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Correlation between clinical severity and quality of life in moderate to severe psoriasis patients: real-world evidence

Korelacija između težine kliničke slike i kvaliteta života kod bolesnika sa umerenom do teškom psorijazom: dokazi iz stvarnog sveta

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Abstract

Background/Aim. Psoriasis is a chronic multisystem, inflammatory, and immune-mediated dermatological disease of a relapsing nature. Not only does it affect objective parameters such as skin and joints, with different intensity involvement and with changes and the degree of changes, but it also significantly affects the health-related quality of life (QoL). The aim of the study was to determine the clinical severity and QoL of patients with moderate to severe psoriasis and examine the association between those parameters before and after the treatment. **Methods.** This cross-sectional study included 183 patients diagnosed with moderate to severe psoriasis. The severity of the clinical picture was determined by calculating the Psoriasis Area and Severity Index (PASI) by a dermatologist, while the QoL was assessed using the Dermatology Life Quality Index (DLQI) questionnaire and psoriasis-related stress by the Psoriasis Life Stress Inventory (PLSI). Disease severity and QoL were measured at the baseline visit and after the 16th week of therapy. **Results.** The average PASI score at the beginning of therapy was 23.1 ± 6.5, while after 16 weeks, this value was 4.36 ± 4.86. The DLQI score was 20.8 ± 5.0 at the start of therapy and 6.20 ± 6.16 after 16 weeks, while the PLSI score was 35.37 ± 8.84 initially and 12.75 ± 12.82 after 16 weeks of therapy. A strong correlation was found between PASI and PLSI scores ($r = 0.702$, $p < 0.001$) in the 16th week of therapy, while the correlation between DLQI and PASI scores was moderate ($r = 0.683$, $p < 0.001$). No significant differences between PASI and DLQI scores were found ($r = 0.080$, $p = 0.284$) nor between PASI and PLSI scores ($r = 0.109$, $p = 0.140$) at baseline. **Conclusion.** Patients with severe psoriasis experience a significant reduction in their QoL, accompanied by a high level of psychosocial stress. Observed improvements in QoL have shown a moderate correlation, while lower levels of psychosocial stress have strongly correlated with the severity of the clinical presentation, which may indicate a complex interaction between psychological factors and physical health in patients with psoriasis.

Key words:
psoriasis; quality of life; severity of illness index; surveys and questionnaires; stress, psychological.

Apstrakt

Uvod/Cilj. Psorijaza je hronično multisistemsko, inflamatorno i imunski posredovano dermatološko oboljenje recidivirajuće prirode. Ovo oboljenje ne samo da utiče na objektivne parametre kao što su zahvaćenost kože i zglobova sa različitim intezitetom zahvaćenosti i stepenom intenziteta promena, već utiče i na kvalitet života (KŽ) povezanim sa zdravljem. Cilj rada bio je da se utvrde težina kliničke slike i KŽ kod obolelih sa umerenom do teškom psorijazom, kao i povezanost ispitivanih parametara pre i posle lečenja. **Metode**. Studijom preseka obuhvaćeno je 183 bolesnika sa dijagnozom umerene do teške psorijaze. Težina kliničke slike određivana je izračunavanjem indeksa *Psoriasis Area and Severity Index* (PASI) od strane dermatologa, dok je pomoću upitnika *Dermatology Life Quality Index* (DLQI) procenjivan KŽ, a pomoću *Psoriasis Life Stress Inventory* (PLSI), meren je nivo stresa povezanog sa psorijazom. Težina bolesti i KŽ mereni su na početku primene terapije kao i posle 16. nedelje primene terapije. **Rezultati**. Prosečna vrednost PASI indeksa na početku terapije bila je 23,1 ± 6,5, dok je nakon 16. nedelje ta vrednost iznosila 4,36 ± 4,86. Vrednost DLQI skora na početku terapije iznosila je 20,8 ± 5,0, a nakon 16. nedelje 6,20 ± 6,16, dok je skor PLSI iznosio 35,37 ± 8,84 na početku, a 12,75 ± 12,82 posle 16. nedelje primene terapije. Utvrđeno

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je postojanje jake korelacije između PASI i PLSI skora (r = 0,702, *p* < 0,001) posle 16. nedelje, dok je korelacija između DLQI i PASI skora bila umerena (r = 0,683, *p* < 0,001). Nije nađena značajna razlika između rezultata PASI i DLQI (r = 0,080, *p* = 0,284), niti između PASI i PLSI skorova (r = 0,109, *p* = 0,140) na početku terapije. **Zaključak**. Bolesnici sa teškim formama psorijaze doživljavaju ozbiljan pad KŽ, uz visok nivo psihosocijalnog stresa. Uočeno poboljšanje KŽ pokazalo je umerenu korelaciju, dok su niži nivoi psihosocijalnog stresa snažno korelisali sa težinom kliničke slike, što može ukazivati na kompleksnu interakciju između psiholoških faktora i fizičkog zdravlja bolesnika sa psorijazom.

Ključne reči:
psorijaza; kvalitet života; bolest, indeks težine; ankete i upitnici; stres, psihički.

Introduction

Psoriasis is a chronic, multisystem, inflammatory, and immune-mediated dermatosis whose prevalence and incidence at the global level have increased in the last three decades [1]. Psoriasis has a detrimental impact on the quality of life (QoL), diminishes patients' self-esteem, causes psychosocial stress, and enhances social stigmatization. Impairments in the domain of QoL in patients with psoriasis are more severe compared to other dermatological diseases and are comparable to cardiovascular diseases, joint inflammation, and depression [2].

Guidelines for treatment and classification differ globally, and treatment depends on the patient's age and comorbidities. Most often, the severity of psoriasis is determined by the Psoriasis Area and Severity Index (PASI) score and the body surface area (BSA). A PASI and BSA score below 10 typically implies a mild presentation, whereas scores surpassing 10 encompass a spectrum ranging from moderate to severe psoriasis. The Delphi consensus from the International Psoriasis Council proposed a new classification system so that, due to the observation of the disease only through these parameters, the severity of the disease would not be underestimated. Under the framework of the revised classification, comprehensive evaluation factors encompass the extent of affected regions, the medical history of the condition, and the patient's overall QoL. That evolved perspective reflects an awareness that gauging disease severity involves more than just physiological markers; it recognizes the broader implications for the patient's holistic well-being. Consequently, the contemporary classification not only accommodates a more nuanced assessment process but also emphasizes the necessity of acknowledging the multifaceted impact of the disease on the individual's overall health and QoL [3].

The recommended instrument for determining the severity of psoriasis in many guidelines is the PASI score. Infiltration, desquamation, erythema, affected parts of the body, and assessment of the involvement of the body with lesions are considered in the estimate of this value. The maximum score can be 72, while PASI ≥ 10 indicates that it is a severe form of psoriasis. If the decrease in PASI values observed at the baseline visit and the end of the induction phase (usually after 16 weeks) is greater than 75%, the therapeutic response is considered adequate [4].

In addition to the PASI score as an objective assessment measure, the Dermatological Life Quality Index (DLQI) is used to determine the self-assessment of QoL of patients as a subjective measure, and they are used in clinical research and daily practice. The use of this instrument is increasing when assessing the overall clinical picture of patients with dermatological diseases due to a growing understanding of the impact of the disease on everyday life and the patient's well-being. Although specific QoL assessment questionnaires exist for psoriasis, the DLQI is still the most applicable in psoriasis testing. The use of this questionnaire has many advantages, such as validity, reliability, and a short time to fill it in. Besides the fact that it has been used in numerous studies in psoriasis, it is also used in other dermatological diseases, so we can easily compare QoL across all dermatoses [5].

The research underscores the necessity of adopting a comprehensive approach for psoriasis patients, as their QoL is hampered across various domains, prominently marked by elevated stress levels. Assessing psoriasis-related stress is pivotal due to its direct influence on QoL and symptom exacerbation. The Psoriasis Life Stress Inventory (PLSI) is of paramount significance in this context, as it stands as a disease-specific tool that accurately addresses stress stemming from skin alterations offering distinct advantages over generic questionnaires [6].

Although both instruments are often used together and do not measure the same parameters, the correlation between PASI and DLQI has often been investigated. Some studies show a moderate correlation between PASI and DLQI values, as anticipated, suggesting enhanced QoL with decreased disease severity [7–9]. Likewise, the amount of perceived stress measured by the PLSI questionnaire reflects a similar trend [6]. Conversely, some authors argue that there is no correlation between QoL and stress with objective measures. This perspective arises from the fact that psoriasis is a condition that systemically affects all aspects of life, regardless of clinical severity [10].

The aim of this research was to examine the association between the disease severity of psoriasis and patients' QoL before and after the treatment. As far as we are aware, no study has been published in our country that compares PASI with DLQI and PLSI results.

Methods

A cross-sectional study was conducted on 183 subjects diagnosed with moderate to severe psoriasis under real-world conditions to evaluate the correlation between the patient-reported outcomes (DLQI and PLSI) and PASI score. The Ethics Committee of the University Clinical Center Kragujevac, Serbia approved this study (No. 01.21–375, from October 29, 2021), and it was conducted according to the Declaration of Helsinki ethical principles [11]. The patients had to have a signed voluntary consent form, a confirmed diagnosis of psoriasis, a PASI value of 10 or higher, and be treated with conventional systemic, phototherapy, and/or biological therapy for 16 weeks to participate in the study. All patient outcomes were tracked at the baseline visit and at the 16th week of treatment. G*Power 3.0.10 was used to estimate the sample size and study power. The minimum sample size for using a two-sided significance test with an alpha significance level of 0.05 and a study strength of at least 90% was 180, resulting in a study power of 91.8%. A sufficient number of respondents was obtained after 13 months of successive data collection from November 2021 to December 2022.

DLQI is a self-administered questionnaire used to assess QoL in dermatological patients. It is divided into domains that include symptoms and feelings, daily activities, leisure, school or work, personal relationships, and treatment effects. Answers are on a four-point scale that ranges from 0 to 3. The results are observed on a linear scale, with higher scores indicating more detrimental effects of the dermatological disease on QoL. Answers can be also obtained and summed across domains using the same method [12].

PLSI is used to measure the psychosocial stress that psoriasis sufferers experience in trying to cope with everyday life events. Chronic stress is classified into two categories: stress due to the appearance of skin changes and social stigmatization and stress due to the physical aspects of the disease as well as the administration of treatment. Patients answer whether any of the above-mentioned situations happened in the last month, and if so, how much the patient thinks that the given situation caused him stress. The total score is obtained by summing the answers from 15 questions (0–45). Test values greater than 10 indicate that given patients are exposed to psychosocial stress due to psoriasis [13].

PASI is a widely used instrument for determining the severity and distribution of lesions in patients with psoriasis. On the body, head, trunk, and lower and upper extremities individually, erythema, desquamation, and infiltration are graded from 0 to 4, and skin involvement by lesions is graded from 0 to 6. Higher scores imply more changes and involvement, with a maximum value of 72 [14].

Questions about socio-demographic information and the disease itself were included in the general questionnaire.

Depending on the data, all patient information is displayed and analyzed using the appropriate statistical methods. The mean and standard deviation were used to represent continuous variables, and the Chi-squared test was used to determine the frequency of categorical variables. The degree of linear relationship between PASI and DLQI was examined by correlation analysis. Statistical analysis was performed *via* SPSS for Windows, version 23.0 of the Statistical Package for the Social Sciences (IBM Corp., Armonk, NY, USA).

Results

Baseline characteristics of the study population are shown in Table 1. In this study, 59% of the patients were males, whereas 41% were females. The average age of the patients was 47.5 ± 14.9 years.

Correlation analysis examined the relationship between the severity of the disease and QoL of patients with psoriasis and was performed for two time points of therapy application – baseline visit and 16th week of therapy. As shown in Figure 1, a moderately positive correlation was established in the 16th week (r = 0.683, $p < 0.001$) between the observed features. Patients with a higher PASI score, which indicates a more severe psoriasis form, also had a higher DLQI score value, i.e., a worse QoL. No statistically significant difference between these characteristics was found at the baseline visit (r = 0.080, $p = 0.284$).

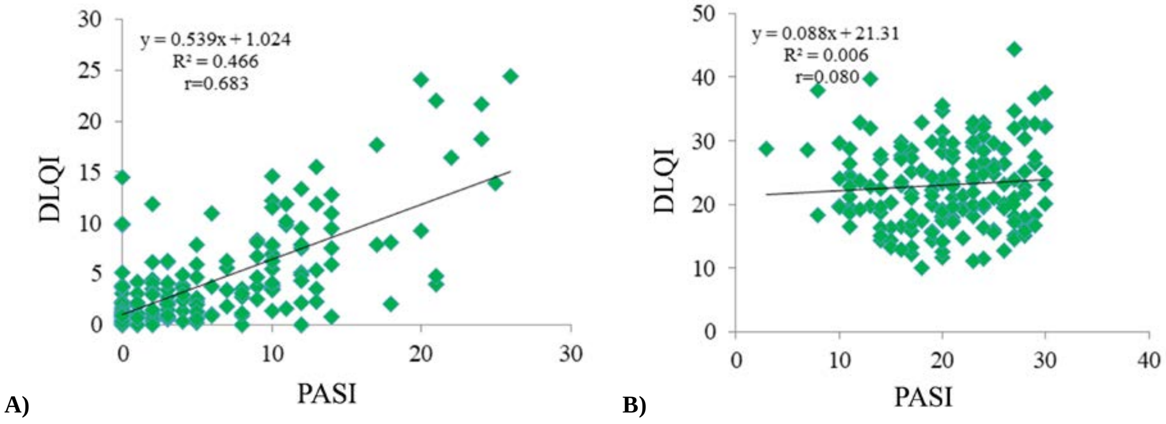
When comparing PASI and PLSI values in the 16th week of therapy, a statistically significant strong positive correlation (r = 0.702, $p < 0.001$) between these characteristics was established. As in the case of the correlation between PASI and DLQI scores, in this case, as well, no statistically significant correlation was found at the baseline visit between PASI and PLSI (r = 0.109, $p = 0.140$) (Figure 2).

Table 1

Characteristics of the study population (n = 183)

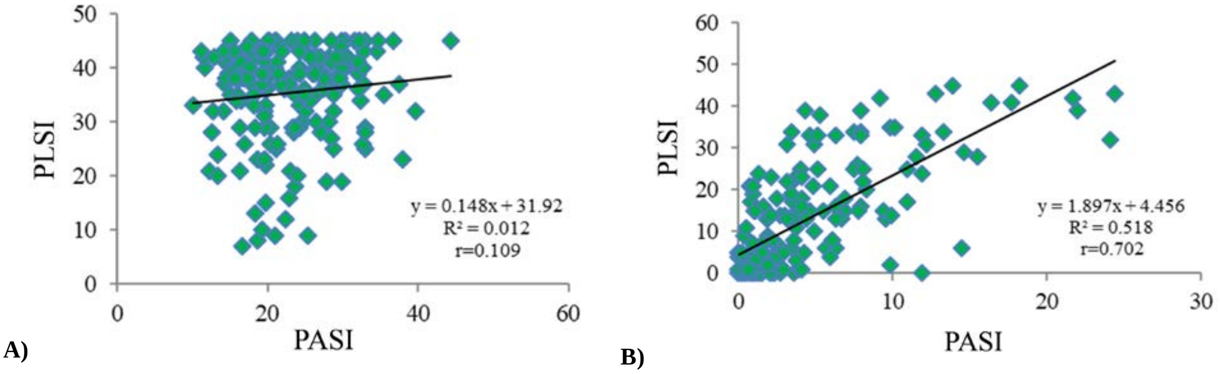
Characteristics	Baseline	After 16 weeks
Age, years	47.5 ± 14.9	
Gender, n (%)		
male	108 (59)	
female	75 (41)	
PASI	23.14 ± 6.50	4.36 ± 4.86
DLQI	20.57 ± 5.83	6.20 ± 6.16
PLSI	35.37 ± 8.84	12.75 ± 12.82
Psoriasis onset age, years	34.5 ± 13.7	
Psoriasis duration, years	12.9 ± 10.3	

PASI – Psoriasis Area and Severity Index; DLQI – Dermatology Life Quality Index; PLSI – Psoriasis Life Stress Inventory.
All values are expressed as mean ± standard deviation or as numbers (percentages).



A) B)

Fig. 1 – Correlation of PASI and DLQI score at baseline visit (A) and after 16 weeks of therapy (B). For abbreviations, see Table 1.



A) B)

Fig. 2 – Correlation of PASI and PLSI score at baseline visit (A) and after 16 weeks of therapy (B). For abbreviations, see Table 1.

After the induction phase, in the 16th week of treatment, patient-reported outcomes were the following: 6.20 ± 6.16 for DLQI score, 12.75 ± 12.82 for PLSI, and 4.36 ± 4.86 for PASI (Table 1).

Discussion

This research aimed to analyze the relationship between psoriasis severity and patient's QoL before and after treatment, using patient-reported outcomes. Regardless of gender or age, patients with psoriasis frequently experience stigmatization, social maladjustment, and feelings of humiliation due to physical appearance, which contribute to everyday stress and impaired QoL [15]. Estimating health-related QoL is complicated because diagnostic assessments are often not precise enough to effectively convey the degree of psoriasis influence on an individual's life.

A study evaluating stress in psoriasis patients found that 66.26% experienced high stress related to the disease, with only 4.57% reporting low perceived stress, irrespective of disease severity [16]. Our data are in accordance with that research because the high mean values of experienced psychosocial stress were determined in presented patients with psoriasis. There were also great impairments found in the QoL of the examined population, which is in line with studies of a similar design, where the QoL was examined in patients with more severe forms of the disease [17, 18]. When reviewing studies with a design akin to ours, we identify parallel trends in study population characteristics. The mean age is 42.6 ± 2.9 years, and the average psoriasis duration closely mirrors our findings, standing at 12.5 ± 10.5 years, compared to our 12.9 ± 10.3 years [19].

In terms of correlation, studies demonstrate that PASI and DLQI have a moderate to high positive correlation after the induction phase of treatment in moderate to severe psoriasis. The authors emphasize that a decrease in the PASI score by 75% or more from the baseline visit plays a crucial role in this correlation. They also note that, as this percentage increases, the strength of the correlation grows [8]. Herédi et al. [20] report a highly positive correlation between PASI and DLQI (r = 0.81). Such data were confirmed in our study, where, after the 16th week, a strong positive correlation was shown. Considering that our research included patients with more severe forms of the disease and significantly impaired QoL, we assume that the therapy's high effectiveness led to substantial clearance and, consequently, notable QoL improvement. Similar data are presented by Lacour et al. [21] in a study that dealt with an estimation of the correlation between patient-reported and physician-reported outcomes in their work; the correlation between PASI and DLQI scores after six months was assessed as highly correlated (r = 0.70). Numerous investigations reveal a moderate positive correlation between these attributes, yet it is worth noting that these studies were not restricted based on PASI values [7, 22]. Contrary to these data, individual studies show no statistically significant correlation (r = 0.172) between QoL and physical assessment methods [9]. For instance, Silva et al. [23] attributed the lack of correlation between PASI and DLQI at baseline and after the 16th week of treatment to factors such as the patient's low socioeconomic status, which can impact QoL regardless of disease presence and the chronic nature of the condition, suggesting a higher level of disease acceptance.

The individual's psychological well-being is linked to therapeutic success. Skin diseases, such as psoriasis, exacerbate or become a source of depression and stress, perpetuating a vicious circle; thus, further study and a deeper understanding of the skin-psychology connection are required [24]. In a study from Serbia where QoL was assessed, no statistically significant difference was found between PASI and PLSI scores (r = 0.119). However, it should be taken into account that their study did not consider this correlation at the beginning and end of the induction phase and that milder forms of psoriasis were included in the study [10]. This data can be elucidated by the inclusion criteria of our study, where only patients with a PASI value exceeding 10 were enrolled. Patients with challenging-to-treat psoriasis or those with lesions in conspicuous areas were excluded if their PASI score was below 10. For such patients, daily stress linked to treatment inefficacy, lesion location, and impaired QoL is expected [19], thus resulting in a weaker correlation. We posit that a substantial association emerges primarily when the condition is more severe and treatment proves effective.

Conclusion

In summary, our study sheds light on the intricate interplay between psoriasis severity and the well-being of individuals grappling with moderate to severe forms of the condition. The discernible reduction in QoL and the palpable psychosocial stress experienced by these patients underscore the multifaceted impact of psoriasis beyond its physical manifestations. We observed that amelioration in patients' QoL correlated moderately with objective reductions in psoriasis severity, while the mitigation of psychosocial stress demonstrated a strong relation to disease severity. The utilization of comprehensive indices, including patient-reported assessments, emerges as pivotal not only for clinical research but also for informing routine practice. Our findings advocate for a holistic approach to psoriasis management that encompasses both physical and psychological aspects, recognizing the need for a more nuanced evaluation of the disease's impact. As we move forward, understanding the intricate dynamics between these parameters will be essential in enhancing the quality of care provided to individuals navigating the challenges posed by psoriasis.

Conflict of interest

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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