Original Article

Determinants of quality of life in patients with psoriasis attending the dermatology outpatient clinic in a tertiary care center: A cross-sectional study

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ABSTRACT

Objectives: (1) To assess the clinical variables adversely affecting the quality of life (QoL) in patients with psoriasis and (2) to study the correlation between the clinical severity of psoriasis and the extent of impact of psoriasis on the QoL of the patient.

Materials and Methods: After obtaining clearance from the Institutional Ethics Committee and written informed consent from individual study subject, consecutive patients with psoriasis above 18 years attending the dermatology outpatient department of a tertiary referral center from January 2015 to December 2015 were included in this cross-sectional study. Clinical severity of the disease was assessed using psoriasis area severity index (PASI). The QoL was assessed using psoriasis disability index (PDI) questionnaire.

Results: There was a significant correlation between the clinical severity score and the total PDI score ($P < 0.001$). In PDI, the work-related questions scored the maximum (5/9, 55.5%) followed by the daily activities related questions (6.06/15, 40.4%). Patients with early age of onset, history of addiction, and history of itching had high PDI scores, but a statistically significant association was noted only for itching. There was no statistically significant association for both mean PASI and PDI scores with gender, marital status, employment status, and family history of psoriasis in our study.

Limitations: Small sample size and the study conducted in a referral hospital not reflecting the status in the community were the major limitations of our study.

Conclusion: Assessment of psoriasis severity should include both clinical and psychological measures. Pharmacological intervention along with psychological support will bring about a better treatment outcome and help the patients to lead a better life.

Keywords: Psoriasis, Quality of life, Psoriasis disability index, Psoriasis area severity index

INTRODUCTION

Psoriasis is a chronic inflammatory condition of the skin in which both genetic and environmental influences play a critical role. Often, it becomes a lifelong burden for the patient. The disease has a great impact on the quality of life (QoL) of the affected individuals.[1]

Psoriasis can be measured using objective measures assessing the extent and severity of the skin disease, but these do not capture the impact of the disease on patients' lives.

By gathering information on health-related QoL along with objective measures of skin involvement, a more complete picture of the impact of the disease can be obtained. An important factor for favorable treatment outcome in psoriasis is the improvement of overall psychosocial morbidity associated with the disease.[2]

MATERIALS AND METHODS

This cross-sectional study was carried out in the dermatology outpatient department of a tertiary referral center for a 12-month period from January 2015 to December 2015 after getting clearance from the ethics committee of the institution. Consecutive patients with psoriasis above 18 years were included. Patients who were not willing to participate in the study were excluded from the study.

Written informed consent was obtained from each participant of the study. A pre-set questionnaire was used to collect the data. A detailed history was documented in all. Socioeconomic status was assessed on the basis of Kuppuswamy's socioeconomic status scale.[3] Detailed physical examination was performed in all cases. Based on the clinical features, patients were classified into different clinical types of psoriasis. Sudden eruption of guttate lesions in a patient with chronic plaque psoriasis was classified as unstable psoriasis. Clinical severity was assessed using the psoriasis area severity index (PASI).[4]

To measure the QoL, the patients were instructed to complete a multidimensional QoL assessment questionnaire (psoriasis disability index [PDI]).[5] PDI is a 15-item standardized questionnaire designed to quantify the functional disability in aspects of daily activities, employment, personal relationships, leisure, and treatment effects in psoriatic patients. The scoring of each question is in a series of four answers: Not at all (score 0), a little (score 1), a lot (score 2), and very much (score 3). The higher the score, the more severe the impairment of the QoL. The question base is 4 weeks. Translation to local language was done by translation – back translation method.

Data management and statistical analysis

Data were coded and entered into a Microsoft Excel worksheet. Data analysis was done using SPSS statistical software 16.0 version. Summary statistics were calculated as count and percentage for qualitative variables. Mean and standard deviation was calculated for quantitative variables. For testing the association of quantitative variables, independent sample *t*-test and ANOVA test were used. Correlation between two quantitative variables was calculated using Pearson's correlation test. Significance level was fixed at $P < 0.05$.

RESULTS

The study group comprised 50 patients. Forty patients were males with a male-to-female ratio of 4:1. Mean age of the study population was 45.6 years with a standard deviation of 12.5 years. Forty-one patients (82%) were married; 4 patients (8%) were separated from their spouses. Five (10%) were unmarried. Seven patients (14%) had a positive family history, either first degree or second degree.

Education, occupation, employment, and socioeconomic status of study participants are as depicted in Table 1.

The mean age of the onset of the disease in the study group was 35.4 years. The majority of the patients in the study group had an age of onset between 20 and 30 years (22, 44%). The second highest age of onset was between 41 and 50 years (9, 18%). Eight patients (16%) had disease onset in 31–40 years, 6 cases (12%) during 51–60 years, and 2 patients (4%) manifested psoriasis for the 1st time after 60 years. Three patients (6%) were below 20 years at the time of onset of psoriasis. The mean total duration of the disease in the study group was 10.2 ± 8.4 years.

Out of the 50 patients in the study group, 29 (58%) gave no history of substance abuse. Twelve patients (24%) smoked, 2 patients (4%) consumed alcohol, and 7 patients (14%) smoked as well as consumed alcohol.

Out of the 50 patients, 19 patients (38%) attributed disease exacerbations to emotional stress. Twelve patients (24%)

Table 1: Education, occupation, and socioeconomic status of the study group.

	Frequency (N)	Percentage
Education		
Postgraduate/graduate	4	8
Intermediate/post high school	3	6
High school certificate	7	14
Middle school certificate	25	50
Primary school certificate	11	22
Illiterate	0	0
Occupation		
Professional job	0	0
Semi profession	3	6
Clerical, shop owner, farmer	8	16
Skilled worker	6	12
Semiskilled worker	9	18
Unskilled worker	9	18
Unemployed	15	30
Socioeconomic status (Kuppuswamy's socioeconomic status scale)		
Lower class	6	12
Lower-lower class	26	52
Lower middle class	10	20
Upper middle class	8	16
Upper class	0	0
Total	50	100

had infection and 8 (16%) had indigenous treatment as the precipitating factor. Withdrawal of the steroid precipitated the exacerbation in 5 patients (10%). Four (8%) gave a history of exacerbation following climate change and 2 patients (4%) did not notice any precipitating factors.

Forty-five patients (90%) had itching.

Out of the 50 patients in the study group, 29 (58%) had chronic plaque psoriasis, 9 (18%) had erythrodermic psoriasis, 8 (16%) had generalized pustular psoriasis, 2 (4%) had psoriatic arthritis, and one each had palmoplantar psoriasis (2%) and unstable psoriasis (2%).

The mean total PASI score of males was 9.4 with a standard deviation of 6.1, and the mean PASI score of females was 13.7 with a standard deviation of 7.8. The difference was not statistically significant ($P = 0.06$). The total mean PDI score was 17.08 (38%) with a standard deviation of 9.4. The mean subscores of questions regarding daily activities were 40.4% (6.06/15), for questions regarding employment were 55.5% (5/9), and for questions regarding personal relationships were 36.7% (2.2/6). For treatment-based questions, the mean score was 20.7% (0.62/3), and for leisure-based questions, the mean score was 26.8% (3.22/12).

The high PDI score was documented when PASI score was above 10 and this was statistically significant (independent sample *t*-test, $P = 0.001$).

Among questions regarding daily activities, work at home was very much affected for 32% (16/50) of patients. About 16% (8/50) answered "very much" to the question regarding problem with hair dressers. The question which scored lowest in daily activities was that regarding using different kinds of clothes due to psoriasis. Only 5 patients (10%) answered "very much" to this question.   Eleven patients (22%) answered "very much" to the question regarding taking more baths and 18% (9/50) answered very much to the question regarding frequent change of clothes due to psoriasis.

Thirty-five (70%) of the 50 patients in the study group were employed. Career was affected very much in 14 patients (14/35, 40%), a lot in 2 patients (2/35, 5.7%), a little in 8 (8/35, 22.9%), and not at all in 11 (11/35, 31.4%) "patients at work" group.

For the alternative questions to the 15 patients who were not working, 5 patients (33.3% of those not working) answered that they lost job due to psoriasis. Six out of the 15 (40%) answered "very much" to the question that psoriasis stopped them from carrying out their normal daily activities. Ten out of the 15 (66.7%) answered that psoriasis altered the way in which they carry out their normal daily activity.

In response to questions based on personal relationships, 22 (44%) patients had sexual difficulties and 58% (29/50) had experienced difficulties with partners/friends.

Only 3 patients (6%) answered "very much" to the problem of psoriasis making their home messy.

Thirty-three (66%) were reluctant to attend family functions. Ten patients (20%) attributed their addiction (to alcohol or smoking) to psoriasis. Seven (7/10, 70%) had started smoking or consuming alcohol before the onset of the disease, which became more after the manifestation of the disease. Ten patients (20%) had problems with communal bathing.

The correlation between total PASI, total PDI, and subdivisions of PDI is given in Table 2.

There was a significant correlation between total PASI and total PDI ($P < 0.001$). Significant correlation was noted between total PASI and subdivisions of PDI ($P < 0.05$), except for questions related to personal relations and treatment.

There was positive correlation between age of onset and PASI, and also between age of onset and PDI. When age of onset increased by one unit, PASI increased by 0.041 unit and PDI increased by 0.033 units. However, the relation was not statistically significant.

There was a negative correlation between duration of disease and total PASI and PDI. When the duration of disease increased by one unit, PASI decreased by 0.031 unit and PDI decreased by 0.064 unit. However, the correlation was not statistically significant.

There was no significant mean difference in PASI and PDI between those who were 50 years or below and those above 50 years.

There was no association between family history and PASI or PDI in the study population.

All the mean values for the subsets of PDI and the mean PASI score were higher for females [Table 3]. However, the difference was statistically significant only for questions related to personal relations ($P = 0.014$). Association of PASI and PDI with marital status (married, unmarried, and separated) analyzed using ANOVA was not statistically

Table 2: The mean scores, standard deviation, and the correlation between PASI, PDI, and subdivisions of PDI.

	Mean	Standard deviation	*P* value
Total PASI (max 72)	10.3	6.6	
Daily activities (max 15)	6.06	3.38	0.003
Employment (max 9)	5	3.47	0.001
Personal relations (max 6)	2.18	1.5	0.341
Leisure (max 12)	3.22	2.61	0.004
Treatment (max 3)	0.62	0.89	0.053
PDI total (max 45)	17.08	9.4	<0.001

Max: Maximum, PASI: Psoriasis Area Severity Index, PDI: Psoriasis Disability Index.

Table 3: Association of gender with PASI and PDI scores (independent sample *t*-test).

	Gender	Mean	Standard deviation	*P* value
Total PASI (max 72)	Male	9.375	6.09	0.06
	Female	13.73	7.76	
Daily activities (max 15)	Male	6.05	3.98	0.971
	Female	6.10	3.10	
Employment (max 9)	Male	4.80	3.56	0.421
	Female	5.80	3.08	
Personal relations (max 6)	Male	2.0	1.5	0.014
	Female	2.9	1.04	
Leisure (max 12)	Male	3.15	2.76	0.708
	Female	3.50	1.90	
Treatment (max 3)	Male	0.55	0.80	0.126
	Female	0.9	1.1	
PDI total (max 45)	Male	16.55	10.01	0.437
	Female	19.2	6.13	

Max: Maximum, PASI: Psoriasis Area Severity Index, PDI: Psoriasis Disability Index.

significant. We observed no significant difference in PASI and PDI with respect to occupation.

The mean PASI and total PDI score were higher among those who had itching [Table 4]. The difference was statistically significant for both mean PASI (*P* = 0.004) and mean PDI (*P* = 0.007). Under the subdivisions of PDI, statistically significant association was noted between itching and questions related to daily activities (*P* = 0.03) and employment (*P* = 0.019).

The difference in the mean value of PASI among patients with different addictions was not statistically significant (*P* = 0.9). PDI scores were more in patients with addictions. However, the difference was not statistically significant (*P* = 0.4).

No statistically significant difference was noted between the PASI (*P* = 0.06) and PDI (*P* = 0.23) with respect to clinical types of psoriasis.

DISCUSSION

Psoriasis is a chronic immunologic disease with a significant adverse impact on the QoL of the patient.[6-8] A male predilection observed by us was similar to the observation of Hagg *et al.*, but was contrary to certain other studies that showed an equal gender distribution.[1,2,9] The male predilection observed by us could be attributed to the selection bias in a hospital-based study like ours. Most of the study participants belonging to low socioeconomic strata (84% belonging to lower middle class and lower class) as noted by us was expected in a study conducted in a government institution.

We found no statistically significant difference in the mean values of PASI and PDI between age groups above and below 50 years, though PASI and PDI were low in the higher age group. This was concordant to the findings of Valenzuela *et al.*; but contrary to the observation of Lopez-Estebaranz

Table 4: Association of PASI, PDI score, and subdivisions of PDI score with itching.

Itching	Mean	Standard deviation	*t* value	*P* value
Total PASI				
Present	11.122	6.378	3.036	0.004
Absent	2.360	1.512		
Daily activities				
Present	6.44	3.757	2.236	0.030
Absent	2.60	2.074		
Employment				
Present	5.38	3.400	2.421	0.019
Absent	1.60	2.074		
Personal relationships				
Present	2.28	1.45	6.263	0.283
Absent	0.67	0.47		
Leisure				
Present	3.42	2.633	1.677	0.10
Absent	1.40	1.517		
Treatment				
Present	0.66	0.91	2.128	0.546
Absent	0.00	0.00		
PDI total				
Present	17.98	8.995	9.229	0.007
Absent	3	1.414		

PASI: Psoriasis Area Severity Index, PDI: Psoriasis Disability Index.

et al.,[10,11] Lopez-Estebaranz *et al.* and Gupta *et al.* found a negative impact of age on QoL in younger patients with moderate-to-severe psoriasis.[11,12]

Gupta *et al.* reported that the severity of psoriasis was not associated with age or gender.[12] We too noted the same. Gupta *et al.* reported lack of association between gender and QoL.[12] We observed statistically significant high scores in females for questions related to personal relations, though

there was no significant association between mean PDI and gender.

Contrary to our study, Lopez-Estebaranz *et al.* noted that male sex and young age of onset were associated with greater impact on QoL.[11] Ograczyk *et al.* noticed that females presented worse QoL scores than males.[13] We too noted the same though the difference was not statistically significant except for questions related to personal relations.

Fortune *et al.* found that patients with early age of onset had higher scores of PASI and PDI.[14] However, no statistically significant association was noted between the age of onset and PASI or age of onset and PDI in our study.

The absence of significant correlation between the duration of disease and PASI/PDI score noted by us was contradictory to the observation of Ograczyk *et al.* who reported that older patients with longer disease duration had more difficulties in social functioning and greater effect on QoL.[13] Similar to our observation, Lee *et al.* also reported no significant association between marital status and QoL.[15]

Gupta *et al.* reported that a high alcohol intake of more than 80 g/day was associated with less treatment-induced improvement in PASI score.[16] Mills *et al.* reported a significantly high relative risk of psoriasis including palmoplantar psoriasis in smokers who smoked more than 20 cigarettes/day.[17] We found no significant association between addictions and PASI and PDI.

The lack of association between a positive family history and PASI and PDI scores observed by us was consistent with previous reports.[11] The proportion of patients (38%) who gave history of a stressful period before exacerbation of psoriasis as noted by us was concordant to the findings of others.[18,19]

The positive association noted between itching and the mean PASI score by us was also reported earlier.[20]

We found a strong correlation between PASI score and PDI. Finlay *et al.* reported similar findings.[21] A study by Rakhesh *et al.* from South India found that daily activities, employment, and treatment were most affected in psoriatics. We found daily activities and employment to be the most affected domains.[22]

The previous studies reported that patients with psoriasis had a higher financial burden due to absenteeism.[23-25] We also observed the same. In our study, 44% of patients had sexual problems which was similar to the observation of Krueger *et al.*[23]

Limitations

Small sample size and the study conducted in a referral hospital not reflecting the status in the community were the major limitations of our study.

CONCLUSION

Psoriasis patients suffer from psychological stress, stigmatization, embarrassment, disabilities at work, and financial problems in addition to the physical sufferings of the disease. Our findings stress the importance of a more holistic approach in the management of psoriasis. Pharmacologic intervention should be accompanied by patient education and reassurance by family and society. Psychological support by encouraging active coping strategies, restructuring negative thoughts about the disease, and encouraging the patients to express emotions will help them to lead a more fruitful life and to achieve a "full life potential."

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Conflicts of interest

Dr. Manikoth Payyanadan Binitha is on the editorial board of the Journal.

REFERENCES

1. Hagg D, Sundstrom S, Eriksson M, Schmitt-Egenolf M. Severity of psoriasis differs between men and women: A study of the clinical outcome measure psoriasis area and severity index (PASI) in 5438 Swedish register patients. Am J Clin Dermatol 2017;18:583-90.
2. Parisi R, Symmons DP, Griffiths CEM, Ashcroft DM. Global epidemiology of psoriasis: A systematic review of incidence and prevalence. J Invest Dermatol 2013;133:377-85.
3. Dudala SR. Updated Kuppuswamy's socioeconomic scale for 2012. J NTR Univ Health Sci 2013;2:201-2.
4. Fredrikkson T, Petterson U. Severe psoriasis-oral therapy with a new retinoid. Dermatologica 1978;157:238-44.
5. Finlay AY, Kelly SE. Psoriasis-an index of disability. Clin Exp Dermatol 1987;12:8-11.
6. Finlay AY, Khan GK. Dermatology life quality index (DLQI)-a simple practical measure for routine clinical use. Clin Exp Dermatol 1994;19:210-6.
7. Gupta MA, Gupta AK. The psoriasis life stress inventory: A preliminary index of psoriasis-related stress. Acta Derm Venereol 1995;75:240-3.
8. Bronsard V, Paul C, Prey S, Puzenat E, Gourraud PA, Aractingi S, *et al.* What are the best outcome measures for assessing quality of life in plaque type psoriasis? A systematic review of the literature. J Eur Acad Dermatol Venereol 2010;24 Suppl 2:17-22.
9. Farber EM, Nall ML. The natural history of psoriasis in 5, 600 patients. Dermatologica 1974;148:1-18.
10. Valenzuela F, Silva P, Valdés MP, Papp K. Epidemiology

and quality of life of patients with psoriasis in Chile. Actas Dermosifiliogr 2011;102:810-6.

11. López-Estebaranz JL, Sánchez-Carazo JL, Sulleiro S. Effect of a family history of psoriasis and age on comorbidities and quality of life in patients with moderate to severe psoriasis: Results from the ARIZONA study. J Dermatol 2016;4:395-401.

12. Gupta MA, Gupta AK. Age and gender differences in the impact of psoriasis on quality of life. Int J Dermatol 1995;34:700-3.

13. Ograczyk A, Miniszewska J, Kępska A, Zalewska-Janowska A. Itch, disease coping strategies and quality of life in psoriasis patients. Postepy Dermatol Alergol 2014;31:299-304.

14. Fortune D, Richards H, Griffiths C, Main C. Adversarial growth in patients undergoing treatment for psoriasis: A prospective study of the ability of patients to construe benefits from negative events. Psychol Health Med 2005;10:44-56.

15. Lee YW, Park EJ, Kwon IH, Kim KH, Kim KJ. Impact of psoriasis on quality of life: Relationship between clinical response to therapy and change in health-related quality of life. Ann Dermatol 2010;22:389-96.

16. Gupta MA, Schork NJ, Gupta AK, Ellis CN. Alcohol intake and treatment responsiveness of psoriasis: A prospective study. J Am Acad Dermatol 1993;28:730-2.

17. Mills CM, Srivastava ED, Harvey IM, Swift GL, Newcombe RG, Holt PJ, *et al.* Smoking habits in psoriasis: A case control study. Br J Dermatol 1992;127:18-21.

18. Al'Abadie MS, Kent GG, Gawkrodger DJ. The relationship between stress and the onset and exacerbation of psoriasis and other skin conditions. Br J Dermatol 1994;130:199-203.

19. Zachariae R, Zachariae H, Blomqvist K, Davidsson S, Molin L, Mørk C, *et al.* Self-reported stress reactivity and psoriasis-related stress of Nordic psoriasis sufferers. J Eur Acad Dermatol Venereol 2004;18:27-36.

20. Verhoeven EW, Kraaimaat FW, de Jong EM, Schalkwijk J, van de Kerkhof PC, Evers AW. Individual differences in the effect of daily stressors on psoriasis: A prospective study. Br J Dermatol 2009;161:295-9.

21. Finlay AY, Khan GK, Luscombe DK, Salek MS. Validation of sickness impact profile and psoriasis disability index in psoriasis. Br J Dermatol 1990;123:751-6.

22. Rakhesh SV, D'Souza M, Sahai A. Quality of life in psoriasis: A study from South India. Indian J Dermatol Venereol Leprol 2008;74:600-6.

23. Krueger G, Koo J, Lebwohl M, Menter A, Stern RS, Rolstad T. The impact of psoriasis on quality of life: Results of a 1998 national psoriasis foundation patient-membership survey. Arch Dermatol 2001;137:280-4.

24. Finlay AY, Coles EC. The effect of severe psoriasis on the quality of life of 369 patients. Br J Dermatol 1995;132:236-44.

25. Feldman SR, Fleischer AB, Reboussin DM, Rapp SR, Bradham DD, Exum ML, *et al.* The economic impact of psoriasis increases with psoriasis severity. J Am Acad Dermatol 1997;37:564-9.