

Scabies Affects Quality of Life in Correlation with Depression and Anxiety

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Key words: scabies, quality of life, Dermatology Life Quality Index, depression, anxiety

Citation: Koç Yıldırım S, Demirel Ögüt N, Erbağcı E, Ögüt Ç. Scabies Affects Quality of Life in Correlation with Depression and Anxiety. *Dermatol Pract Concept*. 2023;13(2):e2023144. DOI: <https://doi.org/10.5826/dpc.1302a144>

Accepted: November 3, 2022; **Published:** April 2023

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Funding: None.

Competing interests: None.

Authorship: All authors have contributed significantly to this publication.

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ABSTRACT **Introduction:** Scabies is a highly contagious disease affects many people worldwide each year and a major public health problem. A small number of studies have shown that scabies causes impairment in the quality of life in adult patients.

Objectives: The aims of this study are to assess the impact of scabies on adult patients quality of life (QoL) and evaluate the relationship between depression and anxiety levels and impairment in life quality.

Methods: This cross-sectional study included adult patients diagnosed with scabies in our dermatology outpatient clinic. The effect of scabies on QoL was evaluated by Dermatology Life Quality Index (DLQI), and the levels of depression and anxiety were evaluated by Beck Depression Scale (BDS) and Beck Anxiety Scale (BAS).

Results: Totally, 85 patients included to the study. QoL of 72.2% of the patients was moderate to extremely large affected. There was a positive correlation between the duration of the disease, the total DLQI score and the severity of the disease impact on QoL ($r_s = 0.287$, $P = 0.01$ and $r_s = 0.280$, $P = 0.008$, respectively). A positive correlation was found between the number of treatments received and the total DLQI ($r_s = 0.223$, $P = 0.042$). There was a positive correlation between BDS and BAS, and total DLQI score ($r_s = 0.448$ and $P = 0.000$; $r_s = 0.456$ and $P = 0.000$, respectively).

Conclusions: Scabies has a moderate to severe effect on QoL. There was a positive correlation between impairment QoL and anxiety and depression scores.

Introduction

Scabies is a contagious skin infestation caused by the mite *Sarcoptes scabiei* variant *hominis*. It affects approximately 455 million people worldwide each year and is still a major public health problem in many resource poor-urban and rural regions of developing world [1]. Recently, scabies outbreaks have been reported in many countries. It was also announced as the most common Neglected Tropical Diseases (NTDs) with skin manifestation according to the World Health Organization list of NTDs [2,3]. In a study from Turkey, it was found nearly 30-fold increase in the number of patients with the diagnoses of scabies comparing 2017 and 2019 and it was also detected that, approximately 13% of patients were resistant to repetitive topical treatments [4].

Scabies often causes severe itching and patients suffered from social stigma, sleep disruption, difficulties in concentration and productivity [2,5]. It was reported that scabies was responsible for 0.21% of disability adjusted life years from all conditions studied by Global Burden of Disease 2015 worldwide [6]. Therefore, the morbidity of scabies may be related to both the degree of clinical pathology and emotional aspects of the disease. Further, scabies may reduce the quality of life (QoL) of patients with the increasing incidence and treatment resistance. There are few reports in the literature evaluating QoL of adult patients with scabies [5,7-9]. To the best of our knowledge, there is no study evaluating the relationship between scabies and depression and anxiety.

Objectives

In our study, we aimed to investigate 1) the effects of the disease on QoL by Dermatology Life Quality Index (DLQI) and to evaluate the depression and anxiety scores through Beck Depression Scale (BDS) and Beck Anxiety Scale (BAS) in adult patients diagnosed with scabies 2) the relationship between the social and demographic characteristics of the patients and these measures, and 3) the relationship between DLQI and anxiety and depression scores.

Methods

Study Design

This cross-sectional study included patients with scabies aged 18 years or older during the period between June 2021 and December 2021 in our dermatology outpatient clinics. Informed consent was obtained from all patients. The approval of the Institutional Review Board was received (IRB approval status [approval date and number: 20.05.2021/602.03.99]).

Patients

Demographic data of patients including age, gender, education status, marital status, time between onset of disease and diagnosis, previous treatment history for scabies, personal and familial psychiatric disease history were recorded. According to the age, patients were classified as young adults (18-44 years), middle-aged persons (45-65 years) and aged persons (> 65 years). Educational levels of patients were classified according to the Turkish national education system such as literate, primary school graduate, secondary school graduate, high school graduate and university graduate. The diagnosis of scabies depended on the 2020 International Alliance for Control of Scabies (IACS) Consensus Criteria for the Diagnosis of Scabies [10]. Patients diagnosed with scabies according to level B (clinical scabies) and level C (suspected scabies) by the dermatology specialist were included to the study. Patients who used 5% permethrin cream or lotion with an interval of 7-14 days or 12.5% sulfur ointment for 3 consecutive days were considered to have received appropriate treatment [11]. Each cycle of these treatments was considered a single time treatment. Individuals younger than 18 years of age, being pregnant, having crusted scabies and having personal psychiatric disease history were not included in the study.

All patients were asked to complete the questionnaires, including DLQI, BDS and BAS.

Questionnaires

DLQI is comprised of 10 items focuses on 6 domains including symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment. The DLQI were scored on a 4-point Likert scale (0, "not at all"; 1, "a little"; 2, "a lot"; 3, "very much"), with the total score ranging from 0 to 30. The higher scores mean the more QoL impaired. During the analysis, scores were banded into five categories according to the severity of the disease impact on patient life as follows: 0-1, no effect; 2-5 small effect; 6-10, moderate effect; 11-20, very large effect and 21-30, extremely large effect. Also, a score of 1 or more for each domain was accepted as impairment in that domain. Turkish validity study of DLQI was conducted [12].

BDS is a 21-item self-report inventory. For each symptom category, there are four sentences; the subject endorses one of them according to his/her experience during the previous week. This form provides a four-point Likert-type measurement. Each item gets progressively increasing points between 0-3. A high total score indicates a high level of depression severity. The BDI was developed by Beck et al was adapted to the Turkish population by Hisli [13,14].

BAI is a 21-item self-report inventory. The items involve symptoms of anxiety. Subjects are asked how much they

experienced each symptom during the previous week on a four-point Likert-type scale of 0–3. Higher total scores indicate higher levels of anxiety. BAI was developed by Beck et al and adapted to the Turkish population by Ulusoy et al. [15,16].

Statistical Analysis

The statistical analysis was carried out using IBM SPSS Statistics 28.0. Continuous data were given as mean \pm standard deviation (SD) and median \pm interquartile range [IQR]. Categorical data were given as percentage. Pearson Chi-Square and Pearson Exact Chi-Square analyzes were performed in the analysis of the cross tables. Mann-Whitney or independent samples t tests were used for quantitative variables. The correlation analyses were performed using Spearman rank correlation coefficient (r_s). For statistical significance, $P < 0.05$ was accepted as the criterion.

Results

Demographics

A total of 85 patients with scabies were included in the study. Forty-one (48.2%) of the cases were female and 44 (51.8%) were male. The mean age \pm SD of the study population was 34.07 ± 12.33 (17-66) years. According to the age categories, most of the patients were young adults (76.5%), while 22.1% of the patients were middle-aged and 1.2% were aged. The median disease duration was 8 weeks (IQR 9). The median duration between the onset of disease symptoms and the time of diagnose was 6 weeks (IQR 4). Thirty of patients (35.3%) had received at least one of the appropriate treatment options including 5% permethrin cream or lotion and 12.5% sulfur ointment. Fourteen percent of patients had received one of the treatment options at least two or more times. The medications were prescribed by a dermatologist to 43.3% of the treated patients and the close contacts of 70% of the treated patients were also offered treatment. Only two patients had a familial history of psychiatric illness. The demographic and social characteristics of patients shown in Table 1.

DLQI

Eighty-three of the patients had completed DLQI. The overall mean DLQI score \pm SD was 10.54 ± 6.17 (median 9.00). According to the severity of the scabies impact on QoL of 72.2% of the patients was moderate to extremely large affected. Banding of DLQI with the scores of the patients was shown in Table 2. The mean score ranged from 0.98 to 3.55 and the median score ranged from 1 to 3 in the individual domains (Figure 1). The domain with the highest impact on patients that ‘symptoms and feelings’ was impaired in all

Table 1. Demographic and social features of patients.

Number of patients, N (%)	85 (100)
Gender, N (%)	
Female	41 (48.2)
Male	44 (51.8)
Age (year), mean \pm SD	34.07 ± 12.33
Disease duration (weeks), median (IQR)	8 (9)
Education, N (%)	
• Literate	2 (2.4)
• Primary school graduate	21 (24.7)
• Secondary school graduate	21 (24.7)
• High school graduate	24 (28.2)
• University graduate	17 (20)
Number of patients received appropriate treatment	30
5% Permetrin cream/lotion N (%)	28 (93.3)
12.5 % Sulfur ointment N (%)	10 (33.3)
Number of treatments, N (%)	18 (21.25 (5.9)
• single time	3 (3.5)
• two times	4 (4.7)
• three times	
• four times	

IQ = interquartile range; SD =standard deviation. †.

Table 2. Banding of the Dermatology Life Quality Index with the scores.

Number of patients, N (%)	Score	Effect severity
1 (1.2)	0-1	No effect
22 (26.5)	2-5	Small effect
25 (30.1)	6-10	Moderate effect
28 (33.7)	11-20	Very large effect
7 (8.4)	21-30	Extremely large effect

patients. The other domains that had the most impact on patients were ‘work and school’, ‘personal relationships’ and ‘daily activities’, respectively. The impairment of each domain was demonstrated in Table 3.

There was no statistically significant relationship between total DLQI and gender, education status, marital status, having appropriate treatment and having any comorbid disease. The total DLQI score was higher in young adults and the difference was statistically significant ($P = 0.06$). A positive correlation was found between the duration of the disease, the total DLQI score and the effect severity ($r_s = 0.287$, $P = 0.01$ and $r_s = 0.280$, $P = 0.008$, respectively). There was also a positive correlation between the number of treatments received and the total DLQI ($r_s = 0.223$, $P = 0.042$). The time between the onset of complaints and

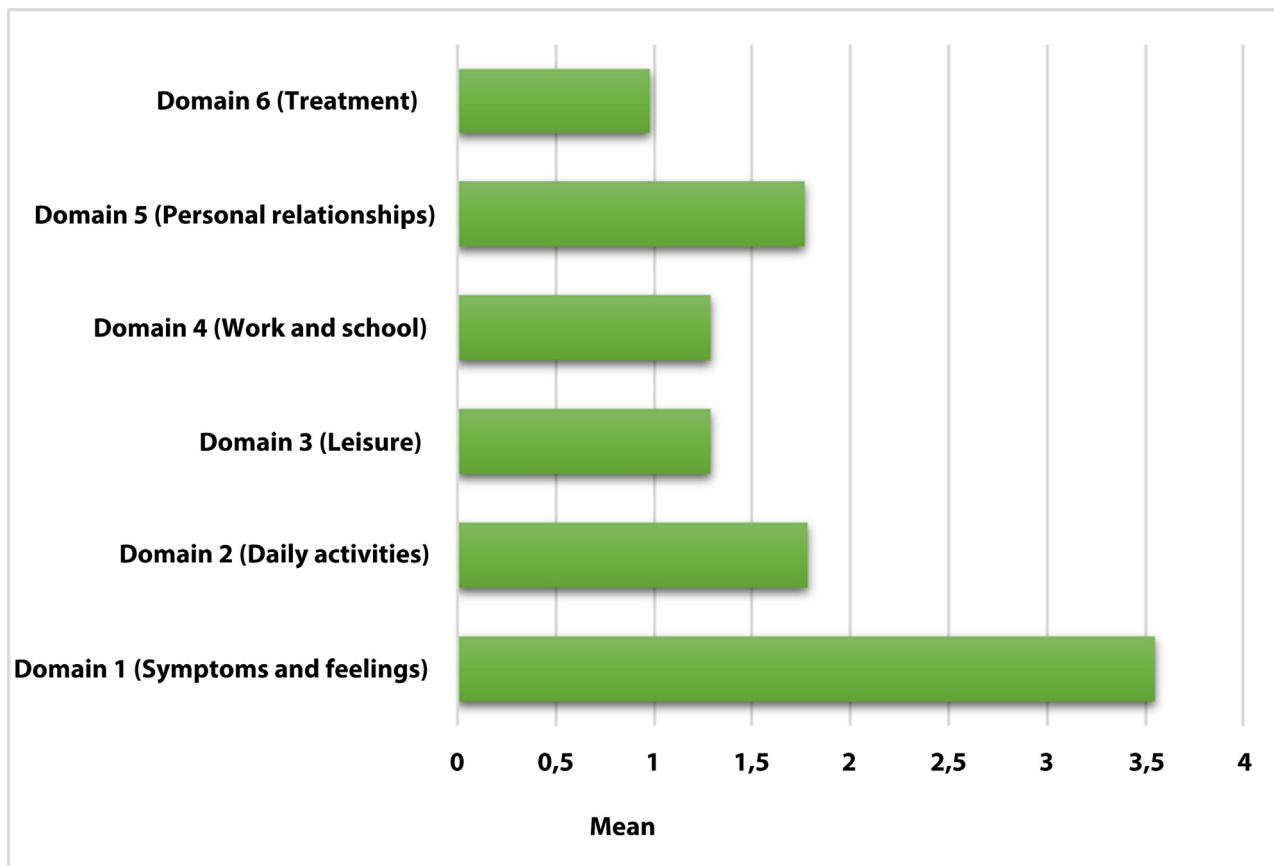


Figure 1. Mean scores of the patients for each domain.

Table 3. Impairment of each DLQI domain in patients with scabies.

Domain	DLQI questions	Number of patients, N (%)
1. Symptoms and feelings	1,2	83 (100)
2. Daily activities	3,4	55 (66.2)
3. Leisure	5,6	49 (59.0)
4. Work and school	7	57 (68.6)
5. Personal relationships	8,9	55 (66.2)
6. Treatment	10	46 (55.4)

the diagnosis was not effective on total DLQI score and the severity of the impact on QoL. The correlations related to total DLQI scores and the severity of the disease impact on life quality were shown in Table 4.

There was no difference between the patients with impairment and without impairment for each domain in terms of gender, age, educational status, presence of any comorbid disease and having appropriate treatment. When we compare those with and without impairment in individual domains, the disease duration and the time to diagnosis was longer in those with impairment in 'daily activities' (question 3 and 4) than those without, and this difference was statistically significant ($P = 0.016$ and $P = 0.019$, respectively). Also, the

disease duration and the number of treatments were higher in those who were with impairment in the 'treatment' domain (question 10) than those who were not ($P = 0.042$ and $P = 0.015$, respectively). For other domains, there was no significant difference in disease duration, time to diagnose and the number of treatments between those with impairment and those who were not.

BDS and BAS

Seventy-five of patients completed BDS and BAS. The mean BDS score \pm SD was 12.11 ± 9.52 and the mean BAS score \pm SD was 8.81 ± 9.45 . There was no statistically significant relationship between BDS and BAS with age, gender, education status, having appropriate treatment and having any comorbid disease. No correlation was found between the duration of the disease, time to diagnose, number of treatment, and BDS and BAS (Table 4). There was a positive correlation between BDS and BAS with total DLQI score ($r_s=0.448$ and $P = 0.000$; $r_s=0.456$ and $P = 0.000$, respectively).

Also, we have compared the BDS and BAS scores of affected patients and non-affected patients for each DLQI domain. Those who have impairment in the domain 2 (daily activities) and domain 4 (work and school) had significantly higher BDS and BAS scores than those without. The BDS scores of those with impairment in the domain 5 (personal

Table 4. The Spearman rank correlation coefficients (r_s) for the total DLQI scores, DLQI effect severity, BDS and BAS.

	Total DLQI		DLQI severity		BDS		BAS	
	r_s	P	r_s	P	r_s	P	r_s	P
Disease duration	0.280	0.010	0.287	0.008	0.201	0.084	0.05	0.963
Time to diagnosis	0.098	0.378	0.159	0.150	0.122	0.297	0.026	0.824
Number of treatments	0.223	0.042	0.203	0.066	0.095	0.417	0.07	0.551

BAS = Beck Anxiety Scale; BDS = Beck Depression Scale; DLQI = Dermatology Life Quality Index.

relationship) and domain 6 (treatment) had higher than those without. Also, the BAS scores of the patients with impairment in the domain 3 (leisure) were higher than without impairment. These findings were shown in Table 5.

Conclusions

To the best of our knowledge, this is the first study to evaluate the life quality of Turkish patients diagnosed with scabies and also the depression and anxiety scores and their relationship between DLQI scores in the literature.

In the previous studies that investigated health-related quality of life, it was found that scabies had a small to moderate effect on life quality [3,5,7-9]. In our study, it was clearly found that scabies had considerable effect on quality of life of patients. According to the DLQI scores, the QoL of 72.2% of the patients was affected moderate to extremely large. The mean DLQI \pm SD score of patients in our study was 10.54 ± 6.17 . In a study from China it was reported 10.09 ± 5.96 similar to our study [5]. In another study, the mean score was reported as 3.1 but it was stated there was a positive correlation between the severity of the disease and the scores and, the mean score of adults with severe scabies was 7.8 [9]. In our study, the domains with the most impact on patients were ‘symptoms and feelings’, ‘work and school’, ‘personal relationships’ and ‘daily activities’, respectively. All of patients had impairment in the domain of ‘symptoms and feelings’ and the impairment percent of other domains were close to each other. In a study, it was reported that ‘symptoms and feelings’, ‘work and school’ and ‘personal relationships’ had the most impact on patients [5]. In another study, the major domains affected in adults were ‘work’ and ‘feelings’ [7]. Our findings were comparable to these results in the literature.

In our study, there was no difference between the gender and educational status, and the DLQI score but the total DLQI scores were higher in young adults ($P = 0.06$) also, most of the patients of our study population was the young adults (76.5%). In a study, it was reported that ‘feeling of shame’ significantly more often reported by female adults as compared with males[8]. In another study, the impact on

‘leisure’, ‘work and school’ and ‘daily activities’ was greater in males [9]. On the other hand, in a different study, the authors were not found any relationship between the gender and education similar to our study [5]. These differences may be related to the fact that the studies were conducted in different geographical regions of the world and sociocultural differences.

In studies, the effect of symptom duration on QoL was not generally mentioned, and only one study reported that those with a symptom duration of 8 weeks or longer tended to have more severe impairment on QoL [8]. In our study, the median disease duration was 8 weeks and we found a positive correlation between the duration of the disease, the total DLQI score and the effect severity.

Recently, scabies outbreaks have been reported in many countries [17-20]. In a study conducted in distinct geographic regions of Turkey, a 7-fold increase was found comparing 2017 and 2018, and a 30-fold increase was found and 2017 and 2019 [4]. Moreover, in recent years, treatment resistance of scabies has been remarkable, and this may be a cause of the prolonged disease duration [4,19-23]. In our study, 14% of patients had received one of the treatment options at least two or more times and we found a positive correlation between the number of treatments received and the total DLQI. It is possible to say that treatment unresponsiveness negatively affects QoL.

Relationships between some dermatological diseases such as psoriasis, vitiligo, atopic dermatitis, acne vulgaris, seborrheic dermatitis, hidradenitis suppurativa and chronic pruritus and depression and anxiety were evaluated in different studies [24-28]. However, to the best of our knowledge, no study has been conducted to evaluate the relationship between scabies and depression and anxiety. In a study evaluated the depressiveness and anxiety of psoriasis patients, the mean BDS score was calculated as 9.36 ± 1.88 and the mean BAS score was found as 11.36 ± 1.79 [29]. In another study including the chronic urticaria patients, while the mean BDS score was 10.56 ± 7.90 , the mean BAS was 14.28 ± 11.58 [30]. In our study the mean BDS score was 12.11 ± 9.52 and the mean BAS score was 8.81 ± 9.45 . While BDS scores were comparable to these studies, the BAS scores in

Table 5. The comparison of the BDS and BAS scores of patients with and without impairment for each DLQI domain.

	Domain 2			Domain 3			Domain 4			Domain 5			Domain 6		
	Affected	Non-affected	P	Affected	Non-affected	P	Affected	Non-affected	P	Affected	Non-affected	P	Affected	Non-affected	P
BDS score, mean \pm SD	14.12 \pm 9.22	8.31 \pm 9.06	0.03	13.44 \pm 9.32	10.33 \pm 9.49	0.051	14.10 \pm 9.56	7.96 \pm 8.56	0.002	13.77 \pm 9.60	9.08 \pm 9.10	0.017	13.95 \pm 9.52	10.00 \pm 9.46	0.033
BAS score, mean \pm SD	10.98 \pm 9.88	4.48 \pm 6.85	0.000	10.19 \pm 9.31	5.6 \pm 7.09	0.001	9.86 \pm 9.35	4.91 \pm 6.05	0.01	9.52 \pm 9.41	5.96 \pm 6.77	0.082	9.65 \pm 9.61	6.67 \pm 7.31	0.06

BAS = Beck Anxiety Scale; BDS = Beck Depression Scale; DLQI = Dermatology Life Quality Index; SD = standard deviation.

our study were lower. We did not find any correlation between the duration of the disease and the number of treatment with BDS and BAS but we found a positive correlation between BDS and BAS with total DLQI. Nearly, all of patients with impairment in each DLQI domain had higher scores of BAS and BDS except for BDS in domain 3 and for BAS in domain 5 and 6. These findings may be due to the chronicity of the pruritus, given the mean disease duration of patients in our study. It was demonstrated that chronic pruritus were associated with depression and anxiety [26,31]. These findings made us think that scabies, which affects QoL negatively like other chronic dermatologic diseases, may also have negative effects on depressiveness and anxiety, and may have effects beyond being a contagious skin disease.

The limitations of our study are the relatively small number of patients, lack of a control group, being not grouped the patients according to the clinical severity of scabies. Also, we did not follow up the patients after the treatment response and could not compared the DLQI, BDS and BAS before and after treatment.

As a conclusion, scabies is a common dermatological problem in our daily routines and the factors such as the disease duration, the necessity of repeating treatment protocols, itching severity and contagiousness may complicate the management of the disease. Scabies has a moderate to severe impact on patients QoL, and as with chronic skin diseases, depression and anxiety scores increase as quality of life impairment. In this setting, scabies is an important health problem and it should be kept in mind that patients diagnosed with scabies are affected not only clinically but also emotionally, and they can be consulted to psychiatry departments when necessary.

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