

# Quality of life assessment among patients suffering from different dermatological diseases

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## ABSTRACT

**الأهداف:** دراسة جودة الحياة بين المرضى الذين يعانون من أمراض جلدية مختلفة. هناك العديد من الدراسات العالمية التي تهدف إلى تقييم نوعية الحياة بين المرضى الذين يعانون من أمراض جلدية مختلفة، ولكن حتى الآن هناك ندرة في الدراسات التي أجريت في المملكة العربية السعودية.

**المنهجية:** أجريت هذه الدراسة المقطعية الكمية في العيادات الخارجية للأمراض الجلدية في مستشفى الملك خالد الجامعي، الرياض، المملكة العربية السعودية. اشتملت على مشاركين في الدراسة تبلغ أعمارهم 18 عامًا فما فوق من كلا الجنسين. استبعدنا المرضى الذين لم يتمكنوا من فهم شروط الدراسة أو إعطاء موافقة خطية. تم جمع البيانات من خلال النسخة العربية المصدق عليها من مؤشر جودة الحياة للأمراض الجلدية (DLQI).

**النتائج:** في المجموع شارك 391 مريضًا في الدراسة، 91% إناث و 8.7% ذكور بمتوسط عمر 33 عامًا تتراوح أعمارهم من 18 إلى 75 عامًا. تم تصنيف المشاركين إلى 14 مجموعة من الأمراض الجلدية المختلفة. تراوحت درجة DLQI من 0 إلى 30 على مقياس إجمالي بناءً على حجم التأثير على جودة الحياة. أبلغ معظم المرضى بشكل جماعي عن عدم وجود تأثير أو تأثير ضئيل على جودة الحياة (62.5%). غالبية المرضى الذين يعانون من حب الشباب (79.7%) والبهاق (79.3%) واضطرابات الشعر (76.9%) والوردية (71.5%) لم يظهروا تأثيرًا أو تأثيرًا طفيفًا على جودة الحياة. على النقيض سجلت الشرى (37.1%) والأكزيما (26.6%) والصدفية (24%) تأثير كبير إلى كبير للغاية. علاوة على ذلك، أبلغ الحزاز المسطح 42% وأورام الجلد 66.7% عن تأثير معتدل.

**الخلاصة:** يساعد فهم تأثير الأمراض الجلدية المختلفة على جودة الحياة في تحسينها. وهكذا شجعنا على إجراء مزيد من الدراسات في مراكز صحية متعددة.

**Objectives:** To assess the quality of life (QoL) of patients with different dermatological diseases. Multiple international studies have evaluated the QoL among patients with different dermatological diseases; however, few studies of this kind have been conducted in Saudi Arabia.

**Methods:** This quantitative, observational, cross-sectional study was carried out in the dermatology outpatient clinics of King Saud University Medical City, Riyadh, Saudi Arabia, from September 2019 until February 2020. Data was collected using the validated Arabic version of the Dermatology of Life Quality Index (DLQI).

**Results:** A total of 391 patients  $\geq 18$  years participated in the study. The mean age of participants was 33 years

(18-75 years). Most participants in this study reported that their dermatological disease had a small or no effect on their QoL (62.5%). The majority of patients who had acne vulgaris (79.7%), vitiligo (79.3%), hair disorders (76.9%), or rosacea (71.5%) reported a small to no effects on their QoL. However, diseases that reflected the largest percentages of a large to extremely large effect on QoL were urticaria (37.1%), eczema (26.6%), and psoriasis (24%). A total of 42.9% of the participants suffered from lichen planus and 66.7% of participants suffered from cutaneous neoplasms reported a moderate effect on their QoL.

**Conclusion:** Understanding the impact of different dermatological diseases on QoL can help dermatologists to improve thier patients' QoL. Therefore, we recommend that further studies on this topic be conducted in multiple health centers.

**Keywords:** Quality of life, dermatological diseases, dermatology, Saudi Arabia.

*Saudi Med J 2021; Vol. 42 (11): 1195-1200  
doi: 10.15537/smj.2021.42.11.20210560*

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*Received 3rd August 2021. Accepted 28th September 2021.*

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**Disclosure.** Authors have no conflict of interests, and the work was not supported or funded by any drug company.

Considering that the skin is the largest and most visible organ of the body, illnesses that affect it can impair quality of life (QoL). Different aspects of an individual's life, including daily activities, work, social life, and emotional functioning, can be affected by chronic skin problems.<sup>1</sup> The negative impacts of dermatological diseases (such as psoriasis, eczema, acne vulgaris, vitiligo, and hair disorders) depend on many factors, including the location and activity of the disease, the body surface area involved, and associated symptoms, such as itching, pain, and discomfort.<sup>2</sup>

The impacts of dermatological diseases are often underrated due to the chronic nature of these illnesses and because few of them are life threatening. However, according to McKoy's<sup>3</sup> study, approximately 21-87% of the population may be affected by at least one type of skin disease. Almost one quarter (24%) of patients who visit a primary care clinic seeking treatment for a skin disease do so due to an unfavourable self-image, disfigurement, or other physical impairments.<sup>3</sup>

As mentioned by Rapp et al,<sup>4</sup> although psoriasis and other types of skin diseases are not life threatening, they can severely impact a patient's QoL. The psychological effects of dermatological diseases are due to the noticeable lesions, which can result in feelings of discomfort, low self-esteem, social disapproval, and social isolation.<sup>4,5</sup> In addition, active, severe skin dermatoses can impair other aspects of an individual's life, such as sexuality, which can impact QoL and can be the underlying cause of an individual's inability to work, leading to work withdrawal or reduced productivity at work.<sup>4,6</sup> All of these impacts can then lead to anxiety, depression, or social maladaptation.<sup>6</sup>

The various adverse effects of different skin problems negatively impact QoL; these effects, in turn, might affect treatment compliance and the course of the disease. Therefore, measures of QoL can help dermatologists monitor disease progression. Quality of life measures assess various aspects of a patient's life, including physical activity and emotional, professional, and social functioning. These measures can be used to improve existing management options or to indicate the need for new ones.<sup>7</sup>

Although multiple studies have evaluated the QoL of patients with different dermatological diseases in developed countries, there are still insufficient data about the impact of skin diseases on the QoL of patients in developing countries. Moreover, few studies of this kind address multiple types of skin diseases and their impacts on QoL. The present study aimed at assessing the QoL among patients from Saudi Arabia suffering from different dermatological diseases, using the Dermatology of Life Quality Index (DLQI) tool.

**Methods.** A quantitative, observational, cross-sectional study was conducted at the dermatology outpatient clinics of King Khalid University Hospital, Riyadh, Saudi Arabia. The study lasted for 6 months from September 2019 until February 2020 and assessed the QoL index among patients suffering from a range of dermatological diseases. Male and female patients  $\geq 18$  years were enrolled in the study. Patients who were unable to understand the study terms or to provide written consent were excluded. After the required institutional review board approval was obtained, a self-administered questionnaire was distributed to participants. The questionnaire was divided into 3 sections. The first section collected demographic information, such as gender, age, and marital status. The second section gathered data on the participant's dermatological disease, including diagnosis, time since diagnosis, type and duration of treatment, and any other comorbid diseases. The third section consisted of the validated Arabic version of the DLQI, and was used in this study with permission.

Data was analysed using The Statistical Package for the Social Sciences, Version 21.0 (IBM Corp., Armonk, NY, USA).

**Results.** A total of 391 patients participated in the study. One returned questionnaire was excluded due to incomplete data. More women than men responded to the questionnaire; 91% of participants were female, and 8.7% were male. The mean age of participants was 33 years, and their ages ranged from 18-75 years. Most of the respondents were single (59.7%), and 33% of the participants had been suffering with a skin disease for more than 5 years. Nineteen percent of participants were diagnosed 2-5 years before the start of the study, 14.6% were diagnosed 1-2 years before the study, and 28% were diagnosed less than one year before the study began.

Each participant was assigned to one of the following diagnostic categories presented in **Table 1**. The total DLQI score could range from 0-30; the total score reflects the magnitude of the effect of the disease on QoL. Impact is categorized as no effect or a small, moderate, large, or extremely large effect. Most participants reported that their illness had a small to no effect on their QoL. More than two-thirds of the population with acne vulgaris reported a small to no effect, whereas the remaining acne patients reported variable scores ranging from moderate to extremely large. Similarly, large percentages of patients with vitiligo, hair disorders, and rosacea reported a small to no effect on QoL. In contrast, around 37% of the participants with urticaria, 26.6% of those with eczema,

and 24% of those with psoriasis reported a large to an extremely large effect on QoL, and 22.2% of those with urticaria, 24.4% of those with eczema, and 28% of those with psoriasis reported a moderate effect on QoL. The largest cohorts of participants with lichen planus and skin neoplasms reported a moderate effect on QoL (Table 1).

Table 2 illustrates the possible risk factors that contributed to the impact of dermatological disease on QoL. The percentage of participants who reported an extremely large effect on QoL increased as disease duration and treatment period increased. Approximately 68% of participants with localized cutaneous disease reported a small to no effect on QoL compared to 46% of participants with generalized skin diseases. Most participants reported that they did not have any other, non-dermatological diseases (-60%), and 73% reported that they did not use other medications.

Further analysis of the elements addressed in the DLQI showed that most of participants responded to most elements with “a little” to “a lot”. However, they were less likely to respond with “very much”. Itchiness/pain (10.5%), impressment (9.7%), and difficulties due to clothes wearing (9.2%) have stronger negative impacts than other elements for which participants said that these issues impact their QoL “very much” (Table 3).

Participants with different skin diseases responded to each element of the DLQI differently, and responses

ranged from “a little” to “very much”. Itchiness/pain had statistically significant associations with urticaria, eczema, seborrheic dermatitis, psoriasis, and acne. Urticaria, eczema, and acne had statistically significant impacts on home duties and shopping. Embarrassment and effect on social/leisure activities had statistically significant associations with several skin disorders, including hyperpigmentation, hair disorders, and urticaria. Impairments related to wearing clothes were more common among participants with acne, urticaria, hair disorders, and cutaneous neoplasms. Participants with skin infections, neoplasms, and urticaria were more likely to report difficulties with physical activity. Impacts on working/studying were not significant except among participants with hair disorders and urticaria. Although participants reported a range of impacts on sexual activity and relationships with partners, friends, and relatives, only urticaria had a statistically significant association with these elements. Acne, hyperpigmentation disorders, neoplasms, and urticaria showed significant associations with treatment problems. Urticaria was the only dermatological disease in our study that significantly affected all elements of QoL addressed by the DLQI (Table 3).

**Discussion.** Dermatological diseases vary in many ways, including symptoms, chronicity, and cosmetic effects. These findings mean that these diseases have

**Table 1 -** The impact of certain dermatological diseases on patients' QoL.

Diagnosis	Total 390 (100)	No effect 119 (30.5)	Small 125 (32.1)	Moderate 79 (20.3)	Large 56 (14.4)	Extremely large 11 (2.8)	P-value
	n (%)						
Acne Vulgaris	84 (21.5)	39 (46.4)	28 (33.3)	11 (13.1)	5 (6.0)	1 (1.2)	0.001*
Urticaria	54 (13.8)	4 (7.4)	18 (33.3)	12 (22.2)	17 (31.5)	3 (5.6)	<0.001*
Hair disorders	52 (13.3)	22 (42.3)	18 (34.6)	10 (19.2)	1 (1.9)	1 (1.9)	0.049
Eczema	45 (11.5)	9 (20)	13 (28.9)	11 (24.4)	11 (24.4)	1 (2.2)	0.191
Vitiligo	29 (7.4)	10 (34.5)	13 (44.8)	4 (13.8)	1 (3.4)	1 (3.4)	0.283
Psoriasis	25 (6.4)	2 (8.0)	10 (40.0)	7 (28.0)	6 (24.0)	0 (0.0)	0.083
Seborrheic dermatitis	15 (3.8)	3 (20.0)	4 (26.7)	5 (33.3)	2 (13.3)	1 (6.7)	0.583
Skin infections	13 (3.3)	3 (23.1)	4 (30.8)	3 (23.1)	3 (23.1)	0 (0.0)	0.845
Rheumatological skin diseases	12 (3.1)	3 (25.0)	3 (25.0)	2 (16.7)	3 (25.0)	1 (8.3)	0.605
Disorders of hyper-pigmentation	10 (2.6)	2 (20.0)	4 (40.0)	2 (20.0)	2 (20.0)	0 (0.0)	0.896
Lichen planus	7 (1.8)	2 (28.6)	1 (14.3)	3 (42.9)	0 (0.0)	1 (14.3)	0.144
Rosacea	7 (1.8)	2 (28.6)	3 (42.9)	1 (14.3)	0 (0.0)	1 (14.3)	0.315
Scars	7 (1.8)	3 (42.9)	2 (28.6)	1 (14.3)	1 (14.3)	0 (0.0)	0.950
Neoplasms	3 (0.8)	1 (33.3)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)	0.318
Others	17 (4.4)	9 (52.9)	1 (5.9)	4 (23.5)	3 (17.6)	0 (0.0)	0.114
Unknown	10 (2.6)	5 (50.0)	3 (30.0)	1 (10.0)	1 (10.0)	0 (0.0)	0.690

Total DLQI range from 0-30. 0-1: no effect at all on patient's life, 2-5: small effect on patient's life, 6-10: moderate effect on patient's life, 11-20: very large effect on patient's life, 21-30: extremely large effect on patient's life, QoL: quality of life, DLQI: dermatology of life quality index

**Table 2 -** The contribution of disease characteristics and treatment characteristics on patients' quality of life (QoL).

Characteristic	Total 390 (100)	No effect 119 (30.5)	Effect on QoL				Extremely large 11 (2.8)
			Small 125 (32.1)	Moderate 79 (20.3)	Large 56 (14.4)	n (%)	
<i>Disease duration</i>							
<3 months	31 (7.9)	13 (41.9)	8 (25.8)	4 (12.9)	6 (19.4)	0 (0.0)	
3-6 months	29 (7.4)	10 (34.5)	12 (41.4)	4 (13.8)	2 (6.9)	1 (3.4)	
6-1 year	49 (12.6)	24 (49)	12 (24.5)	4 (8.2)	8 (16.3)	1 (2)	
1-2 years	57 (14.6)	17 (29.8)	22 (38.6)	11 (19.3)	6 (10.5)	1 (1.8)	
2-5 years	74 (19.0)	12 (16.2)	29 (39.2)	20 (27.0)	13 (17.6)	0 (0.0)	
>5 years	111 (28.5)	33 (29.7)	31 (27.9)	26 (23.4)	15 (13.5)	6 (5.4)	
Unknown	39 (10.0)	10 (25.6)	11 (28.2)	10 (25.6)	6 (15.4)	2 (5.1)	
<i>Treatment form</i>							
Multiple	27 (6.9)	8 (29.6)	9 (33.3)	5 (18.5)	4 (14.8)	1 (3.7)	
Topical	124 (31.8)	38 (30.6)	38 (30.6)	29 (23.4)	16 (12.9)	3 (2.4)	
Systemic	181 (46.4)	57 (31.5)	58 (32)	34 (18.8)	26 (14.4)	6 (3.3)	
Phototherapy	12 (3.1)	2 (16.7)	5 (41.7)	2 (16.7)	2 (16.7)	1 (8.3)	
None	44 (11.3)	14 (31.8)	14 (31.8)	9 (20.5)	7 (15.9)	0 (0.0)	
Unknown	2 (0.5)	0 (0.0)	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	
<i>Treatment duration</i>							
<3 months	47 (12.1)	19 (40.4)	16 (34.0)	5 (10.6)	6 (12.8)	1 (2.1)	
3-6 months	51 (13.1)	16 (31.4)	21 (41.2)	8 (15.7)	5 (9.8)	1 (2.0)	
6-1 year	63 (16.2)	27 (42.9)	21 (33.3)	7 (11.1)	7 (11.1)	1 (1.6)	
1-2 years	34 (8.7)	8 (23.5)	14 (41.2)	6 (17.6)	5 (14.7)	1 (2.9)	
2-5 years	42 (10.8)	8 (19)	10 (23.8)	15 (35.7)	8 (19)	1 (2.4)	
>5 years	57 (14.6)	13 (22.8)	19 (33.3)	13 (22.8)	10 (17.5)	2 (3.5)	
Unknown	56 (14.4)	14 (25.0)	12 (21.4)	16 (28.6)	10 (17.9)	4 (7.1)	
None	40 (10.3)	14 (35.0)	12 (30.0)	9 (22.5)	5 (12.5)	0 (0.0)	
<i>Disease distribution</i>							
Generalized	87 (22.3)	13 (15)	27 (31)	24 (27.6)	20 (23)	3 (3.4)	
local	299 (76.7)	106 (35.5)	97 (32.4)	55 (18.4)	34 (11.4)	7 (2.3)	
Unknown	4 (1.0)	0 (0.0)	1 (25.0)	0 (0.0)	2 (50.0)	1 (25.0)	
<i>On other medication</i>							
Yes	105 (26.9)	32 (30.5)	31 (29.5)	18 (17.1)	19 (18.1)	5 (4.8)	
No	285 (73.1)	87 (30.5)	94 (33)	61 (21.4)	37 (13)	6 (2.1)	
<i>Chronic diseases</i>							
Yes	157 (40.3)	38 (24.2)	47 (29.9)	38 (24.2)	28 (17.8)	6 (3.8)	
No	233 (59.7)	81 (34.8)	78 (33.5)	41 (17.6)	28 (12)	5 (2.1)	

DLQI: dermatology of life quality index, total DLQI range from 0-30, 0-1: no effect at all on patient's life, 2-5: small effect on patient's life, 6-10: moderate effect on patient's life, 11-20: very large effect on patient's life, 21-30: extremely large effect on patient's life

a range of impacts on patients' QoL. Several previous studies assessing the impact of dermatological diseases on QoL have reported significant impairment.<sup>6,8-12</sup> However, a single national study published 8 years ago observed better impact on QoL.<sup>7</sup> Nevertheless, despite constant developments in the treatment of these diseases, including the use of biological therapies to treat many dermatological diseases, a lack of recent data on the QoL of patients with dermatological diseases in Saudi Arabia exists.

Different tools have been developed to assess the QoL of patients with skin diseases. We found that the validated Arabic version of DLQI questionnaire was understandable and easy for participants to use. In addition, as previous studies have concluded, scoring

the DLQI is simple and fast.<sup>13</sup> This questionnaire is not only used by dermatologists; primary care physicians frequently employ it as well.<sup>14</sup>

The current study demonstrated that the QoL of adults with different skin diseases is impaired to varying degrees. Most of our participants (62.6%) reported that their illness had a small to no impact on their QoL; this finding is similar to a previous study.<sup>7</sup> The dermatological diseases that most impact QoL in the present study are urticaria, psoriasis, and eczema. This finding aligns with previous studies conducted in Saudi Arabia and in other countries.<sup>6,8,9,11,15</sup> Other authors have found that acne and vitiligo have the strongest negative impacts on QoL.<sup>16,17</sup>

**Table 3 -** Analysis of dermatology life quality index (DLQI) elements in patients with different dermatological diseases (N=390).

Elements of DLQI	Not at all	A little	A lot n (%)	Very much	Not relevant
Itchiness/pain	135 (34.6)	152 (39.0)	62 (15.9)	41 (10.5)	0 (0.0)
Embarrassment	156 (40.0)	126 (32.3)	70 (17.9)	38 (9.7)	0 (0.0)
Interfered with shopping/home duties (n=389)	114 (29.2)	70 (17.9)	47 (12.1)	26 (6.7)	132 (33.8)
Influenced the clothes you wear	130 (33.3)	70 (17.9)	34 (8.7)	36 (9.2)	120 (30.8)
Affected social/leisure activities	146 (37.4)	72 (18.5)	46 (11.8)	20 (5.1)	106 (27.2)
Sport difficulties	157 (40.3)	62 (15.9)	21 (5.4)	17 (4.4)	133 (34.1)
Problem at work/studying (n=316)	253 (80.1)	50 (15.8)	12 (3.8)	0 (0.0)	1 (0.3)
Problem with partner/relatives/friends	188 (48.2)	72 (18.5)	23 (5.9)	13 (3.3)	94 (24.1)
Sexual difficulties (n=389)	166 (42.6)	21 (5.4)	14 (3.6)	8 (2.1)	180 (46.2)
Problem with treatment	218 (55.9)	66 (16.9)	25 (6.4)	12 (3.1)	69 (17.7)
Prevent working, no/yes	267 (68.5)		26 (6.7)		97 (24.9)

In our analysis of sociodemographic characteristics, no significant difference was found in relation to gender. However, most participants in this study were female (91%). This percentage is similar to that in previously published studies in which most participants were also females.<sup>6-8</sup> In this study, the prevalence of female patients, could be explained by the fact that women visit dermatology clinics more often than men.

Different dermatological diseases have different impacts on each element in the DLQI. In the present study, urticaria was the only disease that had a significant negative impact on all domains of the DLQI. This finding aligns with a 2018 study.<sup>15</sup> The most common impact overall was itchiness/pain followed by embarrassment and discomfort related to clothing. The authors propose that these symptoms are usually the most bothersome for patients with dermatological diseases.

We also examined factors influencing the impact of dermatological diseases on different elements of the DLQI and found that the negative impact increases with prolonged disease duration, more body involvement, and the presence of other chronic diseases; married participants also reported stronger negative impacts than unmarried ones. A previous study found that impaired QoL was associated with a younger age, a lower income, being unmarried, having only one skin condition, and a longer disease duration.<sup>18</sup> The finding that longer duration impacts QoL more severely aligns with our findings.

The DLQI allows patients with dermatological diseases to express their feelings in a structured way, and their responses can help physicians be more aware of their patients' problems. Many studies have investigated the impact of skin diseases on QoL, but few have evaluated the precise elements related to QoL that are impacted by each individual disease.

**Study limitations.** This study was conducted at a single tertiary health care center, which limits the feasibility of generalizing the findings to all individuals with skin diseases. Though it is relatively difficult to conduct population-based studies of dermatological diseases, we encourage more centers to reflect on the burden of the skin diseases using this easy, validated tool. In addition, the varied number of participants in each diagnostic category in the current study may have caused some discrepancies in the findings. Hence, further studies with larger sample sizes are recommended.

In conclusion, understanding the impact of different dermatological diseases on patients' QoL can help dermatologists to improve their patients' QoL. This study has shown that dermatological diseases have variable impact on patients' QoL. We recommend conducting further studies on this matter in multiple health centers with larger number of patients and different quality measurement tools.

**Acknowledgment.** The authors gratefully acknowledge American Manuscript Editors ([www.americanmanuscripteditors.com](http://www.americanmanuscripteditors.com)) for English language editing.

## References

- Pärna E, Aluoja A, Kingo K. Quality of life and emotional state in chronic skin disease. *Acta Derm Venereol* 2015; 95: 312-316.
- Vilar GN, Santos LA, Sobral Filho JF. Quality of life, self-esteem and psychosocial factors in adolescents with acne vulgaris. *An Bras Dermatol* 2015; 90: 622-629.
- McKoy K. The importance of dermatology in global health. Burlington: [Updated 2011; accessed 2015 June 3]. Available from: [files.ctctcdn.com/ded15bfa001/e46f16b0-8960-4f2c-8222-5d1b327e3e46.pdf](https://files.ctctcdn.com/ded15bfa001/e46f16b0-8960-4f2c-8222-5d1b327e3e46.pdf)
- Rapp SR, Feldman SR, Exum ML, Fleischer AB Jr, Reboissin DM. Psoriasis causes as much disability as other major medical diseases. *J Am Acad Dermatol* 1999; 41: 401-407.

5. Hong J, Koo B, Koo J. The psychosocial and occupational impact of chronic skin disease. *Dermatol Ther* 2008; 21: 54-59.
6. Sanclemente G, Burgos C, Nova J, Hernández F, González C, Reyes MI, et al. The impact of skin diseases on quality of life: a multicenter study. *Actas Dermosifiliogr* 2017; 108: 244-252.
7. Abolfotouh MA, Al-Khowailed MS, Suliman WE, Al-Turaif DA, Al-Bluwi E, Al-Kahtani HS. Quality of life in patients with skin diseases in central Saudi Arabia. *Int J Gen Med* 2012; 5: 633-642.
8. Al-Hoqail IA. Impairment of quality of life among adults with skin disease in King Fahad medical city, Saudi Arabia. *J Family Community Med* 2009; 16: 105-109.
9. Silverberg JI, Gelfand JM, Margolis DJ, Boguniewicz M, Fonacier L, Grayson MH, et al. Patient burden and quality of life in atopic dermatitis in US adults: a population-based cross-sectional study. *Ann Allergy Asthma Immunol* 2018; 121: 340-347.
10. Amer AA, Gao XH. Quality of life in patients with vitiligo: an analysis of the dermatology life quality index outcome over the past two decades. *Int J Dermatol* 2016; 55: 608-614.
11. Khan JM, Rathore MU, Tahir M, Abbasi T. Dermatology life quality index in patients of psoriasis and its correlation with severity of disease. *J Ayub Med Coll Abbottabad* 2020; 32: 64-67.
12. Pochynok T, Chernyshov IP, Asayevich N, Sushko S, Kopylova V, Chernyshov PV. Quality of life of school and university students with acne. *Acta Dermatovenerol Croat* 2018; 26: 139-145.
13. Chernyshov PV. The evolution of quality of life assessment and use in dermatology. *Dermatology* 2019; 235: 167-174.
14. Harlow D, Poyner T, Finlay AY, Dykes PJ. Impaired quality of life of adults with skin disease in primary care. *Br J Dermatol* 2000; 143: 979-982.
15. Itakura A, Tani Y, Kaneko N, Hide M. Impact of chronic urticaria on quality of life and work in Japan: results of a real-world study. *J Dermatol* 2018; 45: 963-970.
16. Abdel-Hafez K, Mahran AM, Hofny ER, Mohammed KA, Darweesh AM, Aal AA. The impact of acne vulgaris on the quality of life and psychologic status in patients from upper Egypt. *Int J Dermatol* 2009; 48: 280-285.
17. Nguyen CM, Beroukhim K, Danesh MJ, Babikian A, Koo J, Leon A. The psychosocial impact of acne, vitiligo, and psoriasis: a review. *Clin Cosmet Investig Dermatol* 2016; 9: 383-392.
18. Szepietowski JC, Reich A, Wesolowska-Szepietowska E, Baran E. Quality of life in patients suffering from seborrheic dermatitis: influence of age, gender and education level. *Mycoses* 2009; 52: 357-363.