

## The Effect of Hospitalization on Quality of Life in Dermatology Inpatients

Dermatoloji Yatan Hastalarında Hospitalizasyonun Yaşam Kalitesine Etkisi

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### ABSTRACT

**Objective:** Quality of life (QOL) measures have been used as assessment parameters in the management of chronic skin diseases. Our aim is to demonstrate the effect of inpatient therapy on the health-related QOL.

**Materials and methods:** This study comprised 509 patients with skin diseases. Possible effects of inpatient therapy on QOL were measured as pre/post-treatment differences in Dermatology Life Quality Index (DLQI) and short form (SF)-36 health survey tests' mean scores.

**Results:** The most common reasons necessitating the admission were severity of skin disease or acute deterioration of disease (46.1%). The mean DLQI value for all patients decreased after inpatient therapy (from 13.08 to 6.94). The mean SF-36 value of all subscales for all patients increased after inpatient therapy except for general health subscale of SF-36. The regression analysis showed significant effect of age, being previously hospitalized, duration of admission on the DLQI scores. While age and being previously hospitalized were the factors to affect some of the SF-36 subscale scores.

**Conclusion:** Our results indicate that inpatient therapy may improve QOL of patients with dermatological diseases and that clinicians should consider assessment of DLQI to determine the therapy option for a patient.

**Key Words:** quality of life, dermatology life quality index, short form (SF)-36 health survey, inpatient therapy, skin diseases

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### ÖZET

**Amaç:** Kronik deri hastalıklarının tedavisinde değerlendirme parametreleri olarak yaşam kalitesi ölçümleri de kullanılmaktadır. Amacımız hastaneye yatırarak tedavinin sağlık ilişkili yaşam kalitesi indeksine (YKİ) etkisini göstermektir.

**Yöntem:** Bu çalışmada deri hastalıkları olan 509 hasta değerlendirilmiştir. Hastaneye yatırarak tedavinin YKİ'ye etkisi dermatoloji yaşam kalite indeksi (DYKİ) ve SF-36 yaşam kalitesi ölçeği ortalama skorlarının tedavi öncesi ve sonrası ölçümleri ile değerlendirilmiştir.

**Bulgular:** Hastane yatışını gerektiren en sık nedenler (%41,6) deri hastalığı şiddeti veya hastalık akut şiddetlenmesiydi. Hastaneye yatma ile tüm hastalarda ortalama DYKİ değerleri 13.08'den 6.94'e azalma gösterdi. Tüm hastalarda hastaneye yatma ile SF-36'nın genel sağlık alt skalası haricindeki tüm alt skalalarında ortalama değerlerin artışı izlendi. Regresyon analizi yaş, daha önce hastanede yatmış olmak ve hastanede yatış süresinin DYKİ'yi belirgin olarak etkilediğini gösterdi. Öte yandan bazı SF-36 sağlık ölçeği alt skala skorlarını etkileyen faktörler ise yaş ve hastanede daha önce yatmış olmak şeklindeydi.

**Sonuç:** Sonuçlarımız hastanede yatmanın dermatolojik hastalıkları olan hastalarda yaşam kalitesine iyi etki edebileceğine ve klinisyenlerin hastalarda tedavi seçeneklerini belirlerken DYKİ ölçümünün de dikkate alınması gerekliliğine işaret etmektedir.

**Anahtar Sözcükler:** Yaşam kalitesi, dermatoloji yaşam kalite indeksi, SF-36 sağlık anketi, hastaneye yatırarak tedavi, deri hastalıkları

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**INTRODUCTION**

Although not generally life threatening, skin disease has long been recognized as having an adverse impact on the patient’s physical health, psychological status, social relationships and everyday activities, however, it is only recently that the quality of life (QOL) measures have been used as assessment parameters in the management of chronic skin diseases. Despite this growing awareness, little research has focused on QOL in hospitalized patients with skin diseases (1-13).

For most of the dermatology patients, outpatient treatment is appropriate. However a wide range of skin conditions, especially those with severe and life-threatening manifestations is encountered in the inpatient setting. Inpatient therapy constitutes multifunctional effect on the disease, treatment, it is a useful instrument in shortening the recovery time of patients, helps to improve coping strategies, it offers nursing and care, and provides social support and the opportunity for education for the patients (8,9). Therefore, as with any therapy, inpatient therapy affects the QOL of patients. A limited number of studies from different countries with varying patient numbers supported the beneficial effect of hospitalization on QOL of the patients (1-7,10,11,12). Because QOL is a subjective construct which varies with the population studied, this study aims at quantifying the burden of skin diseases on the health-related QOL in the Turkish population and demonstrating the effect of inpatient therapy on this population.

In general, combining disease specific QOL instruments with general health related QOL instruments is recommended in measuring QOL of dermatology patients (14-18). Of the many disease specific QOL instruments developed, the Dermatology Life Quality Index (DLQI) is probably the most widely-used tool in this population (17-19). DLQI was developed as a simple, short, compact, and a practical questionnaire for use in dermatology clinical settings to assess limitations related to the impact of skin disease (19). The validation studies for the Turkish version of DLQI has been recently published and results of the initial validation work have been reported (20). The short form (SF) - 36 health survey is a 36-item general health status instrument often used in clinical trials and health services research for comparing QOL differences across different diseases (14-17,19,21,22). Both of the instruments have also been shown to be responsive to clinical changes in previous studies (5,7,18,19,23-25). Until now, no study has evaluated the change in QOL after hospitalization in Turkish patients with dermatological disorders. In this study, we used the DLQI and SF-36 test to assess the QOL of dermatology patients hospitalized in a teaching hospital in the center of Turkey.

**MATERIALS AND METHODS**

*Patient population*

All adults (18 years of age or over) hospitalized in Dermatology Department, Gazi University, Ankara, Turkey during two consecutive years with skin diseases who gave their informed consent were enrolled for this prospective, questionnaire based study. The age, sex characteristics, diagnosis of the disease, indication for hospitalization, treatment modalities (e.g., topical, systemic), educational status, duration of admission and the presence of previous hospitalizations were recorded. Patients hospitalized shorter than one week were excluded.

*QOL measurements*

QOL measurements were assessed by using DLQI and SF-36 tests, baseline and post-treatment questionnaires were distributed and completed after obtaining verbal consent. Possible effects on QOL were measured as pre/post-treatment differences in DLQI and SF-36 mean scores.

DLQI was used according to the instructions given by Finlay and Khan (19) and was measured using the Turkish version of the DLQI (20). The DLQI is a 10-item questionnaire developed for measuring QOL in patients with skin disease. The 10 items cover six aspects of daily life experienced during the past week and it is analyzed under six headings; symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment. Each item is assigned a score of 0 (not at all) to 3 (very much). The DLQI score ranges from 0–30, with "30" corresponding to the worst, "0" to the best score of the effect on QOL (19).

General health QOL was measured using the Turkish version of SF-36 (22). The SF-36 test comprises 36 items covering eight subscales; physical functioning, social functioning, physical impairment, emotional impairment, emotions, vitality, pain and global health with one Physical (PCS-36) and one Mental (MCS-36) Component Summary score.

A score from 0 to 100 is calculated for each subscale, with higher scores indicating better health related QOL. It can be used for comparing the health status of patients with different conditions, and for comparing patients with the general population (14,21).

During the study period, 547 patients satisfied the inclusion criteria. 38 were excluded because the post-treatment QOL measurements were not performed. Thus, data were available for 509 patients.

*Statistical Analysis* Data were entered and processed using SPSS version 11.0 for Windows (Statistical Package for the Social Sciences) and analyzed to test the study hypothesis that QOL improves during dermatology inpatient treatments. Questionnaires with more than two missing answers were excluded from the analysis. In cases of one missing answers, missing values were substituted with the mean score on the other items of DLQI and SF-36 tests. Categorical data were analyzed by the Chi Square method. Paired t test was used to assess the differences in mean pre- and post-treatment values for DLQI and SF-36. The differences regarding mean SF-36 subscales were analyzed by the Kruskal–Wallis test for more than two groups. Pearson’s correlation coefficients were used to analyze the relationship between the QOL instruments. A logistic linear regression analysis was performed with DLQI, PCS and MCS as dependent variables, age and duration of admission, educational status, presence of previous hospitalization, type of treatment (e.g., topical, systemic) and disease groups as independent variables. Data were expressed as means with standard deviations in parentheses.

**RESULTS**

*Sample Characteristics*

Table 1 summarizes the descriptive statistics of the patients. The mean age of the patients was 44.8 years (SD, 15.2; range, 18-87 years), and 57.8% of the study group were women. The average duration of admission was 14.9 days (SD, 11.2; range, 9-76 days). The most common reasons necessitating the admission were severity of skin disease or acute deterioration of disease (235, 46.1%), investigation observation (97, 19%), outpatient treatment failure (72,14.9%), initiation of systemic treatment (58, 11.3%), wound care (27, 5.3%) and transport problems (20, 3.9%).

Patients were divided into eight groups according to their diagnosis; Behçet’s Disease; psoriasis; ulcers, ulcerated conditions, including pyoderma gangrenosum, diabetic foot and leg ulcers; erythroderma and mycosis fungoides; eczema, eczemas including all variants except for seborreic dermatoses; urticaria, urticaria and other priority conditions including drug eruptions; blistering disorders; infectious diseases. The group labelled other diagnoses contained diseases that are observed in <10 patients. Among these are the following lichen planus, Sweet’s syndrome, genodermatosis, sarcomas, connective tissue disorders, graft versus host disease, undefined conditions, vasculitis, sarcoidosis, pityriasis rubra pilaris, panniculitis, burns, hair and nail disorders, diseases of the genitalia, Kaposi’s sarcoma, cutaneous melanoma, etc. (Table 1). The most common diagnoses were urticaria group accounting for 24.3% of the total admissions.

**Table 1:** Demographic data of the study group

<b>Age, year, mean (SD), min-max</b>	44.8 (15.2), 18-87
<b>Sex (Female/Male)</b>	294/215
<b>Duration of admission, day, mean (SD), min-max</b>	14.9 (11.2), 9-76
<b>Diagnoses</b>	<b>n=509</b>
Urticaria/pruritic conditions	124
Psoriasis	66
Eczema	44
Infections	70
Ulcers	32
Erythroderma/MF	18
Behçet’s disease	16
Blistering disorders	12
Other diagnoses	127

*QOL issues*

The mean total DLQI scores are shown in Table 2. The mean (SD) DLQI value for all patients decreased after inpatient therapy (from 13.08 (8.27) to 6.94 (3.00), respectively) (p < 0.05). The mean DLQI value of 61% of the patients were higher than 10 before admission while it was 15.3% after inpatient therapy (p < 0.05).

**Table 2:** Mean (SD) scores for eight subscales and two summary subscales of SF-36 and mean (SD) total scores of DLQI of our patient population. Pre-treatment (Pre-T) and post-treatment (Post-T) values were compared in rows.

	All of the patients (n=509)	Urticaria/ Drug eruptions (n=124)	Infections (n=70)	Psoriasis (n=66)	Eczema (n=44)	Ulcers (n=32)	Erythroderma/ MF (n=18)	BD* (n=16)	Blistering disorders (n=12)	Other diagnosis (n= 127)
<b>SF-36 subscales</b>										
Physical functioning	66.88 (30.12)	94.28 (7.86)	58.22 (36.27)	67.33 ( 29.79)	70.29 (26.91)	76.84 (23.92)	65.89 (27.10)	46.25 (37.2)	69.78 (28.89)	68.33 (21.13)
	74.52 (25.95)	70.00 (22.73)	78.00 (22.84)	79.41 (24.60)	78.01 (25.96)	83.82 (16.12)	66.53 (24.06)	63.18 (30.51)	73.91 (26.45)	85.83 (9.17)
Post-T										
Role-physical	38.27 (41.40)	44.40 (44.88)	33.92 (44.79)	30.30 (37.59)	27.77 (29.16)	33.31 (40.33)	40.69 (43.70)	34.26 (16.66)	35.71 (38.14)	25.00 (38.72)
	41.72 (41.85)	38.60 (39.20)	52.97 (43.54)	51.89 (46.47)	36.11 (37.73)	48.52 (43.33)	47.67 (41.10)	56.25 (41.72)	37.50 (42.21)	45.83 (24.57)
Body pain	49.68 (26.52)	49.21 (27.70)	52.36 (26.45)	44.66 (18.76)	52.40 (20.05)	57.72 (27.63)	46.15 (31.50)	42.18 (18.78)	53.18 (30.69)	69.50 (22.82)
	55.94 (24.03)	53.31 (22.20)	56.86 (24.65)	56.22 (23.46)	73.00 (26.09)	63.22 (23.91)	58.39 (21.41)	43 (16.28)	56.32 (32.65)	81.00 (21.93)
General health	54.89 (17.17)	56.94 (19.99)	53.23 (16.84)	54.36 (18.49)	37.50 (2.88)	50.72 (17.71)	54.00 (12.61)	41.36 (23.80)	48.88 (20.80)	60.33 (23.09)
	54.17 (19.63)	54.76 (17.68)	57.26 (22.75)	58.20 (15.20)	56.00 (9.89)	61.21 (17.31)	55.63 (19.00)	54 (15.16)	49.76 (16.49)	65.00 (13.22)
Vitality	51.03 (21.58)	46.92 (20.11)	52.36 (21.92)	52.54 (16.24)	58.33 (2.88)	52.52 (23.91)	46.37 (24.86)	54.23 (14.83)	49.56 (28.32)	66.25 (14.36)
	56.75 (19.51)	55.10 (19.01)	58.94 (18.78)	57.00 (19.66)	55.00 (8.66)	61.55 (16.21)	59.35 (18.41)	56.11 (14.31)	51.52 (23.13)	82.50 (8.66)
Social functioning	55.36 (25.51)	57.19 (21.12)	55.12 (27.31)	48.65 (20.62)	70.00 (6.84)	57.00 (28.92)	56.41 (23.31)	48.61 (22.04)	53.67 (28.12)	75.00 (10.20)
	58.94 (23.249)	58.37 (26.03)	63.46 (24.05)	59.80 (24.35)	57.50 (11.18)	62.10 (24.31)	57.69 (22.31)	53.75 (14.49)	58.45 (29.47)	81.25 (21.65)
Role-emotional	34.01 (41.09)	29.19 (39.96)	37.58 (43.74)	19.81 (34.42)	31.11 (33.33)	27.45 (37.11)	33.33 (37.41)	46.66 (32.20)	28.73 (39.56)	11.11 (17.21)
	39.66 (42.39)	44.18 (43.73)	56.02 (42.33)	51.35 (41.72)	37.03 (42.30)	50.00 (44.41)	35.60 (40.31)	40 (47.47)	27.58 (39.90)	27.77 (38.96)
Mental health	55.12 (18.19)	56.16 (21.20)	57.14 (18.19)	52.98 (16.09)	56.80 (17.97)	59.20 (19.71)	51.46 (16.61)	49.45 (12.16)	58.40 (20.49)	62.00 (6.92)
	58.56 (15.62)	57.18 (12.30)	60.45 (17.23)	59.39 (17.80)	64.80 (20.07)	64.80 (14.36)	59.60 (14.83)	51.55 (11.56)	64.20 (22.45)	70.00 (13.26)
Mental Component Summary score	42.87 (19.81)	51.34 (23.69)	49.11 (19.93)	31.00 (23.62)	41.12 (21.39)	47.45 (20.12)	44.33 ( 21.65)	40.67 (14.50)	39.51 (26.01)	45.56 (22.73)
	46.88 (21.869)	56.21 (16.07)	56.88 (15.22)	39.21 (26.55)	47.02 (17.01)	53.22 (17.32)	48.21 (13.76)	46.22 (22.15)	43.77 ( 15.08)	50.04 (14.77)
Physical Component Summary score	40.12 (21.98)	49.45 (15.34)	43.10 (16.90)	41.45 (27.12)	42.02 (14.80)	45.71 (13.61)	43.89 (18.12)	39.23(34.21)	41.22 (18.02)	38.97 (16.88)
	43.11 (17.98)	52.34 (17.92)	51.08 (13.23)	43.45 (15.62)	50.02 16.79)	51.44 (17.22)	47.01 (13.09)	45.01(20.01)	45.04 (21.09)	41 (19.11)
DLQI	13.08 (8.27)	10.93 (5.25)	10.36 (8.20)	16.28 (7.71)	13.12 (8.31)	12.80 (8.05)	13.73 (7.30)	12.75 (8.86)	12.50 (11.27)	15.33 (1.36)
	6.94 (3.00)	4.53 (2.09)	3.56 (2.39)	7.49 (4.14)	5.20 (4.0)	3.68 (2.57)	6.11 (3.49)	6.78 (5.24)	7.33 (4.65)	7.33 (3.61)

\* BD, Behçet's disease

The mean SF-36 value of all subscales for all patients increased after inpatient therapy ( $p < 0.05$ ) except for one SF-36 subscale (General health,  $p > 0.05$ ). Regarding pre-treatment values, the mean physical functioning scores had a minimum (SD) of 46.25 (37.2) for patients with BD; the mean role-physical scores had a minimum of 27.77 (29.16) for eczema patients. The minimum score for body pain was 42.18 (18.78) in BD patients; for general health, 37.50 (2.88) in eczema patients; for vitality, 46.37 (24.86) in urticaria patients; for social functioning, 48.65 (20.62) and 48.61 (22.04) in psoriasis and BD patients; for role emotional 19.81 (34.42) in psoriasis patients; for mental health 49.45 (12.16) in patients with ulcers.

The lowest score in the SF-36 subscale was observed in role emotional subscale with a value of 19.81 (34.42) for psoriasis patients. The mean SF-36 value of all of these patients increased after inpatient therapy ( $p < 0.05$ ).

The overall mean (SD) DLQI score of 13.48 (8.41) for women was higher than that of 12.50 (8.12) for men ( $p < 0.05$ ). However, there were no differences between women and men regarding all SF-36 subscales ( $p > 0.05$ ) except for social functioning scale which was lower in women than in men ( $p < 0.05$ ) (Table 3).

The study showed significant correlations ranging between  $r = -0.217$  and  $r = -0.511$  between the DLQI domains and SF-36 subscales except for "General Health" subscale of SF-36 test. The strongest correlations ( $> 0.40$ ) were found between DLQI and physical functioning and social functioning SF-36 subscales ( $p < 0.01$ ) (Table 4).

A linear regression analysis was performed with DLQI, PCS and MCS as dependent variables, age and duration of admission, educational status, presence of previous hospitalization, type of treatment (e.g., topical, systemic) and disease groups as independent variables. Data were expressed as means with standard deviations in parentheses. When analyzing the influence of all independent variables, the multiple regression analysis showed significant effect of age (Beta = -0.096;  $t = 37.4$ ;  $p < 0.05$ ,  $R^2 = 0.009$ ), being previously hospitalized (Beta = -0.104;  $t = 36.3$ ;  $p < 0.05$ ,  $R^2 = 0.011$ ), duration of admission (Beta = -0.095;  $t = 18.05$ ;  $p < 0.05$ ,  $R^2 = 0.009$ ) on the DLQI scores.

These results indicated that being previously hospitalized, having longer admission duration and being younger were associated with higher values of DLQI ( $p < 0.05$ ) while type of treatment (Beta = -0.059;  $t = 12.9$ ;  $p > 0.05$ ,  $R^2 = 0.003$ ), and educational status (Beta = -0.052;  $t = 14.6$ ;  $p > 0.05$ ,  $R^2 = 0.003$ ) failed to show such a relationship.

When analyzing the influence of age, being previously hospitalized, duration of hospitalization, educational status on all SF-36 subscales, age affected only the "general health" subscale (Beta = 0.214;  $t = 3.124$ ;  $p = 0.0020$ ,  $R^2 = 0.045$ ), the factor, being previously hospitalized affected "body pain" (Beta = -0.136;  $t = -1.970$ ;  $p = 0.0502$ ,  $R^2 = 0.018$ ), "vitality" (Beta = -0.191;  $t = -2.775$ ;  $p = 0.006$ ,  $R^2 = 0.036$ ), "social functioning" (Beta = -0.224309;  $t = -3.279$   $p = 0.001$ ;  $R^2 = 0.050$ ), "role-emotional" (Beta = -0.236;  $t = -3.462$   $p = 0.0007$ ,  $R^2 = 0.055$ ) "physical functioning" (Beta = -0.156601;  $t = -2.259$ ;  $p = 0.0249$ ,  $R^2 = 0.024$ ) subscale scores. While duration of admission, educational status, type of treatment (e.g., topical, systemic) were not significantly effective factors.

**Table 3:** Distribution of DLQI and SF-36 scores according to gender

	Women (n=294)	Men (n=215)
DLQI mean (SD)	13.48 (8.41)	12.50 (8.12)
<b>SF-36 subscales mean (SD)</b>		
Physical functioning	66.18 (29.84)	67.84 (30.56)
Role-physical	37.29 (40.42)	39.57 (42.73)
Body pain	51.69 (26.04)	46.75 (27.00)
General health	55.76 (17.37)	53.61 (16.85)
Vitality	49.90 (21.47)	52.51 (21.69)
Social functioning*	53.60 (24.68)	57.85 (26.51)
Role-emotional	34.94 (41.53)	32.82 (40.61)
Mental health	54.13 (17.12)	56.43 (19.49)

\*  $p = 0.00046$ ,  $t$ -test.

**Table 4:** Correlation between SF-36 subscales and DLQI items.

SF-36 Subscales	DLQI Items						
	Symptoms and feelings (items 1,2)	Daily activities (items 3, 4)	Leisure (items 5,6)	Work and school (item 7)	Personal relationships (items 8, 9)	Treatment (item 10)	Total
<b>Physical functioning</b>	0.349*	0.457	0.366	0.261	0.249	0.382	0.389
<b>Role-physical</b>	0.298	0.479	0.396	0.376	0.423	0.421	0.401
<b>Body pain</b>	0.308	0.465	0.475	0.356	0.346	0.312	0.424
<b>General health</b>	NS	NS	NS	NS	NS	NS	NS
<b>Vitality</b>	0.290	0.384	0.397	0.419	0.427	0.274	0.374
<b>Social functioning</b>	0.217	0.491	0.464	0.487	0.449	0.508	0.511
<b>Role-emotional</b>	NS	0.242	0.334	0.369	NS	0.435	0.399
<b>Mental health</b>	0.387	0.450	NS	0.478	0.335	NS	0.423

\*Pearson coefficients;  $P < 0.01$ , NS: not significant.

**Table 5:** Effect of inpatient therapy on DLQI scores in different countries

References	Country	Patient number	Diagnosis	Mean DLQI score (SD)	
				Pretreatment	Posttreatment
Schmitt <sup>1</sup>	Germany	36	Psoriasis (n=22) Atopic dermatitis (n=14)	16.2 (7.6)	At the time of discharge: 8.7 At 3 months: 6.9
Ayyalaraju <sup>2</sup>	UK	283	All hospitalized patients	14.9 (7.2)	At 1 week: 8.2 (6.5)
Wahl <sup>3</sup>	USA	366	All hospitalized patients	12.0 (6.9)	At 1 week: 8.5 (7.7)
	Norway	126	Psoriasis (n=85) Eczema (n=46)	18.8 (7.1)	At 1 week: 12.9 (SD,8.1)
Zachariae <sup>4</sup>	Danish	100	All hospitalized patients	12.9 (7.0)	
Kurwa <sup>5</sup>	UK	181	All hospitalized patients	13.2 (7.6)	At 4 week: 7.7 (6.8)
Helbing <sup>6</sup>	UK	280	All hospitalized patients	14.16 ( 6.82)	At 1 week: 8.23 (6.82)
Mazzotti <sup>7</sup>	Italy	900	Psoriasis	8.8 (6.1)	-
Vensel <sup>10</sup>	USA	15	Psoriasis	15.3 (1.0)	At 1 week: 6.9 (1.2) At 3 months : 6.5 (1.0)
Current study	Turkey	509	All hospitalized patients	13.08 (8.27)	At the time of discharge: 6.94 (3.00)

## DISCUSSION

As reflected by a decrease in the mean of total DLQI score and an increase in the mean of total SF-36 scores, after inpatient treatment, the results of this prospective study appear to support our hypothesis, based on our clinical experience, that inpatient therapy improves QOL of patients with dermatological diseases. Our findings are in accordance with the results of studies on the effectiveness and benefit of hospital treatment in QOL of patients with various kind of skin diseases (Table 5). These studies including ours found improved QOL scores at the time of discharge (1), at 1 week (2,3,6,10), 4 week (5), or 3 months (1,10) after discharge from hospital.

Currently, QOL measurement has become a standard measure of outcomes in clinical trials, cost effectiveness analysis and clinical practice (15,16,18,23,24,26). DLQI scores reflect the amount of impact of the disease on the patient's QOL (19) and according to Hongbo et al (15), a DLQI score greater than 10 indicates a very large effect of the skin disease on the patient's life. While 46% our patients were hospitalized because of severity of the skin disease, according to mean of total DLQI scores, 61% of our patients had a mean DLQI score greater than 10 providing evidence for that patients candidate for inpatient therapy has poorer QOL in consistent with the previous research (4,11), and also for that DLQI score in a patient may be helpful to inform the clinician when taking critical management decisions concerning admission or inpatient therapy. There is no specific criteria that defines the indications for admission for dermatology patients and the decision or selection of this treatment modality dependent upon the clinician's judgment as well as the other confounding factors (e.g., bed availability, insurance policies) (2,8,9). Other common reasons necessitating admission are acute deterioration of disease, outpatient treatment failure, initiation of systemic treatment, wound care, respite care, investigation or observation, no help at home, transport problems or social problems (1,4,6).

As there is not always a correlation between the severity of the skin disease and its impact on quality of life (13,18), it can be helpful for the dermatologist to use a QOL scale to determine the psychological impact of skin disease on patients (25,26). One study has demonstrated the relationship between patient-rated QOL and the type of management decisions taken in psoriasis (25). The nature of the clinical decisions taken in the management of patients with psoriasis were shown to be consistent with patient rated QOL. In the study, the clinical decisions of increasing the potency, dose or frequency of the main treatment, changing topical treatment to systemic, systemic to systemic, starting phototherapy and admission of patient to hospital were consistent with the DLQI score of 11–20 indicating a very large effect on overall QOL (25). Therefore, apart from the well-known indications of the inpatient therapy, current observations indicate that clinicians should consider assessment of DLQI to determine the inpatient therapy option for a patient.

DLQI can be used to compare different skin diseases and also to compare between patients from different countries and cultures (1-7,10). Studies showed that the Turkish version of DLQI performs well in Turkish patients with various kind of dermatologic disorders (27-30). The mean score of 13.08 on admission of hospitalized patients found in our study was higher than the mean scores of 12.0 found for USA patients (2); similar to the mean scores of 12.9 found for Danish (4) and of 13.2 found for English hospitalized patients (5); was lower than the mean scores of 14.9 and 14.16 found for English hospitalized patients (2,6). Altogether, these differences can be attributed to the patient profile and the basic properties of the samples covering various diseases and representing different clinical severity levels as well as the cultural differences.

A vast body of published research including ours indicate that patients with skin diseases have low scores on the SF-36 that is comparable to serious systemic diseases in consistent with the previous observations (21).

In this study, regarding pre-treatment assessments, psoriasis, BD, eczema and erythroderma patients showed lowest scores in different SF-36 subscales demonstrating that these disorders have more negative effect on life quality when compared to other skin disorders. Although the negative effect on psychological status and QOL is closely related to the severity and the type of skin disease, patients' reactions to these diseases and their interpretation of the skin disease may be different and probably influenced by patients' cognitive features that have a strong relationship with the patient's previous life experiences (2,5,7).

Women with skin disease experienced significantly more QOL impairment of their general and psychological health than that of men according to the mean DLQI scores which was reported (3,4,11) but not found as an uniform finding (14,17). Similar to the findings of different studies from different countries (21), we found no difference between genders regarding all (except for social functioning) SF-36 subscales.

When analyzing the influence of all independent variables, the regression analysis showed significant effect of age, being previously hospitalized, duration of admission on the DLQI score while type of treatment and educational status failed to show such a relationship. Among multiple variants only presence of previous hospitalization affected almost all of the SF-36 subscale scores. On the other hand, age appear to be related with the score of general health subscale of SF-36 test.

Previously, the combined application of a general health related QOL instrument with a disease specific one was recommended for the evaluation of QOL of patients with skin diseases (16). Therefore we have combined SF-36 and DLQI in our study in order to obtain a comprehensive assessment of the burden of these diseases on the QOL of our patients. Current study showed significant correlations between the SF-36 and DLQI scores of a wide variety of skin diseases, the strongest correlations ( $r > 0.40$ ,  $p < 0.01$ ) were found between DLQI and physical functioning and social functioning SF-36 subscales. On the other hand, similar to the findings of Öztürkcan et al (20), the "general health" subscale of SF-36 did not show correlation with any of the DLQI items. The correlation between SF-36 and DLQI indicates that a dermatology specific instrument DLQI has ability to reflect the general health related QOL of patients with skin diseases. The present study further establishes the validity of the Turkish version of DLQI, and its responsiveness to change in the clinical status of patients after inpatient therapy, confirming previous findings (6,23,24).

The development of QOL measurements has facilitated greater understanding of the impact of skin diseases on psychological well-being and socialization. It was demonstrated that any agent that predictably enhances QOL in a statistically significant fashion also provide a clinically significant improvement (4). In contrast, clinical state of the skin condition may not always reflect the amount of impact on QOL of the patient. There is a growing body of research that suggests the need to consider the patient's QOL during the decision making process, by this way the physicians will improve the clinical and psychological impairment of the patient. When one of these is neglected or ignored during any treatment, the patient will find himself still physically or physiologically ill.

Though it has been showed that QOL after discharge becomes similar to the corresponding outpatient population (8), there is limited evidence whether the improvement in DLQI will persist significantly in the long term or not. Thus, further study is needed to follow this population over time to evaluate how QOL changes with the time after discharge from hospital. Also, apart from one study that showed that hospitalization reduced depression and anxiety in dermatology patients (12,17), the psychological aspect of this treatment modality is not yet known. In conclusion, based on the existing literature and the results found in this study, it can be concluded that in addition to other reasons for admission, QOL assessment is apparently needed to determine patients for admission and that inpatient therapy has a significant positive impact on QOL.

#### Conflict of Interest

No conflict of interest was declared by the authors.

#### REFERENCES

- Schmitt J, Heese E, Wozel G, Meurer M. Effectiveness of inpatient treatment on quality of life and clinical disease severity in atopic dermatitis and psoriasis vulgaris -a prospective study. *Dermatology* 2007; 214: 68-76.
- Ayyalaraju RS, Finlay AY, Dykes PJ, Trent JT, Kirsner RS, Kerdel FA. Hospitalization for severe skin disease improves quality of life in the United Kingdom and the United States: a comparative study. *J Am Acad Dermatol* 2003; 49: 249-54.
- Wahl AK, Mørk C, Lillehol BM, Myrdal AM, Helland S, Hanestad BR, Moum T. Changes in quality of life in persons with eczema and psoriasis after treatment in departments of dermatology. *Acta Derm Venereol* 2006; 86: 198-201.
- Zachariae R, Zachariae C, Ibsen H, Mortensen JT, Wulf HC. Dermatology life quality index: data from Danish inpatients and outpatients. *Acta Derm Venereol* 2000; 80: 272-6.
- Kurwa HA, Finlay AY. Dermatology inpatient management greatly improves life quality. *Br J Dermatol* 1995; 133: 575-8.
- Helbling I, Muston HL, Ferguson JE, McKenna M. Audit of admissions to dermatology beds in Greater Manchester. *Clin Exp Dermatol* 2002; 27: 519-22.
- Mazzotti E, Barbaranelli C, Picardi A, Abeni D, Pasquini P. Psychometric properties of the Dermatology Life Quality Index (DLQI) in 900 Italian patients with psoriasis. *Acta Derm Venereol* 2005; 85: 409-13.
- Ayyalaraju RS, Finlay AY. Inpatient dermatology. United Kingdom and United States similarities: moving with the times or being relegated to the back bench? *Dermatol Clin* 2000; 18: 397-404.
- Kirsner RS, Yang DG, Kerdel FA. Inpatient dermatology. The difficulties, the reality, and the future. *Dermatol Clin* 2000; 18: 383-90.
- Vensel E, Hilley T, Trent J, Taylor JR, Kirsner RS, Kerdel FA, et al. Sustained improvement of the quality of life of patients with psoriasis after hospitalization. *J Am Acad Dermatol* 2000; 43: 858-60.
- Zachariae R, Zachariae C, Ibsen HH, Mortensen JT, Wulf HC. Psychological symptoms and quality of life of dermatology outpatients and hospitalized dermatology patients. *Acta Derm Venereol* 2004; 84: 205-12.
- Hurwitz D, Kerdel FA, Kirsner RS. Hospitalization for skin disease improves quality of life. *Arch Dermatol* 1997; 133: 797-8.
- Nijsten T. Dermatology life quality index: time to move forward. *J Invest Dermatol* 2012; 132: 11-3.
- Lundberg L, Johannesson M, Silverdahl M, Hermansson C, Lindberg M. Health-related quality of life in patients with psoriasis and atopic dermatitis measured with SF-36, DLQI and a subjective measure of disease activity. *Acta Derm Venereol* 2000; 80: 430-4.
- Hongbo Y, Thomas CL, Harrison MA, Salek MS, Finlay AY. Translating the science of quality of life into practice: What do dermatology life quality index scores mean? *J Invest Dermatol* 2005; 125: 659-64.
- De Korte J, Mommers FM, Sprangers MA, Bos JD. The Suitability of quality-of-life questionnaires for psoriasis research: a systematic literature review. *Arch Dermatol* 2002; 138: 1221-7.
- Finlay AY. Quality of life indices. *Indian J Dermatol Venereol Leprol* 2004; 70: 143-8.
- Basra MK, Chowdhury MM, Smith EV, Freemantle N, Piguet V. A review of the use of the dermatology life quality index as a criterion in clinical guidelines and health technology assessments in psoriasis and chronic hand eczema. *Dermatol Clin* 2012; 30: 237-44.
- Finlay AY, Khan GK. Dermatology life quality index (DLQI)-a simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994; 19: 210-6.
- Öztürkcan S, Ermertcan AT, Eser E, Sahin MT. Cross validation of the Turkish version of dermatology life quality index. *Int J Dermatol* 2006; 45: 1300-7.
- Rapp SR, Feldman SR, Exum ML, Fleischer AB Jr, Reboussin DM. Psoriasis causes as much disability as other major medical diseases. *J Am Acad Dermatol* 1999; 41: 401-7.
- Koçyiğit H, Aydemir Ö, Ölmez N. Kısa Form-36 (KF-36)'nın Türkçe Versiyonunun Güvenilirliği ve Geçerliliği. *İlaç ve Tedavi Dergisi* 1999; 12: 102-6.
- Mazzotti E, Picardi A, Sampogna F, Sera F, Pasquini P, Abeni D. Sensitivity of the dermatology life quality index to clinical change in patients with psoriasis. *Br J Dermatol* 2003; 149: 318-22.
- Wyrwich KW, Nienaber NA, Tierney WM, Wolinsky FD. Linking clinical relevance and statistical significance in evaluating intra-individual changes in health-related quality of life. *Med Car* 1999; 37: 469-78.
- Katugampola RP, Hongbo Y, Finlay AY. Clinical management decisions are related to the impact of psoriasis on patient-rated quality of life. *Br J Dermatol* 2005; 152:1256-62.
- Schmitt J, Küster D. Correlation between Dermatology Life Quality Index (DLQI) scores and Work Limitations Questionnaire (WLQ) allows the calculation of percent work productivity loss in patients with psoriasis. *Arch Dermatol Res* 2015; 307: 451-3.
- Çakmur H, Derviş E. The relationship between quality of life and the severity of psoriasis in Turkey. *Eur J Dermatol* 2015; 25: 169-76.
- Altunay IK, Atis G, Esen K, Cucukunal A. Impact of functional pruritus compared with mild psoriasis on quality of life: a cross-sectional questionnaire study in Turkey. *Am J Clin Dermatol* 2014; 15: 365-70.
- Uçmak D, Akkurt M, Toprak G, Yesilova Y, Turan E, Yıldız I. Determination of dermatology life quality index, and serum C-reactive protein and plasma interleukin-6 levels in patients with chronic urticaria. *Postepy Dermatol Alergol* 2013; 30: 146-51.
- Aksoy B, Altaykan-Hapa A, Egemen D, Karagöz F, Atakan N. The impact of rosacea on quality of life: effects of demographic and clinical characteristics and various treatment modalities. *Br J Dermatol* 2010; 163: 719-25.