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Impact of Psychological Factors on Early vs. Late-Onset Psoriasis: A Comparative Analysis

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ABSTRACT

Introduction: Psoriasis is a chronic inflammatory disease that significantly impacts psychosocial well-being. This study compared the clinical and psychosocial characteristics of early-onset (<40 years) and late-onset (≥40 years) psoriasis.

Methods: This cross-sectional study included 190 patients with psoriasis categorized as early-onset (n=135) and late-onset (n=55). Data on demographics, clinical features, comorbidities, and psychosocial factors were collected. The Hospital Anxiety and Depression Scale (HADS) and the Dermatology Life Quality Index (DLQI) assessed psychological impact and quality of life. Statistical analyses included chi-squared tests, t-tests, and correlation analyses.

Results: Early-onset patients were more likely to have a family history of psoriasis (43.7% vs. 16.4%, $P<0.001$), while pustular psoriasis was more common in the late-onset group (27.3% vs. 11.1%, $P=0.006$). A significant positive correlation was observed between DLQI scores and HADS-Total, HADS-Anxiety, and HADS-Depression scores ($P<0.001$). Psychological stress was reported as a disease trigger by 63.1% of patients, with a higher proportion in the early-onset group ($P=0.025$). Although initial comparisons revealed no significant difference in DLQI or HAD scores between groups, an additional analysis limited to chronic plaque psoriasis revealed significantly higher anxiety and total HADS scores in the early-onset group ($P=0.002$ and $P=0.035$, respectively), suggesting a stronger psychological burden when clinical subtype is controlled.

Conclusions: Early-onset psoriasis patients are more likely to report stress as a trigger and have a family history, while late-onset patients exhibit higher rates of pustular psoriasis and increased body mass index. Early-onset patients with chronic plaque psoriasis experience greater psychological burden, particularly anxiety. These findings highlight the importance of age of onset in tailoring psychosocial support and treatment strategies in psoriasis care.

Introduction

Psoriasis is a common chronic immune-mediated inflammatory disease characterized by periods of remission and relapse, significantly impacting patients' quality of life [1]. Psoriasis is traditionally classified into two categories based on age at onset: early-onset (type 1, onset before age 40 years) and late-onset (type 2, onset after 40 years) [2]. According to Henseler and Christophers [2], early-onset psoriasis is associated with HLA markers, often has a family history, and represents a more severe clinical form. In contrast, late-onset psoriasis shows weaker associations with HLA and family history, following a milder course.

Studies have used different threshold ages to define early- and late-onset psoriasis, but generally, early-onset psoriasis is linked to a higher genetic predisposition, a more severe disease course, and greater psychosocial comorbidity [3-5] The chronic nature of psoriasis and its significant impact on quality of life result in a high burden of psychosocial morbidity. Psychological stress is a crucial factor, both as a trigger and as a consequence of the disease [6]. Studies have shown that patients with psoriasis experience numerous psychological challenges, and as a result, they are at increased risk of depression, anxiety, social phobia, suicidal thoughts, and addictions (e.g., smoking, alcohol) [7-9]. In a study investigating the psychological effects of early- and late-onset psoriasis, statistically significant differences were observed in patients' personality traits, depression, and anxiety scores [4]. While the existing literature provides limited insights into the clinical and psychosocial characteristics that distinguish early-onset from late-onset psoriasis, understanding these differences is essential to optimizing patient management strategies.

Objective

This study aimed to determine whether there are differences in clinical and psychosocial characteristics of psoriasis patients based on the age at disease onset. By comprehensively examining these variables, we aimed to determine whether early-onset and late-onset psoriasis manifest distinct profiles that could inform differential treatment approaches and enhance patient care outcomes.

Methods

Study Design and Participants

In this cross-sectional study, a total of 190 patients were recruited from the psoriasis treatment center at Gazi University, Department of Dermatology and Venereology. The study was conducted in accordance with the ethical standards described in an appropriate version of the 1975 Declaration of Helsinki, as revised in 2018. The patients were categorized into two groups based on the age at psoriasis onset: early-onset (under age 40 years) and late-onset (40 years and older). Following informed consent, all patients were assessed by qualified dermatologists. The PASI (Psoriasis Area and Severity Index) scores were calculated for patients with chronic plaque psoriasis. The patients were asked to complete the scales of the Dermatology Life Quality Index (DLQI) and Hospital Anxiety and Depression Scale (HADS). The study was approved by the Gazi University Clinical Research Ethics Committee on 21 July 2020, with decision number 512.

Measurement Tools

The Dermatology Life Quality Index (DLQI)

The Dermatology Life Quality Index (DLQI) was the first tool developed specifically for dermatological conditions by Finlay et al. [10] The DLQI consists of 10 questions grouped into five categories, and the total score ranges from 0 to 30. Higher scores indicate a greater impact on quality of life. The validity and reliability study of the Turkish version of the DLQI was conducted by Öztürkcan et al. in 2006 [11].

Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) was developed by Zigmond and Snaith to identify anxiety and depression in individuals with physical illnesses [12] The validity and reliability study of the Turkish version was conducted by Aydemir et al. in 1997 [13]. The HADS is a 14-item scale with a four-point Likert response format, where seven items measure anxiety (HADS-A) and seven items measure depression (HADS-D). The cutoff points for the Turkish version are 10 for HADS-A and 7 for HADS-D [13].

Statistical Analysis

The statistical analyses were conducted using IBM SPSS Statistics Version 23.0 (Statistical Package for Social Sciences, SPSS Inc., Armonk, NY, USA). Descriptive statistics are presented as mean, standard deviation, frequency, and percentage. The Pearson chi-squared test was used to compare categorical variables. The Kolmogorov-Smirnov test was used to determine the normality of the distribution of variables. For variables not following a normal distribution, the Mann-Whitney U test and Kruskal-Wallis test were applied. Pearson correlation analysis was used for the correlation of parametric variables. The significance threshold was set at $P<0.05$.

Results

Study Population

The study included 190 patients aged 18 and older. Among them, 135 had disease onset before the age of 40 and were

classified as the "early-onset psoriasis" group, while 55 had disease onset at age 40 or older and were classified as the "late-onset psoriasis" group.

Sociodemographic Characteristics of the Patients

The sociodemographic characteristics of the patients are summarized in Table 1. The higher proportion of females in the late-onset group was found to be statistically significant (P=0.023).

Clinical and Psychosocial Characteristics of the Patients

The features related to family history, clinical presentation, and smoking/alcohol use in early- and late-onset psoriasis patients are shown in Table 2. A family history of psoriasis was significantly more prevalent among early-onset patients (χ^2=12.71, P<0.001). On the other hand, pustular forms of psoriasis were observed at a significantly higher rate in the late-onset group (χ^2=7.62, P=0.006). In patients with chronic plaque psoriasis, the mean PASI score was found to be 4.23 (ranging from 0 to 49). No significant difference in PASI scores was observed between patients with early-onset and late-onset psoriasis vulgaris (Z=-1.195, P=0.232).

The comorbidities associated with early- and late-onset psoriasis patients are shown in Table 3. In early-onset psoriasis patients, the most common comorbidities were obesity (n=30), hypertension (n=21), diabetes mellitus (n=13), and hypo/hyperthyroidism (n=11). In late-onset psoriasis patients, the most common comorbidities were hypertension (n=20), obesity (n=19), and diabetes mellitus (n=9).

The distribution of patients based on body mass index (BMI) was as follows: among early-onset psoriasis patients, 3% had a BMI under 18.5 kg/m², 40.3% were in the 18.5-24.9 kg/m² range, 30.6% were in the 25-29.9 kg/m² range, and 26.1% were in the 30-39.9 kg/m² range. In contrast, among late-onset psoriasis patients, none had a BMI under 18.5 kg/m², 17.0% were in the 18.5-24.9 kg/m² range, 43.4% were in the 25-29.9 kg/m² range, and 39.6% were in the 30-39.9 kg/m² range. Our results indicate that a later age at onset is associated with an increase in BMI (P=0.001). The comorbidities associated with early- and late-onset psoriasis patients were also compared. Hypertension was significantly more common in patients with late-onset psoriasis (χ^2=9.99, P=0.001); however, there was no significant difference between the two groups for other comorbidities, including diabetes, coronary artery disease, hyperlipidemia, inflammatory bowel disease, and hypo/hyperthyroidism.

Upon questioning patients about major traumatic life events experienced at the time or just before the onset of psoriatic lesions, 101 patients (53.1%) reported a major traumatic life event that they associated with the beginning of their disease. These events included the death of a loved one, family problems, economic and work-related issues, relocation, military service, and other similar situations. The frequency of major traumatic life events was found to be significantly higher in late-onset patients compared to early-onset patients (χ^2=11.90, P=0.001). A comparison of the psychosocial characteristics of early- and late-onset patients is shown in Table 3. The difference in patients reporting psychological stress as a trigger for their illness between

Table 1. The Sociodemographic Characteristics of the Patients.

		Early-onset psoriasis patients	Late-onset psoriasis patients	All patients
		Mean ± SD	Mean ± SD	Mean ± SD
Age		39.39±13.57	55.56±7.56	44.07±14.18
		n (%)	n (%)	n (%)
Sex	Female	59 (43.7)	34 (61.8)	93 (48.9)
	Male	76 (56.3)	21 (38.2)	97 (51.1)
Marital Status	Married	94 (69.6)	47 (85.5)	141 (74.2)
	Single	39 (28.9)	2 (3.6)	41 (21.6)
	Divorced/Widowed	2 (1.5)	6 (10.9)	8 (4.2)
Education Level	Primary education	19 (14.1)	23 (41.8)	42 (22.1)
	Secondary education	54 (40.0)	20 (36.4)	74 (38.9
	University and above	62 (45.9)	12 (21.8)	74 (38.9)
Employment Status	Employed	62 (45.9)	20 (36.4)	82 (43.2)
	Unemployed	45 (33.3)	18 (32.7)	63 (33.2)
	Student	16 (11.8)	0 (0.0)	16 (8.4)
	Retired	12 (8.9)	17 (30.9)	29 (15.3)

Table 2. The Features Related to Family History, Clinical Presentation, and Smoking/Alcohol Use in Early- and Late-Onset Psoriasis Patients.

		Early-onset psoriasis patients	Late-onset psoriasis patients	All patients	
		n (%)	n (%)	n (%)	*P*
Family history	Yes	59 (43.7)	9 (16.4)	68 (35.8)	χ^2=12.71, *P*=0.000
	No	76 (56.3)	46 (83.6)	122 (64.2)	
Type of psoriasis	Pustular psoriasis (generalized and/ or palmoplantar pustular)	15 (11.1)	15 (27.3)	30 (15.8)	χ^2=7.62, *P*=0.006
	Chronic plaque psoriasis	120 (88.9)	40 (72.7)	160 (84.2)	
Joint involvement	Yes	62 (45.9)	28 (50.9)	90 (47.9)	χ^2=0.15 *P*=0.692
	No	73 (54.1)	27 (49.1)	100 (52.1)	
Nail involvement	Yes	78 (57.8)	30 (54.5)	108 (56.8)	χ^2=0.16 *P*=0.683
	No	57 (42.2)	25 (45.5)	82 (43.2)	
Smoking	Yes	69 (51.1)	33 (60.0)	102 (57.7)	χ^2=1.43 *P*=0.231
	No	66 (49.9)	22 (40.0)	88 (42.3)	
Alcohol consumption	Yes	32 (23.7)	10 (18.2)	42 (22.1)	χ^2=0.69 *P*=0.405
	No	103 (76.3)	45 (81.8)	148 (77.8)	
History of hospitalization for psoriasis	Yes	35 (25.9)	12 (21.8)	47 (27.7)	χ^2=0.35, *P*=0.552
	No	100 (74.1)	43 (78.2)	143 (75.3)	

Table 3. A Comparison of the Psychosocial Characteristics of Early- and Late-Onset Patients.

		Early-onset psoriasis patients	Late-onset psoriasis patients	All patients	
		n (%)	n (%)	n (%)	*P*
Traumatic life event at disease onset	Yes	61 (45.2)	40 (72.7)	101 (53.2)	χ^2=11.90, *P*=0.001
	No	74 (54.8)	15 (27.3)	89 (46.8)	
Psychological stress as lesion trigger	Yes	92 (68.1)	28 (50.9)	120 (63.1)	χ^2=4.99, *P*=0.025
	No	43 (31.9)	27 (49.1)	70 (36.9)	
History of psychiatric consultation	Yes	56 (41.5)	19 (34.5)	75 (39.5)	χ^2=0.78 *P*=0.375
	No	79 (58.5)	36 (65.5)	115 (60.5)	
History of psychiatric medication	Yes	45 (33.3)	19 (34.5)	64 (33.7)	χ^2=0.26 *P*=0.873
	No	90 (66.7)	36 (65.5)	126 (66.3)	
		Mean ± SD	**Mean ± SD**		***P***
DLQI		6.50±7.00	6.01±6.98		*t*=0.43, *P*=0.668

DLQI: Dermatology Life Quality Index.

the early-onset and late-onset groups was found to be statistically significant (χ^2=4.99, *P*=0.025).

The HADS scores for both groups are shown in Table 4. The total HADS scores were 14.11±7.34 in the early-onset group and 12.51±7.80 in the late-onset group. There was no significant difference in HADS-A and HADS-D scores between the early-onset and late-onset groups (*P*>0.05). Additionally, patients who identified psychological stress

Table 4. Hospital Anxiety and Depression Scale (HADS) Scores in Early- and Late-Onset Psoriasis Groups.

	HADS		n (%)	Mean ± SD
Early-onset psoriasis patients	HADS-A	Below threshold	102 (75.6)	7.82±4.21
		Above threshold	33 (24.4)	
	HADS-D	Below threshold	87 (64.4)	6.29±3.80
		Above threshold	48 (35.6)	
Late-onset psoriasis patients	HADS-A	Below threshold	44 (80.0)	6.60±4.66
		Above threshold	11 (20.0)	
	HADS-D	Below threshold	34 (61.8)	5.90±4.01
		Above threshold	21 (38.2)	

HADS-A: HADS-Anxiety, HADS-D: HADS-Depression.

Table 5. Subgroup Analysis of Psychological Outcomes in Patients with Chronic Plaque Psoriasis According to Age of Onset.

Psychosocial parameters	Early-onset chronic plaque psoriasis patients (n=120) Mean ± SD	Late-onset chronic plaque psoriasis patients (n=40) Mean ± SD	t	p
DLQI	5.79 ± 6.43	3.97 ± 5.62	1.59	0.112
HAD-A	7.96 ± 4.17	5.55 ± 4.48	3.11	0.002
HAD-D	6.23 ± 3.76	5.75 ± 4.23	0.68	0.496
HAD-T	14.19 ± 7.25	11.30 ± 7.96	2.13	0.035

Abbreviations: DLQI: Dermatology Life Quality Index; Hospital Anxiety and Depression Scale (HADS).

as a trigger had significantly higher HADS-Total (P=0.016), HADS-A (P=0.024), and HADS-D (P=0.030) scores compared to those who did not identify psychological stress as a trigger. Although DLQI scores were higher in the early-onset group, this difference was not statistically significant (t=0.43, P=0.668). Furthermore, our study found a positive and significant correlation between DLQI and HADS-Total (r=.388, P=0.000), HADS-A (r=.400, P=0.000), and HADS-D (r=.301, P=0.000).

To address the heterogeneity introduced by different clinical types of psoriasis, a subgroup analysis was conducted including only patients diagnosed with chronic plaque psoriasis (n=160; early-onset=120, late-onset=40). Patients with early-onset disease had significantly higher HADS-A and HADS-Total scores compared to those with late-onset psoriasis (P=0.002 and P=0.035, respectively). No significant differences were observed in DLQI or HADS-D scores (P=0.112 and P=0.496, respectively). Detailed results are provided in Table 5.

Discussion

The age at onset of psoriasis is highly variable, ranging from early infancy to advanced age, with the most common age at onset occurring during puberty [14] Approximately 70% of patients experienced the first symptoms of psoriasis before the age of 40, most frequently in the second to third decades of life [15] A study reported that in 30% of patients, the disease began before the age of 16 [16]. In our study, the observation that 71% of patients had early-onset psoriasis is consistent with the literature. Additionally, a family history of psoriasis was found in 43.7% of early-onset patients, compared to 16.4% of late-onset patients. This finding aligns with literature reports indicating that a family history is more common in early-onset psoriasis patients [2,17]

Our study corroborates findings by Ferrándiz et al.[5], demonstrating a higher prevalence of pustular subtypes in late-onset psoriasis. This aligns with their observation that palmoplantar pustulosis predominantly affects patients with disease onset after 30 years of age [5]. The correlation suggests that age-related factors may influence the manifestation of specific psoriasis subtypes. Additionally, the same study found no association between joint involvement and the age at disease onset, which aligns with our findings as we also did not observe such an association. Another parameter associated with late-onset age in our study was an increase

in BMI. This finding is consistent with the results reported by Herédi et al., who found that obesity is more common in patients with late-onset psoriasis compared to those with early-onset psoriasis [18]. This suggests that obesity may be a contributing factor to the development of psoriasis at an older age.

Early-onset psoriasis has been associated with higher genetic predisposition, a more severe disease course, and greater psychosocial comorbidity in the literature [3,4,5]. However, different studies have used varying threshold ages to define early- and late-onset psoriasis. In a study by Remröd et al. [4] involving 101 patients, psoriasis onset before the age of 20 was considered early-onset, while onset at 20 years and older was considered late-onset. Based on this classification, significant differences were found between early-onset and late-onset psoriasis groups in Spielberger State-Trait Anxiety Inventory scores, Beck Depression Inventory scores, and the seven personality types identified by the Swedish Universities Scales of Personality. According to these findings, early-onset patients (onset before 20 years of age) were more anxious and depressed compared to late-onset patients. The same study found no significant relationship between PASI scores and patients' depression and anxiety scores. Additionally, there was no association between the duration of psoriasis and levels of state-trait anxiety, severity of depression, or personality types [4]. However, in contrast with the study by Remröd et al. [4], our study did not initially find a statistically significant difference in depression and anxiety between early-onset and late-onset psoriasis patient groups. One possible explanation for this could be the different threshold ages used in defining early- and late-onset psoriasis. Another important factor may be clinical heterogeneity. When we performed an additional analysis limited to patients with chronic plaque psoriasis—the most prevalent and clinically homogeneous subtype—we found that early-onset patients had significantly higher anxiety scores and total HADS scores compared to those with late-onset disease. These findings suggest that when a clinical subtype is controlled, the psychological burden associated with early-onset psoriasis becomes more apparent, supporting the hypothesis that younger patients may be more vulnerable to anxiety, regardless of disease duration or severity.

In a study involving 137 patients, Gupta et al. highlighted that early-onset disease (before the age of 40) is associated with difficulties in expressing feelings such as self-confidence and anger compared to late-onset disease (after the age of 40). This personality trait can negatively impact the patients' capacity to cope with stress [3]. In our study, the threshold age for early and late onset was set at 40 years, similar to the study by Gupta et al., and as first proposed by Henseler and Christophers in 1985 to define early and late psoriasis.

Mizara et al. [19] reported maladaptive psychological behavior patterns specific to the early period in patients with psoriasis and suggested that unmet emotional and developmental needs in early life could create vulnerability to psychological stress in later years. In line with this, another study noted that children and adolescents often experience stigmatization and social difficulties due to their illness, suggesting that these negative experiences in childhood can affect personality development and lead to anxiety and depression in adulthood [20]. In our study, the presence of psychological stress as a trigger for psoriatic lesions was significantly more common in the early-onset group compared to the late-onset group. Our findings align with another study, by Raychaudhuri and Gross [16], which compared pediatric-onset (<16 years) and adult-onset (>16 years) psoriasis. They emphasized that disease flare-ups were more frequent in pediatric-onset patients under psychological stress. The authors explained this by suggesting that emotional immaturity and lack of insight make younger patients more sensitive to psychological stress. In our study, the proportion of patients who associated the onset of psoriasis with a recent traumatic life event was significantly higher in the late-onset group. Several studies in the literature indicate that traumatic experiences may play a crucial role in the development and exacerbation of psoriasis [21,22,23]; however, the relationship with the age at disease onset has not been thoroughly investigated.

Kimball et al. [24] proposed the concept of Cumulative Life Course Impairment (CLCI) for psoriasis, which expresses the cumulative impact of the disease over a lifetime. According to this model, CLCI in psoriasis results from the complex interaction of external factors such as stigmatization, physical and psychological comorbidities, coping strategies, and the social environment. This lifelong accumulation of physical, psychological, social, and economic burdens influences major life decisions. Warren et al. [25] reported that early-onset psoriasis significantly impacts feelings of shame and stigmatization as well as career choices, continuing education, and relationships with family and social circles, compared to late-onset psoriasis.

The significant positive correlation between DLQI and HADS-Total, HADS-A, and HADS-D in our study supports the relationship between quality of life, depression, and anxiety reported in previous literature [26,27]. In the literature, various studies report that the proportion of patients who associate their disease with psychological stress ranges from 37% to 78% [28]. The role of psychological stress in psoriasis can be explained by its induction of catecholamines and corticosteroids released from the hypothalamic-pituitary axis, leading to the release of neuropeptides from the skin through neuroendocrine, immune, and cutaneous interactions. However, the evidence of a relationship between psychosocial stress and psoriasis flare-ups is limited, as most

data in the literature are based on anecdotal reports or retrospective studies [29, 30].

In our study, 63.1% of patients reported psychological stress as a trigger factor for psoriatic lesions, and this proportion was significantly higher in the early-onset psoriasis group. Our findings align with previous studies that indicate a significant role of stress in exacerbating psoriasis. Ferrándiz et al. [5] reported in a study involving 1,774 patients that trigger factors were more common in patients whose psoriasis onset occurred before the age of 30. Malhotra and Mehta [31] reported that stressful life events were noted in 26% of psoriasis vulgaris patients within a year preceding the onset or exacerbation of the disease. In the study by Consoli et al. [32], 54.8% of patients identified various stressful events as triggers for their psoriasis lesions. In the same study, psychiatric comorbidities of patients were assessed using various scales, and no significant relationship was found between psychiatric comorbidities and identifying stress as a trigger. In contrast, in our study, patients who identified psychological stress as a triggering factor had higher HADS-Total, HADS-A, and HADS-D scores compared to those who did not identify stress as a trigger. The differences in the results may be related to the limitations of evaluating a complex and highly subjective experience like psychological stress using surveys with only one or a few questions. These findings underscore the importance of incorporating comprehensive stress management strategies into psoriasis treatment plans to mitigate the exacerbating effects of psychological stress on the disease and improve overall patient outcomes.

Limitations

This study has several limitations. The cross-sectional design restricts our ability to establish causality between psoriasis onset age and observed differences. The presence of comorbid conditions such as hypertension, diabetes, and cardiovascular disease, which are more frequently observed in patients with late-onset psoriasis, may have confounded the observed associations between age at onset and psychosocial outcomes. Data regarding disease activity and flare status were not systematically collected. Given that a well-controlled chronic condition may exert less psychological burden than an uncontrolled or newly diagnosed flare-up, the absence of flare status as a variable limits the interpretation of quality of life outcomes. Self-reported data on stress and psychosocial factors may introduce recall bias. While validated scales like the HADS and DLQI were used, the complexity and subjective nature of psychological experiences such as stress may not be fully captured by these instruments. More comprehensive psychometric evaluations could provide a deeper understanding of the psychosocial impact of psoriasis. Additionally, the sample was drawn from a single center, limiting the generalizability of the findings. Future studies should include larger, more diverse populations and employ longitudinal designs to provide a clearer understanding of the temporal relationships and underlying mechanisms.

Conclusion

Our study elucidates significant clinical and psychosocial distinctions between early- and late-onset psoriasis, emphasizing the need for age-specific management strategies. The higher prevalence of stress-triggered exacerbations in early-onset patients and the increased occurrence of pustular subtypes in late-onset patients underscore the heterogeneity of psoriasis presentations. Implementing tailored therapeutic approaches that account for the age at onset could enhance patient outcomes. Early-onset patients may benefit from integrated psychosocial support to manage stress effectively, while late-onset patients might require targeted interventions for specific subtypes like pustular psoriasis. Future research should focus on elucidating the underlying mechanisms driving the clinical and psychosocial disparities observed in early versus late-onset psoriasis. Longitudinal studies could provide deeper insights into how age-related factors influence disease progression and response to treatment.

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