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# A Cross Sectional Investigation of the Effect of Eczema on Life Quality and its Comparison with Psoriasis

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## ABSTRACT

**Background:** Eczema and psoriasis are inflammatory skin diseases that negatively affect patients' quality of life. In this study, we aimed to evaluate the dermatology life quality index (DLQI) scores in patients diagnosed with eczema and psoriasis.

**Materials and Methods:** A total of 797 patients, 410 (51.4%) female and 387 (48.6%) male, 202 (25.3%) of whom were diagnosed with mild to moderate psoriasis and 595 (74.7%) with eczema less than 10% of the body surface area were included in this retrospective study. The differences between the demographic data of psoriasis and eczema patient groups and factors affecting the DLQI score were evaluated.

**Results:** The median age of the patients in our study was determined to be 33 (28/41) years, while those patients with eczema were younger and had lower body mass index (BMI) values ( $p < 0.001$  and  $p = 0.034$ , respectively). Seborrheic dermatitis (59.1%) was the most common type of eczema, while psoriasis vulgaris was the most common type among psoriasis group. The total DLQI score was 7 (4/13) in the eczema group and 6 (3/11) in the psoriasis group, respectively. Higher total DLQI scores were found in patients with eczema, women, patients with allergic diseases, patients with sinopulmonary disease, and in people with genital, upper and lower extremity involvement ( $p < 0.05$ ). There was a positive low-power correlation between the increase in BMI and the total DLQI scores of patients with psoriasis and eczema.

**Conclusion:** We found that the DLQI life quality of patients diagnosed with eczema and psoriasis was affected negatively in a similar way. We found that this deterioration increased in both groups in parallel with levels of obesity.

**Keywords:** Eczema, Psoriasis, DLQI

## Introduction

Eczema and psoriasis are inflammatory skin diseases that have a negative impact on the quality of life of patients [1]. Although there are significant differences between these diseases, both are characterized by erythematous, and epidermal lesions, varying in density and affected body surface area [2].

Psoriasis is a chronic inflammatory disease that can occur at any age, affecting both genders at a similar rate, affecting the skin, nails and joints [3]. The clinical pattern is very varied among several types of eczema. Whatever the type of eczema, the histopathological

processes are similar and can be seen as a stereotyped reaction pattern to a variety of different stimuli [4].

A multidimensional disease burden can be described in adult patients diagnosed with eczema (mainly atopic dermatitis) and psoriasis, including not only disease-related skin symptoms, but also sleep disturbances, impaired mental health, impairment in life quality and work productivity [5-7].

The Dermatology Life Quality Index (DLQI) scale is a tool that is frequently used to assess the impact of dermatological diseases on life quality [8]. We have previously shown that psoriasis negatively



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affects the life quality of Turkish patients via using DLQI [9]. In this study, we aimed to compare the effect of eczema on the life quality with psoriasis patients in whom this effect is best known and to reveal the factors affecting life quality.

## Materials and Methods

### Design of the Study

This study was conducted at the Bahcesehir University Faculty of Medicine Hospital, Dermatology Clinic from October 2017 to March 2020. Seven hundred ninety-seven patients with a clinical diagnosis of psoriasis were enrolled in the study. After the selection criteria were met, all patients were informed about the study and informed consent was obtained.

### Patients

Socio-demographic characteristics of the patients (age, gender, educational status, marital status, income level, alcohol and smoking habits, and comorbid diseases), psoriasis and eczema-specific data (disease subtype, involvement area, disease duration, and presence of psoriatic arthritis) were recorded. The researcher, a dermatologist, collected socio-demographic and clinical data. Inclusion criteria for the study were that the patients be older than 18 years of age, have the ability to give informed consent, be literate in Turkish, and have clinically and/or laboratory-defined psoriasis or eczema with less than 10% body surface area involvement. Patients younger than 18 years of age, those who were unable to evaluate the DLQI form and did not agree to participate in the study, and those with two dermatological diseases were excluded from the study. Ethical permission for conducting this study was obtained from the Ethics Committee of Kocaeli University in the province where the relevant institution is located (approval number: 2016/172, date:17.02.2016).

### Measurements

Independent variables included demographic, socio-economic, and clinical characteristics. Patients who signed the informed consent form were asked to complete the DLQI.

### DLQI Score

DLQI is a questionnaire created for patients with skin diseases and consists of 10 items (emotions, daily activities, leisure time, work, personal relationships and treatment) that are filled out by the patients themselves. The overall DLQI score is the sum of the individual answer scores and ranges from 0 [meaning the skin disease has no effect on health-related quality of life (HRQoL)] to 30 (meaning the maximum effect on HRQoL). A DLQI score of 0-1 points indicates no impact on the patient's life; 2-5: a slight impact on the patient's life; 6-10: a moderate impact on the patient's life; 11-20: a significant impact on the patient's life; and a score of 21-30 is defined as one in which the patient's life is severely impacted. Score

increase is associated with decreased quality of life. The Turkish version of this questionnaire was prepared by Ozturkcan et al. [10] and a study of its accuracy and validity has been conducted.

### Statistical Analysis

The Statistical Package for the Social Sciences 26.0 (IBM Corporation, Armonk, New York, United States) program was used in the analysis of variables. The suitability of univariate data to normal distribution was evaluated by Kolmogorov-Smirnov test and Shapiro-Wilk Francia test. The Mann-Whitney U test was used with the Monte Carlo simulation technique in comparing two independent groups with each other according to the quantitative data. Spearman's rho tests were used to examine the correlations of variables with each other. In the comparison of categorical variables with each other, the Pearson chi-square test was used with exact results and the column proportions were compared with each other and expressed according to the Benjamini-Hochberg corrected p-value results. Odds ratio was used with 95% confidence intervals to show how many times those with a risk factor were higher than those without. Linear Regression, Random Forest, and Neural Network (Multilayer Perceptron-Radial Basis) were used to find and predict the variable with the highest significance in the DLQI total score. Since none of these methods could create a meaningful and valid model, their results were not reported. Quantitative variables were explained in tables as mean±standard deviation, median±interquartile range and median (minimum/maximum), categorical variables were shown as n (%). Variables were analyzed at a 95% confidence level and a p-value of less than 0.05 was considered to be significant.

## Results

### Demographic Characteristics

Our study included 410 (51.4%) females and 387 (48.6%) males, of whom 202 (25.3%) were mild to moderate psoriasis and 595 (74.7%) were eczema patients with less than 10% body surface area involvement. The most common type of eczema found in eczema group was seborrheic dermatitis (59.1%), while psoriasis vulgaris was the most common type in the psoriasis group (67.8 %) (Table 1).

While the median age of the patients in our study was 33 (28/41) years, patients with eczema were younger (32 vs. 37) and had lower body mass index (BMI) values (25.4 vs. 26) ( $p<0.001$  and  $p=0.034$ , respectively) (Table 2).

### Comparison of Eczema and Psoriasis Groups

While there was no difference between genders in the eczema group, it was found that psoriasis was more common in women than men (F/M: 1.7). The frequency of involvement in the truncus, genital area and extremities was found to be higher in patients with psoriasis than in those in the eczema group. On the other hand, the

**Table 1. Demographic findings**

	n	%
<b>Group</b>		
Psoriasis	202	25.3%
Eczema	595	74.7%
<b>Gender</b>		
Female	410	51.4%
Male	387	48.6%
<b>Eczema type</b>		
Seborrheic dermatitis	351	59.0%
Nummular dermatitis	91	15.3%
Dyshidrotic Eczema	20	3.4%
Irritant contact dermatitis	52	8.7%
Allergic contact dermatitis	26	4.4%
Atopic dermatitis	26	4.4%
Lichen simplex chronicus	17	2.9%
Other	12	2.0%
<b>Psoriasis type</b>		
Psoriasis vulgaris	137	67.8%
Palmoplantar pustulosis	6	3.0%
Guttate psoriasis	6	3.0%
Psoriatic arthritis	2	1.0%
Pustular psoriasis	1	0.5%
Other	50	24.8%

involvement frequency on face was found to be higher in patients who have eczema compared to the ones with psoriasis (Table 2). While additional skin diseases are more common in patients with eczema, the presence of other systemic diseases in the history of patients with psoriasis, sinopulmonary disease, continuous drug use, metabolic disease, cardiovascular disease, neurological disease, musculoskeletal disease, psychiatric disease, female-male hormonal diseases are statistically more likely (Table 3).

### DLQI Results

While the total DLQI score was found to be 7 (4/13) in the eczema group, it was 6 (3/11) in the psoriasis group. When the DLQI effect status of the patients was evaluated, it was found that 252 (31.6%) of the patients were affected at a mild level, 230 (28.9%) of them were moderately severe, and 190 (23.8%) were affected at a very severe level (Table 2). It was found that approximately half of the patients with a diagnosis of psoriasis (none=15.8%, mild=32.2%) had very low DLQI levels. Symptoms, emotions and leisure time scores were found to be significantly higher in the eczema group ( $p=0.012$  and  $p=0.034$ , respectively) (Table 2).

### Comparison by Psoriasis and Eczema DLQI Scores

When the patients were evaluated according to their psoriasis and eczema DLQI total scores, it was found that among eczema patients; females ( $p=0.003$ ), patients with allergic disease ( $p=0.025$ ), patients with sinopulmonary disease ( $p=0.022$ ), and patients with genital ( $p=0.023$ ), upper extremity ( $p=0.001$ ) and lower extremity ( $p=0.016$ ) involvement had higher total DLQI scores than others. It was found that in patients with psoriasis only those with lower extremity ( $p=0.045$ ) involvement had higher DLQI scores than those without lower extremity involvement.

### DLQI Total Correlation Analysis

A positive low-strong correlation was found between increased BMI and DLQI total scores, leisure time activities and disrupted friendship scores in patients with psoriasis. In patients with eczema, a positive low-strong correlation was found between increased BMI and DLQI totals, leisure activity, symptoms, level of deterioration in friendships and effect on feelings (Table 4).

### Discussion

Chronic dermatological diseases have a significant impact on patients' psychological health, self-esteem, and body image. Chronic stress and associated loss of positive self-image can also lead to social disability, which will likely exacerbate psoriatic and eczema symptoms [5,11]. In our study, we found that the life quality of patients diagnosed with eczema and psoriasis was similarly affected in a negative way.

DLQI is a reliable and valid tool for measuring quality of life and is widely used in psoriasis clinical investigations to assess life quality [6,12]. Studies on psoriasis patients in the United States of America have shown that an increase in disease severity is associated with a decrease in HRQoL, more hospital admissions, decreased self-confidence, and treatment-related frustration [13,14]. Quality of life is significantly affected in patients with eczema, but DLQI measurement is not used routinely in daily clinical practice.

Psoriasis affects both sexes in equal frequency and can occur at any age, whereas eczema starts at an earlier age and, similar to psoriasis, does not differ in distribution between genders [15,16]. In our study, there was no difference found in the frequency of incidence between genders in the eczema group, while it was found that psoriasis was more common in women than men (F/M: 1.7). The higher prevalence of female patients diagnosed with psoriasis was thought to be related to the fact that the patient cohort in our study consisted of younger patients compared to those in the literature.

It has been shown that the negative effects of psoriasis on life quality can be as severe as heart failure, diabetes, cancer and major

Table 2. Table in which patient groups are compared				
	Total (n=797)	Eczema (n=595)	Psoriasis (n=202)	p
Age, Median (Q1/Q3)	33 (28/41)	32 (27/38)	37 (29/49)	<0.001 <sup>u</sup>
Complaint duration (months), Median (Q1/Q3)	12 (2/36)	6 (1.5/36)	12 (4/60)	<0.001 <sup>u</sup>
Smoking (absent), n(%)	244 (30.6)	172 (28.9)	72 (35.6)	0.136 <sup>fc</sup>
Alcohol use (absent), n(%)	118 (14.8)	90 (15.1)	28 (13.9)	0.731 <sup>pc</sup>
Presence of allergies, n(%)	173 (21.7)	134 (22.5)	39 (19.3)	0.375 <sup>pc</sup>
BMI (kg/m <sup>2</sup> ), Median (Q1/Q3)	25.5 (22.4/28.2)	25.4 (22.3/27.9)	26 (22.9/30)	0.034 <sup>u</sup>
	n (%)	n (%)	n (%)	
Gender				<0.001 <sup>pe</sup>
Female	410 (51.4)	284 (47.7)	126 (62.4)	
Male	387 (48.6)	311 (52.3)	76 (37.6)	
Face	367 (46.0)	320 (53.8)	47 (23.3)	<0.001 <sup>pe</sup>
Truncus	153 (19.2)	89 (15.0)	64 (31.7)	<0.001 <sup>pe</sup>
Genital	73 (9.2)	30 (5.0)	43 (21.3)	<0.001 <sup>pe</sup>
Upper extremity	375 (47.1)	193 (32.4)	182 (90.1)	<0.001 <sup>pe</sup>
Lower extremity	245 (30.7)	104 (17.5)	141 (69.8)	<0.001 <sup>pe</sup>
DLQI effect				0.002 <sup>pc</sup>
None	78 (9.8)	46 (7.7)	32 (15.8) <sup>A</sup>	0.001
Small	252 (31.6)	187 (31.4)	65 (32.2)	ns.
Moderate	230 (28.9)	179 (30.1)	51 (25.2)	ns.
Very large	190 (23.8)	153 (25.7) <sup>B</sup>	37 (18.3)	0,033
Extremely large	47 (5.9)	30 (5.0)	17 (8.4)	ns.
	Median (Q1/Q3)	Median (Q1/Q3)	Median (Q1/Q3)	
DLQI total	7 (3/12)	7 (4/13)	6 (3/11)	0.017 <sup>u</sup>
Symptoms and feelings	3 (2/4)	3.3 (2/5)	2.8 (2/4)	0.012 <sup>u</sup>
Daily activities	1 (0/2)	1 (0/2)	1 (0/2)	0.097 <sup>u</sup>
Leisure	1 (0/2)	1 (0/2)	0 (0/2)	0.034 <sup>u</sup>
Work and school	0 (0/1)	0 (0/1)	0 (0/1)	0.055 <sup>u</sup>
Personal relationships	1 (0/2)	1 (0/2)	0 (0/1)	0.135 <sup>u</sup>
Treatment	0 (0/1)	0 (0/1)	0 (0/1)	0.957 <sup>u</sup>

<sup>u</sup> Mann-Whitney U Test (Monte Carlo), <sup>fc</sup> Fisher Exact Test(Exact), <sup>pc</sup> Pearson chi-square Test (Exact), Q1: Percentile %25, Q3: Percentile %75

depression [17]. Patients struggle with the disease and face various psychosocial problems during daily life activities highlighting the need for psychosocial strategies to treat patients diagnosed with psoriasis and to help them improve their overall quality of life. In our previous study conducted with 154 patients with psoriasis in 2011, we found the average DLQI score to be 9.3 (0-29) [9]. In this current study, the median DLQI score was found to be 6 (3/11) in patients diagnosed with psoriasis. We believe that the lower average DLQI score found in the current study is due to the fact that the psoriasis patients included in the study had milder disease activity, received adequate local therapies, and participated in standard clinic follow-ups.

In this current study, we aimed to reveal the life quality status of people diagnosed with two different skin diseases that are similar in appearance by evaluating their DLQI score, and we noticed that the eczema patient group had higher average DLQI scores. Another remarkable finding was that patients with eczema had very severe DLQI scores at a higher rate (36.7% vs. 26.7%) than those with psoriasis. Similar to our study, Lundberg et al. [18] found that patients with psoriasis had lower mean DLQI scores than those with atopic dermatitis. Face, hand and forearm involvement in patients with eczema significantly affects the patient's life quality and comfort during the day, both cosmetically and functionally. In addition, the fact that eczema affecting the face area is resistant

Table 3. Comparison of the groups in terms of comorbid conditions of the patients				
	Total	Eczema	Psoriasis	p
	(n=797)	(n=595)	(n=202)	
	n (%)	n (%)	n (%)	
Family history	251 (31.5)	197 (33.1)	54 (26.7)	0.096 <sup>pe</sup>
Additional skin disease	294 (36.9)	237 (39.8)	57 (28.2)	<b>0.003<sup>pe</sup></b>
Disease in medical history	351 (44.0)	234 (39.3)	117 (57.9)	<b>&lt;0.001<sup>pe</sup></b>
Sinopulmonary disease	86 (10.8)	61 (10.3)	25 (12.4)	0.431 <sup>pe</sup>
Cancer	10 (1.3)	6 (1.0)	4 (2.0)	0.284 <sup>fe</sup>
Continuous drug use	226 (28.4)	156 (26.2)	70 (34.7)	<b>0.024<sup>pe</sup></b>
GIS disease	33 (4.1)	24 (4.0)	9 (4.5)	0.838 <sup>pe</sup>
Metabolic disease	68 (8.5)	43 (7.2)	25 (12.4)	<b>0.029<sup>pe</sup></b>
Cardiovascular disease	73 (9.2)	40 (6.7)	33 (16.3)	<b>&lt;0.001<sup>pe</sup></b>
Urogenital disease	14 (1.8)	7 (1.2)	7 (3.5)	0.056 <sup>fe</sup>
Neurological disease	18 (2.3)	9 (1.5)	9 (4.5)	<b>0.025<sup>fe</sup></b>
Musculoskeletal disease	33 (4.1)	15 (2.5)	18 (8.9)	<b>&lt;0.001<sup>pe</sup></b>
Hepatobiliary disease	17 (2.1)	12 (2.0)	5 (2.5)	0.778 <sup>fe</sup>
Thyroid disease	46 (5.8)	30 (5.0)	16 (7.9)	0.161 <sup>pe</sup>
Psychiatric illness	17 (2.1)	9 (1.5)	8 (4.0)	<b>0.048<sup>fe</sup></b>
Female/Male hormonal disorders	121 (15.2)	74 (12.4)	47 (23.3)	<b>&lt;0.001<sup>pe</sup></b>

<sup>fe</sup> Fisher Exact test (exact), <sup>pe</sup> Perason chi-square test (exact)

to conventional treatments emerges as a significant challenge [18,19]. In our study, we think that the acute and widespread occurrence of face involvement in patients with eczema may be associated with higher DLQI scores in the patients, and the increase in the symptoms-emotions and leisure time sub-criteria is due to this psychosocial influences and treatment difficulty.

In a study conducted by Araya et al. [20], the mean DLQI score of patients diagnosed with seborrheic dermatitis was found to be 8.1 (0/27). In the same study, it was emphasized that people with scalp lesions are more severely affected than those where other body parts are affected. Szepietowski et al. [21] found the mean DLQI score of  $7.73 \pm 5.3$  in a study in which patients with seborrheic dermatitis were evaluated, and it is similar to the results of our study involving patients with predominantly seborrheic dermatitis. Holm et al. [22] found the median DLQI score to be 5 (3-9) in a study in which they evaluated the life quality of patients with AD in 2006. In this study, they emphasized that AD has a significant effect on HRQoL, and that mental health, and the social and emotional functioning of patients are affected more than physical function. Similarly, in our study, it was found that symptoms and emotions and leisure time scores were significantly higher than those for physical activity in the patient group with eczema ( $p < 0.005$ ).

There are not sufficient data in the literature regarding the presence of asthma and sinopulmonary disease in eczema or psoriasis patients that result in deterioration in DLQI scores. In our study, in addition to

the literature, it was determined that patients with eczema who had allergic diseases ( $p=0.025$ ) and those with sinopulmonary disease ( $p=0.022$ ) had higher DLQI scores. This situation may be thought to be related to additional factors (such as continuous drug use, atopic structure, and disease burden brought by additional comorbidity) that negatively contribute to the life quality of patients with chronic allergic diseases.

The relationship between eczema and obesity has been described especially in children, and the effect of this condition on the life quality of patients is controversial. Xuan et al. [23] found that BMI affects the life quality of patients with seborrheic dermatitis. Silverberg and Simpson [24] found that obesity was associated with an increased frequency and severity of eczema in adolescents aged 10-17 years, and a deterioration in the general health status of eczema patients. However, measurements were not made with the DLQI in this study. In our study, obesity was found to be correlated with the DLQI total, leisure activity and symptom-feeling effects in patients with eczema, similar to those in psoriasis patients. In our study, we think that the relationship between BMI and DLQI deterioration in eczema patients is an important finding, in contrast to those in the literature.

#### Study Limitations

There are some limitations to our study. Some of which are due to the fact that patients were followed up in a single center, as

Table 4. Correlation analysis for factors affecting DLQI increase in patients with psoriasis and eczema

			Age	BMI	Complaint duration
Psoriasis	DLQI total	r	0.034	0.161	0.054
		p	0.630	0.022	0.445
	Symptoms and feelings	r	0.024	0.050	-0.017
		p	0.739	0.478	0.808
	Daily activities	r	0.052	0.118	0.112
		p	0.466	0.093	0.111
	Leisure	r	0.015	0.194	0.078
		p	0.831	<b>0.006</b>	0.270
	Work and school	r	0.004	0.103	0.075
		p	0.959	0.145	0.289
	Treatment	r	0.135	0.222	0.101
		p	0.055	<b>0.002</b>	0.154
	Personal relationships	r	0.058	<b>0.173</b>	-0.021
		p	0.410	<b>0.014</b>	0.768
Eczama	DLQI total	r	0.034	0.086	-0.004
		p	0.413	<b>0.037</b>	0.923
	Symptoms and feelings	r	0.046	0.103	-0.004
		p	0.258	<b>0.012</b>	0.923
	Daily activities	r	0.022	0.064	-0.002
		p	0.590	0.122	0.956
	Leisure	r	0.087	0.09	-0.021
		p	0.033	<b>0.027</b>	0.615
	Work and school	r	0.010	-0.002	-0.036
		p	0.810	0.953	0.384
	Treatment	r	-0.008	0.072	0.000
		p	0.843	0.080	0.997
	Personal relationships	r	0.104	0.116	-0.036
		p	<b>0.011</b>	<b>0.004</b>	0.385

Spearman's rho test, r: Correlation coefficient

patient selection causes numerical differences between the groups, and there was no information about the patients' education levels, employment and income status. In addition, the relationship between disease severity and DLQI could not be clearly evaluated because scoring systems that evaluate the disease severity of the patients (Psoriasis Area Severity Index and Eczema Area and Severity Index) were not used. We think that the fact that the DLQI scores of the patients in our study are at a higher level compared to the literature can be explained by this situation.

## Conclusion

In conclusion, in our study, we found that the DLQI life quality of patients diagnosed with eczema, was affected in a moderate-negative way, similar to that in those with psoriasis. We found that this deterioration increased in both groups in parallel with

obesity. Follow-up of these diseases in a multidisciplinary manner, in which comorbid conditions are considered, optimal treatments are performed and weight control is addressed is very important in terms of improving the social, psychological and cognitive conditions of patients.

## Ethics

**Ethics Committee Approval:** Ethical permission for conducting this study was obtained from the Ethics Committee of Kocaeli University in the province where the relevant institution is located (approval number: 2016/172, date:17.02.2016).

**Informed Consent:** All patients were informed about the study and informed consent was obtained.

**Peer-review:** Externally and internally peer-reviewed.



### Authorship Contributions

Surgical and Medical Practices: F.E.Y., Concept: F.E.Y., C.K., B.A., Design: F.E.Y., B.A., Data Collection or Processing: F.E.Y., C.K., B.A., Analysis or Interpretation: F.E.Y., Literature Search: F.E.Y., Writing: F.E.Y.

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