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Original Article

Correlation between Psoriasis Area Severity Index and Dermatology Life Quality Index in psoriasis

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Abstract

Introduction Several validated dermatology-specific measurement tools are used globally to quantify the extent to which a skin disorder affects an individual's quality of life.

Methods A cross-sectional study was performed enrolling 60 patients of psoriasis. Patients were evaluated for psoriasis severity using the Psoriasis Area and Severity Index (PASI) and its correlation with Dermatology Life Quality Index (DLQI) was assessed.

Results PASI and DLQI were found to have significant correlation (r= 0.266; p=0.044) but the degree of correlation was much lower than that found in European studies. However, analysis done after data stratification did not show a significant relationship between the two scores except in males (r=0.415; p=0.006) and in patients with disease duration between 1-6 years (r=0.579; p=0.002).

Conclusion The correlation we found between PASI and DLQI was weaker than that reported previously in other populations. Further validation of culturally relevant and disease specific quality of life measuring instruments is needed to capture the true impact of skin diseases on patients' lives. Currently, DLQI fails to encompass some clinically important endpoints and may not be much relevant for routine clinical practice in our society.

Key words
Psoriasis; PASI; DLQI.

Introduction

Psoriasis is a chronic multi system disease with a multifactorial etiology. The condition is equally frequent in men and women and affects 2-4% of the global population.[1,2] Because of the high prevalence of comorbid conditions, it can be beneficial to look at psoriasis as a syndrome rather than a single disease phenomenon.[3] Although psoriasis can present at any age, the disease commonly manifests before the age of 30, such that most patients are affected at the most productive stage of their lives.[4] Psoriasis carries a significant economic burden to patients and society as a whole, through the direct costs associated with medical care, as well as the economic loss secondary to decreased career productivity and global functioning. Psoriatic skin changes can have negative effects on psychological state, self-esteem and body image.[5] DLQI is a self-administered questionnaire that measures the impact of dermatological disorders on quality of life. It encompasses six domains (symptoms, emotions, daily activities, sports, school or work, relationships and treatment) of patient's life in the preceding one week.[6] A systematic review carried out on 13 RCTs from several European countries found that disease severity assessed

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PASI had significant correlation (r=0.81, p=0.001) with the DLQI.[7] Severe disease has previously shown to be strongly correlated with decreased quality of life (r=0.622, p<0.0001).[9]

This study was performed to understand the correlation between DLQI and PASI in our local population. Despite available evidence, quality-of-life assessments are not routinely gathered for these patients. Previous studies on this subject in our region have shown varied results, with some studies showing modest correlation between the DLQI and PASI score and others showing no correlation. We hope that by clarifying the relationship between DLQI and PASI in local population, this study can help to incorporate quality-of-life instruments into routine clinical practice by informing local guidelines. Furthermore, exploring this correlation may increase patient adherence to treatment regimens.

Methods

A cross-sectional analysis was performed for 6 months, from October 2018 to April 2019, analyzing an outpatient population of psoriasis patients at the Department of Dermatology, Benazir Bhutto Hospital, Rawalpindi, Pakistan. The sample size of 60 cases was arrived at by considering the magnitude of correlation between PASI and DLQI in patients of psoriasis at 0.622, as seen in previous studies on the relationship between DLQI and PASI,[9] calculated with type I error=5% and a type II error=10%. Adults with ages between 18-70 years with diagnosis of psoriasis were in the study. Patients were precluded if they were found to have any of the following comorbidities: severe hypertension (BP ≥160/100mmHg), uncontrolled diabetes (Glucose >200mg/dl), Hepatitis B or C, or active malignancy.

Sixty patients meeting inclusion criteria were enrolled in this study after getting written informed consent. Patient demographic information (name, age, gender, site(s) of involvement and duration of disease) was obtained. A questionnaires of DLQI was used, PASI and DLQI were calculated using the respective scoring systems.

Data was analyzed through SPSS 21. Mean and standard deviation (SD) were calculated for quantitative variables (age, duration of disease, PASI and DLQI scores). Qualitative variables like gender and site(s) involved were denoted as frequencies and percentages. Pearson's correlation coefficient was used to measure correlation between the two scores. Data was stratified for age, gender, site(s) of involvement and disease duration. P-value ≤0.05 was taken as significant.

Results

Sixty (N=60) patients met the inclusion criteria. Of 60 patients, 16 (26.67%) were female and 44 (73.33%) were male. The mean age of participants was 38.18±15.37 years. The average disease duration was 6.56±8.70 years with range of 1month to 40 years. Most patients had been affected by psoriasis for at least 2 years.

The majority of patients in our sample had multiple affected sites; 20% of patients (n=12) had only one site affected. 40% (n=24) of patients had 4 affected sites. The sites most frequently affected were the scalp (56.7%, n=34), upper and lower limbs (53.3%, n=32) and trunk 45%, n=27).

The average PASI score of 60 patients included in our study was 4.68±2.30. The minimum and maximum PASI scores in our sample was 0.2 and 11.5 respectively. The average Dermatology Life Quality Index (DLQI) of our cohort was~~is~~ 6.7±4.928. DLQI scores ranged from 1 to 23 of a possible total of 30 points.

Twenty (33.33%) patients responded "Very much" to the question stating how itchy, painful or stinging had their skin been over the previous week. When surveyed whether disease extent and sites involved led to sexual problems, the majority of patients (96.7%, n=58) responded "not at all". Similarly, majority responded "not at all" to the questions pertaining to the effect of their disease on their social and leisurely activities, sports and shopping.

Using Pearson's correlation coefficient (r), the DLQI and PASI were significantly correlated (r=0.266; p-value 0.044; **Table 1**). When the cohort was stratified by sex, there was a significant correlation between the DLQI and PASI scores in males (r=0.415, p=0.006), but no significant correlation in female patients (r=0.249, p=0.391) was found. When stratified with respect to age, the correlation was not significant in any of the three age groups. When stratified by disease duration, the correlation between the two scores was only significant in the group with disease duration between 1 and 6 years (r =0.579, p=0.002). When stratified with respect to number of involved sites, the correlation was not significant. Detailed statistics for sample stratification can be found in **Table 2**.

Table 1 Correlation between PASI score and DLQI score.

Variables	*PASI Score*	*DLQI Score*
PASI Score	1	0.266 (0.044*)
DLQI Score	0.266 (0.044*)	1

Table 2 Post-stratification correlation coefficients.

	Correlation Coefficient	*P-value*
Stratification by sex		
Male	0.415	0.006*
Female	0.249	0.391
Stratification by age		
≤ 28 years.	0.320	0.211
Between 28–45 years.	0.349	0.087
≥ 45 years.	0.319	0.247
Stratification by disease duration		
Less than 1 year	0.134	0.633
Between 1– 6 years.	0.579	0.002*
Greater than 6 years	0.052	0.85
Stratification by total sites involved		
≤ 3	0.322	0.063
> 3	0.148	0.501

* significant at <0.05.

Discussion

This analysis has found significant correlation (r=0.266, p<0.05) between PASI and DLQI but the degree of correlation is weaker than what has been reported in previous studies such as those done in Europe, India and Iran where much higher correlation between PASI and DLQI has been documented.[7-9] In a previous study conducted in Pakistan, correlation was significant with r=0.345.[10] This is similar, albeit slightly higher than the correlation coefficient found in our study.

To some extent, the lack of coherence between two scores is conceivable because PASI and DLQI measure different aspects of disease. In PASI, each area of body is weighted according to the surface area involved while DLQI is more heavily influenced by involvement of the visible areas of body. So, psoriasis lesions present on face and distal extremities have a greater weight on DLQI score compared to that for PASI.

One reason for a weaker correlation in our sample is that our population is different from the populations in which the DLQI was originally derived. DLQI was developed in the United Kingdom in 1994 as the first validated dermatology specific quality of life index and its simplicity of use and brevity resulted in its global popularity both in clinical practice and in research.[11,12] But as it was designed for use in Western audiences, it may not reflect some of the important aspects of lifestyle interference present in other areas of the world. Proposed additions to a more appropriate score for quality

of life would include questions relating to work inside home and at job, and possible removal of questions about sports, shopping, leisurely and sexual activities as a vast majority of our population indicated that their psoriasis did not affect these activities at all. Additionally, the subgroup analysis indicated a greater correlation between PASI and DLQI in males, but not in females. It indicates that the DLQI does not include relevant questions for females in our society, who often work inside their home. So consideration should be given to questions related to problems with cooking, washing, other household chores and taking care of kids and other family members.

Another possible reason for the lower correlation between two scores is the low mean severity of disease in our sample. This group had a relatively low mean PASI score (4.7±2.9) indicating that a majority of included patients were experiencing mild psoriasis. The low severity of psoriasis may not have captured the true impact that severe psoriasis can have on quality of life.

Additionally, DLQI addresses questions pertaining to previous one week only, whereas Psoriasis is a chronic disease spanning years. So we need quality of life assessment tools specifically designed for psoriasis only. In addition, the failure to detect significant correlation in many of the stratified subgroups may be due to small sample size limiting the power of our calculations. Increased sample sizes would allow for more meaningful subgroup analysis.

Conclusion

The current study has found weaker correlation between DLQI and PASI compared to that found in Western populations. The unidimensionality and lack of cultural relevance of several domains of DLQI are few of the proposed reasons for this discrepancy. There is a void for some made to order questionnaire customized according to educational, social, cultural and religious background of patients in our local society. Furthermore for measuring quality of life in Psoriasis we need Life Quality Indices designed specifically for Psoriasis that address the chronic nature of disease as oppose to the conventional DLQI that is for the past one week only. We suggest other tools such as Psoriasis Index of Quality of Life (PSORIQoL), Impact of Psoriasis Questionnaire (IPSO) or the Psoriasis Life Stress Inventory (PLSI) a subject of further research.

References

1. Damiani G, Bragazzi NL, Karimkhani Aksut C, Wu D, Alicandro G, McGonagle D, Guo C, Dellavalle R, Grada A, Wong P, La Vecchia C. The global, regional, and national burden of psoriasis: results and insights from the global burden of disease 2019 study. *Front Med*. 2021;**16(8)**:743180.
2. Ograczyk A, Miniszewska J, Kępska A, Zalewska-Janowska A. Itch, disease coping strategies and quality of life in psoriasis patients. *Postepy Dermatol Alergol*. 2014;**31(5)**:299.
3. Al-Mutairi N, Eassa BE, Nair V. Measurement of vitamin D and cathelicidin (LL-37) levels in patients of psoriasis with co-morbidities. *Indian J Dermatol Venereol Leprol*. 2013;**79(4)**:492.
4. Schons KRR, Beber AAC, Beck MdO, Monticielo OA. Nail involvement in adult patients with plaque-type psoriasis: prevalence and clinical features. *An Bras Dermatol*. 2015;**90(3)**:314-9.
5. Hawro T, Zalewska A, Hawro M, Kaszuba A, Królikowska M, Maurer M. Impact of psoriasis severity on family income and quality of life. *J Eur Acad Dermatol Venereol*. 2015;**29(3)**:438-43.
6. Lewis V, Finlay AY. 10 years experience of the Dermatology Life Quality Index (DLQI). *J Investig Dermatol Sump Proc*. 2004;**9(2)**:169-180.
7. Mattei PL, Corey KC, Kimball AB. Psoriasis Area Severity Index (PASI) and

the Dermatology Life Quality Index (DLQI): the correlation between disease severity and psychological burden in patients treated with biological therapies. *J Eur Acad Dermatol Venereol*. 2014;**28(3)**:333-7.
8. Nayak PB, Girisha BS, Noronha TM. Correlation between disease severity, family income, and quality of life in psoriasis: A study from South India. *Indian Dermatol Online J*. 2018;**9(3)**:165.
9. Soltandehghan K, Najafi-Ghezeljeh T. Relationship Between Quality of Life and Disease Severity in Patients with Psoriasis. *NPT*. 2017;**4(3)**:143-53.
10. Khawaja, A.R., Bokhari, S.M.A., Rasheed, T., Shahzad, A., Hanif, M., Qadeer, F. and Jafferany, M. Disease severity, quality of life, and psychiatric morbidity in patients with psoriasis with reference to sociodemographic, lifestyle, and clinical variables: a prospective, cross-sectional study from Lahore, Pakistan. *Prim Care Companion CNS Disord*. 2015;**17(3)**:26260.
11. Finlay AY, Khan G. Dermatology Life Quality Index (DLQI)—a simple practical measure for routine clinical use. *Clin Exp Dermatol*. 1994;**19(3)**:210-6.
12. Basra MK, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994–2007: a comprehensive review of validation data and clinical results. *Br J Dermatol*. 2008;**159(5)**:997-103.