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Dermatology Life Quality Index and Work Limitation among Psoriasis Patients

Nashwa Nabil[*1], Nader Nasr[2], Eman Mahmoud Shebl[3]

Departments of [1, 3]Community, Environmental and Occupational Medicine, [2]Dermatology and Andrology and Faculty of Medicine, Benha University, Egypt

***Corresponding author:** Nashwa Nabil, **Mobile:** (+20) 01125923049, **E-Mail:** nashwa.nabil@fmed.bu.edu.eg

ABSTRACT

Background: Psoriasis is a long lasting immune-mediated disease that has a significant ferocious effect on quality of life (QOL). It is often accompanied with social stigmatization, physical disability and psychological disorders that may reach to suicidal ideation. All these effects of psoriasis have a significant negative impact at patients' work productivity. Nevertheless, the effects of psoriasis on work-related factors have not been extensively studied.

Objective: The aim of the current study is to assess the relationship between the severity of psoriasis, dermatology life quality index and work limitation among employed psoriatic patients. **Patients and methods:** A cross-sectional study was conducted at Benha University Hospital Dermatology Clinic from 1st August 2022 till the end of October 2022. The study included 180 of psoriasis patients using an interview questionnaire incorporating the Dermatology Life Quality Index (DLQI) and Work limitation questionnaire (WLQ). An assessment of the disease severity was carried out using the Psoriasis Area Severity Index (PASI). **Results:** The majority of studied group were males (64.4%) with a median (IQR) age 45 (40-52) years old. Their median (IQR) disease duration was 12 years. About 48.9% of the studied patients have degree PASI score. DLQI and WLQ score significantly increased among studied patients have severe PASI grade [median 26 (IQR 23-27) and median 65 (IQR 50-75), respectively]. There were highly significant positive correlations between DLQI and WLQ score, age and disease duration among the studied patients. **Conclusion:** Psoriasis has a great impact on the workers, the organization and the society as a whole. So measures for good psoriasis management are recommended.

Keywords: Psoriasis, Work limitation, DLQI, WLQ, PASI.

INTRODUCTION

Any area of the body can be affected by the chronic inflammatory skin disease psoriasis, which has a pattern of remission or relapse [(1)]. It happens when the immune system mistakenly perceives a healthy skin cell as a pathogen and sends out false signals that lead to an increase in the production of new skin cells[(2)].

It affects 0.14-1.99% of persons worldwide, making it a very common condition [(3)]. Psoriasis distresses 3 % of the American population, with approximately 250,000 new cases every year [(4)]. In Egypt, the prevalence of psoriasis ranges between 0.19% and 3% of the Egyptian people [(5)].

The most prevalent type of psoriasis, plaque psoriasis (PSO), often produces raised, scaly, and erythematous lesions to emerge on the skin [(2)]. Nearly 30% of individuals experience pain and swelling in their joints along with other symptoms, which indicates the onset of psoriatic arthritis [(6)]. PSO can manifest at any age, but the majority of instances happen before the age of 35, and women are frequently identified earlier than men [(7)].

Although there are several therapies available to decrease the symptoms of the disease, psoriasis is not curable [(8)]. The patient's age, general health, comorbidities, and severity all factor into these treatments [(9)]. Psoriasis can range from minor to severe. How much of the body is affected by psoriasis determines the severity. Additionally, consider how psoriasis affects a person's daily life [(2)]. It has been discovered that severe cases of psoriasis have an impact on health-related quality of life comparable to other chronic conditions as hypertension, congestive heart failure, type 2 diabetes, or depression. Patients may have severe physical discomfort and some handicap depending on the location and degree of outbreaks [(9)].

Away from physical impact of itching, pain, and scaling, the patients can also feel ashamed or embarrassed because of their disease which affects their social life by avoiding social activities [(10)]. Perceived discrimination, stigmatization and social exclusion are psychologically devastating for individuals suffering from psoriasis and their families[(11)].

As a result, psoriasis has a massive negative impact on people's lives.

The severity of the illness and its stigma are related to a negative impact on productivity at work. Both the sick and society must pay a high price for this lost output [(12)]. The projected annual economic impact in the United States is $35.2 billion, of which 32% is due to lost productivity at work [(13)]. According to one study, 49% of psoriasis patients who were working frequently missed work due to their condition, while 92% of those who were unemployed cited psoriasis as the main reason for their situation. Additionally, presenteeism (decreased productivity despite being present at work or school) contributes to patient productivity loss in addition to absenteeism (decreased productivity as a result of absence from work or school); additionally, presenteeism makes up a larger portion of overall productivity loss than absenteeism[(14)].

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PATIENTS AND METHODS

- **Study design**: Cross-sectional study.
- **Study setting:** Dermatology and Andrology Clinic at Benha University Hospital (BUH).
- **Study period:** Collection of data was begun on first of August 2022 till the end of October 2022**.**
- **Study population:** Psoriasis patients diagnosed at the outpatient clinic of BUH.

Inclusion criteria: The study included employed patients at least 18 years old, diagnosed with psoriasis and had begun treatment with a local or systemic psoriasis regimen.

Exclusion criteria: Unemployed patients, pregnant females and those with disabling diseases were excluded from the study.

Sampling technique: Simple random sample.

Sample size: The total number of patients who accepted to participate during the study period was 180 patients.

Study methods and tools:

Patients were given the Dermatology Life Quality Index (DLQI) and the Work Limitation Questionnaire (WLQ-25), and the Psoriasis Area Severity Index was used to determine the severity of the condition (PASI). Gender, age, BMI, occupation, length of illness, severity of illness, complications, and course of therapy were all recorded for patients on a particular form.

A. The DLQI, a dermatology-specific tool to assess health-related quality of life (HRQoL), asks respondents to provide 10 responses that are broken down into 6 categories: symptoms and feelings, daily activities, leisure activities, work and school, personal relationships, and treatment received within the previous week. A 4-point Likert scale was used to grade responses: 0 for "not at all/not relevant," 1 for "a little," 2 for "a lot," and 3 for "a lot" (very much). The overall DLQI score, which ranges from 0 to 30, is determined using responses. Lower HRQoL is indicated by higher scores [(15)].
B. Psoriasis Area Severity Index: It is a measurement of the psoriasis plaques' colour, thickness, scaling, and coverage. It is used to gauge the severity and scope of psoriasis and evaluate how well psoriasis therapies are working. Absolute PASI values range from 0 to 72, with higher scores indicating more severe psoriasis. A score of 0 denotes the absence of psoriasis, whereas a score of 10 or more denotes severe psoriasis [(16)].
C. Work limitation questionnaire-25: The WLQ was used to evaluate the loss of job productivity due to illness. The WLQ asks respondents to rate how difficult (or capable) they were of meeting 25 particular job expectations over the previous two weeks. Four work limitation scales are created from the 25 responses: Managing time, meeting physical, mental, interpersonal, and output demands. The punctuality, pace, and productivity subscale of the time demands scale consists of five items. Six items make up the physical demands subscale, encompassing lifting, moving about, repetitive motions, posture, and tool use. Nine items make up the mental or interpersonal demands subscale, which measures social interactions and focus while working. Five elements make up the output demands subscale, which assesses the quantity and calibre of work. Client instructions and scoring: The customers are asked to rate how difficult it was for them to manage job-specific responsibilities in the previous two weeks given their present health status for each of the questions. The clients are asked how often they struggle with each of the four subscales, excluding the physical demands subscale. The physical demands subscale looks at how often they can complete tasks without any difficulty, a five-point ordinal answer scale with a zero to four range. Total scores can be between 0 and 100%, and the greater the score, the more work restrictions and productivity loss there will be [(17)].

Ethical consideration:

Benha University Faculty of Medicine's Ethics Committee gave its approval for this study. All patients who participated in this study signed informed written consent for participation and publication of the data contained in this research. The included procedures were performed in full accordance with the code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Data management and statistical analysis

Data were verified, coded by the researchers, and analyzed using IBM-SPSS 23.0 (IBM-SPSS Inc., Chicago, IL, USA). The Kolmogorov-Smirnov test was used to determine whether the quantitative data's distribution was normal. For quantitative data, the median (IQR) was used to summarize the data, while for qualitative data, number and percentage were used. Using the Mann-Whitney test and the Kruskall-Wallis test, quantitative data were compared. To ascertain the relationship between age, disease duration, DLQI, and WLQ, Spearman correlation analysis was used. All tests are two-sided. In this study, $P \leq 0.05$ was considered the acceptable threshold of significance, $P \leq 0.001$ was deemed highly statistically significant (Hs), and $P > 0.05$ was deemed non-statistically significant (Ns).

RESULTS

Table 1 summarizes the sociodemographic characteristics of the psoriatic patients.

Table (1): Sociodemographic characteristics and disease related data of the studied patients.

Variable (Total N.=180)		N.	%
Age (Median and IQR)		45 (40-52)	
Sex	**Female**	64	35.6
	Male	116	64.4
Occupation	**Doctor**	11	6.1
	Farmer	42	23.3
	Nurse	56	31.1
	Teacher	44	24.4
	Worker	27	15.0
Residence	**Urban**	32	17.8
	Rural	148	82.2
Education	**Secondary educated**	70	38.9
	Bachelor degree	73	40.6
	Master degree or above	37	20.6
Marital status	**Unmarried**	32	17.8
	Married	148	82.2
BMI (Median and IQR)		28.6	22.3-31.3
Disease duration (Median and IQR)		12	7-16.5

The median (IQR) of DLQI, and WLQ scores among studied patients were 12 (9.25-18) and 47.5 (25 – 65) respectively. About 48.9 % of the studied patients have mild degree PASI, 29.4% of them have moderate degree and 21.7 % have severe degree PASI (**Figure 1**).

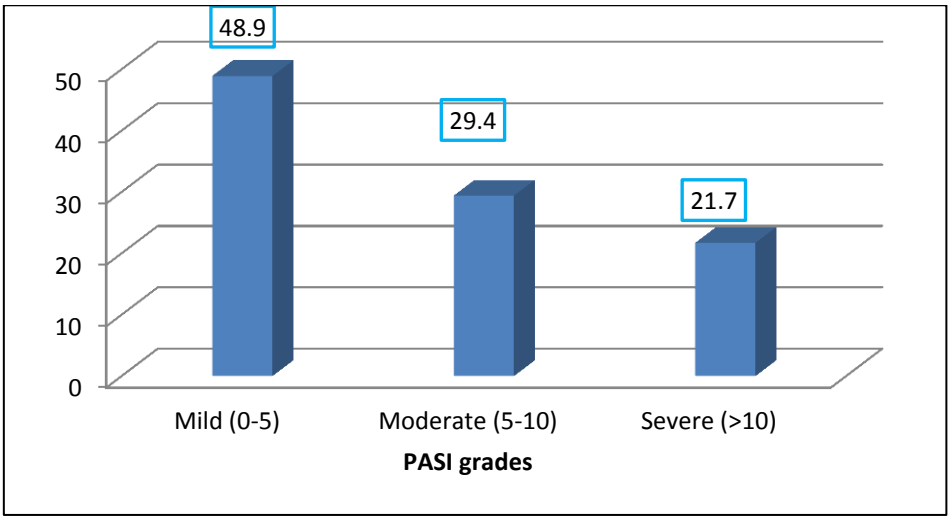

Figure (1): Distribution of PASI grades among studied patients.

There were highly significant differences between the studied patients DLQI and WLQ scores according to their PASI grades. DLQI, WLQ score and significantly increased among patients have severe PASI grade [median 26 (IQR 23-27) and median 65 (IQR 50-75), respectively] (**Table 2**).

Table (2): Differences between DLQI and WLQ of the studied patients regarding PASI grades

PASI	Mild		Moderate		Severe		Kruskall Wallis test	P value
	Median	IQR	Median	IQR	Median	IQR		
DLQI	10	8-11	16	12-17	26	23-27	95.613	**.000**
WLQ	32.5	20-50	55	45-65	65	50-75	43.919	**.000**

There was no significant difference between the studied patients DLQI and WLQ regarding residence and education (**Table 3**).

Table (3): Differences between DLQI and WLQ of the studied patients regarding residence and education.

Residence	**Urban**		**Rural**				**Mann Whitney test**	**P value**
	Median	**IQR**	**Median**		**IQR**			
DLQI	14.5	9 - 17.75	12		10 – 18		0.242	0.809
WLQ	50	35-65	45		25 -65		0.419	0.675
Education	**Secondary**		**Bachelor degree**		**Master degree or high**		**Kruskall Wallis test**	**P value**
	Median	IQR	Median	IQR	Median	IQR		
DLQI	12	9.75-17.75	12	9-17	16	10.5-20.5	2.89	0.236
WLQ	45	25-65	50	25-65	45	20-65	0.276	0.871

There was no significant difference between the studied patients DLQI and WLQ scores regarding psoriasis type. There were highly significant differences between the studied patients DLQI and WLQ scores regarding their psoriasis activity. DLQI and WLQ scores significantly increase when the studied patient's disease in highly active state (**Table 4**).

Table (4): Differences between DLQI and WLQ of the studied patients regarding psoriasis type and activity.

Psoriasis type	**Plaque**		**Guttate**		**Pustular**		**Erythroderma**		**Kruskall Wallis test**	**P value**
	Median	**IQR**	**Median**	**IQR**	**Median**	**IQR**	**Median**	**IQR**		
DLQI	12	9-17.25	13	7.75- 20.25	19	10-28	18.5	8-27.5	.897	0.826
WLQ	47.5	25-65	47.5	18.75-78.75	40	20-60	47.5	30-61.25	.272	0.965
Disease activity	**High**		**Moderate**		**Low**		**Remission**		**Kruskall Wallis test**	**P value**
	Median	**IQR**	**Median**	**IQR**	**Median**	**IQR**	**Median**	**IQR**		
DLQI	26	22.75-28	15	11-19.25	10	8-16	11	9-15	62.2	**0.000**
WLQ	65	55-75	55	23.75-66.25	45	25-65	40	20-60	29.5	**0.000**

There were highly significant differences between the studied patients DLQI and WLQ scores regarding arthritis and musculoskeletal affection. Those have psoriatic arthritis and musculoskeletal affection have significantly higher work limitation and more affected quality of life and health. There was no significant difference between the studied patients DLQI and WLQ scores regarding type of treatment either topical or combined (**Table 5**).

Table (5): Differences between DLQI and WLQ of the studied patients regarding arthritis, musculoskeletal affection and treatment.

Psoriatic Arthiritis	**Positive**		**Negative**		**Mann Whitney test**	**P value**
	Median	IQR	Median	IQR		
DLQI	25	17-27	11	9-15	8.312	**.000**
WLQ	65	55-75	40	20-60	6.743	**.000**
Musculoskeletal affection	**Positive**		**Negative**		**Mann Whitney test**	**P value**
	Median	IQR	Median	IQR		
DLQI	27	22-28	11	9-15	7.023	**.000**
WLQ	60	45-75	40	20-60	5.594	**.000**
Treatment	**Topical**		**Combined**		**Mann Whitney test**	**P value**
	Median	IQR	Median	IQR		
DLQI	12	9-19.25	12.5	9.75-18	.221	.825
WLQ	45	25-65	50	23.75-65	.581	.561

There were highly significant positive correlations between DLQI and age, disease duration and WLQ score among the studied patients (p<0.000). There were highly significant positive correlations between WLQ score and age and disease duration (p<0.000) (**Table 6**).

Table (6): Correlation between DLQI, EQ_VAS and WLQ of the studied patients.

Spearman correlation		DLQI	WLQ
DLQI	Correlation coefficient P value	-	0.592 **0.000**
WLQ	Correlation coefficient P value	0.592 **0.000**	-
Age	Correlation coefficient P value	0.237 **0.000**	0.139 0.063
Disease duration	Correlation coefficient P value	0.422 **0.000**	0.315 **0.000**
BMI	Correlation coefficient P value	-0.085 0.257	-0.016 0.828

DISCUSSION

This cross sectional study provides insight into the impact of psoriasis on QoL, work limitation and work productivity among eligible psoriasis patients. The majority of the studied patients have mild to moderate psoriasis. Similar results were reported by descriptive study conducted by **Abdelsamed *et al.*** [18] at Zagazig University Hospitals, Zagazig, Egypt which revealed that 51.7%, 40.8% and 18.1% of the patients have mild, moderate and severe psoriasis respectively.

There was significant difference regarding DLQI between studied patients with different PASI grades in our study. As, DLQI score significantly increased among patients have severe PASI grade.

This comes in agreement with **Magdi *et al.*** [19] and **Tang *et al.*** [20] studies which reported that the greater impact of disease on QOL was found among those have severe psoriasis. This is matched to **Nayak *et al.*** [21] and **Sojević Timotijević *et al.*** [22] studies which reported that there was significant positive correlation between PASI score and DLQI score. Similarly, **Mattei *et al.*** [23] study reported that decrease in PASI by at least 75% cause QOL improvement in treated psoriasis patients. The same results were reported also by **Eid and Elweshahi** [24] study.

There were significant differences between studied patients PASI grades and WLQ in our study. As, WLQ score significantly increased among patients have severe PASI grade. This is inconsistent with **Strober *et al.*** [12] study stated that moderate and severe psoriasis categories were significantly associated with more missed working hours and work impairment. Also, **Korman *et al.*** [25] study reported that work productivity worsened with increased disease severity**.**

Findings from the current study show that the impact varies depending on psoriasis activity among studied patients. Patients with highly active disease had poorer outcome than patient with moderate or low active disease also had reduced HRQoL and work productivity. Although psoriasis may be controlled to a certain degree, patients with active disease continued to experience detrimental HRQoL. This is in accordance
with **Korman *et al.*** [25] study. This comes in agreement with **Viswanathan *et al.*** [26] study which stated that progressive course had the largest effect on DLQI than other types of disease course. That was in agreement with **Nayak *et al.*** [21] study which reported that the chronic progressive course of psoriasis along with disease severity impairs QOL.

There was no significant difference between the studied patients DLQI and WLQ scores regarding psoriasis type. That was similar to the results of an Iranian study by **Moradi *et al.*** [27] who found no statistically significant difference in QOL regarding clinical types of psoriasis in Iran. But, this is mismatched with **Magdi *et al.*** [19] study as, patients with erythrodermic psoriasis had the worst DLQI (19.60 ± 7.93), followed by those with classic plaque psoriasis (12.24±6.60), followed by those with guttate psoriasis (9.45±7.31) then, those with palmoplantar psoriasis (6.27±5) [19]**.**

According to the current study results, there were insignificant associations between QoL scores and patient's education the same was found by Sharaf and Ibrahim study [28]. Contrary to our results, Soliman study stated that patients with lower education level had more severe psoriasis and bad quality of life as education increase their knowledge, and permit them to cope themselves better [15]. We also observed that no significant difference in the treatment practice for psoriasis patients.This is inconsistent with **Al Raddadi *et al.*** study [29]**.**

Regarding disease duration, there was significant positive correlation was noticed in our study between disease duration and DLQI. That was in line with **Sojević Timotijević *et al.*** [22] study who noticed negative impact of the disease duration on the QOL of patients but in dissimilarity to **Singhal *et al.*** study [30].

Psoriasis and obesity are complemented by low-grade systemic inflammation. Also, obesity-derived pro-inflammatory mechanisms may aggravate the severity of psoriasis in over weight individuals with psoriasis [(31)]. In our study, no correlations were detected between DLQI, WLQ -25 and BMI of the studied patients. That was similar to **Petridis *et al.*** study [(32)]. But, **Jensen *et al.*** [(33)] reported in their study that losing weight showed PASI improvement and a significant reduction in DLQI in overweight patients with psoriasis. The current study reported highly significant increase in work limitation and decrease work productivity and DLQI among patients with psoriatic arthritis and has musculoskeletal affection. The same results were reported by **Orbai *et al.*** [(34)] study prospective study in USA which stated that work absenteeism and short-term disability were significantly greater associations among patients with psoriatic arthritis than psoriasis patients and control group.

This study has limitations, It was a cross sectional study with absence of a statistical control for potential confounding factors. Therefore, additional studies using longitudinal data would enable a better comprehension of the dynamics in Egyptian psoriasis patients.

In conclusion, different factors affect quality of life and work limitation in psoriasis patients including psoriasis PASI score, disease activity, and duration of disease, while type of psoriasis and different types of treatment did not affect quality of life and work limitation in psoriasis patients.

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