



# Evaluation of Self-Esteem Status and Common Psychiatric Conditions in Psoriasis Patients Before and After Treatment with Biological Drugs

Safoura Shakoei<sup>1\*</sup>, Shahin Hamzelou<sup>1,2</sup>, Maryam Sadeghi<sup>1</sup>, Mohammad Effatpanah<sup>3</sup> and Maryam Nasimi<sup>2</sup>

1. Department of Dermatology, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

2. Department of Dermatology, Razi Hospital, Tehran University of Medical Sciences, Tehran, Iran

3. Department of Pediatrics, School of Medicine, Imam Khomeini Hospital, Tehran University of Medical sciences, Tehran, Iran

## \* Corresponding author

### Safoura Shakoei, MD

Department of Dermatology, School of Medicine, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

Tel: +98 9123220757

Email: dr.shakoei@gmail.com

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## Abstract

**Background:** Skin diseases have many negative effects on self-esteem and quality of life. Psoriasis has several psychological and social impacts on self-esteem. This study was performed to compare the effects of psoriasis on Self-Esteem Status before and after the treatment with biological drugs.

**Methods:** In this prospective cross-sectional descriptive study, patients with psoriasis referred to two hospitals in Tehran, Iran, were studied. Demographic data were recorded, and disease information was collected through the Psoriasis Area and Severity Index (PASI) score. The self-esteem status was determined using the standardized Symptom Checklist-90-Revised (SCL-90-R) and the Eysenck questionnaires. Data were analyzed by Pearson correlation and t-score tests.

**Results:** The severity of the disease decreased significantly after treatment with biological drugs. Scores related to depression, anxiety, somatization, interpersonal sensitivity, hostility, morbid anxiety, paranoid thoughts, and psychosis decreased after treatment. Self-esteem increased after treatment. The more severe the disease, the less the patients' self-esteem increased after treatment with biologic drugs ( $p < 0.000$ ). According to the Eysenck measurement index, people with higher socioeconomic levels significantly increase self-esteem after treatment with biological drugs. According to the General Symptom Index (GSI), socioeconomic status has no significant effect on self-esteem.

**Conclusion:** Treatment of psoriasis patients with biologics can reduce the severity of their disease and improve mental disorders in these patients. This treatment also increases their self-esteem and generally improves their quality of life of these patients.

**Keywords:** Biological drugs, Psoriasis, Self-esteem

## Introduction

The skin is an organ that primarily functions in contact with the environment (1). As skin diseases are often visible, those who suffer from skin diseases have to deal with both their disease and the adverse reaction of others due to the appearance aspects and stigmas (2). The skin plays an essential role in the socialization process that continues from childhood to adulthood by providing self-esteem. The incidence of psychiatric disorders in patients with skin diseases is estimated at 30 to 60% (3,4).

Self-esteem is an attitude about oneself, achieved by accepting oneself through self-evaluation, which is a very important aspect of life, both in adults and children. Most studies have shown that acquired skin disorders, such as atopic dermatitis, psoriasis, and acne, affect self-esteem more profoundly than congenital skin disorders (5,6).

The effect of other skin problems, such as acne vulgaris, on self-esteem also shows that issues significantly negatively impact patients' self-esteem, especially the severe form of acne among women from different cultures, and effective treatment of this problem improves patients' self-esteem (7). Pediatric skin disorders have also been reported to affect childhood self-esteem (6).

Psoriasis is a common and chronic inflammatory skin disease that affects about 0.5-1% of children and 2-3% of the world's population (8). Although the exact etiology of psoriasis is not yet known, it appears to be multifactorial. It has several key components, including genetic predisposition, environmental stimuli, skin barrier dysfunction, and immune system dysfunction (9). In addition to causing physical disorders, psoriasis causes mental disorders in an individual, which is associated with significant Health-Related Quality of Life (HRQOL) disorders (10). Routine HRQOLs assessments usually focus on the effect of disease on patients' physical, mental, and social functioning, not the effect of treatment on these factors (10).

Mild psoriasis is usually treated with topical corticosteroids, vitamin D analogs, calcineurin inhibitors, tazarotene, dithranol, tar preparations, and targeted phototherapy (11,12). Patients with moderate-to-severe psoriasis are usually treated with phototherapy and systemic and biological therapies;

however, using topical medications in combination with these treatments may help reduce the need for other treatments to achieve disease control (13,14).

Phototherapy is used as the first-line therapy for moderate-to-severe psoriasis, pregnant woman, and patients with contraindications to systemic treatment (11). Systemic therapies include methotrexate, cyclosporine, acitretin, and fumaric acid esters. Biologic therapies tumor necrosis factor-alpha inhibitors (adalimumab, etanercept, infliximab), inter-leukin-12/23 inhibitor (ustekinumab), interleukin-17 inhibitors (secukinumab), phosphodiesterase-4 inhibitor (apremilast), and Janus Kinase (JAK) in-hibitors (tofacitinib) (12).

Patients' age and comorbidities are significant factors in choosing a biological agent. TNF- $\alpha$  inhibitors are often referred to as first-generation biological therapies (15).

Psoriasis is associated with several psychological and social consequences, such as decreasing self-esteem, and its comparison, before and after treatment, can lead to a better assessment of therapeutic adequacy in these patients, which has not yet been evaluated. This study was designed to compare self-esteem in patients with psoriasis before and after treatment with biological drugs.

## Materials and Methods

### ***Study design and inclusion/exclusion criteria***

In this prospective cross-sectional descriptive study, patients with psoriasis referring to our Hospitals, Tehran, Iran, from March to July 2020, who were candidates for biologic medicine for any reason, were studied. The main inclusion criteria for patients were psoriasis and receiving biological drugs. The exclusion criterion was the use of biological drugs for diseases other than psoriasis.

Informed consent was obtained from patients after explaining the study protocol. This study was performed in line with the principles of the Declaration of Helsinki and approved by the Ethics Committee of Tehran University of Medical Sciences (TUMS).

### ***Sample size***

All patients with psoriasis receive biological treatment referring to the hospitals designated for sample collection and evaluated for five months.

### **Data collection**

Independent variables of this study included age, sex, level of education, socioeconomic status, duration of the disease, joint involvement, nail involvement, treatment with biological drugs, and the type of the drugs. This information was collected through interviews with the patients and completing the score of the Psoriasis Area and Severity Index (PASI).

Patients with psoriasis who were candidates for receiving biological drugs (infliximab, adalimumab, etanercept) were evaluated for self-esteem status before treatment using the standardized Symptom Checklist-90-Revised (SCL-90 -R) (with validity and reliability) (16), and the Eysenck questionnaires (17). After at least two months of treatment with biological drugs, questionnaires were completed again, and the results were compared.

### **Symptom checklist-90-revised questionnaire**

The SCL-90-R questionnaire consists of 90 separate questions, including a list of problems that may be routine complaints of people (18). The subscales and items of the questionnaire are somatization (12 items), obsessive-compulsive disorder (10 items), interpersonal sensitivity (9 items), depression (13 items), anxiety (10 items), hostility (6 items), morbid anxiety (7 items), paranoid thoughts (6 items), psychosis (10 items), and additional questions (7 items). To score this questionnaire, the answers must first score in each sentence in the following order: not at all: score 0, little: score 1, somewhat: score 2, high: score 3, very high: score 4. By summing the scores of the items in that subscale, the score of each subscale is obtained. The scores are interpreted in the following order: a) average scores of one or more: morbid conditions and b) average scores above 3: severe depression and psychosis.

### **General symptom index (GSI)**

This index is extracted from the SCL-90-R questionnaire, and it is the best indication of the level or depth of discomfort at present and should be used in cases where a brief assessment is needed (18). It also provides information about the number of symptoms and the severity of their discomfort. The GSI score is calculated by the sum of raw scores (not subscale and additional questions)/90 (the number of questions in

the questionnaire).

### **Positive symptoms test (PST)**

The PST is also derived from SCL-90-R, indicating the extent of discomfort (18). This indicator is calculated by a simple count of the number of non-zero scored questions of symptoms that the patient admits.

### **Positive symptoms discomfort index (PSDI)**

The PSDI is a pure measure of the severity of the discomfort. It is a modified measure of the severity of the symptoms and is calculated by the sum of the total raw scores/PST score.

### **Eysenck questionnaire**

The Eysenck questionnaire was used to score patients' self-esteem status (17). It has 30 items, and the subject must choose one of the three options of "Yes," "No," or "N/A" to answer each item. In this questionnaire, the lowest possible score is zero, and the highest score is 30. Options with a "N/A" answer are given 0.5 points. Questions with "Yes" or "No" answers are awarded according to the scoring of each question 1 or zero. A high score indicates high self-esteem. The scoring is as follows: the score of between 0 and 5: very low self-esteem, the score between 6 and 10: low self-esteem, the score between 11 and 15: moderately low self-esteem, the score between 16 and 20: moderately high self-esteem, the score between 21 and 25: good self-esteem, and a score between 26 and 30: very good self-esteem.

### **Statistical analysis**

Statistical analyses were performed with SPSS version 23 (IBM SPSS Statistics, Armonk, NY, USA). Descriptive statistics are presented as means and Standard Deviation (SD). The scores of the SCL-90-R and Eysenck questionnaires and GSI, PST, and PSDI were compared before and after treatment with biological drugs using Pearson correlation, Spearman correlation coefficient, and t-score tests. A  $p < 0.05$  was considered to indicate statistical significance.

### **Results**

A total of 31 patients with psoriasis participated in the study, including 19 men (61.3%) and 12 women (38.7%). The average age of the participants in

our study was  $42 \pm 15$  years (range:19-80 years). The mean duration of the disease in our patients was  $157 \pm 120$  months (range:15-420 months). The

number of patients' children was  $1.3 \pm 1.8$  (range:0-7). The demographic characteristics of the patients are presented in table 1.

**Table 1.** Demographic characteristics of patients

Variable		Frequency	Percent
Marital status	Single	17	54.8
	Married	12	38.7
	Divorced/widow	2	6.5
Education level	Under diploma	6	19.4
	Diploma	9	29
	Associate degree	6	19.4
	Bachelor's degree	7	22.6
	Master's degree and higher	3	9.7
Income level	Low	12	38.7
	Below average	12	38.7
	Medium to high	6	19.4
	High	1	3.2
Biologic drug type	Infleximab	15	48.4
	Adalimumab	10	32.3
	Etanercept	6	19.4
Treatment duration (Month)	2	26	83.9
	3	3	9.7
	4	1	3.2
	5	1	3.2
History of using drugs	NBUVB <sup>a</sup>	17	54.8
	Oral PUVA <sup>b</sup>	12	38.7
	Bath PUVA	2	6.2
	CoalTar	1	3.2
	Topical steroids	31	100
	Calcipotriol	14	45.2
	Daivobet	5	16.1
	Tazarotene	3	9.7
	Pimecrolimus	3	9.7
	Tacrolimus	3	9.7
	Anthralin	4	12.9
	Neotigason (acitretin)	18	58.1
	Methotrexate	28	90.3
Cyclosporine	13	41.9	

a: Narrow band ultraviolet B, b: Psoralen-ultraviolet A.

The mean disease severity based on the PASI before treatment with biologic drugs (score=11.86) significantly decreased after treatment (score=8.86) ( $p<0.001$ ). Joints ( $p=0.89$ ) and nails ( $p=0.78$ ) involvement in our patients after treatment with biologic drugs did not change significantly compared with before treatment. The severity of the joint and nail involvement was not measured, and just the involvement and non-involvement were recorded. The correlations between clinical complaints of our patients based on SCL-90-R questionnaire subscales before and after treatment with biologic drugs are shown in table 2.

All subscales of the PCL-90-R questionnaire (except for pathological anxiety) and GSI, PST, and PSDI significantly reduced after treatment with biological drugs.

The average Eysenck score in patients before the treatment with biologic drugs ( $19.9\pm5.3$ ) increased significantly after treatment ( $22.2\pm4.8$ ) ( $p<0.001$ ). Average self-esteem based on the Eysenck score increased dramatically after the treatment with biologic drugs (from  $3.3\pm1.2$  to  $3.9\pm0.92$ ) ( $p<0.001$ ). The correlation between GSI and Eysenck scale

for self-esteem evaluation demonstrated that these indices were compatible (Pearson coef. $=-0.762$ , Spearman coef. $=-0.768$ ,  $p<0.001$ ). The relationship between self-esteem based on the Eysenck scale and GSI before and after treatment is shown in table 3.

The socioeconomic status of patients was correlated with an increase in self-esteem (based on the Eysenck index) after the treatment with biological drugs compared with before treatment, which means that patients with higher socioeconomic status had a more significant increase in self-esteem after treatment.

### Discussion

Skin conditions, such as psoriasis, can severely affect the patient’s self-image, self-esteem, and well-being (19). Psoriasis is a multifactorial inflammatory disease in which the burden of the disease extends beyond the patient’s physical symptoms (20). Psoriasis affects all aspects of quality of life, including physical, mental, social, sexual, and occupational issues (21,22). In the present study, the Eysenck and SCL-90 questionnaires were used to assess patients with psoriasis and their mental disorders psychologically.

The results of our study showed that patients with

**Table 2.** SCL-90-R questionnaire subscales and indices before and after treatment with biologic drugs

Variable	Before treatment Mean $\pm$ SD	After treatment Mean $\pm$ SD	p-value <sup>a</sup>
Somatization	0.93 $\pm$ 0.46	0.67 $\pm$ 0.41	<0.001
Obsessive-compulsive disorder	0.90 $\pm$ 0.70	0.74 $\pm$ 0.57	<0.001
Interpersonal sensitivity	0.80 $\pm$ 0.56	0.65 $\pm$ 0.47	<0.001
Depression	1.10 $\pm$ 0.48	0.85 $\pm$ 0.40	<0.001
Anxiety	0.85 $\pm$ 0.50	0.65 $\pm$ 0.46	<0.001
Hostility	0.78 $\pm$ 0.49	0.65 $\pm$ 0.44	<0.001
Pathological anxiety	0.35 $\pm$ 0.24	0.30 $\pm$ 0.20	0.06
Paranoid thoughts	0.71 $\pm$ 0.72	0.57 $\pm$ 0.64	<0.001
Psychosis	0.61 $\pm$ 0.40	0.52 $\pm$ 0.39	<0.001
GSI score	0.75 $\pm$ 0.34	0.58 $\pm$ 0.27	<0.001
PST score	37.2 $\pm$ 15.00	31.9 $\pm$ 13.00	<0.001
PSDI score	2.00 $\pm$ 0.33	1.90 $\pm$ 0.37	0.006

a: Significance level:  $p<0.05$ .

**Table 3.** Correlation between self-esteem based on the Eysenck and General Symptom Index (GSI) before and after treatment with biological drugs

	Eysenck		General symptom index	
	Pearson correlation	p-value <sup>a</sup>	Pearson correlation	p-value
Before treatment	-0.74	<0.0001	0.73	<0.0001
After treatment	-0.70	<0.0001	0.76	<0.0001
Difference between before and after treatment	0.44	0.01	-0.53	0.002

a: Significance level: p<0.05.

psoriasis have multiple psychological problems, and this disease has adverse effects on patients' self-esteem according to GSI and Eysenck scale. Mental and psychological disorders in these patients include somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, phobia, hostility, paranoid thoughts, and psychosis. In line with our findings, the results of a similar study that examined the self-esteem and quality of life of patients with psoriasis using the Dermatology Life Quality Index (DLQI), Body Image Scale, and Rosenberg Self-Esteem Scale, showed that psoriasis significantly affects the quality of life, self-esteem and body image of patients and also causes mental and social problems (22).

In our study, the patients in terms of PASI score, somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, paranoid thoughts, morbid anxiety, psychosis, and self-esteem based on the Eysenck, GSI, PST, and PSDI scores were significantly different before and after treatment with biologic drugs. In a study by Krueger *et al*, etanercept therapy greatly positively affected patients' physical and mental quality of life compared with the placebo group (23). In our research, etanercept was one of the biological drugs used to treat the patients. Physical/mental health and self-esteem significantly improved after treatment with biologic drugs. We also evaluated the drugs infliximab and adalimumab, confirming their efficacy and safety in patients with psoriasis (24). They significantly improved the disease leading to an improvement in patients' self-esteem.

The severity of the disease was assessed based on three scales: PASI, PSDI, and PST in patients before

and after treatment with biologics. Based on all three scales, the disease severity in patients with psoriasis after treatment with biologics significantly decreased. In a study by Shikiar *et al*, it was shown that the adalimumab administration (40 mg/week for 12 weeks) compared with the placebo for the treatment of moderate-to-severe plaque psoriasis is effective in the improvement of skin symptoms and other quality of life indicators of patients (25).

In the present study, based on the scores obtained from the SCL-90-R questionnaire, the patients' depression scores significantly reduced after treatment. Also, after biological treatment, somatization disorders, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, paranoid thoughts, morbid anxiety, and psychosis decreased. Patients' self-esteem increased from about 20 (moderate to high self-esteem) to 22 (good self-esteem) after treatment, according to the Eysenck questionnaire. Menter *et al* examined the effect of adalimumab on depressive symptoms in patients with moderate-to-severe psoriasis in a placebo-controlled, randomized, double-blind clinical trial using the Zung Self-Rating Depression Scale (ZDS). The results showed that compared with the placebo group, the adalimumab group experienced an additional 6-point decrease in the ZDS score at week 12. Improvement in depression was associated with improvements in PASI and dermatological quality of life index (26).

In this study, there were some limitations, including self-report bias, which was resolved by justifying patients to fill in the questionnaire correctly. Also, the involvement of nails and joints in this study was examined based on whether or not they were involved, and the severity of their involvement was

not discussed.

### Conclusion

The results of our study showed that treating psoriasis patients with biological drugs can reduce the severity of their disease and improve mental disorders in these patients. These drugs also increase their self-esteem and generally improve the quality of life in these patients.

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contributed to the study's implementation. This study was performed in line with the principles of the Declaration of Helsinki and approved by the Ethics Committee of Tehran University of Medical Sciences (TUMS) (Ethical code#: IR.TUMS.MEDICINE.REC.1397.494).

### Conflict of Interest

The authors declare no conflict of interest.

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