

# Perceived stress, life events, fatigue and temperament in patients with psoriasis

Journal of International Medical Research

2019, Vol. 47(9) 4284–4291

© The Author(s) 2019

Article reuse guidelines:

[sagepub.com/journals-permissions](http://sagepub.com/journals-permissions)

DOI: 10.1177/0300060519862658

[journals.sagepub.com/home/imr](http://journals.sagepub.com/home/imr)



Esra Pancar Yuksel<sup>1</sup> , Dilek Durmus<sup>2</sup> and Gokhan Sarisoy<sup>3</sup>

## Abstract

**Objective:** To evaluate the perceived stress, life events, fatigue and temperament profile in patients with psoriasis and to investigate the relationship between these factors.

**Methods:** This cross-sectional study included patients with psoriasis and healthy control subjects. The two groups were compared regarding the number of life events, Perceived Stress Scale (PSS) and Multidimensional Assessment of Fatigue scores. The Temperament Evaluation of Memphis, Pisa, Paris and San Diego Autoquestionnaire was used to evaluate the personality traits among the two groups.

**Results:** A total of 75 patients with psoriasis (mean  $\pm$  SD age,  $44.94 \pm 13.62$  years) and 75 healthy controls (mean  $\pm$  SD age,  $41.10 \pm 8.89$  years) were included in the study. A statistically significant difference was found between the two groups in terms of the presence of life events, PSS score, fatigue and temperament profiles. Patients with psoriasis with depressive, cyclothymic and anxious temperament profiles were found to have higher PSS scores. In the psoriasis group, the PSS scores were positively correlated with the number of life events.

**Conclusions:** Stress and life events were found to be correlated with psoriasis. In the patients with psoriasis, depressive, cyclothymic and anxious temperament profiles seemed to be associated with higher perceived stress.

## Keywords

Fatigue, life events, perceived stress, psoriasis, temperament

Date received: 26 February 2019; accepted: 19 June 2019

<sup>1</sup>Department of Dermatology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>2</sup>Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>3</sup>Department of Psychiatry, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

### Corresponding author:

Esra Pancar Yuksel, Department of Dermatology, Faculty of Medicine, Ondokuz Mayıs University, Atakum, 55139, Samsun, Turkey.

Email: [esrapancar@yahoo.com](mailto:esrapancar@yahoo.com)



## Introduction

Psoriasis is a chronic inflammatory skin disease that affects approximately 2% of the population.<sup>1</sup> Although heredity, genetic susceptibility and environmental factors have been implicated in its aetiology, the aetiopathogenesis has not yet been clarified.<sup>2</sup> Psychological factors have been thought to play an important role in the onset of the disease, and stress has been suggested as a causative or maintaining factor.<sup>3,4</sup>

Some studies support the influence of stress on psoriasis. For example, emotional stress was suggested as a significant precipitating factor in a retrospective study.<sup>5</sup> In a review of the literature about the correlation between stress and psoriasis, stress was considered to be a triggering factor in a high proportion of patients (range, 31–88%).<sup>6</sup> In terms of observational studies, 45% have reported that psychological stress has a moderate-to-large effect on the onset or exacerbation of psoriasis.<sup>7</sup> There is increasing evidence that the occurrence of stressful events is associated with the course of psoriasis. For example, daily stressors are suggested to affect the disease outcome in patients with psoriasis.<sup>8</sup> A case-control study reported that stressful events were associated with the recurrence and exacerbation of psoriasis.<sup>9</sup>

Stress is defined as an abnormal response of an individual to overcoming the adverse effects in his/her environment. It has also been advised that it is important to evaluate the personality of the individual subjected to stress.<sup>2</sup> Temperament is the hereditary part of personality and it impacts an individual's psychological state.<sup>9</sup> The Temperament Evaluation of Memphis, Paris and San Diego Autoquestionnaire (TEMPS-A) is one of the most common tools used to measure temperament; it has been validated in many different languages.<sup>10</sup> It distinguishes depressive,

cyclothymic, hyperthymic, irritable and anxious temperaments. Each of these temperaments has specific traits: while a depressive temperament represents negativity, low self-esteem, sensitivity and self-denial, a person with a cyclothymic temperament experiences rapid changes in mood, sleep and energy.<sup>11</sup> Excessive energetic and overconfident behaviours, high self-esteem, risk-taking and sociability are properties of a hyperthymic temperament.<sup>11</sup> People with an irritable temperament are restless, aggressive and critical. Those with an anxious temperament have a tendency to complain and an exaggerated disposition toward worrying.<sup>11</sup> Temperament profiles have been found to be different in psoriasis patients when compared with healthy controls.<sup>12</sup> However, few studies have investigated the temperament profiles of psoriasis patients and their impact on the disease.<sup>12</sup> The present study assessed life events, perceived stress, fatigue and the temperament profiles of patients with psoriasis and compared them with healthy controls. This study also aimed to detect the possible association between life events, perceived stress and temperament in patients with psoriasis.

## Patients and methods

### Study population

This cross-sectional study enrolled patients with psoriasis admitted to the Department of Dermatology, Ondokuz Mayıs University Research Hospital, Samsun, Turkey and healthy control subjects that attended the same hospital for routine examinations including other hospital personnel between May 2017 and May 2018. The diagnosis of psoriasis was made clinically and/or histopathologically. Information about age, sex, clinical features, nail involvement and disease duration were obtained for all study participants. Articular involvement was assessed by

a physical therapy and rehabilitation physician (D.D.). The same dermatologist (E.P. Y.) calculated the Psoriasis Area and Severity Index (PASI) scores for each psoriasis patient to determine the disease severity.<sup>13</sup> The exclusion criteria were as follows: (i) patients with psoriasis with cognitive dysfunction that might prevent their understanding of the administered scales; (ii) patients <18 years. The study inclusion criteria for the healthy control group were as follows: (i) absence of a psychiatric disease; (ii) aged  $\geq 18$  years; (iii) absence of any other systemic illness. The healthy control group was administered the same scales that were applied to the patient group as described below. The number of life events, the Perceived Stress Scale (PSS) and Multidimensional Assessment of Fatigue (MAF) scores of the patients with psoriasis and the healthy controls were compared. TEMPS-A was used to evaluate the personality traits of all the study participants. A psychiatrist (G.S.) evaluated the PSS and MAF scores and the TEMPS-A results.

The patients with psoriasis and the healthy controls voluntarily agreed to participate in the study and written informed consent was obtained from each study participant. The study protocol was approved by the Clinical Research Ethics Committee of Ondokuz Mayıs University, Samsun, Turkey on 12 May 2017 (no. B.30.2.ODM.0.20.08/886-959). This study was performed in accordance with the Declaration of Helsinki.

### Study measures

**Life events list.** The list of life events contains 113 events that people can encounter throughout their lives. Participants were asked to indicate whether or not they had experienced (yes = 1; no = 0) any of the events during the past 6 months.<sup>14</sup>

**Perceived stress scale.** The PSS was developed to measure the stress perception of an individual to the situations occurring in his/her life. The Turkish version of the PSS was used to measure the perceived stress of participants in this study.<sup>15</sup> It consists of 14 questions; the participants were asked to rate each item from 'Never (0)' to 'Very often (4)' using a five-point Likert-type scale. Reverse scoring was used for the seven items with positively worded questions. Higher scores were accepted as an indication of greater stress perceptions.

**Fatigue.** Fatigue was assessed using the MAF scale. The MAF evaluates five dimensions of fatigue: degree, severity, distress, impact on activities of daily living and timing. A 10-point numerical rating scale was used for scoring. The reliability and validity of the Turkish language version of the MAF scale was reported.<sup>16</sup>

**TEMPS-A.** The validated Turkish version of the TEMPS-A was used to evaluate the affective temperaments of all the study participants. The validity and reliability of Turkish TEMPS-A was established previously.<sup>17</sup> This self-administered questionnaire consists of 99 true or false questions. Five types of temperaments were determined for the participants with the following cut-off scores: 13 for depressive temperament (18 items), 18 for cyclothymic temperament (19 items), 20 for hyperthymic temperament (20 items), 13 for irritable temperament (18 items) and 18 for anxious temperament (24 items). It is possible for an individual to have more than one dominant affective temperament.

### Statistical analyses

All statistical analyses were performed using IBM SPSS Statistics for Windows®, Version 21.0 (IBM Corp., Armonk, NY, USA). Descriptive data are presented as

mean  $\pm$  SD or median (minimum, maximum). The Shapiro–Wilk test was used to analyse the normal distribution assumption of the quantitative outcomes. Student's *t*-test,  $\chi^2$ -test and Mann–Whitney *U*-test were used to compare the clinical scores and demographical characteristics of the two groups. Spearman correlation coefficients were used to express the correlations. A *P*-value  $< 0.05$  was considered statistically significant.

## Results

A total of 75 patients with psoriasis and 75 healthy controls were included in the study. The mean  $\pm$  SD age of the patients with psoriasis was  $44.94 \pm 13.62$  years and the group consisted of 40 males and 35 females. The mean  $\pm$  SD age of the healthy controls was  $41.10 \pm 8.89$  years and the group consisted of 32 males and 43 females. There were no significant differences in terms of age and sex distribution between the two groups. In the patients with psoriasis, the disease duration varied between 1 year and 35 years (mean  $\pm$  SD,  $11.37 \pm 9.15$  years) and the PASI scores ranged between 0 and 36 (mean  $\pm$  SD,  $9.39 \pm 8.16$ ). The demographic and clinical characteristics of the two groups are shown in Table 1.

A significantly higher proportion of patients with psoriasis experienced life events in the previous 6 months compared with the healthy controls ( $P = 0.001$ ) (Table 2). The median number of life events was 1.00 (range, 0–5) in the patients with psoriasis group compared with 0 (range, 0–2) in the control group. Huge financial loss (11 of 75; 15%) and borrowing moderate amounts of money (11 of 75; 15%) were the most common life events in the patient group. Patients with psoriasis had significantly higher PSS scores than the controls ( $P = 0.001$ ). The MAF scores were also significantly higher in the patients with psoriasis than the healthy controls

**Table 1.** Demographic and clinical characteristics of the patients with psoriasis ( $n = 75$ ) and healthy control subjects ( $n = 75$ ).

Characteristic	Patients with psoriasis $n = 75$	Control subjects $n = 75$
Age, years	$44.94 \pm 13.62$	$41.10 \pm 8.89$
Sex, male:female	40:35	32:43
Duration of disease	$11.37 \pm 9.15$	–
PASI score	$9.39 \pm 8.16$	–
Arthritis		
Present	9 (12.0)	–
Absent	66 (88.0)	–
Nail involvement		
Present	14 (18.7)	–
Absent	61 (81.3)	–

Data presented as mean  $\pm$  SD or *n* of participants (%). No significant between-group differences in age and sex distribution ( $P \geq 0.05$ ); Student's *t*-test,  $\chi^2$ -test and Mann–Whitney *U*-test.

PASI, Psoriasis Area and Severity Index.

( $P = 0.001$ ). The PASI scores had no significant associations with the presence of life events, the PSS score and the MAF score.

The study identified 17 depressive, eight cyclothymic and 11 anxious temperaments in the group of patients with psoriasis; and the differences were significant compared with the healthy controls ( $P < 0.05$  for all comparisons) (Table 2). There were no significant differences between the two groups in terms of irritable and hyperthymic temperaments. Patients with psoriasis with depressive, cyclothymic and anxious temperament profiles were found to have significantly higher PSS scores compared with those without these temperaments ( $P < 0.05$  for all comparisons) (Table 3).

In the psoriasis group, the PSS scores were positively correlated with the number of life events ( $r = 0.437$ ,  $P = 0.001$ ). When the MAF scores were compared with the number of life events and the PSS scores, there was a positive correlation with both ( $r = 0.401$ ,  $P = 0.001$ ;  $r = 0.312$ ,  $P = 0.001$ , respectively). There was no correlation

**Table 2.** Comparison of the temperament profiles of the patients with psoriasis ( $n = 75$ ) and healthy control subjects ( $n = 75$ ).

Characteristic	Patients with psoriasis $n = 75$	Control subjects $n = 75$	Statistical significance <sup>a</sup>
Number of life events			$P = 0.001$
Present	58 (77.3)	32 (42.7)	
Absent	17 (22.7)	43 (57.3)	
PSS score	$21.64 \pm 8.28$	$11.20 \pm 7.59$	$P = 0.001$
MAF score	$11.23 \pm 14.49$	$3.08 \pm 2.17$	$P = 0.001$
Depressive			$P = 0.001$
Present	17 (22.7)	0 (0.0)	
Absent	58 (77.3)	75 (100.0)	
Cyclothymic			$P = 0.006$
Present	8 (10.7)	0 (0.0)	
Absent	67 (89.3)	75 (100.0)	
Hyperthymic			NS
Present	8 (10.7)	6 (8.0)	
Absent	67 (89.3)	69 (92.0)	
Irritable			NS
Present	1 (1.3)	0 (0.0)	
Absent	74 (98.7)	75 (100.0)	
Anxious			$P = 0.001$
Present	11 (14.7)	0 (0.0)	
Absent	64 (85.3)	75 (100.0)	

Data presented as  $n$  of participants (%).

<sup>a</sup>Student's  $t$ -test,  $\chi^2$ -test and Mann-Whitney  $U$ -test.

PSS, Perceived Stress Scale; MAF, Multidimensional Assessment of Fatigue; NS, not significant between-group difference ( $P \geq 0.05$ ).

**Table 3.** Perceived stress scale scores in patients with psoriasis with or without depressive, cyclothymic and anxious temperament profiles ( $n = 75$ ).

Patients	Perceived stress scale score	Statistical significance <sup>a</sup>
Depressive		$P = 0.006$
Present	$26.52 \pm 5.18$	
Absent	$20.20 \pm 8.50$	
Cyclothymic		$P = 0.003$
Present	$29.12 \pm 3.13$	
Absent	$20.74 \pm 8.26$	
Anxious		$P = 0.01$
Present	$26.72 \pm 7.00$	
Absent	$20.76 \pm 8.21$	

Data presented as mean  $\pm$  SD.

<sup>a</sup>Student's  $t$ -test.

between PASI and the number of life events, the MAF scores and the PSS scores ( $r = 0.123$ ,  $P = 0.291$ ;  $r = 0.137$ ,  $P = 0.242$ ;  $r = 0.012$ ,  $P = 0.916$ , respectively).

## Discussion

The results of the current study showed that patients with psoriasis had more life events, reported higher perceived stress and felt more fatigue than the healthy controls. They were more likely to have a depressive, cyclothymic and/or anxious temperament profile. Moreover, patients with psoriasis with depressive, cyclothymic and anxious

temperament profiles were found to have higher levels of perceived stress.

Previous studies have investigated the role of stress in psoriasis and it is considered to play an important role in the onset and exacerbation of this disease. For example, studies have found that up to 88% of patients with psoriasis blamed the development of their disease on the extent of their perceived stress.<sup>6,7</sup> A previous study reported that 85% of patients with psoriasis presented with stress.<sup>18</sup> In an international cross-sectional epidemiological psoriasis study, it was suggested that flares or outbreaks of psoriasis are most often triggered by stress.<sup>19</sup> The percentage of patients with psoriasis that associated stress with outbreaks of psoriasis has also been reported to increase.<sup>20</sup> However, the association between psoriasis and history of stress was not observed in a prospective cohort study.<sup>21</sup> Several studies have also emphasized that stressful events have an impact on psoriasis. For example, patients with psoriasis reported at least one potential stressful event; and stressful events were described by 47.36% of patients with a first episode.<sup>9</sup> The Italian Psoriasis Study Group suggested that stressful life events might represent risk factors for the onset of psoriasis.<sup>22</sup> A review of the available evidence on the role of stressful life events in triggering or exacerbating skin diseases and the role of stressful events in psoriasis found that both have an impact on onset and relapses.<sup>23</sup> However, some studies reported no difference between patients with psoriasis and the controls in terms of stressful events.<sup>24-26</sup>

This current study supports the correlation between life events and perceived stress and psoriasis. However, important points should be considered when examining the effect of stress on patients with psoriasis. First, severe and stressful life events could be a common variable in patients with psoriasis, so they might believe that their

disease was stress related.<sup>27</sup> In this current study, the presence of life events was significantly higher in the patients with psoriasis than the healthy controls. Additionally, patients with psoriasis that had a higher number of life events reported higher perceived stress. Moreover, psoriasis could have a negative impact on the patients' perceptions of stress. This reasoning might also explain why the patient group displayed higher perceived stress in this current study.

It is also important to determine the ability of an individual to cope with life events. Patients with psoriasis with a depressive temperament might be more likely to believe that stress and psychological factors are the cause of their illness.<sup>27</sup> Therefore, the current study assessed the relationship between temperament and psoriasis and found that patients with psoriasis were more likely to have depressive, anxious and cyclothymic temperaments than the healthy controls. In this current study, the temperament profiles were significantly different among the patients with psoriasis and the controls. These current findings were consistent with the results reported previously.<sup>2</sup> For example, a previous study reported that patients with psoriasis were more depressed, showed a more harm-avoidant temperament and were less self-directed.<sup>2</sup> In another study, the temperament dimensions of males with psoriasis were found to be different from the healthy controls.<sup>12</sup>

Very few studies have used a questionnaire to investigate the presence of life events, perceived stress and temperament.<sup>2,24-26</sup> The distinctive feature of this current study was that it evaluated the presence of life events and perceived stress at the same time using a standard questionnaire for patients with psoriasis with a fatigue score. This current study also evaluated five types of temperament in patients with psoriasis and determined their correlation with stress. Additionally, the current



study observed that patients with psoriasis with depressive, anxious and cyclothymic temperaments appeared to experience more perceived stress than patients without these temperaments.

On the basis of these current findings, it might be important to offer psychiatric support to ensure effective dermatological care of patients suffering from psoriasis. A previous study reported that psychological distress had a negative effect on the treatment of this disease.<sup>28</sup> Patients with psoriasis in the low-level worry group responded to treatment better than patients in the high-level worry group.<sup>28</sup> The importance of insight and empathy in the prognosis of psoriasis and treatment of stress has been noted.<sup>4</sup>

This current study has several limitations. First, the number of patients was relatively small. Secondly, the cross-sectional study design was also a limitation. A prospective study could provide additional valuable information on the association between psoriasis and stress. Thirdly, the control group only contained subjects with a hyperthymic temperament.

In conclusion, the present study supports the role of stress in psoriasis. It also found that a patient's personality had important implications in the management of stress. Therefore, psychiatric support might be considered in the management of psoriasis.

### Declaration of conflicting interest

The authors declare that there are no conflicts of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### ORCID iD

Esra Pancar Yuksel  <https://orcid.org/0000-0003-1233-5556>

### References

- Rodríguez-Zúñiga MJM and García-Perdomo HA. Systematic review and meta-analysis of the association between psoriasis and metabolic syndrome. *J Am Acad Dermatol* 2017; 77: 657–666.
- Kiliç A, Güleç MY, Gül U, et al. Temperament and character profile of patients with psoriasis. *J Eur Acad Dermatol Venereol* 2008; 22: 537–542.
- Griffiths CE and Richards HL. Psychological influences in psoriasis. *Clin Exp Dermatol* 2001; 26: 338–342.
- Seville RH. Stress and psoriasis: the importance of insight and empathy in prognosis. *J Am Acad Dermatol* 1989; 20: 97–100.
- Campolmi E, Zanieri F, Santosuosso U, et al. The importance of stressful family events in psoriatic patients: a retrospective study. *J Eur Acad Dermatol Venereol* 2012; 26: 1236–1239.
- Rousset L and Halioua B. Stress and psoriasis. *Int J Dermatol* 2018; 57: 1165–1172.
- Dodoo-Schittko F. Psoriasis: the significance of psychological stress. *Br J Dermatol* 2018; 178: 1002.
- Evers AW, Verhoeven EW, Kraaimaat FW, et al. How stress gets under the skin: cortisol and stress reactivity in psoriasis. *Br J Dermatol* 2010; 163: 986–991.
- Manolache L, Petrescu-Seceleanu D and Benea V. Life events involvement in psoriasis onset/recurrence. *Int J Dermatol* 2010; 49: 636–641.
- Karam EG, Mneimneh Z, Salamoun M, et al. Psychometric properties of the Lebanese-Arabic TEMPS-A: a national epidemiologic study. *J Affect Disorder* 2005; 87: 169–183.
- Litaiem N, Youssef S, El Kefi H, et al. Affective temperament profile in psoriasis patients in Tunisia using TEMPS-A. *J Affect Disord* 2013; 151: 321–324.
- Ak M, Haciomeroglu B, Turan Y, et al. Temperament and character properties of male psoriasis patients. *J Health Psychol* 2012; 17: 774–781.
- Louden BA, Pearce DJ, Lang W, et al. A Simplified Psoriasis Area Severity Index (SPASI) for rating psoriasis severity in

- clinic patients. *Dermatol Online J* 2004; 10: 7.
14. Sorias S. Hasta ve normallerde yaşam olaylarının stres verici etkilerinin araştırılması. Doçentlik tezi, İzmir, Ege Üniversitesi, *Ege Tıp fakültesi Psikiyatri Bilim Dah*, 1982 (Thesis, Ege University, Faculty of Medicine, Psychiatry Department, 1982).
  15. Eskin M, Harlak H, Demirkiran F, et al. The adaptation of the Perceived Stress Scale into Turkish: a reliability and validity analysis. *New Symposium: A Journal of Psychiatry, Neurology and Behavioral Sciences* 2013; 51: 132–140 [In Turkish, English abstract].
  16. Yıldırım Y and Ergin G. A validity and reliability study of the Turkish Multidimensional Assessment of fatigue (MAF) scale in chronic musculoskeletal physical therapy patients. *J Back Musculoskelet Rehabil* 2013; 26: 307–316.
  17. Vahip S, Kesebir S, Alkan M, et al. Affective temperaments in clinically-well subjects in Turkey: initial psychometric data on the TEMPS-A. *J Affect Disord* 2005; 85: 113–125.
  18. Leovigildo ES, David RA and Mendes AS. Stress level of people with psoriasis at a public hospital. *An Bras Dermatol* 2016; 91: 446–454.
  19. Ammar-Khodja A, Benkaidali I, Bouadjar B, et al. EPIMAG: International cross-sectional epidemiological psoriasis study in the Maghreb. *Dermatology* 2015; 231: 134–144.
  20. Snast I, Reiter O, Atzmony L, et al. Psychological stress and psoriasis: a systematic review and meta-analysis. *Br J Dermatol* 2018; 178: 1044–1055.
  21. Huerta C, Rivero E and Rodríguez LA. Incidence and risk factors for psoriasis in the general population. *Arch Dermatol* 2007; 143: 1559–1565.
  22. Naldi L, Peli L, Parazzini F, et al. Family history of psoriasis, stressful life events, and recent infectious disease are risk factors for a first episode of acute guttate psoriasis: results of a case-control study. *J Am Acad Dermatol* 2001; 44: 433–438.
  23. Picardi A and Abeni D. Stressful life events and skin diseases: disentangling evidence from myth. *Psychother Psychosom* 2001; 70: 118–136.
  24. Eskin M, Savk E, Uslu M, et al. Social problem-solving, perceived stress, negative life events, depression and life satisfaction in psoriasis. *J Eur Acad Dermatol Venereol* 2014; 28: 1553–1559.
  25. Picardi A, Pasquini P, Cattaruzza MS, et al. Only limited support for a role of psychosomatic factors in psoriasis. Results from a case-control study. *J Psychosom Res* 2003; 55: 189–196.
  26. Picardi A, Mazzotti E, Gaetano P, et al. Stress, social support, emotional regulation, and exacerbation of diffuse plaque psoriasis. *Psychosomatics* 2005; 46: 556–564.
  27. O'Leary CJ, Creamer D, Higgins E, et al. Perceived stress, stress attributions and psychological distress in psoriasis. *J Psychosom Res* 2004; 57: 465–471.
  28. Fortune DG, Richards HL, Kirby B, et al. Psychological distress impairs clearance of psoriasis in patients treated with photochemotherapy. *Arch Dermatol* 2003; 139: 752–756.