Self-Administered Psoriasis Area Severity Index scores ($P = .05$), while motivational interviewing produced similar improvements.[41,42]

Despite this, there remains no universally accepted screening process or guideline for identifying and managing psychological comorbidities in psoriasis. Developing such protocols is essential for holistic, patient-centred care.

Limitations

This review has several limitations. The included studies varied in population characteristics, diagnostic criteria, and psychological assessment tools, introducing heterogeneity. While PsA was well-represented, rarer subtypes such as palmoplantar pustular psoriasis were less so, and others like erythrodermic and guttate psoriasis were not represented. Differences in psychological assessment tools likely influenced the range of reported prevalence rates. Some studies may be subject to bias due to the improved efficacy of biologic treatments, which can lead to better psychological outcomes and potentially overestimate the mental health burden in populations with less access to these therapies. The predominance of cross-sectional studies limits causal inferences. Potential publication bias, unadjusted confounders, and underreporting of suicidality further constrain findings.

Conclusion

This review highlights the psychological burden of psoriasis subtypes associated with PsA and PPP, emphasizing the need for integrated mental health care in these specific subtypes. Despite significant distress in PsA and palmoplantar pustular psoriasis, current screening practices remain inadequate. Future studies should explore long-term outcomes and assess intervention strategies to advance comprehensive, patient-centred management of psoriasis and its psychological comorbidities.

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None.

Data Availability Statement

The data underlying this article will be shared on reasonable request to the corresponding author.

Declaration of Conflicting Interests

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr Ilya Mukovozov has participated in advisory boards for Catalytic Health, Inc, CeraVe, Galderma, Kenvue, L'Oreal Canada, Pfizer, RBC Consultants, and Sun Pharmaceuticals; received honoraria for speaking engagement from AbbVie, Novartis, Pfizer, and Sun Pharmaceuticals. All other authors declare no conflict of interest.

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Supplemental Material

Supplemental material for this article is available online.

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