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The Differential Biopsychosocial Burden of Psoriasis and Vitiligo: A Comparative Analysis of Participation Restriction and its Clinical and Psychiatric Correlates

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A B S T R A C T

Visible skin diseases like psoriasis vulgaris and vitiligo impose a significant psychosocial burden. However, the comparative impact on real-world functioning and the interplay of clinical, social, and psychiatric factors remain poorly understood, particularly in non-Western populations. This study aimed to quantitatively compare participation restriction between these two conditions and to identify its key biopsychosocial predictors. This comparative cross-sectional study, conducted in a tertiary Indonesian hospital, enrolled 50 patients (25 with psoriasis vulgaris, 25 with non-segmental vitiligo). The primary outcome was participation restriction, measured by the 18-item Participation Scale (P-Scale). Clinical severity was assessed using the Psoriasis Area and Severity Index (PASI) and Vitiligo Area Scoring Index (VASI). Crucially, depressive and anxiety symptoms were screened using the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) scale, respectively. A hierarchical multiple linear regression analysis was performed to identify predictors of participation restriction. Patients with psoriasis reported profoundly higher mean P-Scale scores (43.16 ± 5.01) compared to those with vitiligo (25.72 ± 4.21; $p < 0.001$), indicating more severe restrictions. Psoriasis patients also exhibited significantly higher scores for depressive symptoms (PHQ-9: 11.52 ± 3.18 vs. 5.68 ± 2.29; $p < 0.001$) and anxiety symptoms (GAD-7: 10.24 ± 2.95 vs. 5.12 ± 2.15; $p < 0.001$). The hierarchical regression model was highly significant ($F(7, 42) = 28.14$, $p < 0.001$), explaining 82.4% of the variance in P-Scale scores. After controlling for demographic and clinical factors, a diagnosis of psoriasis ($\beta = 0.45$, $p < 0.001$), higher clinical severity ($\beta = 0.28$, $p = 0.002$), and higher depressive symptom severity (PHQ-9 score; $\beta = 0.39$, $p < 0.001$) were significant independent predictors of greater participation restriction. In conclusion, psoriasis vulgaris is associated with a dramatically greater burden of participation restriction than vitiligo. This burden is driven by a complex interplay of the disease's clinical severity, its inherent diagnosis-specific factors, and, critically, comorbid depressive symptoms. These findings underscore the necessity of a biopsychosocial approach in dermatology, advocating for routine mental health screening and integrated care models to address the multifaceted drivers of disability in patients with chronic inflammatory skin disease.

1. Introduction

Chronic dermatological conditions represent a formidable global health challenge, affecting millions and exerting a pervasive impact that extends far beyond the cutaneous surface.[1] Among these, chronic inflammatory and autoimmune skin diseases such as psoriasis vulgaris and vitiligo are distinguished by their visibility. This visibility frequently renders patients vulnerable to profound psychosocial distress, including anxiety, depression, and social stigmatization, which collectively degrade health-related quality of life. Stigma, a discrediting attribute that incites social marginalization, is a critical determinant of patient-reported outcomes.[2] However,

its ultimate impact is most tangibly expressed as participation restriction—an individual's difficulty in engaging with fundamental life situations, such as maintaining employment, fostering interpersonal relationships, or participating in community life. This construct, rooted in the World Health Organization's International Classification of Functioning, Disability and Health (ICF) framework, offers a more functional and less abstract measure of a disease's real-world burden than traditional quality-of-life metrics.[3]

Psoriasis vulgaris is a systemic, immune-mediated inflammatory disease characterized by erythematous, indurated plaques with overlying silvery scales.[4] Its global prevalence is estimated between 0.1% and 5%. The pathophysiology is driven by a complex cytokine cascade, primarily along the IL-23/Th17 axis, which perpetuates keratinocyte hyperproliferation and chronic inflammation. The clinical presentation—often involving pruritus, pain, and conspicuous lesions—is frequently misconstrued by the public as contagious or indicative of poor hygiene, leading to overt social rejection.[5] Furthermore, the systemic inflammation in psoriasis is not confined to the skin; it is linked to a host of comorbidities, including psoriatic arthritis and cardiovascular disease, and has direct effects on the central nervous system, creating a biological substrate for neuropsychiatric symptoms, a phenomenon known as "immunopsychiatry".[6]

Conversely, vitiligo is an autoimmune disorder characterized by the selective destruction of melanocytes, resulting in well-demarcated, depigmented macules and patches.[7] Affecting up to 2% of the global population, its primary impact is on appearance. While physically quiescent—lesions do not typically itch, scale, or cause pain—the stark alteration of skin color, particularly in individuals with darker skin tones, can inflict significant psychological trauma, precipitating reduced self-esteem and identity-related distress. The societal response to vitiligo is also often rooted in misconceptions, leading to stigmatization.[8] While extensive research has documented the negative impact of both diseases, there remains a critical gap in the literature regarding their direct, comparative assessment through the functional lens of participation. Few studies have performed a head-to-head comparison of participation restrictions, and even fewer have attempted to deconstruct the drivers of this burden by simultaneously assessing clinical and psychiatric variables.[9] The vast majority of existing research originates from Western populations, leaving the sociocultural nuances of stigma in regions like Southeast Asia, where skin appearance can hold profound cultural value, largely unexplored.[10]

Therefore, the primary aim of this study was to quantitatively compare the level of participation restriction, as measured by the Participation Scale (P-Scale), between patients with psoriasis vulgaris and vitiligo in an Indonesian cohort. The secondary aims were to explore the demographic, clinical, and, critically, psychiatric (depressive and anxiety symptoms) factors associated with the severity of these restrictions. The novelty of this research lies in its direct comparative methodology using a participation-centric instrument within a specific Southeast Asian cultural context, and its adoption of a comprehensive biopsychosocial framework to model the predictors of functional disability. We hypothesized that psoriasis vulgaris would be associated with greater participation restriction than vitiligo, and that this difference would be explained by a combination of clinical severity and a higher burden of psychiatric symptoms.

2. Methods

A comparative, observational, cross-sectional study was conducted at the Dermatology and Venereology Outpatient Clinic of Dr. Moewardi Regional General Hospital in Surakarta, Indonesia, a major tertiary referral center for the Central Java region. The study was conducted from June 1st, 2025, to June 30th, 2025. The study protocol was approved by the Research Ethics Committee of Dr. Moewardi Regional General Hospital, Surakarta. All procedures adhered to the ethical standards of the 1964 Helsinki Declaration and its subsequent amendments. All participants provided written informed consent.

A consecutive sampling method was used to recruit 50 participants (25 diagnosed with psoriasis vulgaris and 25 with non-segmental vitiligo). The sample size was calculated a priori based on a formula for comparing two independent means, using data from a pilot study. Assuming a standard deviation of 5.0, a power of 80%, a significance level of 5%, and a minimum detectable difference of 4 points in the mean P-Scale score, a sample size of 25 participants per group was deemed sufficient. Inclusion criteria were: (1) age ≥18 years; (2) a definitive clinical diagnosis of psoriasis vulgaris or non-segmental vitiligo confirmed by a dermatologist; (3) disease duration of at least 6 months; and (4) ability to provide written informed consent. Exclusion criteria were: (1) presence of a significant confounding comorbid skin disease (such as severe acne or atopic dermatitis); (2) a pre-existing, formally diagnosed severe mental illness that would preclude valid assessment (including schizophrenia, bipolar I disorder, or major depressive disorder with psychotic features); (3) cognitive impairment or language barriers preventing comprehension of the questionnaires; (4) refusal to provide consent.

The primary outcome in this study was participation restriction. This was measured using the Participation Scale (P-Scale). The P-Scale is an 18-item, interviewer-administered questionnaire assessing restrictions in nine life domains (including work, interpersonal relationships, and community life). Each item is scored from 0 (no restriction) to 4 (severe restriction), yielding a total score from 0 to 72, with higher scores indicating more severe restriction. The validated Indonesian version was used. The primary independent variable in this study was the disease group. a dichotomous variable categorizing patients as having either psoriasis vulgaris or vitiligo. Several sets of covariates were collected. Key clinical covariates included disease severity, assessed using the Psoriasis Area and Severity Index (PASI) for psoriasis, which ranges from 0 to 100, and, for vitiligo, severity was assessed using the Vitiligo Area Scoring Index (VASI), which was standardized into *z*-scores for analysis. Disease duration and age of onset were recorded in years. Lesion visibility, a dichotomous variable indicating the presence of lesions on highly visible areas (face, neck, hands).

Psychiatric Covariates included depressive symptoms and anxiety symptoms. Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9). This is a 9-item self-report scale that scores the severity of depressive symptoms over the past two weeks. The total score ranges from 0 to 27, with higher scores indicating more severe depression. Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale. This is a 7-item self-report scale measuring the severity of anxiety symptoms over the past two weeks. The total score ranges from 0 to 21, with higher scores indicating more severe anxiety. Demographic covariates included age, gender, marital status (categorized as unmarried vs. married), employment status, education level, and monthly household income were collected. After providing informed consent in a private setting, each participant was interviewed by a trained researcher. First, demographic data was collected. Next, participants completed the PHQ-9 and GAD-7 questionnaires. Following this, the researcher administered the P-Scale. Finally, a board-certified dermatologist, unblinded to diagnosis, performed the clinical severity assessments (PASI or VASI).

Data were analyzed using IBM SPSS Statistics, Version 25.0. A p-value < 0.05 was considered statistically significant. Frequencies and percentages were used for categorical variables, while means and standard deviations (SD) were used for continuous variables. Independent Samples t-tests were used to compare means of continuous variables between the psoriasis and vitiligo groups. Chi-square tests were used for categorical variables. A hierarchical multiple linear regression analysis was conducted to identify independent predictors of the continuous P-Scale score (the dependent variable). This approach allows for assessing the incremental predictive value of different sets of variables. Model 1, demographic variables (age, gender, marital status) were entered.

Model 2, clinical variables (disease group, standardized severity z-score, disease duration, visible lesions) were added. Model 3, Psychiatric variables (PHQ-9 score, GAD-7 score) were added. The change in R-squared (ΔR^2) at each step was examined to determine the additional variance explained by each block of variables. An interaction term (Disease Group × Standardized Severity) was tested but found to be non-significant ($p > 0.10$) and was thus removed from the final model to maintain parsimony. Assumptions of linear regression (normality of residuals, linearity, and multicollinearity) were checked and met.

3. Results and Discussion

A total of 50 patients (25 with vitiligo, 25 with psoriasis) were enrolled. The comprehensive characteristics are detailed in Table 1. The mean age of the cohort was 35.8 ± 41.2 years, with no significant difference between groups. A key demographic difference was observed in marital status, with a significantly higher proportion of vitiligo patients being unmarried (52.0%) compared to the psoriasis group (24.0%) ($p = 0.041$). Clinically, the mean age of disease onset was significantly earlier in the vitiligo group (21.4 ± 8.1 years) compared to the psoriasis group (33.7 ± 12.5 years) ($p < 0.001$). Psoriasis patients had lesions in highly visible areas more frequently than vitiligo patients (84.0% vs. 60.0%, $p = 0.048$). Most strikingly, the psychiatric burden was profoundly different between the groups. Psoriasis patients reported significantly higher mean scores for both depressive symptoms (PHQ-9: 11.52 ± 3.18 vs. 5.68 ± 2.29; $p < 0.001$) and anxiety symptoms (GAD-7: 10.24 ± 2.95 vs. 5.12 ± 2.15; $p < 0.001$), with the mean scores in the psoriasis group falling into the moderate severity range for both conditions.

Table 1. Demographic, Clinical, and Psychiatric Characteristics of Participants

CHARACTERISTIC	VITILIGO (N=25)	PSORIASIS VULGARIS (N=25)	P-VALUE
DEMOGRAPHIC DATA			
Age (years), mean (SD)	35.8 (13.1)	41.2 (15.0)	0.184*
Gender, n (%)			0.395+
Male	10 (40.0)	13 (52.0)	
Female	15 (60.0)	12 (48.0)	
Marital Status, n (%)			**0.041+**
Unmarried	13 (52.0)	6 (24.0)	
Married	12 (48.0)	19 (76.0)	
CLINICAL DATA			
Disease Duration (years), mean (SD)	6.8 (4.5)	7.5 (5.1)	0.582*
Age of Onset (years), mean (SD)	21.4 (8.1)	33.7 (12.5)	**<0.001***
Disease Severity, mean (SD)	*VASI: 9.8 (5.2)*	*PASI: 12.4 (4.8)*	-
Visible Lesions (Face/Hands/Neck), n (%)	15 (60.0)	21 (84.0)	**0.048+**
PSYCHIATRIC DATA			
PHQ-9 Score, mean (SD)	5.68 (2.29)	11.52 (3.18)	**<0.001***
GAD-7 Score, mean (SD)	5.12 (2.15)	10.24 (2.95)	**<0.001***

Notes: SD = Standard Deviation; VASI = Vitiligo Area Scoring Index; PASI = Psoriasis Area and Severity Index; PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder-7.
* p-value derived from Independent Samples t-test. + p-value derived from Chi-square test.
Bold red values indicate statistical significance at $p < 0.05$.

The primary outcome revealed a profound disparity. The mean total P-Scale score for the psoriasis group (43.16 ± 5.01) was substantially higher than that for the vitiligo group (25.72 ± 4.21). This difference of 17.44 points was highly statistically significant ($t(48) = 13.05$, $p < 0.001$), indicating a far greater degree of functional impairment and restriction in daily life participation among patients with psoriasis. This difference is visualized in Figure 1.

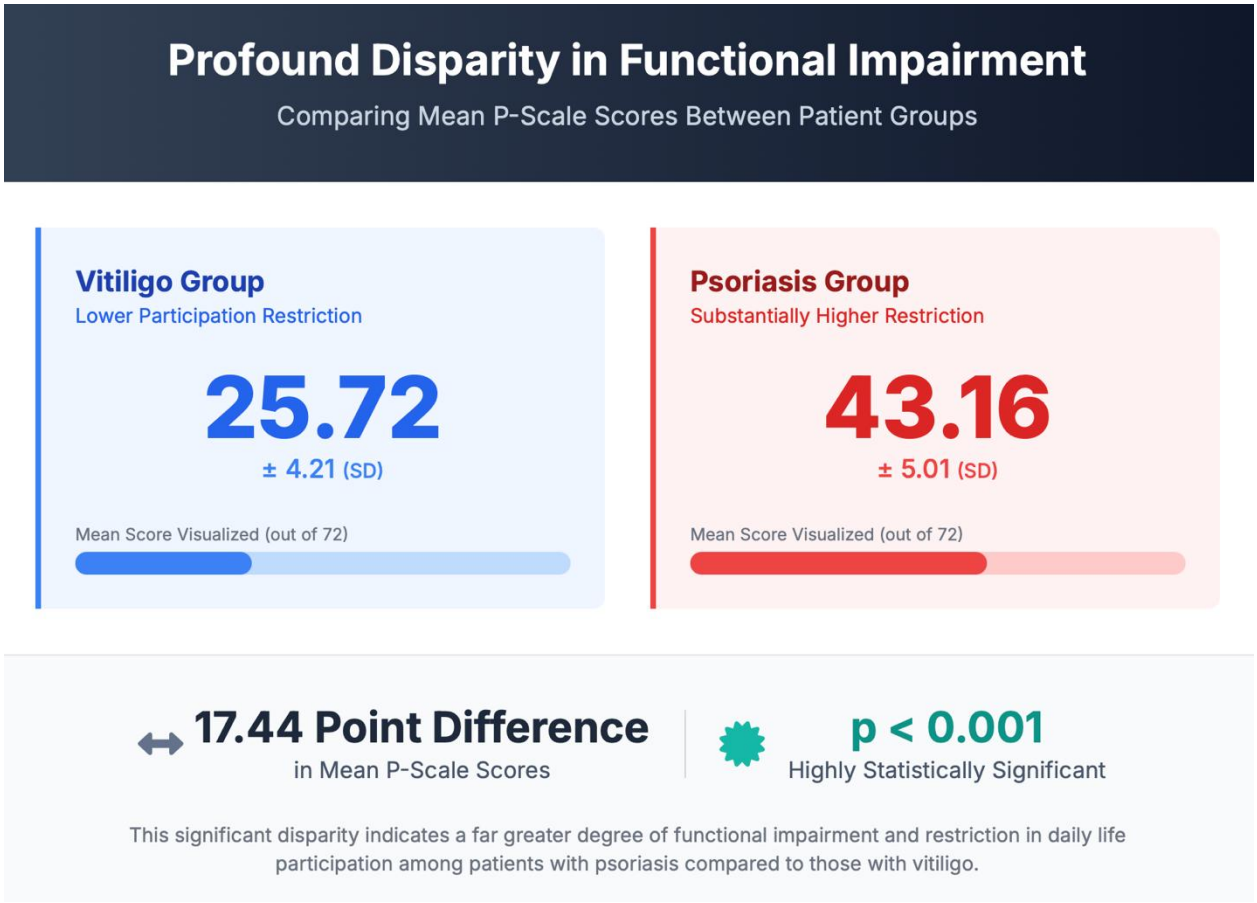

Figure 1. Comparison of total P-scale scores between vitiligo and psoriasis vulgaris groups. The figure illustrates the distribution of total Participation Scale (P-Scale) scores. The central line represents the median, the box represents the interquartile range (IQR), and the whiskers represent the range of the data. The psoriasis group demonstrates a significantly higher median and overall distribution of scores compared to the vitiligo group ($p < 0.001$).

The hierarchical multiple linear regression analysis provided a detailed model of the factors contributing to participation restriction (Table 2). Model 1, containing only demographic variables, was not significant and explained only a small fraction of the variance ($R^2 = 0.07$). Model 2, which added the clinical variables, represented a massive improvement. The model became highly significant ($p < 0.001$), and the R^2 change was 0.64, indicating that clinical factors explained an additional 64% of the variance in P-Scale scores. In this model, having a diagnosis of psoriasis ($\beta = 0.68$, $p < 0.001$) and higher standardized clinical severity ($\beta = 0.25$, $p = 0.005$) were strong, significant predictors of higher restriction. Model 3, the final model, added the psychiatric variables (PHQ-9 and GAD-7 scores). This addition explained a further 11.4% of the variance in P-Scale scores ($\Delta R^2 = 0.114$, $p < 0.001$). The final model was highly significant ($F(7,$

42) = 28.14, p < 0.001) and accounted for a total of 82.4% of the variance in participation restriction. In this final, comprehensive model, three variables emerged as significant independent predictors: (1) Diagnosis of Psoriasis: Even after accounting for all other factors, having psoriasis (vs. vitiligo) was the strongest predictor of higher P-Scale scores (β = 0.45, p < 0.001); (2) Clinical Severity: Higher standardized disease severity (PASI/VASI z-score) independently predicted greater restriction (β = 0.28, p = 0.002); (3) Depressive Symptoms: Higher scores on the PHQ-9 were a powerful and independent predictor of greater restriction (β = 0.39, p < 0.001). GAD-7 scores were not a significant independent predictor in the final model, likely due to their high correlation with PHQ-9 scores.

Table 2. Hierarchical Multiple Linear Regression Predicting Participation Restriction (P-Scale Score)

VARIABLE	MODEL 1		MODEL 2		MODEL 3 (FINAL)	
	B (SE)	β	B (SE)	β	B (SE)	β
Step 1: Demographics						
Age	-0.04 (0.07)	-0.08	-0.01 (0.04)	-0.02	0.02 (0.03)	0.04
Gender (Male)	2.15 (2.51)	0.12	0.65 (1.45)	0.04	-0.11 (1.18)	-0.01
Marital Status (Unmarried)	3.01 (2.73)	0.16	0.98 (1.59)	0.05	-0.55 (1.29)	-0.03
Step 2: Clinical Variables Added						
Disease Group (Psoriasis)	-	-	**13.51 (1.78)**	**0.68***	**9.02 (1.81)**	**0.45***
Severity (z-score)	-	-	**2.91 (0.98)**	**0.25†**	**3.25 (0.99)**	**0.28†**
Visible Lesions (Yes)	-	-	1.88 (1.75)	0.09	0.91 (1.43)	0.05
Disease Duration	-	-	-0.15 (0.21)	-0.06	-0.08 (0.17)	-0.03
Step 3: Psychiatric Variables Added						
PHQ-9 Score	-	-	-	-	**1.15 (0.29)**	**0.39***
GAD-7 Score	-	-	-	-	-0.21 (0.35)	-0.06
R^2	0.071		0.710		0.824	
ΔR^2	-		0.639*		0.114*	
F for model	1.21		14.01*		28.14*	

Notes: Dependent variable is the Total P-Scale Score. B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient. Significant predictors are highlighted in **bold red** text.
* p < 0.001, † p < 0.01.

This study provides compelling evidence that psoriasis vulgaris is associated with a profoundly more severe burden of participation restriction than vitiligo in an Indonesian cohort. The nearly 18-point mean difference in P-Scale scores represents a vast chasm in the lived experience of these two visible dermatoses.[11] Our analysis, uniquely incorporating psychiatric screening within a biopsychosocial framework, demonstrates that this functional disability is not merely a product of social stigma but is a complex syndrome driven by the disease diagnosis itself, its clinical severity, and critically, the presence of comorbid depressive symptoms.

The central and most compelling finding of this investigation is the profound chasm in functional impairment between psoriasis and vitiligo.[12] The observation that a diagnosis of psoriasis remained the most powerful predictor of participation restriction—even after statistically controlling for the significant influences of clinical severity and psychiatric symptoms—compels a more nuanced and integrated understanding of its pathophysiology. The disability associated with psoriasis is not a monolithic entity driven by a single cause.[13] Rather, it appears to be the cumulative result of a devastating "dual pathway": an "outside-in" pathway, mediated by the social and psychological sequelae of stigma, and a concurrent "inside-out" pathway, driven by the direct biological impact of systemic inflammation on the central nervous system. This dual-pathway framework provides a comprehensive model for understanding why psoriasis, uniquely among visible dermatoses, exacts such a heavy toll on an individual's ability to engage with the world.[14]

The "outside-in" pathway represents the traditional and most intuitive understanding of the burden of visible skin disease. It begins with the external social environment and works its way inward to shape the patient's psyche and behavior. This pathway is fundamentally about stigma—the process by which society labels, stereotypes, and rejects individuals based on a discrediting attribute.[15] For patients with psoriasis, the clinical presentation of their disease provides a potent substrate for this process. Unlike the quiescent, achromatic patches of vitiligo, which may evoke curiosity or even misplaced pity, the lesions of psoriasis are active and inflammatory. The erythema, induration, and prominent silvery scaling create a visceral aesthetic that can be deeply unsettling to the lay public. These lesions are often erroneously perceived as signs of contagion, poor personal hygiene, or a communicable disease, activating primitive responses of fear and revulsion in observers.[16]

This external reaction fuels what sociologists term enacted stigma: overt acts of discrimination and social rejection.[17] Patients report being stared at in public, being asked to leave swimming pools, or being treated with excessive caution by service professionals. In the workplace, this can translate into missed opportunities for promotion or being relegated to non-client-facing roles. In personal life, it can lead to social invitations being withheld and potential romantic partners recoiling from physical intimacy. This constant barrage of negative social feedback directly curtails a patient's opportunities and ability to participate in community, occupational, and interpersonal domains.

However, the impact of stigma extends beyond these external barriers. Perhaps more insidiously, enacted stigma gives rise to felt stigma, an internal, psychological process. After repeated experiences of rejection, patients begin to anticipate negative social judgment, internalizing the shame and disgust they perceive in others. This leads to a state of hypervigilance and fear, where every social interaction is fraught with the potential for humiliation. The patient begins to see themselves through the rejecting eyes of society, leading to a damaged self-concept, profound body image dissatisfaction, and diminished self-esteem. This internalized shame is a powerful driver of self-imposed isolation. Patients may proactively withdraw from social situations to preemptively avoid the pain of rejection.[18] They may avoid activities that require exposing their skin, such as sports or summer gatherings. The constant shedding of scales can create a deep-seated fear of

"contaminating" their environment—leaving flakes on furniture, clothing, or in the homes of others—further fueling their desire to retreat from the world. This cascade of social anxiety and avoidance behavior is a primary driver of the high scores on the Participation Scale, as patients systematically disengage from the very life activities the scale is designed to measure. While the "outside-in" pathway of stigma is a powerful disabling force, our findings strongly indicate that it is insufficient to explain the full magnitude of the disability seen in psoriasis.[19] The "inside-out" pathway provides the missing piece of the puzzle, positing that the disease's intrinsic biology directly generates disability by altering brain function. Psoriasis is not merely a skin disease; it is a systemic inflammatory condition. The same immune dysregulation that drives keratinocyte hyperproliferation in the skin results in elevated circulating levels of pro-inflammatory cytokines, including Tumor Necrosis Factor-alpha (TNF-α), Interleukin-17 (IL-17), and IL-23.

For decades, the brain was considered "immune-privileged," shielded from the body's inflammatory processes by the blood-brain barrier. The field of immunopsychiatry has overturned this dogma, revealing that these circulating cytokines can and do communicate with the central nervous system. They can cross the blood-brain barrier at permeable regions or activate secondary messenger systems that transmit inflammatory signals into the brain. Once within the central nervous system, these cytokines trigger a neuroinflammatory cascade that has profound effects on neural circuits and neurotransmitter systems, particularly those regulating mood, motivation, and energy metabolism. This neuroinflammation gives rise to a highly conserved neurobiological syndrome known as "sickness behavior." From an evolutionary perspective, sickness behavior is an adaptive response to infection or injury. When the body is under attack, the immune system signals the brain to initiate a coordinated set of behavioral changes designed to conserve energy and reallocate resources toward fighting the pathogen. These changes include profound fatigue, loss of pleasure (anhedonia), decreased appetite, psychomotor retardation, and a powerful drive for social withdrawal. In the context of an acute infection, this response is beneficial and transient. However, in a chronic inflammatory state like moderate-to-severe psoriasis, the immune system is perpetually activated, and the brain is subjected to a relentless inflammatory barrage. The adaptive "sickness behavior" response becomes maladaptive and chronic. The phenotype of chronic sickness behavior is clinically indistinguishable from the constellation of symptoms that define major depressive disorder.[20] The fatigue becomes debilitating exhaustion, the anhedonia becomes a pervasive loss of interest in life, and the social withdrawal becomes a profound and isolating apathy. This provides a direct, biological, non-stigma-related mechanism for the severe participation restriction seen in psoriasis. Patients may find themselves unable to get out of bed, engage in hobbies, or maintain relationships, not simply because they fear social rejection, but because their own brain, hijacked by inflammatory signals, has eliminated their capacity and motivation to do so. Their biology is instructing them to disengage. The significantly higher PHQ-9 scores observed in our psoriasis cohort are not just a psychological reaction to a difficult disease; they are very likely a clinical manifestation of this underlying neuroinflammatory process. Vitiligo, in contrast, is a more organ-specific autoimmune condition without the same degree of systemic cytokine elevation. Consequently, it does not trigger this potent "inside-out" pathway, which is a fundamental reason for the dramatic difference in functional outcomes between the two diseases. These "outside-in" and "inside-out" pathways do not operate in isolation. They interact and potentiate each other, creating a vicious, self-sustaining cycle of disability. Consider the synergistic feedback loop: The systemic inflammation of the "inside-out" pathway induces fatigue and depressive symptoms.

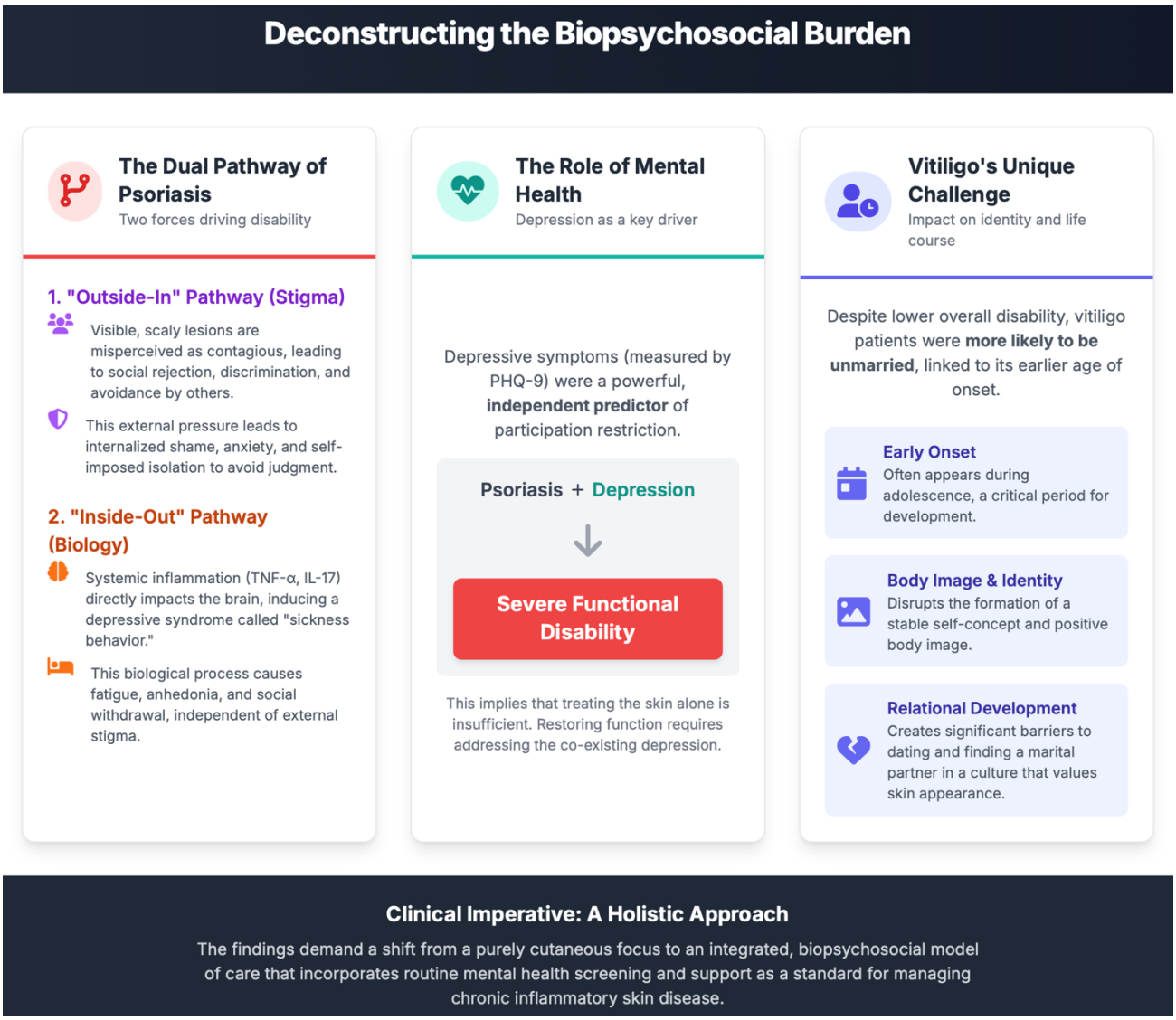

Figure 2. Deconstructing the biopsychosocial burden.

This biologically-driven avolition and anergia may make it more difficult for a patient to adhere to complex topical treatment regimens or maintain meticulous personal grooming, potentially worsening the visible signs of their disease. This, in turn, can intensify the negative social reactions of the "outside-in" pathway. The resulting social rejection and psychological distress are potent stressors. It is well-established that psychological stress activates the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, which themselves can further drive the release of pro-inflammatory cytokines, thus exacerbating the psoriatic inflammation. In this way, the social world directly fuels the biological fire, which in turn further diminishes the patient's capacity to engage with the social world. This vicious cycle, where the social and biological pathways feed into one another, likely explains why the "diagnosis of psoriasis" itself remained such a powerful predictor in our regression model, even after accounting for individual factors like clinical severity and depression scores. The diagnosis represents the entire, integrated, and synergistic gestalt of this complex biopsychosocial condition. This

framework powerfully underscores the independent role of psychiatric comorbidity as a driver of disability. The depression captured by the PHQ-9 is the clinical endpoint of both the biological "inside-out" pressures and the psychological "outside-in" pressures. Regardless of its origin, the presence of clinical depression—with its core symptoms of anhedonia, avolition, hopelessness, and fatigue—is a profoundly disabling condition in its own right. It erodes the very will to participate in life. Our finding that the PHQ-9 score was a strong, independent predictor of participation restriction highlights a critical reality for clinical practice: treating the skin is necessary, but often insufficient. A patient may achieve clear skin through effective dermatological therapy, but if the co-existing depression is left unaddressed, they may remain functionally impaired and unable to reclaim their life. This provides a clear and urgent mandate for the integration of mental health screening and management into the standard of care for psoriasis.

Finally, the intriguing finding that vitiligo patients were significantly more likely to be unmarried, despite having a lower overall burden of participation restriction, illuminates a different but equally important dimension of psychosocial burden: the impact of a disease on developmental trajectory and identity formation. The significantly earlier age of onset for vitiligo—often in adolescence or early adulthood—is key. This is a critical and vulnerable period of the life course, dedicated to the formation of a stable self-concept, the development of body image, and the navigation of first intimate relationships. The sudden appearance of highly visible, depigmented patches can catastrophically disrupt this process. It can lead to the formation of what has been termed a "spoiled identity," where the individual's sense of self becomes inextricably and negatively linked to their visible difference. In the sociocultural context of Indonesia, where there can be strong societal and familial expectations regarding marriage and where physical appearance is often highly valued, this can create formidable barriers to courtship and finding a marital partner. The burden of vitiligo, therefore, may be less about the day-to-day friction of social participation and more about a fundamental disruption of a key life-course goal. This specific, targeted impact on relational development provides a compelling explanation for the marital status disparity and serves as a poignant reminder that the burden of a disease cannot always be captured by a single metric; its true impact is often revealed in the life stories it irrevocably alters.

This study, while providing novel insights, has limitations. The cross-sectional design precludes causal inference. The single-center setting and use of consecutive sampling may limit generalizability. A key limitation is the lack of data on treatment history and specific clinical phenotypes (including Fitzpatrick skin type, presence of psoriatic arthritis, or specific lesion locations like the scalp or nails), which are known to be important unmeasured confounders. The interviewer-administered nature of the P-Scale could also introduce social desirability bias, and the scale itself primarily captures the magnitude of restriction, not its subjective emotional quality. Despite these limitations, the clinical implications are profound and clear. The management of psoriasis must evolve beyond a purely cutaneous focus to a holistic, biopsychosocial model. Our findings provide a strong evidence-based rationale for: (1) Routine Mental Health Screening: The use of validated, simple tools like the PHQ-9 should be integrated into routine dermatology visits for patients with psoriasis; (2) Integrated Care Models: There is a pressing need for closer collaboration between dermatology and mental health services, including the development of specialized psychodermatology clinics, to provide comprehensive care that addresses both the "outside-in" (stigma) and "inside-out" (inflammation-induced depression) drivers of disability; (3) Patient Education: Clinicians should educate psoriasis patients about the direct link between their systemic inflammation and symptoms of depression and fatigue, validating their experience and destigmatizing their mental health struggles.

4. Conclusion

In conclusion, this study demonstrates that patients with psoriasis vulgaris experience a significantly more severe burden of participation restriction than patients with vitiligo. This disparity is not solely explained by the visible nature of the disease but is independently predicted by the diagnosis of psoriasis, its clinical severity, and, most critically, the severity of comorbid depressive symptoms. The findings highlight a dual pathway to disability in psoriasis, involving both external social stigma and internal, inflammation-driven sickness behavior. These results carry an urgent clinical imperative: to transform the management of chronic inflammatory skin disease from a siloed, organ-specific approach to an integrated, biopsychosocial model of care that places mental health screening and support at its core.

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