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## ORIGINAL ARTICLE

## Stress coping mechanisms in smoking psoriatics



Ilknur Altunay<sup>1</sup>, Nurhan Doner<sup>1</sup>, Sibel Mercan<sup>2</sup>, Gulsen Tukenmez Demirci<sup>1,\*</sup>

<sup>1</sup> Dermatology Department, Sisli Etfal Training and Research Hospital, Istanbul, Turkey

<sup>2</sup> Psychiatry Department, Sisli Etfal Training and Research Hospital, Istanbul, Turkey

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## ABSTRACT

**Background:** The link between emotional stress and smoking has previously been investigated and results have suggested that smoking is used as a way of dealing with stress. There are many studies indicating the relationship between smoking and psoriasis or emotional stress and psoriasis. However, to our knowledge, the link between smoking associated with emotional stress and psoriasis has not been shown before. Our aim was to investigate psoriatic patients' abilities to cope with stress, the relationship between coping strategies and smoking habit.

**Methods:** Ninety-nine individuals with psoriasis (57 females, and 42 males, mean age: 37.4 years) were included in this study. Sociodemographic information including age, sex, smoking habit, etc., was obtained; Psoriasis Area Severity Index (PASI) scores were recorded. The Fagerstrom Test for Nicotine Dependence was used on smoking patients to evaluate smoking habit or the degree of nicotine dependence. The Ways of Coping Questionnaire and Dermatology Life Quality Index were filled out by all patients. Data were assessed by comparing psoriatic smokers with nonsmokers and statistically analysis was carried out with the SPSS 11.5 program.

**Results:** Forty patients (40.4%) were smokers. When comparing the two groups' mechanisms of coping with stress, smokers and nonsmokers coped with stress in similar ways. The seeking social support scores from the Ways of Coping Questionnaire were significantly lower in smokers than nonsmokers ( $p < 0.05$ ), while the Fagerstrom Test for Nicotine Dependence scores were correlated with distrustful approach sub-scores, and PASI only correlated with smokers. The Dermatology Life Quality Index scores were correlated with the PASI and distrustful approach scores in all patients.

**Conclusion:** Smoking and nonsmoking psoriatic patients had similar stress coping strategies, except the subgroup seeking social support, and usually used positive ways of coping with stress. Psoriatic patients who smoke might employ smoking to avoid stressful situations. They would benefit from education on adopting healthy stress management and, in turn, developing mature stress coping mechanisms. Future prospective studies are required to address the exact causal link between smoking, psoriasis and psychiatric comorbidity, including stress coping mechanisms.

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## Introduction

Psoriasis is a chronic, inflammatory multisystem disease. It is considered an immune-mediated disorder influenced by many variables, such as genetic, environmental and psychosocial factors.<sup>1–3</sup> The effects of all these factors on the development and course of the disease have been demonstrated in numerous studies so far. Stressful life events and smoking in response to environmental/psychosocial trigger factors have been reported to

negatively affect the onset and course of the disease, and are also regarded as preventable causes of morbidity.<sup>1–4</sup> Additionally, smoking is an important contributing factor to cardiovascular comorbidity in psoriasis.<sup>5</sup>

Physical discomfort, psychological and social difficulties relating to psoriasis may lead to psychiatric comorbidities and substance abuse, such as smoking and alcohol abuse. While the prevalence of smoking has been found to be significantly higher among psoriasis patients when compared to healthy controls, patients with high stress levels report an increased frequency of psoriasis when compared to people with low stress levels.<sup>6–8</sup> These two factors, emotional stress and smoking, also have a relationship with each other. Based on these data, it may be considered that patients with psoriasis may be smoking more due to emotional stress. Generally

\* Corresponding author. Sisli Etfal Eğitim ve Araştırma Hastanesi, Dermatoloji Kliniği, 19 Mayıs Cad, Etfal Sok, Sisli 34377, Istanbul, Turkey. Tel.: +90 212 3735000; fax: +90 212 3535976.

E-mail address: [gulsentukenmez@yahoo.com](mailto:gulsentukenmez@yahoo.com) (G.T. Demirci).

speaking, regardless of psoriasis, smoking may be a behavioral response to emotional stress, reducing anxiety.<sup>9,10</sup> There are some investigations that have assessed the link between smoking and psoriasis or smoking and emotional stress separately.<sup>1–3,9–17</sup>

A few studies evaluating the relationship between cigarette smoking, stressful life events and psoriasis have focused on the risk factors and suggested that both smoking and stress may play an important role in the onset or exacerbation of the disease.<sup>1,4,13,14,18</sup> However, the relationship between emotional stress, smoking habit and psoriasis seems to have been ignored from the psychological viewpoint. The purpose of this study was to investigate the stress coping mechanisms of psoriatic patients in the psychological domain and to assess the difference between those who smoke and those who do not smoke as a way of coping with stress, if any, and to evaluate the relationship between nicotine dependence and stress coping mechanisms. Hence, it may be considered that if patients have maladaptive coping mechanisms and smoke more for this reason, we can help them to develop more healthy coping strategies and provide smoking cessation advice that may yield substantial positive effects in preventing and managing smoking related comorbidities and lead to a better overall clinical outcome.<sup>13,17,19</sup>

## Methods

A total of 99 psoriatic patients (57 females, and 42 males) over the age of 15 years (mean age:  $37.4 \pm 12.9$  years) were included in the study. Sociodemographic information (including age, sex, education, marital status, smoking habits, systemic drug use, duration of illness, etc) was obtained. Clinical severity was assessed with Psoriasis Area and Severity Index (PASI) scores after examination; additionally, the Dermatology Life Quality Index (DLQI) test (Turkish version)<sup>20</sup> was given to all patients to assess the impact of the disease.

The patients were defined as smokers and nonsmokers according to their smoking habits. Smoking psoriatic patients filled out the Turkish version of the six-item Fagerstrom Test for Nicotine Dependency (FTND).<sup>21</sup> The FTND is one of the most widely used tests in the measurement of nicotine dependence levels; there are five dependency levels, from very low to very high dependence. The FTND is a test including six questions and evaluates dependence on a scale from very low to very high. It has been widely adopted for use in both clinical and research settings as a measure of psychological dependence on nicotine. Its reliability and validity in Turkish society has been examined by Uysal et al.<sup>21</sup>

The PASI, Ways of Coping Questionnaire (WCQ) total and subgroup and DLQI scores of smokers and nonsmokers were compared statistically. Statistical analyses related to the FTND were only carried out in smoking groups. Chi-squared test, *t* test, *t* test in independent groups, Mann–Whitney U test, and Pearson's correlation test in SPSS 11.5 were used for statistical evaluations.

The WCQ is an inventory developed by Folkman and Lazarus and its Turkish version was adopted by Sahin and Durak.<sup>22</sup> The scale consists of 30 questions and five subscales [trustful approach (TA), optimistic approach (OA), submissiveness (S), distrustful approach

**Table 1** Nicotine dependence level of patients according to the Fagerstrom Test for Nicotine Dependence.

Fagerstrom test grade	n	%
Very low dependence	20	50.0
Low dependence	10	25.0
Medium dependence	3	7.5
High dependence	5	12.5
Very high dependence	2	5.0

**Table 2** Sociodemographic characteristics of the study group.

Sociodemographic characteristics	Smokers (n)	Nonsmokers (n)	p
Sex			
Male	20	22	0.147
Female	20	37	
Age (years) <sup>a</sup>	$36.73 \pm 11.02$	$37.86 \pm 14.11$	0.541
Marital status			
Married	11	13	0.449
Single	24	42	
Divorced	5	4	
Education (years)			
8	34	33	0.118
9–12	5	17	
>12	1	3	

Chi-squared test was used for analysis.

<sup>a</sup> Independent group *t*-test was used for analysis.

(DA) and seeking social support approach (SSS)]. The first three are considered active approaches with respect to problem solving and the other two are passive approaches to emotions.

## Results

Forty patients out of the cohort were current smokers (40.4%). Current smokers had smoked regularly every day at least for 6 months. The nonsmoking group consisted of those who had quit smoking at least 6 months ago, those who smoke very rarely and those who have never smoked. Ten smokers (25.0%) had a medium- to high-level of nicotine dependence according to the FTND (Table 1). The mean FTND score was  $3.13 (\pm 2.4)$ . Forty-one percent of smokers stated that smoking had decreased their stress level.

When smokers and nonsmokers were statistically compared, there was no difference regarding age ( $p = 0.654$ ), sex ( $p = 0.147$ ), marital status ( $p = 0.449$ ), and educational status ( $p = 0.118$ ) (Table 2). When clinical characteristics and anamnestic data related to psoriasis were considered, there was no significant difference between the two groups (Table 3). The presence of another chronic illness and/or psychiatric disease were also investigated and no statistical difference was shown ( $p = 0.485$  and  $p = 0.552$ , respectively).

Both smokers and nonsmokers preferred similar coping strategies and their ranking of the strategies was the same. (Ranking scores were calculated by dividing the mean score by the maximum score.) Considering the scores of the subscales, the SSS scores were lower in smokers than nonsmokers, and this was the only difference that was statistically significant ( $p < 0.05$ ). In fact, all of the scores were lower in smokers than nonsmokers, yet the difference was not statistically meaningful except for SSS (Table 4).

Pearson's correlation test was performed to determine the link between the FTND, WCQ sub scores and PASI scores. There was positive correlation between FTND, DA ( $p = 0.036$ ,  $r = 0.333$ ) and

**Table 3** Disease-related characteristics of the patients.

Characteristics of psoriasis	Smokers mean	Nonsmokers mean	p
Type of disease <sup>a</sup>			
Plaque	36	53	
Guttate	2	1	
Pustular	2	3	
Palmoplantar	0	2	
Duration of illness (days)	$111.80 \pm 105.78$	$120.00 \pm 106.27$	0.512
Systemic drug use	18	29	0.685
Psoriasis area severity index <sup>b</sup>	$7.45 \pm 4.38$	$6.6 \pm 3.49$	0.170
Dermatology life quality index <sup>b</sup>	$9.43 \pm 6.63$	$9.41 \pm 7.57$	0.761

<sup>a</sup> Chi-squared test could not be performed because the number of patients was inadequate

<sup>b</sup> Mann–Whitney U test was used for analysis.

**Table 4** Comparison of the stress coping strategies in smokers and nonsmokers.

Coping strategies of the patient subgroups	Smoking status	Number of patients	Mean	Std	Min–max score	t	p
Optimistic approach	Smokers	40	9.45	2.80	0–15	–0.914	0.363
	Nonsmokers	59	10.00	3.02			
Distrustful approach	Smokers	40	10.82	5.54	0–24	–0.461	0.647
	Nonsmokers	59	11.29	3.78			
Submissiveness	Smokers	40	7.00	4.51	0–18	–1.094	0.277
	Nonsmokers	59	7.98	4.30			
Trustful approach	Smokers	40	14.65	3.51	0–21	–1.217	0.224
	Nonsmokers	59	15.08	4.71			
Seeking social support	Smokers	40	6.67	2.95	0–12	–2.272	<b>0.023</b>
	Nonsmokers	59	7.95	1.94			

Bold indicates \* $p < 0.05$  which is statistically significant.  
The t test was used for analysis.

PASI scores ( $p = 0.029$   $r = 0.350$ ) in smokers and DLQI, PASI ( $p = 0.000$ ,  $r = 0.391$ ) and DA scores ( $p = 0.001$ ,  $r = 0.332$ ) in all patients. There was a positive correlation between DLQI and PASI scores without FTND scores ( $p = 0.000$ ,  $r = 0.495$ ) in nonsmokers.

## Discussion

Psoriasis is a disabling disease that seriously diminishes life quality and leads to psychosocial consequences. Poor self-esteem, depression and even suicidal ideation, anxiety, and personality disorders are associated with the psychological morbidities of psoriasis. There are numerous studies reporting psychosocial morbidity in the disease and thus there is a wide consensus considering psychosocial factors, such as emotional stress, at the onset and development of the disease. Although there are a few studies indicating that stress does not worsen psoriasis, the link between these two has been demonstrated in many studies,<sup>3,23–30</sup> therefore the results on the topic are variable. There are limited studies, however, demonstrating the coping strategies of psoriatic patients. In these studies, planning, acceptance and active coping have been reported as the most frequently employed coping strategies.<sup>25,28,30</sup> In our study, we used a different instrument (WCQ) to determine patients' ways of coping with stress. Its Turkish version consists of five subgroups according to factor analyses results. However, assessment of the test focuses on two issues: problem-focused/active coping and emotion-focused/passive coping. TA, OA and SSS are the active stress-coping strategies; DA and S are accepted as passive.

When evaluating mechanisms of coping with stress, there was no statistical difference between smokers and nonsmokers in terms of patients' strategies except in seeking social support. The most frequently employed coping mechanisms in both groups were TA, OA, and SSS, which were active coping strategies. However, smokers are less likely to seek social support than nonsmokers when they experience a stressful situation, and perhaps prefer cigarette smoking as a way to relieve stress. Although both smokers and nonsmokers employed active coping mechanisms, one of our study limitations was that we did not compare the coping mechanisms of psoriatics with those of healthy controls. This could be addressed in a further investigation so it would be possible to discuss whether psoriatic patients employ different coping strategies than people without the illness.

In a multicenter study conducted by Finzi et al, active coping and planning have been reported to be the most frequently employed coping strategies by psoriatic patients.<sup>28</sup> Fortune et al reported that acceptance, planning, active coping and positive reinterpretation are the most frequently used coping strategies in psoriatics.<sup>30</sup> Our results seem to be consistent with these studies. Considering the relationship between coping strategies, smoking dependence level and disease severity, the fact that PASI, DA and FTND scores are

increased in smokers means that smoking addiction increases with the severity of the disease and the level of DA.

Fortes et al were able to show an association between the severity of psoriasis and the intensity of smoking, defined by daily cigarette consumption, and found that patients were at a more than twofold greater risk of severe psoriasis when smoking intensively. They highlighted the importance of smoking cessation in patients with psoriasis.<sup>11</sup> Some studies demonstrated this correlation, particularly in male smokers,<sup>7,31</sup> although there was no difference between the sexes in our study. Additionally, the positive correlation between the DLQI and PASI scores without FTND scores in nonsmokers suggest that quality of life and severity of disease are related to each other regardless of smoking status. Researchers investigating the association between psoriasis and smoking have previously pointed out a significant etiopathogenetic role of cigarette smoking and have indicated that cigarette smoking is a risk factor for the disease.<sup>1,4,11,12,15,27,31</sup> In fact, nicotine is a psychoactive substance and smokers believe that smoking lowers their stress and anxiety level in general.<sup>9,10,16,17,32</sup>

An association has been found between alexithymia and psoriasis in previous studies. Attachment-related avoidance or not seeking support has been emphasized in psoriatic patients.<sup>25,33,34</sup> Other psychiatric associations, such as depression and anxiety, can be related to smoking and complicate the situation at this point.<sup>29</sup> This is, actually, another limitation to our study, as we did not examine the associated psychiatric disorders in detail, thinking that numerous variables would have been involved, creating complexity. Despite this, neither group showed any significant statistical difference with regard to the presence of psychiatric disease.

Another limitation is the cross-sectional study design; no causal link can be demonstrated between smoking addiction and psoriasis. It is difficult to state whether psoriasis leads to smoking or *vice versa*. Nevertheless, our purpose was not to demonstrate causality but to question whether there is a relation between smoking and emotional stress in psoriatic patients. Moreover, there was no statistically significant difference in the duration of disease between current smokers and nonsmokers.

## Conclusion

Both groups demonstrated similar stress coping strategies. SSS was problematic in the smoking group, where possibly smoking had replaced social help. Nevertheless, no difference was seen between the two groups in terms of coping strategies. This point may be of importance with patients coming for help for psoriasis. It is possible that when confronted with stress, the patient resorts to cigarette smoking rather than collaborating with the therapist and searching for methods of stress reduction. This mechanism will serve to

impair patient compliance rather than alleviate the stress. The alertness of the therapist will may provide better, healthy communication with patients with psoriasis, leading to better patient compliance and smoking cessation. It should be borne in mind that smoking cessation may result in a better clinical outcome in psoriasis, as indicated by previous studies showing that smoking worsened the severity of psoriasis and that patients who smoked tended to be less responsive to treatment.<sup>11,13,31,35,36</sup> Yet, future prospective studies focusing on causality are required to address the exact link between smoking, psoriasis and psychiatric comorbidity, and also to determine the main targets in prevention and management of the disease.

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